



BUSINESS PLAN

**FINANCIAL AND ECONOMIC SUBSTANTIATION OF PROFITABILITY AND
EXPEDIENCY OF ORGANIZING ACTIVITIES FOR THE PRODUCTION OF
LED CHIPS IN THE REPUBLIC OF UZBEKISTAN**

CONTENT:

- 1. Objective of the project**
- 2. Customer project**
 - 2.1. The situation in the market, the existing business relationships and goodwill.
 - 2.2. The potential of existing and projected
- 3. Project strategy**
 - 3.1. Assortment and characteristics of the products
- 4. Market and marketing concept ***
 - 4.1. introduction
 - 4.2. The main characteristics of the market
 - 4.3. Product Characteristics. Market demand
 - 4.4. Review of local industry
 - 4.5. Import Export
 - 4.6. Prospects of development of the industry in the medium and long term
 - 4.7. qualitative characteristics
 - 4.8. pricing system on the market
 - 4.9. Legislation
 - 4.10. Summary and Conclusions
- 5. Material resources**
 - 5.1. The classification of raw materials and components
 - 5.2. Project demand for materials and components
 - 5.3. Energy supply
- 6. Site location**
 - 6.1. Feature portion
 - Production structure, property complex
- 7. Technology and Design**
 - 7.1. Production capacity and the development of data
 - 7.2. The production plan in accordance with the project
 - 7.3. Technology and Equipment
 - Manufacturing process
 - Main production equipment
 - 7.4. Manufacturers and suppliers of equipment
 - 7.5. Construction
- 8. Organization of production and overhead costs**
 - 8.1. The organizational structure of the enterprise
 - 8.2. Overhead costs (works general and administrative)
- 9. Workforce**
 - 9.1. The need for a labor force
 - 9.2. To the staff requirements, the need for and the organization of their education
- 10. Driving the project**
 - 10.1. Project implementation stage
- 11. Financial evaluation**
 - 11.1. A set of capital project expenditures
 - 11.2. Total costs for products sold
 - 11.3. Estimation of economic efficiency, taking into account the payback
 - 11.4. Amortization of non-current assets
- 12. Calculation of profits and losses**
 - 12.1. Calculation of profits and losses of the enterprise
- 13. Cashflow Calculations**
 - 13.1. Statement of cash flows
- 14. Risk factors**
- 15. Findings**

Memorandum Privacy

This business plan is submitted to the investor only to decide on the financing of the project and cannot be used to copy in any form or for any other purposes, as well as to third parties.

Taking this to the business plan, the recipient (except group of persons defined by senior management Company) takes responsibility and guarantee the return of the copies of the Enterprise set forth in this Business Plan address, if he does not intend to invest in this project.

All data, evaluations, plans, proposals and conclusions presented in this project related to its potential profitability, production volumes, costs, profit margins, the future of its level, cash flow and other financial indicators, based well on the agreed opinion of the management and shareholders of the Company .

The present business plan put the raw data provided by the Company. All prices are taken as of "16" in September 2019.

The views and conclusions contained in this business plan, do not necessarily reflect the views and conclusions of the consumers of the information.

The technological part of the project developed in conjunction with specialists and equipment supplier and foreseen to be installed under this project technological equipment corresponding to the common enterprise technology and has a conjugation of all technological transitions to create an industrial complex for the production of LED chips.

Project Summary:

Kind of activity:	Production of LED chips	Objective of the project:	Creation of a modern plant for the production of light-emitting diodes (LED chips)
The production capacity of the production:	44 408 000,00 pcs. in year.	Area information:	Uzbekistan, Tashkent, Tashkent region.
Project cost:	23 412 917 \$ US	The area of the land:	3.2 hectares
Cost of equipment:	11,850,000 \$ US	New workplaces:	293 people
The cost of the PBX:	550 000 \$ US	Sales market:	The Republic of Uzbekistan
Cost of construction:	3.7 million \$ US	Workload on years:	1 year, 30%, 2-year, 35% 3 year or 45% of 4-year 50% 5 year-70% 6 year-90% 7 year 100%
Cost of raw materials and materials:	\$ US 5 167 901 (reserve for 1 month at 100% load equipment)	Total sales: Total for 5 years	240 197 161 \$ US
Other costs:	267 577 \$ US	Total sales for 5 years	93 626 862 pcs.
Net margin:	36%	Breakeven point:	4.4%
Recoupment of the project taking into account the 20% discount:	5th YEAR	NPV on 5th YEAR	4,762,164 \$ US
accumulated Earnings per 5th YEAR:	49 095 801 \$ US	IRR on the 5th YEAR	27%
The cumulative cash flow at the 5th YEAR:	54 767 612 \$ US	Recoupment of the project without taking into account the discount:	4th YEAR

1. Objective of the project

Result Business Plan aims to provide an objective description and information on the feasibility and advisability of organizing and creating a modern plant for the production of LED chips.

When laid in the calculation of income and expenses of the project it is efficient, financially sound with an average level of risk.

Cost of the project, the necessary documentation, as well as the cost structure around the project provided in the annex to the Business Plan.

Prospects for the development of this project are:

- ❖ A large demand for LEDs in the market of the Republic of Uzbekistan;
- ❖ Lack of speed and mobility demand in the market;
- ❖ The lack of high-quality light-emitting diodes on the market;
- ❖ Rapid turnover of funds;
- ❖ Quick payback on investment.

Besides:

- ❖ Thanks to the creation and organization of a modern plant for the production of LED chips is planned gradual increase in the speed of future production;
- ❖ Expanding consumer base and the opportunity to become one of the largest producers in the Republic of Uzbekistan.

Refinancing of the profits and a further increase in production volumes will further increase profits and ensure stable operation of the organization in the future.

This project represents the creation and organization of a modern plant for the production of LED chips.

The modern plant will organize the production of LED chips, to create production capacity and jobs in the region.

Objectives of the project:

- Organization and construction of an LED chip factory.
- Infrastructure development.
- Implementation of activities on a full cycle.
- Creation of production volumes at planned capacity due to the use of advanced technology and modern equipment.
- The conquest and preservation of a portion of the internal consumer market.
- The implementation of sound production and sales policy to meet the strategic goals of the enterprise.
- Conducting independent research, to update range of finished products.
- Further development and expansion of the company.
- Ensuring their income-earning owners, creation of conditions for the disclosure of entrepreneurial, creative and spiritual potential of employees.

The strategy developed by the project meets the following priorities of the structural transformation of the economy:

- *Increased capacity of the production sector of the Republic of Uzbekistan;*
- *The development of the industry as a whole, as the saturation of the market with quality products.*
- *The use of modern equipment;*
- *The active social policy aimed at creating more jobs and better working conditions, the growth of real incomes and consumption.*

The project will:

For the district's economy:

- To contribute to the regional economy, provide the domestic market with quality products at reasonable prices;
- Improve the social climate in the region (by creating new jobs, and the replenishment of a profitable part of the budget).

For the organizers of the project:

- Securely invest funds through the creation and development of the enterprise;
- To profit from the sale of LED chips.

The basis of the calculations and conclusions on a series of documents on the company:

- ✓ *Costing*
- ✓ *The parameters of the planned volume of production*
- ✓ *Analysis of the production technology of LED chips;*
- ✓ *Specifications for water supply engineering plant, electricity;*
- ✓ *Specifications for the transportation of finished products;*
- ✓ *Methodology for planning, accounting and calculation of production costs;*
- ✓ *The taxation system;*
- ✓ *Regulations on the procedure for determining amortization and depreciation charges referring to the cost of production;*

Based on the macroeconomic and financial results of the project, its high efficiency and low sensitivity to the risks identified, it is believed that the project can be implemented in the current economic environment and subject to inherent baseline.

The calculations shown in the annexes to this business plan are made only on the basis of a new organized activities, as the company will be exclusively focused on this activity, and the company currently has no plans to implement other activities.

2. Customer project

Name:	Association «UZELTEXSANOAT»
Address:	100047 Republic of Uzbekistan, Tashkent, Amir Temur Street, 13.
Project Objectives:	Organization of production of LEDs (LED chips) at the expense of investment funds.
Information:	Phone: (+998 71) 232-34-29 Fax: (+998 71) 232-34-82 Web site: www.uzeltexsanoat.uz Email: info@uzeltexsanoat.uz

2.1. The situation in the market, the existing business relationships and goodwill.

Active development of LED-technology has led to the growth of the Uzbek lighting market. At the beginning of 2018 its volume was estimated at 1.006 billion euros. However, the situation continues to change rapidly. The rate of introduction of LED solutions are estimated at over 34%, in some segments share modern technology is almost 50%.

Analysts predict that by the end of this year the volume of the domestic lighting market will reach 1.1 billion euros. Last year on the LED share in consumer and professional lighting sector of the market accounted for about 60% of total turnover.

Lighting market is dynamic, it is constantly changing. The rate and direction of its development is influenced by both internal and external factors. The most powerful of these are themselves cost reduction of LEDs and LED-technology and the popularization of "smart" lighting systems.

Penetration of LED solutions in the range of consumer market was 48.2%. Here, growth is not as intense as the introduction of LED-technology in the lighting sector for business.

Currently, it began active development of the market of LED systems. Experts expect that in this direction the consumer sector will grow less dynamically than going expansion of "smart" technologies in the professional lighting market.

According to analysts, now share integrated lighting systems account for about 1% of the consumer lighting market, and 23% - in the sector of lighting solutions for the business. The rise in popularity of "smart" in the field of lighting solutions will provide additional impetus to the emergence and development of new services.

2.2. The potential of existing and projected

The trend towards energy efficiency contributes to growth of the market of LED light sources, including on the territory of the Republic of Uzbekistan. Practice shows that the demand for LED-system depends on the volume of the state order and the funds allocated for the implementation of energy efficient technologies.

As you know, demand creates supply. Therefore, today we are witnessing the rapid development of the market of lighting fixtures with LED light sources. After all, due to their diminutive size there are more options for the realization of the most daring and innovative design projects.

However, every coin has two sides. Against the background of the active growth of the market of lighting marked the emergence of many small manufacturing companies that are establishing Issue LED-lamps, assembled from imported components.

The products of these companies are in demand only because it is available for sale at relatively low prices. In addition, the analysis of LED equipment for the domestic market shows that on the territory of Uzbekistan and imported products of foreign manufacturers, including many Chinese-made light sources.

3. project strategy

3.1. The product range

Initiator of the project plans to become a manufacturer and supplier of LED chips. The company plans to present to the implementation of LEDs following capacities:

Name of products
10W LED chip
50W LED chip
100W LED chip

- 4. Market and marketing concept**
 - 4.1. Introduction**
 - 4.2. The main characteristics of the market**
 - 4.3. Product Characteristics. Market demand**
 - 4.4. Review of local industry**
 - 4.5. Import Export**
 - 4.6. Prospects of development of the industry in the medium and long term**
 - 4.7. Qualitative characteristics**
 - 4.8. Pricing system on the market**
 - 4.9. Legislation**
 - 4.10. Summary and Conclusions**

SWOT - Analysis

SWOT-analysis, the definition of strengths and weaknesses of the enterprise, as well as the opportunities and threats arising from its immediate environment (the external environment).

Strengths - the benefits of the organization;

Weaknesses - Organization disadvantages;

Opportunities - environmental factors, the use of which will create value to the organization in the market;

Threats - factors that can potentially worsen the situation of the organization in the market.



SWOT - analysis is an important part of the situational analysis, and allows you to answer the following questions:

- Which it is for the Enterprise of strengths, weaknesses, opportunities and threats?
- How can you take advantage of opportunities, using the strengths of the company?
- What are the weaknesses of the enterprise may be used to prevent the opportunities?
- From what strengths can neutralize existing threats?
- What threats, aggravated by weak enterprise parties, should be most wary of?
- How strong competitive position of businesses?

In general, conducting SWOT-analysis boils down to the filling of so-called "matrix SWOT-analysis", which has the following form: left stand two sections (strong and weak side), in which respectively entered all identified at the first stage of the analysis the strengths and weaknesses of the organization . In the upper part of the matrix as there are two sections (opportunities and threats) into which they are introduced all the identified opportunities and threats

Qualitatively determine the list of strengths and weaknesses of the enterprise on the basis of expert estimates, their relationship to the opportunities and threats and make up the matrix of SWOT - analysis.

Identification of strengths and weaknesses is an internal aspect of the analysis. Strengths are the basis for the development strategy of the enterprise, at the same time determine the weaknesses of the need to conduct on the part of the company's management activities aimed at eliminating these disadvantages.

Strengths	Weaknesses
<p>The image of a stable and reliable company, which allows to attract additional consumers</p> <p>Volume market</p>	<p>Relative dependence on changes in the exchange rate and the presence probability of modification schemes and execution of transactions in the system of national commodity exchange markets, both from the organizers of the auction, and the state.</p>
<p>Automation equipment:</p> <p>The products at the output of a high-quality performance.</p> <p>Ensuring the production process thanks to the uninterrupted power sources</p>	
<p>Full compliance with the international quality assurance system</p>	<p>The probability of changing the legislative and normative-legal acts, regulating and governing the business in the country, leading to changes in activity and worsening conditions</p>
<p>High qualification and competence of personnel</p>	
<p>Modern production technology and a high level of technical equipment</p>	<p>A new player on the market with no established reputation</p> <p>The lack of local sources of raw materials</p> <p>Not established relationships with suppliers of raw materials</p>
<p>Automated equipment of high accuracy and reliability</p>	
<p>Low operating costs and equipment</p>	

Opportunities	Threatening
<p>Creating a high-tech production</p>	<p>The presence of strong competitors, the emergence of new competitors in the sphere of production</p> <p>Reducing the solvency of potential customers</p>
<p>Creating a high-quality working conditions</p>	
<p>Access to new international and domestic markets</p>	<p>Rising prices from suppliers of necessary raw materials for the production of</p> <p>Presence in the market of vertically integrated players with a guaranteed market for their own production</p>
<p>High rates of growth of production capacity in the country</p>	
<p>A sufficient amount of raw material suppliers local production</p>	
<p>The growing share of industry in GDP</p>	

Sales software, sales organization

There are a lot of marketing moves in order to increase sales of their products. However, sales of the scope is fairly specific. That is why to make quality advertising, which would be an exhibitor in the best possible light, very hard.

Sales of products is an integral part of the activities of organizations in market conditions. The company can count on a real commercial success only if rationally organized the marketing of products. In the chain "production-distribution-exchange-consumption" on the share of sales activity account for three of the last link.

The effective functioning of any business is impossible without well-organized sales services. For the sale of goods organization should carry out a set of targeted actions to ensure the movement of goods in the market space.

However, the high efficiency of product sales can only be achieved if the marketing activity of professional management.

Sales organization in the organization and management plays a very important role in the sense that provides feedback to the production to the market, is a source of information on the demand and consumer needs. Therefore, sales policy development forms the basis of the marketing program on how each product and for the separation of production as a whole. If on the basis of calculations it turns out that the cost of implementation of a new product are too high and do not allow for a certain level of profitability, the management of the production department may decide not appropriate for further development and introduction of this product. Experts marketers can not only determine the future profitability of products,

In the process of the organization sales management problem is solved already at the policy development stage company. Speech on the selection of the most effective system of channels and marketing techniques for specifically certain markets. This means that the production from the beginning focused on specific forms and methods of marketing, the most favorable conditions. Therefore, the development of marketing policy is aimed at determining the optimal direction and resources needed to ensure the greatest efficiency of the process of sale of goods. This presupposes an informed choice of organizational forms and methods of marketing activities aimed at achieving the planned outcomes.

Sales program

The price policy of this project formed the basis of the data of the market research and the existing rates in the market. Using these data were generated following prices for its products.

Cost of production:

Name of products	Selling price in the domestic market with VAT		VAT excluded domestic sales	
	\$ US		\$ US	
10W LED chip	PC.	1.4819	PC.	1.3846
50W LED chip	PC.	2.3941	PC.	2.2470
100W LED chip	PC.	3.6580	PC.	3.4280

Index increase in the cost of production of 5.4% was used in the calculation of the sales plan. This decision was taken due to the annual increase in prices for raw materials, materials and energy.

5. Material resources

5.1. The classification of raw materials and components

One of the most important elements in the production of a material resources from them depends on the continuity and stability of production.

- Availability of raw materials, proven reserves of raw materials

To date, the market is full of companies engaged in the supply of raw materials needed for production.

Below is a list of possible cooperation organizations to deliver the necessary raw materials for the production of LED chips:

BRIDGELUX, INC.



A country: America
46430
Fremont
Blvd,
Fremont, CA
94538

Phone:
1 925-583-8452

email:
sales@bridgelux.com

LED arrays and other components

Cree



A country: USA
4600 Silicon Drive
Dareem, NC, 27703

Phone:
1 919-313-5300
800-533-2583
Web site:
www.cree.com

Ice and ice chip components

Chi Mei Corporation



A country: of Taiwan
No.59-1, Sanjiazi, Rende Dist., Tainan City
71702, Taiwan (ROC)

Phone:
886-6-2663000
email:
service@mail.chimei.com.tw

LED accessories

EPISTAR Corporation (Jingyuan Photoelectric Co., Ltd.)



A country:
China
Number 21, Lixing Road, Hsinchu Science Park
Hsinchu

Phone:
886 3 567-8000
email:
sales@epistar.com
Web site:
www.epistar.com

LED accessories

NICHIA CORPORATION



Phosphor material for evaporation and coatings, catalysts, etc.

A country:
Japan

491 Oka, kaminak lake-Cho, Anan-shi,
Tokushima 774-8601

Phone:

81 884 22 2311

Web site:

www.nichia.co.jp

These companies have been selected as potential suppliers of industrial raw materials required.

Also, the company occupies a leading position on the delivery of raw materials for production.

- The main raw materials

One of the most critical moments of decision, which depends on the continuity and stability - is to ensure raw material. In a market economy and raw materials for production are under scrutiny, both in quantitative and qualitative terms, as are over a significant proportion of the cost of the final product, and significantly affect the quality of the products.

These costs for raw materials are taken on the basis of the planned rules cost production costs and details are specified in the design of the project in the application.

5.2. Project needs, and ensuring the availability of materials and components, their classification, supply program

Material procurement and sales system - to ensure an uninterrupted supply of plant and auxiliary materials necessary for the operation of the rhythm of production and organization of timely product sales.

Usually logistics system is not organized for each department, and for the whole plant (supply of raw materials is carried out through a system of warehouses, in accordance with the design requirement).

5.3. Energy supply

The modern enterprise is a major consumer of energy resources necessary for the process of production, as well as for the normal functioning of the business units. Under the energy resources we understand all available resources that are consumed in the production and viability of the Company who participate in mutual settlements with external suppliers and between departments. To them we include electricity, thermal energy, a variety of technical gases and special fluids, sewage. Thousands of kilowatt-hours and a large number of Gcal of heat and other energy uses modern industrial enterprise.

Selection of the most cost-effective energy should be based on a comprehensive solution of issues of energy, technology, organization of production and the economy through a comparative analysis of unit costs (consumption rates) process fuel and energy, non-recurring expenses for the development and implementation of measures to reduce standards.

Consumed energy can now be purchased from both purchased and produced in-house. The enterprise can produce electricity - on the rating power plant, steam and hot water - a boiler, generating gas -

generating station. Supply company has specific features, consisting of the need for immediate use of the energy produced and uneven demand for it during the day and time of year. Therefore, the uninterrupted supply of energy should be ensured through the establishment of reserves of power equipment capacity.

Large losses of pressure in the air network with their considerable extent does not allow for a centralized maintenance of the enterprise with compressed air, even within the company. Typically, stationary or mobile compressor stations are used to supply compressed air disposed near the consumer shops.

Centralized supply system ensures reliable and uninterrupted supply of energy and reduce enterprise operating costs of production and non-recurring costs associated with obtaining the necessary enterprise energy.

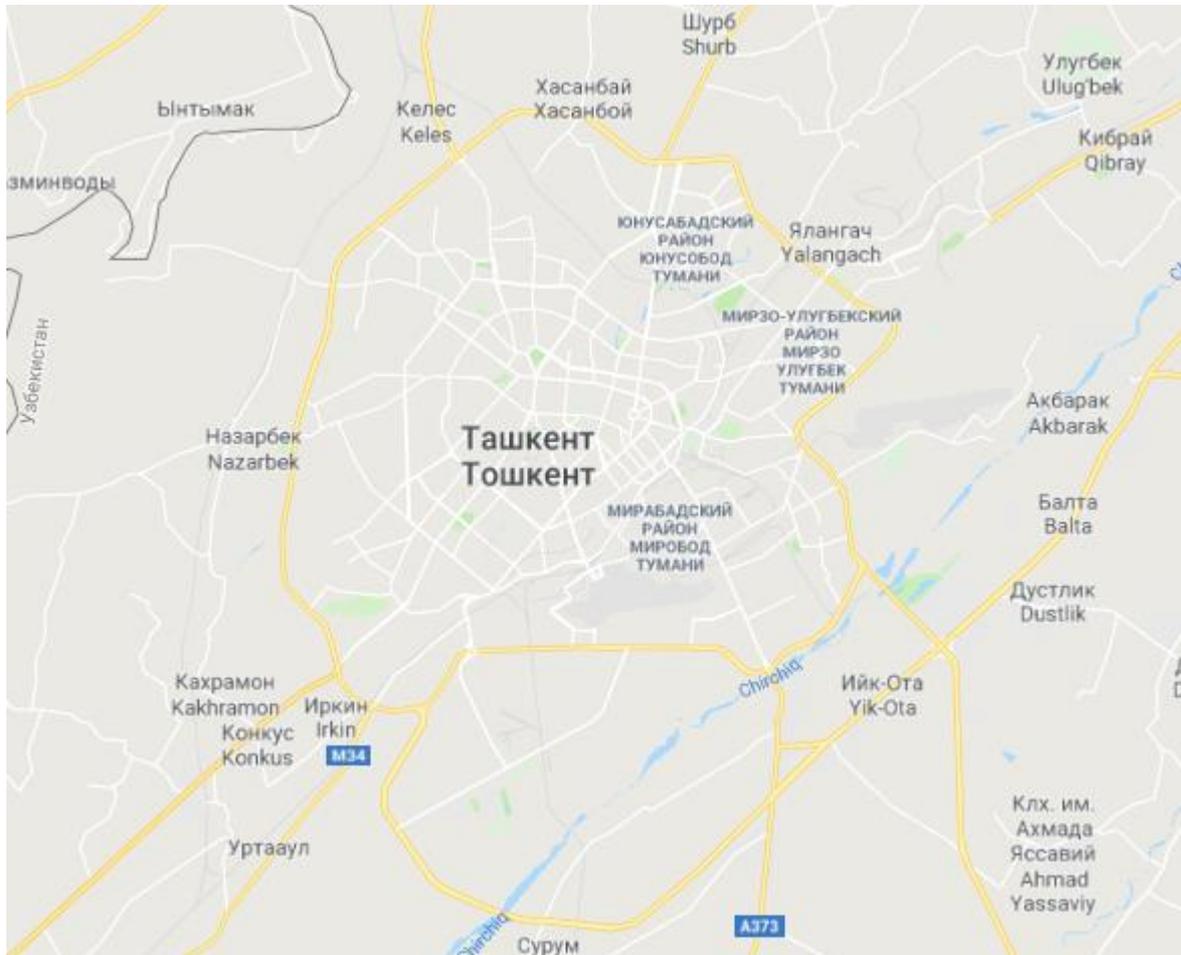
Name	unit of measurement	monthly demand	unit cost	Monthly cost
			\$ US	\$ US
electric power	kW / h	9251 666.7	.0474	438237
Water	m3	1 130.0	0.0895	101
Garbage	m3	0.5	4.4105	2
TOTAL				438340

Name	unit of measurement	Annual demand	unit cost	annual cost
			\$ US	\$ US
electric power	kW / h	111 020 000.0	.0474	5258842
Water	m3	13 560.0	0.0895	1213
Garbage	m3	6.0	4.4105	26
TOTAL				5260082

6. Site location

6.1. Feature portion

Estimated location for construction of a plant for the production of LED chips will be located in the city of Tashkent, Tashkent region.



- **Production structure, property complex**

Recommended total area for the organization of the plant for the production of LED chips 3,2 hectares.

In the proposed enterprise will be the following production areas and departments: storage of raw materials warehouse, office building, hangars and sheds for storage of necessary equipment.

7. Technology and Design

7.1. Production capacity and the development of data

Justification of potential and actual capacities on production enterprise incorporated in the means of labor is the basis for the formation of its production program.

Production capacity - a measure that reflects the company's ability to maximize (subdivision, consolidation or sectors) for the implementation of commercial output in natural silt cost units, related to a specific time period (shift, day, month, quarter, year).

Quantitative values of production capacity due to the scientific and technical level of production technology, the nomenclature (range) and product quality, as well as the peculiarities of work organization, the availability of energy, raw materials and labor resources, the level of organization of labor, specialization and cooperation, bandwidth transport, storage and distribution services. The instability of the factors affecting the value of production capacity, generates a plurality of index, so they are subject to periodic review. In production management practice, there are several types of concepts that characterize the production capacity: the design, the launcher, the development, the actual, planned, input and output over the period inputted, outputted, carrying.

In general, the production capacity can be defined as the maximum possible production in the same period of time with the designated conditions of use of the equipment and production resources (space, energy, raw materials and human labor). A leading factor in the production capacity and determining its name is equipment that is part of a means of changing the material of the production process.

The simplest and most accurate gauges of production capacity are natural units:

Production capacity is measured, as a rule, in the same unit in which the planned production of the product in real terms (tons, pieces and meters). For example, the production capacity mining enterprises determined in tons mining, metallurgical plants - in tonnes metal smelting and production of rolled products; engineering plants - in pieces manufactured machines; capacity of sugar mills and other food industry - in tons of raw materials, processed into finished products.

Product, which has a wide product scale, production capacity can be expressed in conditional physical units. If the company produces several kinds of products, the production capacity shall be established for each type separately.

The fuller the time used capacity, the more output is produced, the lower its cost, the more quickly the manufacturer to accumulate funds for the reproduction of production and improvement of the production system: replacement of equipment and technologies of production and reconstruction of organizational and technical innovations.

The increase in output of existing equipment and production areas through automation and other means of intensification of technological processes reduces the need for new investments, causes a reduction in operating costs, savings in raw materials and improves the ecological safety.

Project production capacity is determined in the design and manufacture reflects its capacity to carry out the project in the operation of the business environment. Actually reached capacity reclaimed called for stable operation. Depending on the development and current state of the production capacity acquired its specific values for the period of start-up of production (start-up), actually prevailing when the current fluctuations in demand for the products of (actual) or in the calculation of production volumes (planned).

During each planning period may vary capacity. The larger the planning period, the probability of such changes above. The main reasons for the changes are:

- installation of new pieces of equipment to replace obsolete or emergency;
- depreciation of equipment;
- commissioning of new facilities;
- change the performance of equipment in connection with the intensification of its mode of operation or in connection with the change of quality of raw materials, catalyst life, adsorbents, cleaning, change of corrosion protection, etc.
- modernization of equipment (replacement assemblies, units, grippers, conveyor elements and the like);
- changes in the structure of the starting materials, raw material composition or intermediates, methods of selecting the fractions of the heat exchange methods, metering calibration etc .;
- the duration of operation of the equipment during the planning period, taking into account stops for repairs, preventive maintenance, process interruptions;
- specialization of production;
- equipment operations (cyclical, continuous);
- organizing repairs and routine maintenance.

Of considerable importance is the increase of production capacity, which is achieved by the technical retrofitting and improving of the production process. Production capacity at the beginning of the period, as a rule - a year, called the input and at the end of period (years) - closed production capacity.

The production capacity of the project is taken on the basis of technical characteristics of equipment. According to the technical characteristics of the equipment for the production of LED chips, the production capacity is 44 408 000,00 units of finished products per year, with 100% utilization of equipment. The table below shows the volume of production in the breakdown:

Name of products	measurement units	The volume of production in the year	Production volume per month	The volume of production per day	Production volume per hour
The LED chip 10 W	PC.	22 204 000.00	1850 333.33	71 166.67	4 447.92
LED chip 50W	PC.	11 102 000.00	925 166.67	35 583.33	2 223.96
100W LED chip	PC.	11 102 000.00	925 166.67	35 583.33	2 223.96
TOTAL:		44 408 000.00	3700 666.67	142 333,33	8 895.83

When calculating the breakeven point minimum production capacity should be 4-5% of the maximum possible power. In these terms of performance, revenues from sales of finished products will exceed the costs.

Due to the high demand for this type of product in accordance with the optimal payback period of the project input capacity set at 30%. Output production capacity of the project, which will be 100% production capacity and service delivery is scheduled for 7 year project.

Data on the production plan are as follows:

BUSINESS PLAN

Name of products	By year			
	1 YEAR	2 YEAR	3 YEAR	4 YEAR
DEVELOPMENT OF RANGE (%)	30%	35%	45%	50%
10W LED chip	30,0%	35%	45%	50%
50W LED chip	30,0%	35%	45%	50%
100W LED chip	30,0%	35%	45%	50%
Production quantities				
10W LED chip	6 661 200,0	7 771 400,0	9 991 800,0	11 102 000,0
50W LED chip	3 330 600,0	3 885 700,0	4 995 900,0	5 551 000,0
100W LED chip	3 330 600,0	3 885 700,0	4 995 900,0	5 551 000,0
PHYSICAL unsold goods				
10W LED chip	555 100,0	647 616,7	832 650,0	925 166,7
50W LED chip	277 550,0	323 808,3	416 325,0	462 583,3
100W LED chip	277 550,0	323 808,3	416 325,0	462 583,3
TOTAL OUTPUT				
10W LED chip	6 106 100,0	7 123 783,0	9 159 150,0	10 176 833,0
50W LED chip	3 053 050,0	3 561 891,0	4 579 575,0	5 088 416,0
100W LED chip	3 053 050,0	3 561 891,0	4 579 575,0	5 088 416,0
TOTAL	12 212 200,0	14 247 565,0	18 318 300,0	20 353 665,0

Name of products	By year			
	5 YEAR	6 YEAR	7 YEAR	Total:
DEVELOPMENT OF RANGE (%)	70%	90%	100%	60%
10W LED chip	70%	90%	100%	60%
50W LED chip	70%	90%	100%	60%
100W LED chip	70%	90%	100%	60%
Production quantities				
10W LED chip	15 542 800,0	19 983 600,0	22 204 000,0	93 256 800,0
50W LED chip	7 771 400,0	9 991 800,0	11 102 000,0	46 628 400,0
100W LED chip	7 771 400,0	9 991 800,0	11 102 000,0	46 628 400,0
PHYSICAL unsold goods				
10W LED chip	1 295 233,3	1 665 300,0	1 850 333,3	7 771 400,0
50W LED chip	647 616,7	832 650,0	925 166,7	3 885 700,0
100W LED chip	647 616,7	832 650,0	925 166,7	3 885 700,0
TOTAL OUTPUT				
10W LED chip	14 247 566,0	18 318 300,0	20 353 666,0	85 485 398,0
50W LED chip	7 123 783,0	9 159 150,0	10 176 833,0	42 742 698,0
100W LED chip	7 123 783,0	9 159 150,0	10 176 833,0	42 742 698,0
TOTAL	28 495 132,0	36 636 600,0	40 707 332,0	170 970 794,0

In the first half year of the project scheduled to work on the preparation of the project to the start of production. A complex measure for the gradual phasing start of the project is of strategic importance to the implementation. These include: the preparation of all necessary documents for the creation of new production, contracts for the purchase of necessary equipment, industrial raw materials, auto-vehicles for the transportation of finished products and raw materials, carrying out plant construction work, delivery of production equipment, carry out installation and commissioning of production equipment, training and education.

From the data shown in the table shows that when downloading production equipment by 30% the amount of output in the form of ready-mix concrete is **12 212 200.0 pcs.**

With an annual production volume increase by 5-20%, to 7, the volume of the planned production and sales amounted to 40,707 units 332.0.

7.2. The production plan in accordance with the project

Annual production program is based on the technical characteristics of the equipment used in the process, the data of marketing research as well as normative and legislative acts on labor, operating in the territory of the Republic of Uzbekistan:

- Production capacity - 44 408 000,00 pcs. in year.
- The number of working hours per week for production staff (at 6-day working week and one shift system) 48 hours;

Data on the timetable						
Number of shifts per day					change	2.00
Work shift					hour	8.00
The average number of working days in a month					day	26,00
The number of working months in a year					month	12,00
Data on capacity development plan						
Years the project	unit of measurement	2021	2022	2023	2024	
Percentage growth of the volume of production		100%	122%	130%	140%	
Name of products		1 YEAR	2 YEAR	3 YEAR	4 YEAR	
Total production of LED chips 10 W, in the year	PC.	10 000 000,00	12 200 000.00	15 860 000,00	22 204 000.00	
Total production of LED chips 50 W per year	PC.	5000 000.00	6 100 000.00	7930 000.00	11 102 000.00	
Total production of LED chips 100 watts per year	PC.	5000 000.00	6 100 000.00	7930 000.00	11 102 000.00	

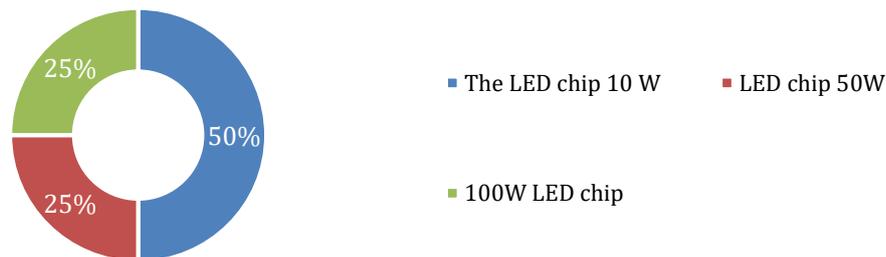
The annual production volume at maximum loading capacity is given in the table.

➤ Production of LED chips:

Name of products	measurement units	The volume of production in the year	Production volume per month	The volume of production per day	Production volume per hour
The LED chip 10 W	PC.	22 204 000.00	1850 333.33	71 166.67	4 447.92
LED chip 50W	PC.	11 102 000.00	925 166.67	35 583.33	2 223.96
100W LED chip	PC.	11 102 000.00	925 166.67	35 583.33	2 223.96
TOTAL:		44 408 000.00	3700 666.67	142 333,33	8 895.83

Name of products	measurement units	The proportion of the total volume in%
The LED chip 10 W	%	50.00%
LED chip 50W	%	25.00%
100W LED chip	%	25.00%
Total:		100.00%

Share in the total volume of production, in%



The calculations for this project, the predicted production and sale of products are designed taking into account the establishment of the level of development of productive capacities. The first half of the year will go to the delivery and installation of equipment, training facilities, organizational matters.

7.3. Technology and Equipment

- Justification of the choice of technology and equipment, circuits, process, advantages and disadvantages, the reliability of equipment and guarantee vendor

Selection and calculation of technological equipment - a very important stage of the design. Because, as far as qualified to solve this issue in the design will depend on such factors as the quality and yield, productivity, profitability.

The initial data are:

- flowsheet and production modes;
- grocery calculations;
- management mode (plot separation line).

- **Types of LEDs**

Currently, LEDs have gained wide popularity. In this case, clearly separate their power, brightness, applications, form factor and other parameters is not possible, because each manufacturer has its own classification. However, different types of LEDs can be grouped into classes according to some characteristic features.

Indicator lamps and LED

For a clearer idea of what are the LEDs, they can be divided into two major groups: the indicator and lighting.

The indicator is used mainly for color display, as well as the backlighting of displays, instrument panels and other devices. That is, the LEDs are relatively small capacity (up to 0.2 W) with moderate brightness.

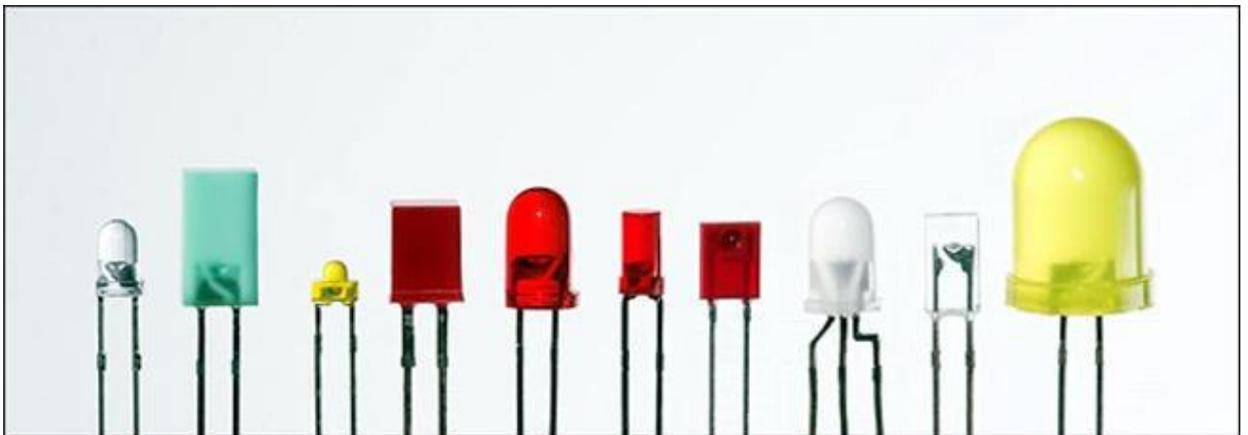
LED lamps are used in lighting of premises as part of the LED lamps and tapes in automotive headlamps and wherever is required to obtain a high luminous intensity. The power of such LEDs can reach tens of watts.

Indicator LED

Indicator LEDs, in turn, can be divided into several groups.

DIP LEDs

LEDs of this type are light emitting chip in a pin housing, often with a convex lens. Body types: cylindrical, diameter 3, 4, 5, 8, ... 10 mm, and rectangular.



In a very wide range of colors - until the IR and UV ranges. May be both monochrome and multi-color (when concentrated in a single package a few crystals of different colors), - for example, RGB.

One disadvantage of these LED may be mentioned the low scattering angle light flux is usually not more than 60° .

Super Flux "Piranha"

Structurally Piranha LEDs are super-bright LEDs in a rectangular housing with four pins. This design allows you to securely attach the LED on the board.



Available varieties: red, green, blue and white three (different emission temperature). Produced in the body with a lens (3 and 5 mm) and without it. The scattering angle ranges from 40° to 120° .

Scope Piranha - lights automobile devices, daytime running lights, advertising signs etc.

Straw Hat

Along with Piranha, large angle scattering light flux LEDs have Type Straw Hat («straw hat»). Outwardly, they look like ordinary cylindrical two conclusions LED, but with less height and increased lens radius, for which he received his name.

Emitting crystal in these LEDs is the closest to the front wall of the lens (be sure to read about assignment lenses for LEDs), which results in the scattering angle of the order $100-140^{\circ}$.



Available in red, blue, green, yellow and white LED. With the ability to create a non-directional radiation can be used for decorative purposes, as replacement lamps emergency alarm and other locations where a uniform illumination with low power consumption.

SMD LEDs

In addition to pin LED, SMD type LED manufactured. This should include super-bright white LEDs and color capacity of about 0.1 W surface mount package. Dimensions housings typically standard for any type elements SMD: 0603, 0805, 1210, etc., where the marking denotes a length and width in hundredths of an inch or in millimeters. At the same time there as a kind of a convex lens, or without.



Due to the simplicity of installation, based on these LED available LED Strip. For example, well known in this area acquired LED Cree SMD 3528.

LED lighting

These LEDs are used for lighting buildings and streets in the composition of lights, car headlights, LED strips, etc. In this regard, it has a high power, high intensity radiation, and are available only in white color in the surface-mount.

Two varieties are usually made, different color temperature: cool white (cool white) and warm white (warm white).

Since the crystals of emitting white light, do not exist in the production of lighting LEDs have resorted to various technologies mixing three primary colors (RGB). From their method of addition depends on the color temperature of white light produced.

One method of obtaining white light is to coat three emitting crystal phosphor layers, with each layer responsible for its base color. Another method is to apply two layers of phosphor to crystal blue.

Lighting SMD LED

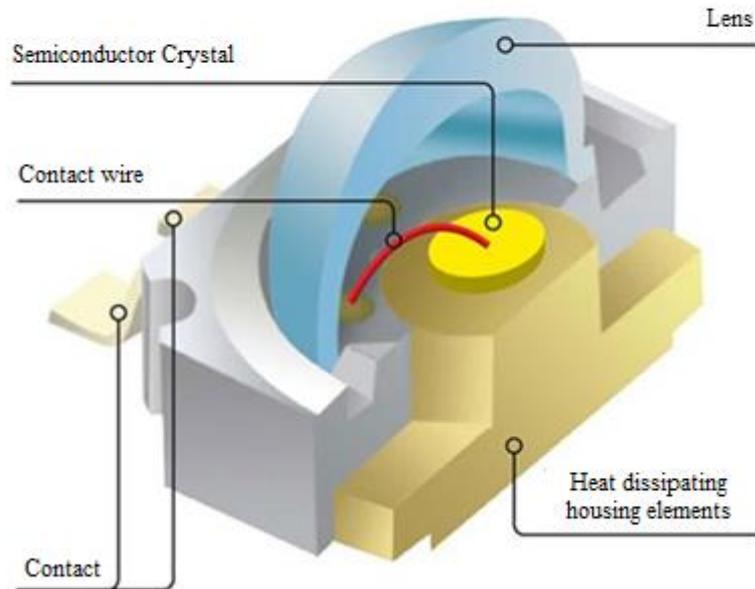
Most LED lighting are also available in SMD package. In contrast to the indicator, characterized by greater capacity and are made only in white color.

The main field of application of SMD - LED strip and lamp, portable lights, car headlights. At the same time they give a fairly directional radiation (about 100° -130°), so you have to use a large amount of LED for even illumination of the area under illumination of large areas.



Structurally lighting SMD are coated with a phosphor emitting chip on the heat sink substrate, usually copper or aluminum. They found both species to the lens, and without it.

Construction SMD - LED



COB LEDs

There was widespread LED type COB (Chip On Board, chip on board). In fact, this integration of a large number (generally several tens) SMD crystals in one housing, which are then covered with a phosphor.



On top of the picture are shown for comparison Cree SMD 5050(Left) and COB - matrix of 36 chips (right).

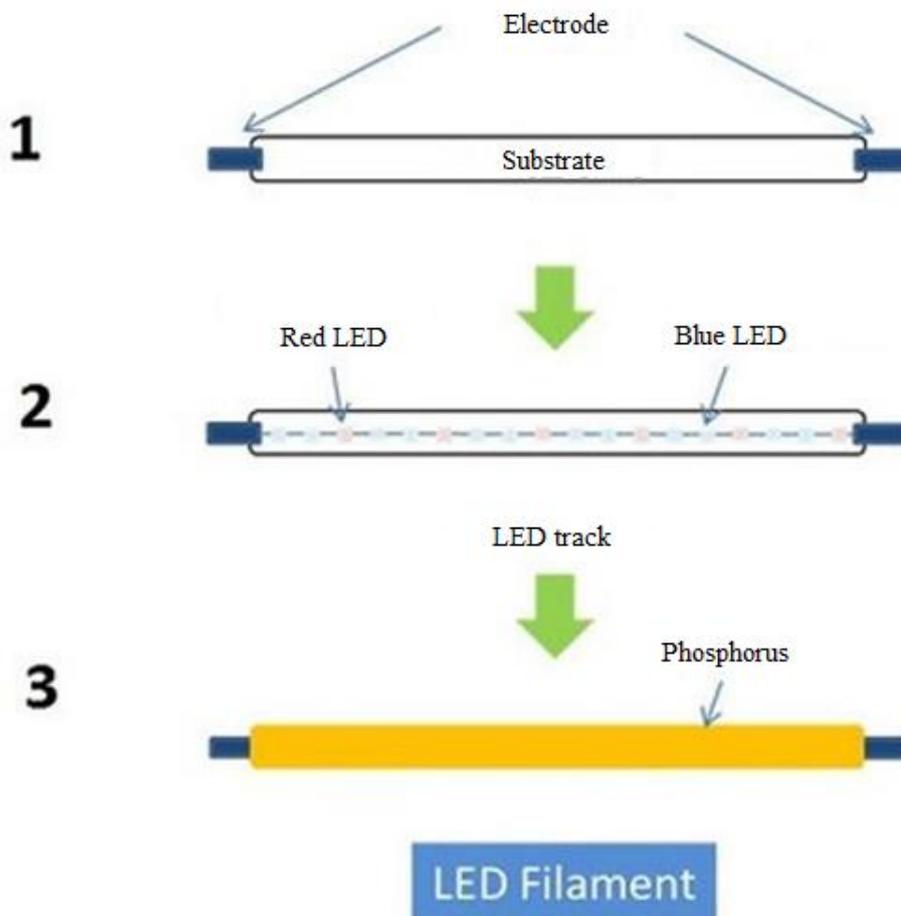
COB used only for lighting. Their light output order of magnitude greater than that of the single SMD. Note, however, that these LEDs are not suitable for creating a focused light due to the large angle scattering of light. At the same time to create a completely non-directional radiation, too, will not work - LEDs scattering angle of less than 180° .

Filament LED

This type of LED is also used so far only for lighting. Widely used as a decorative illumination of premises. Emission spectrum, in contrast to the SMD and the COB, is much more pleasant to the human eye and resembles a light bulb. This saves all the inherent advantages of LED: Low power consumption and long service life.



At the same time efficiency Filament even higher than in the same SMD, - first collect much illumination for the same power. This is achieved by COG technology (Chip On Glass, chip on glass) in which the light emitting chip is mounted on a glass substrate and then covered by the phosphor.



The substrate itself has a cylindrical shape, which allows to obtain the scattering angle of the light flux 360°. That is, such LED are very good at creating a non-directional radiation.

laser diodes

And finally, yet another type that cannot be attributed to any indicator, to any lighting LED, - a laser diode. Actually, the LED can be regarded as a stretch, since it does not have the production technology is nothing to do with the conventional LED.



Laser diodes are specially processed semiconductor crystals which when energized generating a very narrow beam of light. In this new generation of samples possible to obtain a beam divergence angle within 5-10°. It occurs as models operating in the visible range, and outside it (UV and IR).



Widespread use of these diodes found in laser pointers, sighting, DVD-drive, optical computer mice, optical fiber communication lines.

Clearly classify all variety of LEDs is difficult, because rarely certain LED manufactured for some specific purposes. Nevertheless, the basic directions of their application, - display and lighting - are still the same, and the classification given here is suitable for general guidance on the types of LEDs.

Benefits

Saving

One of the advantages of LEDs is their durability. These light sources have a resource used 100 000 hours, and it's 10-12 years of continuous operation. For comparison - the maximum period of neon and fluorescent lamps is 10 thousand hours..

During this same time, in the light module using fluorescent lamps, they must be changed 8-10 times, and incandescent lamps have to re "twist" from 30 to 40 times. The use of LED modules makes it possible to reduce energy costs by up to 87%.

Facilities

LED module - multicomponent structure with connecting undemanding circuit. In a chain of, say, fifty light-emitting diodes one or two defective not only displays advertising fragment out of order, but did not affect the total light emission. Giant life of the LEDs is almost solves the problems associated with the need to replace them. Furthermore, light-emitting diodes can operate reliably in a wide range of operating temperatures.

Reliability

There reliability very special kind - the one from which sometimes depend on people's lives. The use of LEDs in display devices of information (traffic signs, traffic lights, placards, etc.) leads to a significant increase in the distance of the human eye. No coincidence that in many large cities of developed countries, there is no normal traffic lights, and LED circuits used in air and surface navigation systems.

Another aspect through which the LEDs some customers preferred are their durability and vandal-proof quality. Unlike glass tubes data light sources are made of plastic. In this way they are not easily incapacitate by mechanical damage. The characteristic voltage required for operation of the LED - 3-4 volts. Therefore, in circumstances where required to comply with increased security measures or you can not use high voltage LEDs are an optimal choice. The operating voltage of LED modules, as mentioned previously, amounts to 10-12 V. It is evident that at a low voltage is required to apply conductors of large cross section with a strong insulation. It also facilitates the connection of the LEDs to the power supply. At discharge tubes, in contrast to the light-emitting diodes, has a threshold: a light source to light up, in the beginning it is necessary to apply for the necessary discharge voltage. LEDs begin to emit light immediately when connected to the mains, and to easily adjust the brightness of the build-up or decrease in voltage almost immediately after turning. One important advantage of LEDs is resistance to low temperatures. It is known that the cold gas discharge inside the light sources winterkilling mercury occurs, and this leads to a decrease in brightness. At low temperatures also have problems with the inclusion of neon. LEDs do not have these disadvantages. and easy to adjust the brightness of the build-up or decrease in voltage almost immediately after turning. One important advantage of LEDs is resistance to low temperatures. It is known that the cold gas discharge inside the light sources winterkilling mercury occurs, and this leads to a decrease in brightness. At low temperatures also have problems with the inclusion of neon. LEDs do not have these disadvantages. and easy to adjust the brightness of the build-up or decrease in voltage almost immediately after turning. One important advantage of LEDs is resistance to low temperatures. It is known that the cold gas discharge inside the light sources winterkilling mercury occurs, and this leads to a decrease in brightness. At low temperatures also have problems with the inclusion of neon. LEDs do not have these disadvantages.

- **Manufacturing process**

LED - a semiconductor diode that emits light when current is passed through the pn-junction. Pn-junction to emit light, the following two conditions must be met. Firstly, the width of the forbidden band in the LED active region should be close to the photon energy of the visible light range, and, secondly, the emission probability in the recombination of electron-hole pairs must be high. For this purpose, the semiconductor chip should contain few defects due to recombination which occurs without radiation. These conditions are to some extent contradictory. Realistically, to comply with them, one p-n-transition in the crystal is not sufficient. It is necessary to produce multilayer semiconductor structures. They are called heterostructure (precisely because the study of heterostructures Academician Alferov won the Nobel Prize).

Production of light-emitting diode is facing some difficulties. Since the creation of LEDs - is a dynamically developing sector of the lighting industry, the prevailing laws and regulations, their application does not exist yet. No regulatory documents related to the production process and the use of LEDs. Every major production tries to find their product selection criteria, but unfortunately, not like international agreements do not exist. Although in this direction in recent years active work and achieved good results, we need to understand that the creation of common requirements for LED technology - it's not one year. To understand the complexity of creating such a document should be familiar with the production technology.

Consider a phased process of establishing LEDs.

Growing the crystal.

Here, the main role is played by a process such as organometallic epitaxy. Epitaxy - is oriented growth of a single crystal on the surface of another (substrate). Epitaxial growth of semiconductor (LED and - this is semiconductor) is carried out by thermal decomposition (pyrolysis) of organometallic compounds containing the chemical elements needed. For such a process requires very pure gases, as provided in modern plants. The thickness of the grown layers are carefully controlled. It is important to ensure the uniformity of the structures on the substrate surface. The cost of installations for epitaxial growth comes to a half million euros. A process of setting up high-quality materials for the future of LEDs takes several years.

Creating a chip.

At this stage, there are processes such as etching, the establishment of contacts, cutting. The entire complex was named "planar processing of films." Film grown on a single substrate is divided into a few thousand chips.

Binning.

Binning (chip sorting) - a particularly important process of production of LEDs, which unjustly often forget to mention in the literature. The fact that the production of any product must be met certain selection criteria. But in the above stages of production of the LED is impossible to achieve absolute similarity of products in its performance. Fabricated chips originally have characteristics that differ in a certain range. The chips are sorted into groups (bins). In each group, a certain parameter varies within certain limits.

Sorting is conducted by:

- wavelength of emission maximum;
- voltage;
- luminous flux (luminous intensity or axial) and t. d.

Binning as LED products gradation method finds application in the production and, hence, the name of products supplied. These two facts make the use of LEDs for a wide range of users.

Create LED.

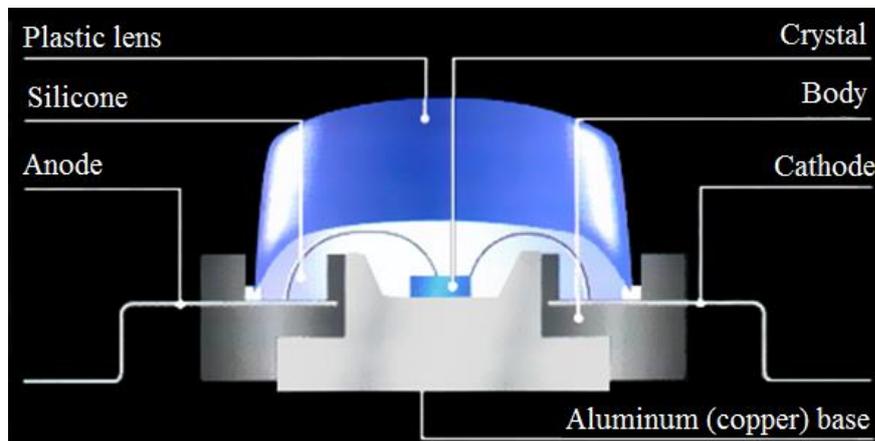
Creating a direct LED - this is the final stage of the process chain. Creates housing future light source terminals are mounted, the phosphor is selected (if required). But especially worth mentioning such an important part, as the optical system (namely, the production of lenses). Lenses for light-emitting diodes made of epoxy, silicone or plastic. They are subject to a wide range of requirements, since LED optical system plays a major role (LED directs light output solid angle at the right).

Lenses should:

- be as transparent as possible;
- transmit light around the optical range;
- exhibit good adhesion of the material to the material of the PCB;
- be temperature stable;
- обладать высоким сроком службы (что характеризуется к воздействию излучения кристалла и химическому воздействию люминофора, если таковой применен).

What today there are manufacturing LED technology

As for the crystal growth, the core technology - organometallic epitaxy. This process requires very pure gases. In modern installations provided the automation and control of gas composition, their separate streams, precise adjustment of the gas temperature and the substrate. The thicknesses of the grown layers are measured and controlled in the range of tens of angstroms to several microns. The different layers must be doped with impurities, donors or acceptors, to create a pn-junction with a high concentration of electrons in the n-region and holes - in the p-region.



In one process, which lasts several hours, can be grown on the structures 6-12 50-75 mm diameter substrates. It is important to ensure and control the uniformity of the structures on the substrate surface. The cost of installations for epitaxial growth of nitride semiconductors, developed in Europe (the company Aixtron and Thomas Swan) and the US (Emcore), reached \$ 1.5-2 million. The experience of different companies shows that to learn to get to this setting, competitive structure with the necessary parameters can be for the period from one year to three years. A technology that requires high culture.

An important step is planar processing technology films: they are etched, creating contacts to n- and p-layers of coating films to metallic terminals. Film grown on a single substrate can be cut into several thousand chips ranging in size from 0.24 to 0.24 x 1 x 1 mm².

The next step is the creation of these LED chips. It is necessary to mount a chip in the housing to make contact connections, to make optical coatings, antireflective surface for reflecting the output radiation or it. If it's white LED, it is necessary to uniformly apply the phosphor. It is necessary to provide heat removal from the crystal and the housing, to make a plastic dome, focusing the radiation in the desired solid angle. About half the cost of the LED is determined by these stages of high technology.

The need to increase capacity to increase the luminous flux has meant that the traditional form of the body of the LED fails to satisfy the producers due to insufficient heat dissipation. It was necessary to bring your chip to a thermally conductive surface. Therefore, to replace the traditional technology and several more advanced SMD-technology (surface montage details - surface mount parts) comes the most advanced technology COB (chip on board). LED fabricated on SOI technology, schematically shown in the figure above.

LEDs made of SMD- and COB technology, are mounted (glued) directly on a common substrate, which may play the role of a radiator - in this case it is made of metal. So are LED modules, which can be linear, rectangular or circular in shape, be rigid or flexible, in short, are designed to satisfy every whim of the designer. Appear and the LED lamps with the same socket, like a low-voltage halogen designed to replace them. But for high-end lighting fixtures and LED spotlights are made to build a massive round radiator.

Earlier in the LED assemblies were a lot of LEDs. Now, with increasing power LEDs become smaller, but the optical system directing the light beam to the desired solid angle, plays an increasingly important role.

Due to the large number of positive qualities (low power consumption, the lack of mercury, low voltage power, high reliability, small size, etc.), based on LEDs are varied and high-quality LED lighting fixtures. It can be a long list of different types of LED lamps: This and spotlights, and linear LED luminaires and lamps of a general or special purpose. We can say that the light-emitting diodes - a dynamic light sources.

▪ **Main production equipment**

- Equipment for cutting wafers, substrates and group blanks;
- Assembly line, and laser soldering crystals;
- Equipment for the formation of bulk terminals;
- Plasma processing equipment;
- Equipment splicing crystals;
- Equipment thermal processes;
- Sealing equipment;
- Quality control equipment;
- Flexible manufacturing cells;
- Line for SMD mounting.

Equipment identification	Country of origin	The average price for a single line of \$ US equipment
Line for mounting SMD LED light-emitting diodes	China	200000
	Countries of Europe	210000
	Russia and CIS countries	-

The required amount of equipment will be known when creating the detailed budget documentation and analysis of the planned production of a group of manufacturing engineers and specialists.

7.4. Manufacturers and suppliers of equipment

BE Semiconductor Industries NV Besi Austria GmbH



A country: Austria

Representative offices

Innstrasse 16

www.besi.com

6241 Radfeld Austria

Phone:

43 5337 600 0

Installation for assembling electronic components flip-chip, marking machines for printed circuit boards

LLC "AssemRus"



A country: Russia

Phone:

City: Moscow

7 (495) 933-10-43

Street: Ugreshskaya

email:

d. 2, pp. 82, floor 3, BR. 09

info@assemrus.ru

Website:

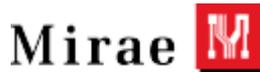
www.assemrus.ru

Loaders PCB line

Mirae Corporation

A country: Korea

Phone:



SMD Component Installer

Address: Dzhivon-dong 203-ho
302-7, 3gondan 1-ro
Gumi-si, Gyeongsangbuk-do
Office: Nambu (South)
Gumi Office

041-529-1083
010-4335-9321
email:
smtsales@mirae.com
webmaster@mirae.co.kr

LLC "LionTeh-S"



Multi-purpose equipment supplied for the production of LEDs.

A country: Russia

City: St. Petersburg

Leninsky Prospect, d. 153, support
906 (floor 9)

Phone:
7 (812) 309-27-37
7 (495) 646-14-76
Website:
www.liontech.ru
email:
mail@liontech.ru

"CMT technology"



Oven convection reflow solder TSM Series
TRA

A country: Russia

City: Moscow

2nd Kotlakovsky lane, 1C3

Phone:
7 (499) 322-20-25
8 (800) 775-83-26
email:
info@smttech.ru

Sino Ukraine Production Port



Equipment for the production of LEDs

A country: Ukraine

City: Kiev

Str. Vladimir 45, of. 41

Phone:
38 (044) 223-39-36
email:
sinoukraine@gmail.com

Sino Ukraine Production Port



Equipment for the production of LEDs

A country: China

City: Shenzhen

Fu'an Industrial Zone 3

Phone:
75529502322
Website:
en.eton-mounter.com

Shenzhen ETA Technology Co., Ltd.



A country: China

City: Songgang

Phone:
8 615 763 257 378

Yangyong industrial zone village
Shapu

Website:
etasmt.com

**Multi-purpose equipment supplied for the
production of LEDs.**

7.5. Construction

The normal functioning of plants is determined by the creation of rational management of the shop, ensuring the work of the process equipment, systems and services, and comfortable working conditions for staff.

The normal functioning of plants is determined by the creation of rational management of the shop, ensuring the work of the process equipment, systems and services, and comfortable working conditions for the staff formulate the basic requirements for the guild economy

Building basic industrial purposes intended to cover the equipment to perform the basic technological and auxiliary processes and staff in most cases, the building is a supporting structure for mounting intrashop Conveyor mechanisms and energy communications

Volume planning solutions building workshops are subject to the scheme of technological process (taking into account the possible expansion and perspectives are agreed), which will provide an assortment quality and output at the same time takes into account the conditions of the organization of construction and possible unification of constructions Rational exchange planning solutions building workshops are characterized by compact design with maximum use of production space and lockable rooms . optimal from the point of view of construction workers and the placement on the general plan configuration management, unification of constructive elements These solutions provide the same parallel arrangement of spans, the same type of grid columns and the same height Retreats are suitable in the case of production requirements relating to the organization of rational freight traffic,

As a rule, placed in shops multidisciplinary buildings with wide spans columns on the axes 12, 18, 24, 30, 36 and 42m (sometimes 15, 21, 27, 33 and 39 m). Selecting spans the width of the production depends on the type and configuration of the installed equipment. In buildings, manufacturing plants may provide support spans of the same or smaller width, in particular -. A pitch multiple of 3 m They arranged ventilation and electrical heating furnaces smoke extraction equipment, maintenance services, office, sometimes domestic premises. In the absence of sufficient production areas or if there is a high ground water level, or individual spans all building management operate with so-called technical floor, wherein disposed communication electrical facilities, ventilation systems,

Column spacing in the building of workshops depending on the requirements of the process varies from 6 to 36 m usually at the rows of buildings column spacing of 12 m, which is associated with a more convenient fastening enclosing wall structures of the building, and in some cases -. 6, 18 and 24 m; rows of columns on the inner step is from 12 to 36 m.

For production plants most often construct buildings with columns resting on the electric bridge cranes, load capacity is determined by the weight of the transported goods and a replacement of the

equipment used during repairs. The use Ros buildings small plants that produce, for example, thin-walled pipes with small diameters. In such shops are widely used outdoor mechanized and manual transport. Promising the construction of separate spans Ros, mainly non-technological purpose, with the service installed in their outdoor machinery equipment such as mobile cranes

The height of the plants was determined taking into account the building with a secure service set hoisting means of technological equipment, transportation of metal equipment, facilities, metal stacks in warehouses intermediate and finished goods sides of the rolling stock. The total height of the building determined by the height setting intrashop electric bridge cranes, cranes clearance (height) and the height of the roof structure.

Frameworks shops buildings made of metal, concrete and mixed structures. building elements (columns, beams, trusses, floors) must withstand a load of technology and vehicles. Depth of the foundations and pillars of the building configuration depends on the design calculations, taking into account the load on the building and the characteristics of the soil, and on the depth of the underground facilities, located near the columns as in the shop, and beyond.

The floors in shops are made of materials well resisting mechanical stress, and heat impact and corrosive media. Flooring should be easily maintainable, quickly replaceable and easy to clean. Load floors may range from 30 and 250 kN / m². Usually the floors in the main spans are made of concrete slabs with a frame Plot iron or steel plates. Floors can be Asphalt concrete (in areas not exposed to temperature extremes), adobe, brick, stoneware paving (the areas of heating furnace, a metal warehouses). The bus electrode premises basement oil, smoker's hydraulics etc. arrange flooring tiles, flooring and plastic coated.

All buildings design workshop using as the main production of artificial lighting, in addition to natural through the glazed window openings in the walls, as well as add-ons to the lamp on the roof.

8. Organization of production and overhead costs

8.1. The organizational structure of the enterprise

Management of all business activities will be carried out in areas Director:

- economics and finance;
- management of the current industrial, economic and financial activities of the Company;
- supply, marketing and sale of products;
- social development;
- ensuring the safety of property and security work.

8.2. Overhead costs (works general and administrative)

Overhead at full capacity consists of the following major items of expenditure:

- wages of workers;
- taxes and other charges that are not directly included in the cost;
- the cost of routine maintenance and repair of equipment;
- labor costs, etc.

9. Workforce

9.1. The need for a labor force

The project will be implemented by means of attracting qualified personnel - both desktop and engineering.

State employees will be 293 people.

The number of manufacturing personnel determined taking into account the mode of operation of the equipment, the level of mechanization, automation and others.

State employees represented in the table.

	Workplaces	Average monthly \$ US	The total monthly \$ US	TOTAL ANNUAL STAFF PHOT
PRODUCTION				
Administrative maintenance department	5.0	158	789	9474
warehouse workers	10.0	179	1789	21474
the driver of the electric vehicle	4.0	200	800	9600
Technical Control Department	10.0	189	1895	22737
assembly line workers	200.0	168	33684	404211
Engineering group	5.0	184	921	11053
laboratory workers	10.0	184	1842	22105
Shop for metal working	9.0	168	1516	18189
paint shop	8.0	168	1347	16168
Logistics	7.0	189	1326	15916
Total:	268		45911	550926
Total production staff	268		45911	
social insurance payment (12% of the payroll, but not less than 65% * 1 minimum wage)		12%	5509	
Total with CAP:			51420	

ADMINISTRATIVE STAFF					
Office and administration		20	368	7368	88421
the department		5	295	1474	17684

	Total:	25		8842
				106105
Total administrative staff		25		8842
social insurance payment (12% of the payroll, but not less than 65% * 1 minimum wage)			12%	1061
Total with CAP:				9903
TOTAL		293		61323

9.2. To the staff requirements, the need for and the organization of their education

To work on the enterprise will be attracted qualified staff.

To comply with the working conditions at the workplace created by the requirements of safety and sanitation is necessary to make the certification.

Work and rest is set in accordance with the law, collective agreement or employment contract.

Workers will use special clothing, shoes and other necessary facilities, Washing and neutralizing agents in accordance with the established norms.

Production personnel will have specific technical knowledge. An indispensable condition for the existence of the qualification will be in employment. If necessary, training will be conducted at the enterprise.

10. Driving the project

10.1. Project implementation stage

Schedule cyclic organization of industrial activity for 3 years	With the division by year											
	1 YEAR				2 YEAR				3 YEAR			
Marketing research												
Preparation of all package of documents required for production												
Development of Business Plan												
Construction works												
Pre-certification												
Organization of the production site												
Purchase of raw materials and equipment												
Delivery of raw materials and equipment												
Connecting to external networks and communications												
Laying and connection to utility networks												
Experimental-industrial run												
recruitment												
Training												
Ensuring the production process												
Market research and consideration of industrial distribution problems												
Start of production of LED chips												

11. Financial evaluation

11.1. A set of capital project expenditures

Financing of the project is planned to carry out at the expense of investment funds in foreign currency.

The total project cost is \$ US 23 412 917.

NAME	Formed EQUITY	INVESTMENT formed SEREDSTVA	TOTAL
	IN FOREIGN CURRENCY	IN FOREIGN CURRENCY	IN FOREIGN CURRENCY
	\$ US	\$ US	\$ US
FIXED ASSETS			
purchase			
Buildings	-	3700000	3700000
Power Machines and Equipment	-	80000	80000
Working machinery and equipment	-	11850000	11850000
Furniture	-	44000	44000
computers	-	19250	19250
transportation	-	550000	550000
Other fixed assets	-	150000	150000
Registration, the formation of the authorized capital, paperwork	-	8209	8209
project work	-	6315	6315
Acquisition of land	-	104211	104211
Preparation of utilities (power, gas, water and sewage), landscaping and outdoor lighting.	-	11508	11508
Installation works, creation of utility systems	-	852474	852474
Installation technology training work on it	-	505170	505170
Obtaining necessary permits	-	78933	78933
The organization of the advertising company	-	17368	17368
Total:	-	17977438	17977438
INITIAL WORKING CAPITAL			
Initial working capital (raw materials and material costs for the organization of production at 100% load, 1 month)	-	5167901	5167901
Total:	-	5167901	5167901
FINANCIAL COSTS			
The costs of customs procedures (on the basis of the loan amount)	-	62 400,00	62400
Transportation costs (calculated on the loan amount)	-	187 200,00	187200
Pre-project costs	-	17 977.44	17977
Total:	-	267577	267577
TOTAL COST OF THE PROJECT	-	23412917	23412917

Major capital costs for the project are:

- ✓ Buildings

- ✓ Power Machines and Equipment
- ✓ Working machinery and equipment
- ✓ Furniture
- ✓ Computers
- ✓ Transportation
- ✓ Other fixed assets
- ✓ Registration, the formation of the authorized capital, paperwork
- ✓ Project work
- ✓ Acquisition of land
- ✓ Preparation of utilities (power, gas, water and sewage), landscaping and outdoor lighting.
- ✓ Installation works, creation of utility systems
- ✓ Installation technology training work on it
- ✓ Obtaining necessary permits
- ✓ The organization of the advertising company

For the organization of the plant for the production of LED chips required administrative and domestic buildings, as well as the construction of fences and barriers, warehouses, sheds for storage of materials needed for production and special equipment, as well as protection from the rain. The total value of the buildings, constructions and structures is according to preliminary estimates 3.7 million \$ US.

The main equipment for the production of LED chips maximum production capacity of 44 408 000,00 units. finished products per year. The cost of the complex is \$ US 11.85 million.

Power Machines and equipment include transformer substation and a generator for uninterrupted power supply. The cost of transformers and generator of 80 000 \$ US.

Furniture and computer equipment necessary for setting up the administrative facilities for bookkeeping and other administrative staff. A set of furniture and computer equipment is 63 250 \$ US.

For the transportation of finished products, as well as the delivery of the necessary raw materials for the production of needed vehicles (cars, trucks, loaders). The total cost of road transport is 550 000 \$ US.

The financial costs of the project will include the initial costs for the organization of activities such as: pre-development costs of market research and business plan, registration of vehicles, the costs of customs procedures, as well as certification of the planned production of goods.

Not unimportant is to provide the plant with raw materials and materials necessary for the smooth production. The project provides an initial working capital, including the commodity and material costs for the organization of production and services at 100% load, at 1 month. The costs of the initial working capital is \$ US 5 167 901.

Based on data from the total cost of the project mentioned above is \$ US 23 412 917.

11.2. Total costs for products sold

To determine the future viability of the project are important realistic forecasts of production costs. Production costs should be calculated as the total annual costs of products sold, as well as the specific costs per unit of output.

For the analysis and study of the planned production program and break-even analysis is necessary to determine the main cost items directly related to each individual type of product.

When assessing the cost of production at the plant, a project should take into account industry guidelines for planning, accounting and determination of the cost of products, works and services.

Material costs include raw materials, basic and auxiliary production materials and spare parts. Costs of production personnel include fixed and variable costs depending on the types of work and cost elements. The costs of wages and social security of employees directly involved in the production (variable costs) are recognized as material costs, pay and social security personnel associated with the production as a whole (fixed costs) relate to overhead cost.

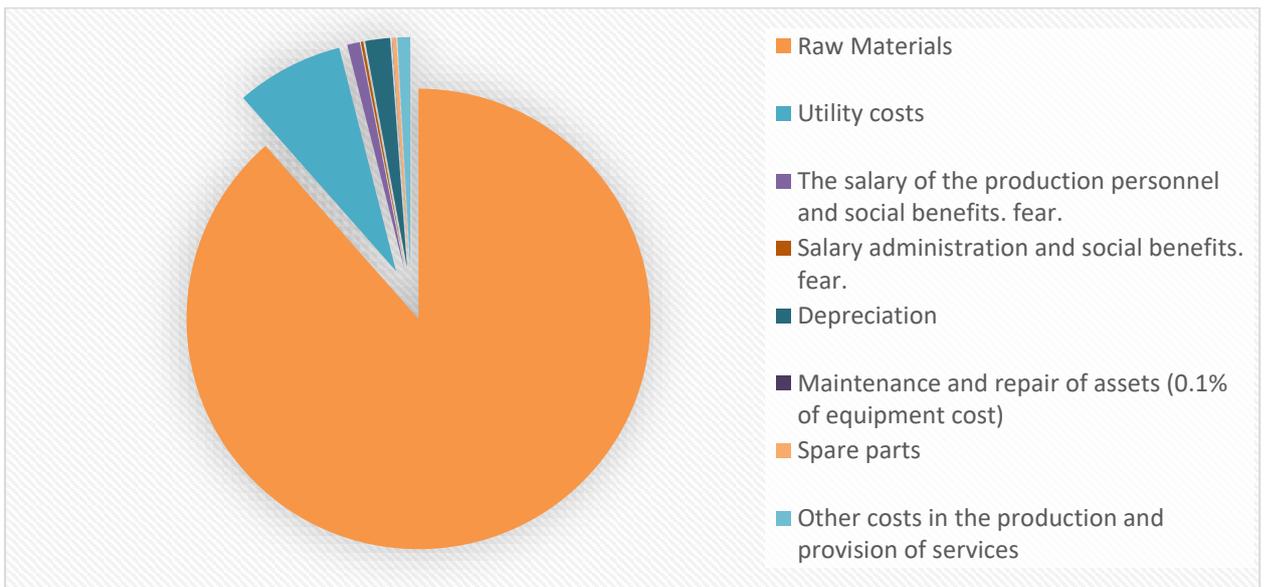
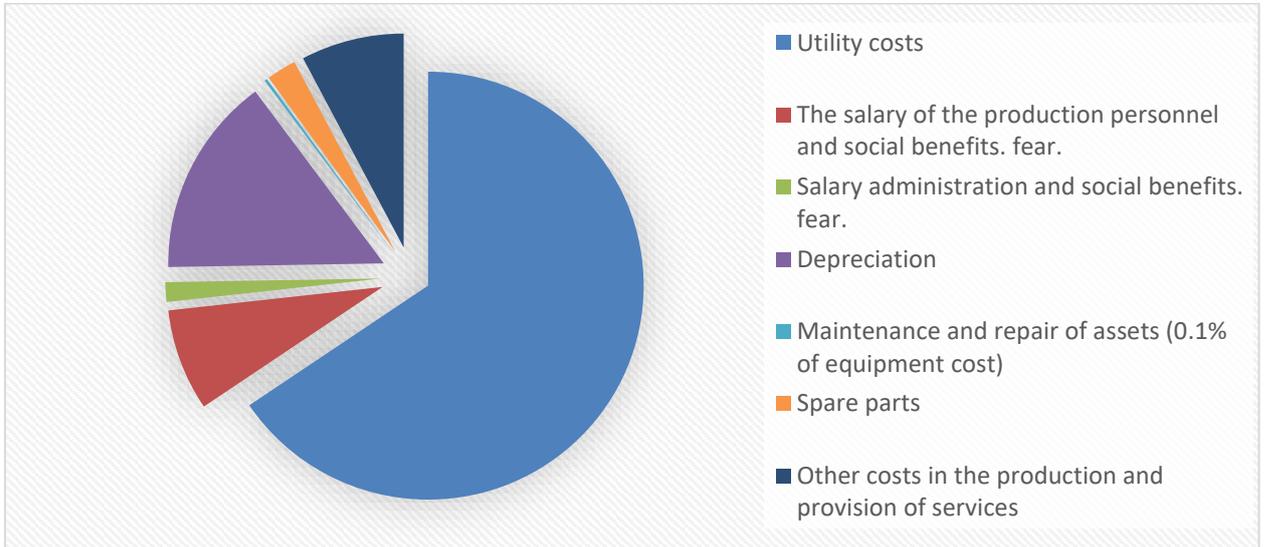
Overhead costs other than fixed costs for staff costs take into account the costs of raw materials, operating costs, technology costs, as well as costs related to the site and on the environmental measures and other costs (indirect costs).

Total economic costs accounted for in accordance with the procedure and checklist adopted in the industry and tax authorities.

The table below shows the cost of the production and provision of services:

Name	Total costs per year	The share of fixed costs	The proportion of variable costs	fixed costs	variable costs
	\$ US	in total costs (%)	in total costs (%)	\$ US	\$ US
Raw Materials	62014817	0%	100%	0	62014817
including:					
<i>The LED chip 10 W</i>	19942018	0%	100%	0	19942018
<i>LED chip 50W</i>	16780480	0%	100%	0	16780480
<i>100W LED chip</i>	25292318	0%	100%	0	25292318
The salary of the production personnel and social benefits. fear.	617037	0%	100%	0	617037
Salary administration and social benefits. fear.	118838	100%	0%	118838	0
The cost of creating working conditions (5%)	36794	100%	0%	36794	0
utility costs	5260082	0%	100%	0	5260082
rent of space	0	100%	0%	0	0
Depreciation	1212488	100%	0%	1212488	0
Maintenance and repair of assets (0.1% of equipment cost)	16393	0%	100%	0	16393
Spare parts	178950	0%	100%	0	178950
Other costs in the production and provision of services	620148	0%	100%	0	620148
Total:	70075547			1368119	68707427
TOTAL	70075547			1368119	68707427

Based on this graph and table shows that without considering raw material costs and consumption of primary article (66%) is the utility costs. The high amount of utility costs due to the large number of pieces of production equipment.



When considering the total cost of the basic shop costs are raw materials, accounting for 89% of total expenditure, or \$ US 62 014 817.

11.3. Estimation of economic efficiency, taking into account the payback

Net present value - the sum of the discounted cash flow value of the project, cast to the present day.

The indicator represents the difference between all cash inflows and outflows, given the current point in time (the time of the investment project evaluation).

It shows the amount of cash that the investor expects to receive from the project, after the cash inflows will pay for the initial investment costs and recurrent cash outflows associated with the project.

IRR (English internal rate of return, standard abbreviations - IRR (GNI)) - is the interest rate at which the net present value (net present value - the NPV) is equal to 0. NPV is calculated based on cash flow, discounted to the present day.

Period	cash flow	The discount rate	NPV	GNI
0 year	(23412917)	20,0%		#NUMBER!
1 year	2263540	20,0%	(21526634)	
2 year	7532887	20,0%	(16295462)	-38%
3 year	10951044	20,0%	(9,958,052)	-5%
4 year	13042332	20,0%	(3,668,347)	13%
5 year	20977809	20,0%	4762164	27%
6 year	29203552	20,0%	14542374	35%
7 year	34692051	20,0%	24224289	41%

Calculation payback at a discount rate of 20% indicates a positive result for the fifth year, and the RR is 4 762 164 \$ US GNI and 27%.

Profitability index(English PI, DPI, Present value index, Profitability Index, benefit cost ratio.) - investment performance, which is the ratio of income to the discounted amount of investment capital. Other synonyms yield index, which carry the same economic sense: the index of profitability and profitability index.

calculation of ID (PI / yield index)				
Period	initial costs	cash income	cash flow	Cash flow
0 year	\$ 23,412,917	\$ -	\$ -	\$ -
1 year	\$ -	\$ 27,526,238	\$ 25,262,698	\$ 2,263,540
2 year	\$ -	\$ 33,846,427	\$ 26,313,540	\$ 7,532,887
3 year	\$ -	\$ 45,864,492	\$ 34,913,448	\$ 10,951,044
4 year	\$ -	\$ 53,709,768	\$ 40,667,435	\$ 13,042,332
5 year	\$ -	\$ 79,250,237	\$ 58,272,428	\$ 20,977,809
6 year	\$ -	\$ 107,390,112	\$ 78,186,560	\$ 29,203,552
7 year	\$ -	\$ 125,759,559	\$ 91,067,508	\$ 34,692,051
			NPV (NPV)	\$ 33,789,803
			ID (PI)	144%

The payback period of the investment project (Payback Period, PP)- it is the ratio of the initial investment in the project to the average profitability of the project. If several investors, each calculates the payback period and its investments in the investment project, ie the ratio of its investment in the project to its average annual income in this project.

Calculation of the payback period of the project			(PP / payback time)	
Period	initial costs	cash income	Cash flow	Cash flow from an accrual basis
0 year	\$ 23,412,917	\$ -	\$ -	\$ -
1 year	\$ -	\$ -	\$ 2,263,540	\$ 2,263,540
2 year	\$ -	\$ -	\$ 7,532,887	\$ 9,796,427
3 year	\$ -	\$ -	\$ 10,951,044	\$ 20,747,471
4 year	\$ -	\$ -	\$ 13,042,332	\$ 33,789,803
5 year	\$ -	\$ -	\$ 20,977,809	\$ 54,767,612
6 year	\$ -	\$ -	\$ 29,203,552	\$ 83,971,165
7 year	\$ -	\$ -	\$ 34,692,051	\$ 118,663,216
			(PP / payback time)	4th YEAR

Discounted payback period - payback period in the present value.

Period	initial costs	Cash flow	Discounted Cash Flow	Discounted cash flows on an accrual basis
0 year	\$ -	\$ -	\$ -	\$ -
1 year	\$ -	\$ 2,263,540	\$ 1,886,283	\$ 1,886,283
2 year	\$ -	\$ 7,532,887	\$ 6,277,406	\$ 8,163,689
3 year	\$ -	\$ 10,951,044	\$ 9,125,870	\$ 17,289,559
4 year	\$ -	\$ 13,042,332	\$ 10,868,610	\$ 28,158,169
5 year	\$ -	\$ 20,977,809	\$ 17,481,508	\$ 45,639,677
6 year	\$ -	\$ 29,203,552	\$ 24,336,293	\$ 69,975,970
7 year	\$ -	\$ 34,692,051	\$ 28,910,043	\$ 98,886,013
			(DPP / payback period based discount)	4th YEAR

ROI (return on investment) -This ROI. It allows you to calculate the efficiency of investment companies. The article describe in more detail what the ROI, as it is considered, we present the formulas and examples of calculation.

Period	initial costs	cash income	Cash flow	The average net profit in 7 years
0 year	\$ 23,412,917	\$ -	\$ -	\$ -
1 year	\$ -	\$ -	\$ 2,263,540	\$ -
2 year	\$ -	\$ -	\$ 7,532,887	\$ -
3 year	\$ -	\$ -	\$ 10,951,044	\$ -
4 year	\$ -	\$ -	\$ 13,042,332	\$ -
5 year	\$ -	\$ -	\$ 20,977,809	\$ -
6 year	\$ -	\$ -	\$ 29,203,552	\$ -
7 year	\$ -	\$ -	\$ 34,692,051	\$ -
in total			\$ 118,663,216	\$ 8,447,451
			(DPP / payback period based discount)	36%

Based on the payback figures, we can judge the profitability and viability of the project.

Short payback period and high coefficients are caused not by high costs for the organization of the project, as well as the low cost of the required production of raw materials, a small amount of full-time employees and moderate demand for this type of products.

11.4. Assessing the impact of the financial results of the country's economy

Act of 12/24/2018, the № LRU-508 in tax code amended and changed. Resolution of the President of 12.26.2018, № PP-4086 approved tax rates for 2019, as well as the procedure for taxation of certain categories of taxpayers. In this case, the main change is the payment of taxes, depending on the volume of sales.

In 2019 VAT payers will become an enterprise with an annual turnover of more than 1 billion soums.

The income tax rate for the majority of legal entities decreased in 2019:

- ✓ for other legal persons (with some exceptions) - from 14 to 12%.

Based on the information above, we can safely say that according to preliminary calculations tax payments throughout the life of the project will amount to more than 45 million \$ US.

Totals for PROJECT COSTS In monetary terms,								
\$ US	By year							
	1 YEAR	2 YEAR	3 YEAR	4 YEAR	5 YEAR	6 YEAR	7 YEAR	Total:
the payment of taxes to the state budget	2411513	3030345	4211466	5030213	7590286	10482176	12477260	45233259

11.5. Amortization of non-current assets

Amortization of non-current assets

Changes made to the January 1, 2019 on income tax from legal entities - revised marginal rate of depreciation of fixed assets subject to amortization for tax purposes specified in Article 144 of the Tax Code and some groups of fixed assets reduced depreciation rates, depending on the period of use. Namely, the annual depreciation rate:

- on buildings and buildings reduced from 5% to 3%;
- Structures for left unchanged at 5%;
- transfer devices for lowered from 8% to 5%;
- for power machines and equipment have been reduced from 8% to 5%;
- on working machines and equipment by activity (except backhaul) reduced from 15% to 8%;
- by cell transport (rail, sea and air) are reduced from 8% to 4%.

Amortization and depreciation for tax purposes for each subgroup is calculated by applying the depreciation rate, but not higher than the limit established by the Tax Code of the Republic of Uzbekistan.

Thus, the project will take into account the depreciation of existing and acquired property.

Object for amortization	residual value	Rate (per year)%
Acquired fixed assets		
Buildings	3700000	3%
Power Machines and Equipment	80000	5%
Working machinery and equipment	11850000	8%
Furniture	44000	15%
computers	19250	15%
transportation	550000	20%
Other fixed assets	150000	20%
Total:	16393250	
Acquired fixed assets		
financial costs	267577	14%

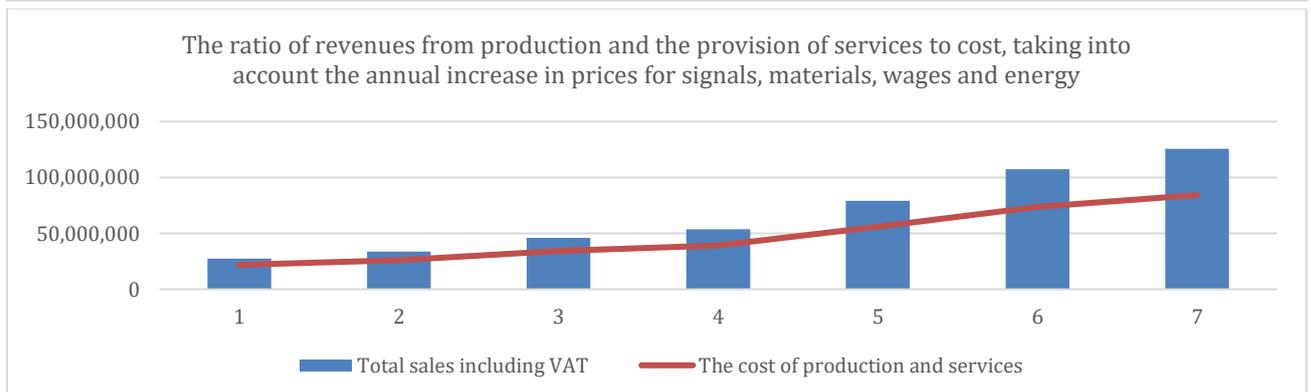
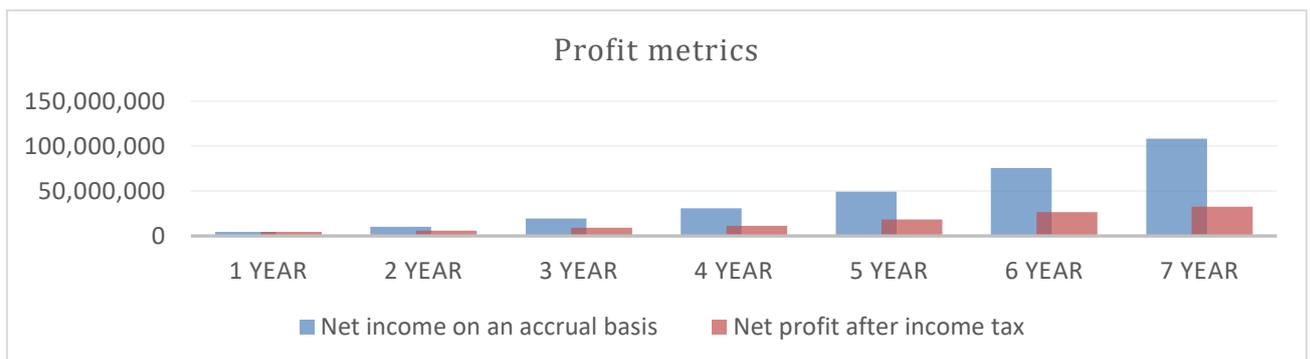
A detailed calculation of depreciation costs of existing and acquired fixed assets is shown in the Appendix.

12. Calculation of profits and losses

12.1. Calculation of profits and losses of the enterprise

In the calculation of gains and losses and other deductions into account the divisions of the application, taking into account the existing taxes.

Estimated earnings and cash flow from the project for a period of 7 years, calculated in accordance with the plan of production and sales (see Annex).



Accumulated profits for the whole project for 7 years for the production of LED chips will be 108 144 749 \$ US.

TOTAL INCOME INDICATORS PROJECT				
\$ US	By year			
	1 YEAR	2 YEAR	3 YEAR	4 YEAR
Proceeds from sale of finished products and services	27526238	33846427	45864492	53709768
The cost price of the production and provision of services	23185138	27889746	36818208	42290997
Net profit	4341100	5956680	9046284	11418770
accumulated profit	4341100	10297781	19344065	30762835

TOTAL INCOME INDICATORS PROJECT				
\$ US	By year			
	5 YEAR	6 YEAR	7 YEAR	Total:
Proceeds from sale of finished products and services	79250237	107390112	125759559	473346833
The cost price of the production and provision of services	60917271	80918316	93182407	365202083
Net profit	18332966	26471796	32577152	108144749
accumulated profit	49095801	75567597	108144749	

It is estimated that the discounted payback of the project is the 5th year, the accumulated profits at the 5th year of \$ US 49 095 801.

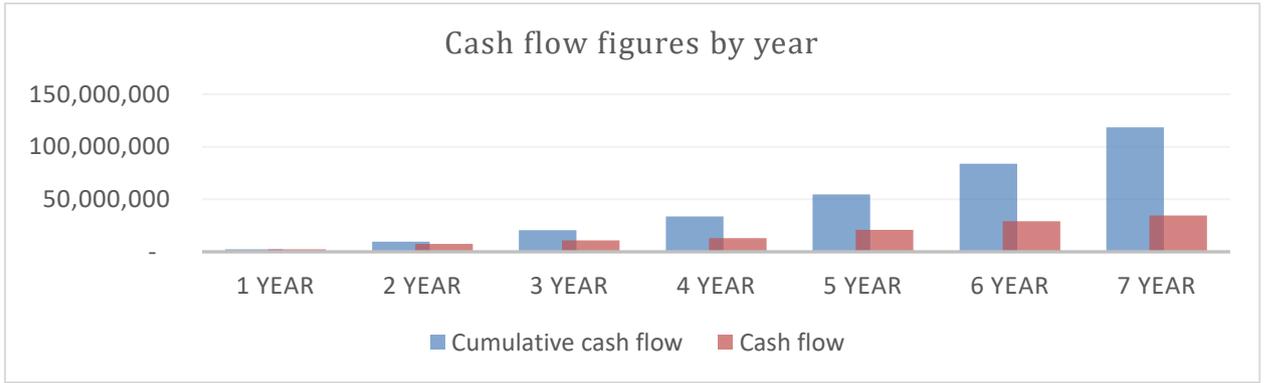
13. Cashflow Calculations

13.1. Statement of cash flows

Particular attention is paid to the flow of production. The financial plan for the current activity of the company, excluding the project is as follows.

After creating a plant for the production of LED chips, planned annual increase in the volume of production at the current activity;

The financial viability of the project confirmed the positive balance of available funds throughout the consideration of the horizon.



The cumulative cash flow for the whole project for 7 years for the production of LED chips will be 118 663 216 \$ US for the entire planning period, it will be positive.

FINAL PERFORMANCE CASH FLOW				
\$ US	By year			
	1 YEAR	2 YEAR	3 YEAR	4 YEAR
Proceeds from sale of finished products and services	27526238	33846427	45864492	53709768
The cost price of the production and provision of services	25262698	26313540	34913448	40667435
cash flow	2263540	7532887	10951044	13042332
Cumulative cash flow	2263540	9796427	20747471	33789803

FINAL PERFORMANCE CASH FLOW				
\$ US	By year			
	5 YEAR	6 YEAR	7 YEAR	Total:
Proceeds from sale of finished products and services	79250237	107390112	125759559	473346833
The cost price of the production and provision of services	58272428	78186560	91067508	354683617
cash flow	20977809	29203552	34692051	118663216
Cumulative cash flow	54767612	83971165	118663216	

With regard to the current annual flow, it is also positive for the entire period of activity, even at very conservative calculations.

Cash flow from the project taking into account all deductions and taxes are shown in the financial and economic calculations.

14. Risk factors

Manufacturers seeking to be competitive and have a solid reputation in the market, should carefully monitor the quality of its products and the risks that may affect the achievement of this goal.

controlled:

- commercial
- profitability risk
- production risks
- financial risks

- raw material supply disruption risk

uncontrolled:

- regulatory risks
- political risks
- environmental risks

FROM to reduce the release of non-conforming products were analyzed potential operational risks in the enterprise, is currently the most critical.

Types of occupational risks:

- risks of major industrial activity: technological risks, the risks of damage, accident risks.
- risks ancillary production activities: Risks power outages, longer equipment repair risks, the risks of emergency assistance systems.
- risks providing productive activities: the risk of failures in the work of providing services; failure risk information systems; risks in the sphere of circulation.

To assess risks applied FMEA method (analysis of failure modes and effects), the most commonly used for identification of component failures, systems, or processes that can lead to non-compliance with their assigned function. In this case, the method used to determine the risk priority value RPN ($RPN = S \cdot O \cdot D$), and for further calculating the total risk for each of the production steps, and identifying the most risky step.

FMEA- analysis is a technology that the possibility of defects and their impact on consumers. FMEA-analysis is carried out for the developed products and processes in order to reduce consumer risk from potential defects.

Block diagram of the qualitative assessment of the investment risks of the project:

For all the above types of potential defects determine their effects based on the experience and expertise of members of the competition committee. For each defect effects expert determine the significance score S using a table of points of significance. Relevance score ranges from 1 (the least significant risk) to 10 (for the most significant risks)

For each identified risk score determines the impact I on the progress of the process using a special table. Ball impact varies from 1 (for the risks did not affect the project) to 10 (for the risks that fail the business plan).

For each dedicated risk score is determined by the probability of G in the implementation by means of a special table. Credit occurrence varies from 1 (for risk, occurrence of which is unlikely) to 10 (for the risk, the likelihood of occurrence of which no doubt commission). This scale is based on the subjective criteria which are based on various assumptions.

After obtaining expert S, O estimates and D we define the priority of draft risk (HRR)

$$RPN = S \cdot O \cdot D$$

For risks that have multiple effects that can influence the final result of the implementation is determined by the number of HRR. Each HRR may have a value from 1 to 1000.

Folding, derived from the analysis of the project RPN, we get the priority number of the project's risk (RPN). It must be determined in advance and set limit value of risk priority (RPN). If RPN obtained by calculation exceeds RPN the project data is not allowed for further assessment of the competition.

stage	types of risk	S (indicator of the significance or severity failure)	O (index of probability or frequency of occurrence of a fault causes)	D (index of probability of a defect or error)	An RPN (risk priority number)	Σ
Receipt of raw materials to the factory	technological risks	8	5	3	120	557
	risks of breakdowns	6	5	4	120	
	emergency risks	1	5	2	10	
	risks of power outages	3	5	8	120	
	prolongation of maintenance risks	2	5	2	20	
	emergency risks ancillary systems	1	4	3	12	
	risks of failure in providing services	4	6	5	120	
The production process	risks of disruptions in information systems	1	7	5	35	444
	technological risks	8	5	6	240	
	risks of breakdowns	4	5	4	80	
	emergency risks	3	4	4	48	
	risks of power outages	4	5	2	40	
Storage and transport	risks of disruptions in information systems	3	4	3	36	601
	technological risks	8	5	6	240	
	risks of breakdowns	7	6	5	210	
	emergency risks	3	5	5	75	
	risks of failure in providing services	4	4	4	64	
	risks of disruptions in information systems	2	2	3	12	

Based on the obtained calculation totals RPN each step does not exceed 1,000.

In the process of implementing this project should focus on technical and technological risks, the occurrence of which in the worst scenarios can cause the creation of critical situations.

Potential risks of the enterprise presented production risks, commercial risks, financial risks and risks related to force majeure.

Legal risks - these are the risks associated with the imperfection of the legislation, fuzzy paperwork, the uncertainty of court action in case of disagreement founders.

Despite the fact that Uzbekistan has established and improved legal and regulatory framework, to ensure that the activities of business entities, created by both local and foreign investors can not even deny the existence of the factors affecting the legal risks. These include: the availability of the bureaucracy, the ongoing process of improving the legislation.

Risk reduction measures:

- Clear and unambiguous wording of the relevant articles in the documents;
- Attraction to process documents of experts with practical experience in this area;
- Allocation of the necessary funds to pay for high-end lawyers and interpreters.

Technical risks- risks related to the complexity of the work and the lack so far of the technical project. Possible underutilization of equipment and the delay in commissioning of engineering systems.

The company will attract highly qualified specialists for setting up equipment that reduces the technical risks to a minimum.

Risk reduction measures:

- Formation of the necessary requirements in the technical specification under development, the definition of a rigid material liability in the contract for execution of works;
- Accelerated study linking technical equipment and technical facilities;
- Conclusion on a "turnkey" contracts with sanctions for discrepancies and missed deadlines.

Production risks- risks related to the insufficiently high quality of products / services. A significant risk may be a lack of highly qualified personnel.

Risk reduction measures:

- Precise scheduling and management of the project;
- Training of qualified personnel.

Environmental risks - it risks associated with environmental pollution and emissions into the atmosphere and discharges into water.

Environmental risk assessment - identification and assessment of the probability of events that have adverse effects on the environment, public health, business activity and due to environmental pollution, violation of environmental requirements, emergency situations of natural and technogenic character.

Marketing risks - risks related to the output of the delay in the market, wrong choice of a marketing strategy, pricing errors, insufficient market research.

competitor analysis shows that this market segment is poorly developed. In this regard, it should be thoroughly aware of their main advantages and focus on their main efforts and resources.

Measures to reduce risks:

For the company, which aims to win market share from competing firms, marketing objectives should be a priority.

The measures include:

- Creating a strong marketing service;
- Marketing strategy development;
- Marketing research: volumes, pricing, the buyer;
- Research on the segmentation of internal and external market.

Financial risks - related to the probability of loss of financial results (money), insolvency, consumer demand volatility, lower prices competitive disadvantage of working capital.

One of the financial risk factors is the need for timely investment, the presence of which is a prerequisite for the start of the project: how they linger, so delayed the start of the project.

Measures to reduce risks:

- The variety offered project financing schemes, both through its own funds and by borrowing;
- Development of investment - financial strategy, which aims to get into a profitable operation of the zone;
- A complex of measures to search for investment resources for business development.

Natural - natural risks - these are the risks associated with the manifestations of the elemental forces of nature: earthquake, flood, storm, fire, epidemics, drought, etc.

Measures to reduce risks:

- Compulsory insurance.

Evaluation of project opportunities

Before offering this project for consideration, initiator of the project was carried out in-depth analysis of the existing situation in the market of Uzbekistan, really taking into account all factors that may have an impact on all stages of the project.

Based on these financial results, as well as the overall analysis of the entire program for the production, which is a graph of the activities of the project, an analysis of the current situation in the domestic and foreign markets, markets, potential competition from other similar companies operating in this segment, possible operational risks, as well as other factors, we can conclude about the viability and effectiveness of the ideas and actions presented and will be implemented in a given the project.

15. Findings

Findings - The result of the project makes it possible to be optimistic to decide on its implementation in relation to its projected profitability, low risk of direct financial benefits for the organizers.

The analysis of business plans to the following conclusions:

- Management risk is minimized because the enterprise is coordinated by an experienced manager with extensive experience in production, greatly reduces the risk of possible occurrence of failures in the enterprise;
- Projected cash flows are sufficient to prompt the enterprise.

In general, this project will provide an opportunity to implement the idea of the project initiators, as well as participate in the process of profound economic transformations taking place in Uzbekistan at this stage.

Analysis of financial stability characterized by the company's solvency, which in turn reflects the availability of stocks and costs the sources of their formation. After spending the analysis of the below given calculation (application) of the cash flows of real money it can be seen that the resulting gross income completely covers all costs, taxes, and other expenses. After all payments is still sufficient amount of net profit, which will focus on working capital and for the further expansion of the company. This means that the proposed project is efficient, cost effective and sustainable.

PROJECT COST

ANNEX 1

NAME	Formed EQUITY IN FOREIGN CURRENCY \$ US	INVESTMENT FUNDS IN FOREIGN CURRENCY \$ US	TOTAL IN FOREIGN CURRENCY \$ US
FIXED ASSETS			
purchase			
Buildings structures	-	3 700 000	3 700 000
Subordinate unit	-	-	-
Power Machines and Equipment	-	80 000	80 000
Working machinery and equipment	-	11 850 000	11 850 000
mobile transport	-	-	-
Furniture	-	44 000	44 000
Computers	-	19 250	19 250
Transportation	-	550 000	550 000
Other fixed assets	-	150 000	150 000
Registration, the formation of the authorized capital, paperwork	-	8 209	8 209
project work	-	6 315	6 315
Purchase of land	-	104 211	104 211
Preparation of utilities (power, gas, water and sewage), landscaping and outdoor lighting.	-	11 508	11 508
Installation works, creation of utility systems	-	852 474	852 474
Installation technology training work on it	-	505 170	505 170
Obtaining necessary permits	-	78 933	78 933
The organization of the advertising company	-	17 368	17 368
Total:	-	17 977 438	17 977 438
INITIAL WORKING CAPITAL			
Initial working capital (raw materials and material costs for the organization of production at 100% load, 1 month)	-	5 167 901	5 167 901
Total:	-	5 167 901	5 167 901
FINANCIAL COSTS			
Expenses for insurance collateral (based on the deposit amount)	-	-	-
The costs of notarization of the pledge (on the basis of the loan amount)	-	-	-
The costs of customs procedures (on the basis of the loan amount)	-	62 400,00	62 400
Transportation costs (calculated on the loan amount)	-	187 200,00	187 200
Pre-project expenses	-	17 977,44	17 977
One-time commission of the bank for the issuance of the loan (based on the loan amount)	-	-	-
Total:	-	267 577	267 577
TOTAL COST OF THE PROJECT	-	23 412 917	23 412 917

depreciation expense

APPENDIX 2

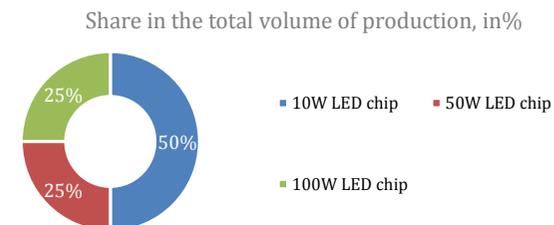
Object for amortization	residual value	Rate (per year)%	By year							Total:
			1 YEAR	2 YEAR	3 YEAR	4 YEAR	5 YEAR	6 YEAR	7 YEAR	
Acquired fixed assets										
Buildings	3 700 000	3%	111 000,0	111 000,0	111 000,0	111 000,0	111 000,0	111 000,0	111 000,0	777 000,0
Power Machines and Equipment	80 000	5%	4 000,0	4 000,0	4 000,0	4 000,0	4 000,0	4 000,0	4 000,0	28 000,0
Working machinery and equipment	11 850 000	8%	948 000,0	948 000,0	948 000,0	948 000,0	948 000,0	948 000,0	948 000,0	6 636 000,0
Furniture	44 000	15%	6 600,0	6 600,0	6 600,0	6 600,0	6 600,0	6 600,0	6 600,0	46 200,0
Computers	19 250	15%	2 887,5	2 887,5	2 887,5	2 887,5	2 887,5	2 887,5	2 887,5	20 212,5
Transportation	550 000	20%	110 000,0	110 000,0	110 000,0	110 000,0	110 000,0	110 000,0	110 000,0	770 000,0
Other fixed assets	150 000	20%	30 000,0	30 000,0	30 000,0	30 000,0	30 000,0	30 000,0	30 000,0	210 000,0
Total:	16 393 250		1 212 487,5	8 487 412,5						
Acquired fixed assets										
financial costs	267 577	14%	38 225,3	38 225,3	38 225,3	38 225,3	38 225,3	38 225,3	38 225,3	267 577,4
TOTAL:	16 393 250		1 212 488	8 487 413						
accumulated amortization			1 212 488	2 424 975	3 637 463	4 849 950	6 062 438	7 274 925	8 487 413	

The volume of production at full capacity

ANNEX 3a

DATA ON PRODUCTION

Name of products	measurement units	The proportion of the total volume in%
10W LED chip	%	50,00%
50W LED chip	%	25,00%
100W LED chip	%	25,00%
Total:		100,00%



DATA types of manufactured products

The maximum volume of production

Name of products	measurement units	The volume of production in the year	Production volume per month	The volume of production per day	Production volume per hour
10W LED chip	PC.	22 204 000,00	1 850 333,33	71 166,67	4 447,92
50W LED chip	PC.	11 102 000,00	925 166,67	35 583,33	2 223,96
100W LED chip	PC.	11 102 000,00	925 166,67	35 583,33	2 223,96
TOTAL:		44 408 000,00	3 700 666,67	142 333,33	8 895,83

Data on capacity development plan

Years the project	Scope	measurement units	2021	2022	2023	2024
Percentage growth of the volume of production			100%	122%	130%	140%
Name of products			1 YEAR	2 YEAR	3 YEAR	4 YEAR
Total production of LED chips 10 W, in the year	household / industrial	PC.	10 000 000,00	12 200 000,00	15 860 000,00	22 204 000,00
Total production of LED chips 50 W per year	household / industrial	PC.	5 000 000,00	6 100 000,00	7 930 000,00	11 102 000,00
Total production of LED chips 100 watts per year	household / industrial	PC.	5 000 000,00	6 100 000,00	7 930 000,00	11 102 000,00

Data on the timetable

Number of shifts per day	change	2,00
Work shift	hour	8,00
The average number of working days in a month	day	26,00
The number of working months in a year	month	12,00

PRODUCTION PLAN

APPENDIX 4a

Name of products	Number of services at 100% powerful. in year		The level of unsold products at the end of the period
10W LED chip	22 204 000	PC.	8,33%
50W LED chip	11 102 000	PC.	8,33%
100W LED chip	11 102 000	PC.	8,33%

Name of products	By year							
	1 YEAR	2 YEAR	3 YEAR	4 YEAR	5 YEAR	6 YEAR	7 YEAR	Total:
DEVELOPMENT OF RANGE (%)	30%	35%	45%	50%	70%	90%	100%	60%
10W LED chip	30,0%	35%	45%	50%	70%	90%	100%	60%
50W LED chip	30,0%	35%	45%	50%	70%	90%	100%	60%
100W LED chip	30,0%	35%	45%	50%	70%	90%	100%	60%
Production quantities								
10W LED chip	6 661 200,0	7 771 400,0	9 991 800,0	11 102 000,0	15 542 800,0	19 983 600,0	22 204 000,0	93 256 800,0
50W LED chip	3 330 600,0	3 885 700,0	4 995 900,0	5 551 000,0	7 771 400,0	9 991 800,0	11 102 000,0	46 628 400,0
100W LED chip	3 330 600,0	3 885 700,0	4 995 900,0	5 551 000,0	7 771 400,0	9 991 800,0	11 102 000,0	46 628 400,0
PHYSICAL unsold goods								
10W LED chip	555 100,0	647 616,7	832 650,0	925 166,7	1 295 233,3	1 665 300,0	1 850 333,3	7 771 400,0
50W LED chip	277 550,0	323 808,3	416 325,0	462 583,3	647 616,7	832 650,0	925 166,7	3 885 700,0
100W LED chip	277 550,0	323 808,3	416 325,0	462 583,3	647 616,7	832 650,0	925 166,7	3 885 700,0
TOTAL OUTPUT								
10W LED chip	6 106 100,0	7 123 783,0	9 159 150,0	10 176 833,0	14 247 566,0	18 318 300,0	20 353 666,0	85 485 398,0
50W LED chip	3 053 050,0	3 561 891,0	4 579 575,0	5 088 416,0	7 123 783,0	9 159 150,0	10 176 833,0	42 742 698,0
100W LED chip	3 053 050,0	3 561 891,0	4 579 575,0	5 088 416,0	7 123 783,0	9 159 150,0	10 176 833,0	42 742 698,0
TOTAL	12 212 200,0	14 247 565,0	18 318 300,0	20 353 665,0	28 495 132,0	36 636 600,0	40 707 332,0	#####

PLAN OF INCOME FOR THE PRODUCTION

ANNEX 5a

Name of products	Selling price in the domestic market with VAT		VAT excluded domestic sales		The cost price with VAT	mark-up	VAT (value added tax)	VAT (value added tax)
	\$ US		\$ US		\$ US	\$ US	%	\$ US
10W LED chip	PC.	1,4819	PC.	1,3846	0,898	54%	20%	0,10
50W LED chip	PC.	2,3941	PC.	2,2470	1,511	49%	20%	0,15
100W LED chip	PC.	3,6580	PC.	3,4280	2,278	50%	20%	0,23

Name of products	By year							
	1 YEAR	2 YEAR	3 YEAR	4 YEAR	5 YEAR	6 YEAR	7 YEAR	Total:
Sales excluding VAT								
10W LED chip	8 454 601	10 395 829	14 087 141	16 496 795	24 341 473	32 984 551	38 626 672	145 387 062
50W LED chip	6 860 299	8 435 464	11 430 699	13 385 958	19 751 349	26 764 583	31 342 757	117 971 110
100W LED chip	10 465 977	12 869 027	17 438 515	20 421 431	30 132 383	40 831 676	47 816 074	179 975 082
TOTAL	25 780 877	31 700 321	42 956 355	50 304 184	74 225 204	100 580 810	117 785 503	443 333 254
Sales including VAT								
10W LED chip	9 048 711	11 126 350	15 077 052	17 656 034	26 051 961	35 302 393	41 340 988	155 603 487
50W LED chip	7 309 433	8 987 721	12 179 049	14 262 316	21 044 440	28 516 820	33 394 720	125 694 500
100W LED chip	11 168 095	13 732 355	18 608 391	21 791 418	32 153 836	43 570 899	51 023 851	192 048 845
TOTAL	27 526 238	33 846 427	45 864 492	53 709 768	79 250 237	107 390 112	125 759 559	473 346 833

Index increase in the cost of products sold by year

Name of product	index%
LED chip	5,4%

UTILITY COSTS AT FULL CAPACITY

APPENDIX 6

Name	unit of measurement	monthly demand	unit cost \$ US	Monthly cost \$ US
electric power	kW / h	9 251 666,7	0,0474	438 237
Water	m3	1 130,0	0,0895	101
Garbage	m3	0,5	4,4105	2
TOTAL				438 340

Name	unit of measurement	Annual demand	unit cost \$ US	annual cost \$ US
electric power	kW / h	111 020 000,0	0,0474	5 258 842
Water	m3	13 560,0	0,0895	1 213
Garbage	m3	6,0	4,4105	26
TOTAL				5 260 082

PLANNED STAFFING COMPANY

APPENDIX 7

	Workplaces	Average monthly \$ US	The total monthly \$ US	In total for a year
PRODUCTION				
Administrative maintenance department	5,0	158	789	9 474
warehouse workers	10,0	179	1 789	21 474
the driver of the electric vehicle	4,0	200	800	9 600
Technical Control Department	10,0	189	1 895	22 737
assembly line workers	200,0	168	33 684	404 211
Engineering group	5,0	184	921	11 053
laboratory workers	10,0	184	1 842	22 105
Shop for metal working	9,0	168	1 516	18 189
paint shop	8,0	168	1 347	16 168
Logistics	7,0	189	1 326	15 916
Total:	268		45 911	550 926
Total production staff	268		45 911	
social insurance payment (12% of the payroll, but not less than 65% * 1 minimum wage)		12%	5 509	
Total with CAP:			51 420	
ADMINISTRATIVE STAFF				
Office and administration	20	368	7 368	88 421
the department	5	295	1 474	17 684
Total:	25		8 842	106 105
Total administrative staff	25		8 842	
social insurance payment (12% of the payroll, but not less than 65% * 1 minimum wage)		12%	1 061	
Total with CAP:			9 903	
TOTAL	293		61 323	

COST OF RAW MATERIAL AT FULL CAPACITY BY
by name

ANNEX 8

10W LED chip

Name	U rev.	the origin of raw materials	Requirements for 1 unit. products	Price per unit of measure. Without VAT	Price per unit of measure. VAT included	Costs by 1 unit. products	Total VAT 1 units. products	Monthly production volume	Monthly cost	annual cost
				\$ US	\$ US	\$ US			\$ US	\$ US
Formation and creation of LED Cristal SMD LEDs						0,0245				
Artificial sapphire (substrate)	PC.	imported	0,00019	36,34000	39,50000	0,00699	0,00000012	1 850 333,33	12 930,98	155 171,80
The gas mixture of the desired composition (organization of the pyrolysis process)	process	imported	1,00000	18,17000	19,75000	0,00349	0,00030385	1 850 333,33	6 465,49	77 585,90
Contact Spray on tape	process	imported	1,00000	18,17000	19,75000	0,00349	0,00030385	1 850 333,33	6 465,49	77 585,90
Clay (thermo)	u	imported	1,00000	18,17000	19,75000	0,00349	0,00030385	1 850 333,33	6 465,49	77 585,90
Gold wire 25 md	u	imported	1,00000	18,17000	19,75000	0,00349	0,00030385	1 850 333,33	6 465,49	77 585,90
Phosphor / selikon	u	imported	1,00000	18,17000	19,75000	0,00349	0,00030385	1 850 333,33	6 465,49	77 585,90
Creating setodiodnogo chip										
Printed circuit board	dm2	imported	0,05111	2,76000	3,00000	0,15334	0,01227	1 850 333,33	283 727,95	3 404 735,37
SMD mounting	PC.	imported	30,00000	0,02250	0,02446	0,73379	0,05870	1 850 333,33	1 357 753,25	16 293 039,00
Special form of packaging, antistatic (100 pieces.)	PC.	imported	0,01000	0,73600	0,80000	0,00800	0,00064	1 850 333,33	14 802,67	177 632,00
Packages for packaging special-antistatic (100 pieces.)	PC.	imported	0,01000	0,27600	0,30000	0,00300	0,00024	1 850 333,33	5 551,00	66 612,00
Total:						0,898127	0,071850		1 661 834,86	19 942 018,37

The ratio of imported raw materials to the local in the production of 1 unit. finished products:

	\$ US	at %
imported	0,898	100,00%
local	0,0000	0,00%

50W LED chip

Name	U rev.	the origin of raw materials	Requirements for 1 unit. products	Price per unit of measure. Without VAT	Price per unit of measure. VAT included	Costs by 1 unit. products	Total VAT 1 units. products	Monthly production volume	Monthly cost	annual cost
				\$ US	\$ US	\$ US			\$ US	\$ US
Formation and creation of LED Cristal SMD LEDs										
Artificial sapphire (substrate)	PC.	imported	0,00019	36,34000	39,50000	0,00699	0,00000012	925 166,67	6 465,49	77 585,90
The gas mixture of the desired composition (organization of the pyrolysis process)	process	imported	1,00000	18,17000	19,75000	0,00349	0,00030385	925 166,67	3 232,75	38 792,95
Contact Spray on tape	process	imported	1,00000	18,17000	19,75000	0,00349	0,00030385	925 166,67	3 232,75	38 792,95
Clay (thermo)	u	imported	1,00000	18,17000	19,75000	0,00349	0,00030385	925 166,67	3 232,75	38 792,95
Gold wire 25 md	u	imported	1,00000	18,17000	19,75000	0,00349	0,00030385	925 166,67	3 232,75	38 792,95
Phosphor / selikon	u	imported	1,00000	18,17000	19,75000	0,00349	0,00030385	925 166,67	3 232,75	38 792,95
Creating setodiodnogo chip										
Printed circuit board	dm2	imported	0,25556	2,76000	3,00000	0,76669	0,06134	925 166,67	709 319,87	8 511 838,42
SMD mounting	PC.	imported	30,00000	0,02250	0,02446	0,73379	0,05870	925 166,67	678 876,63	8 146 519,50
Special form of packaging, antistatic (100 pieces.)	PC.	imported	0,01000	0,73600	0,80000	0,00800	0,00064	925 166,67	7 401,33	88 816,00
Packages for packaging special-antistatic (100 pieces.)	PC.	imported	0,01000	0,27600	0,30000	0,00300	0,00024	925 166,67	2 775,50	33 306,00
Total:						1,511483	0,120919		1 398 373,33	16 780 479,92
The ratio of imported raw materials to the local in the production of 1 unit. finished products:										
				\$ US					at %	
imported				1,511					100,00%	
local				0,0000					0,00%	

100W LED chip

Name	U rev.	the origin of raw materials	Requirements for 1 unit. products	Price per unit of measure. Without VAT	Price per unit of measure. VAT included	Costs by 1 unit. products	Total VAT 1 units. products	Monthly production volume	Monthly cost	annual cost
				\$ US	\$ US	\$ US			\$ US	\$ US
Formation and creation of LED Cristal SMD LEDs										
Artificial sapphire (substrate)	PC.	imported	0,00019	36,34000	39,50000	0,00699	0,00000012	925 166,67	6 465,49	77 585,90
The gas mixture of the desired composition (organization of the pyrolysis process)	process	imported	1,00000	18,17000	19,75000	0,00349	0,00030385	925 166,67	3 232,75	38 792,95
Contact Spray on tape	process	imported	1,00000	18,17000	19,75000	0,00349	0,00030385	925 166,67	3 232,75	38 792,95
Clay (thermo)	u	imported	1,00000	18,17000	19,75000	0,00349	0,00030385	925 166,67	3 232,75	38 792,95
Gold wire 25 md	u	imported	1,00000	18,17000	19,75000	0,00349	0,00030385	925 166,67	3 232,75	38 792,95
Phosphor / selikon	u	imported	1,00000	18,17000	19,75000	0,00349	0,00030385	925 166,67	3 232,75	38 792,95
Creating setodiodnogo chip										
Printed circuit board	dm2	imported	0,51113	2,76000	3,00000	1,53339	0,12267	925 166,67	1 418 639,74	17 023 676,83
SMD mounting	PC.	imported	30,00000	0,02250	0,02446	0,73379	0,05870	925 166,67	678 876,63	8 146 519,50
Special form of packaging, antistatic (100 pieces.)	PC.	imported	0,01000	0,73600	0,80000	0,00800	0,00064	925 166,67	7 401,33	88 816,00
Packages for packaging special-antistatic (100 pieces.)	PC.	imported	0,01000	0,27600	0,30000	0,00300	0,00024	925 166,67	2 775,50	33 306,00
Total:						2,278177	0,182254		2 107 693,19	25 292 318,33

The ratio of imported raw materials to the local in the production of 1 unit. finished products:

	\$ US	at %
imported	2,278	100,00%
local	0,0000	0,00%

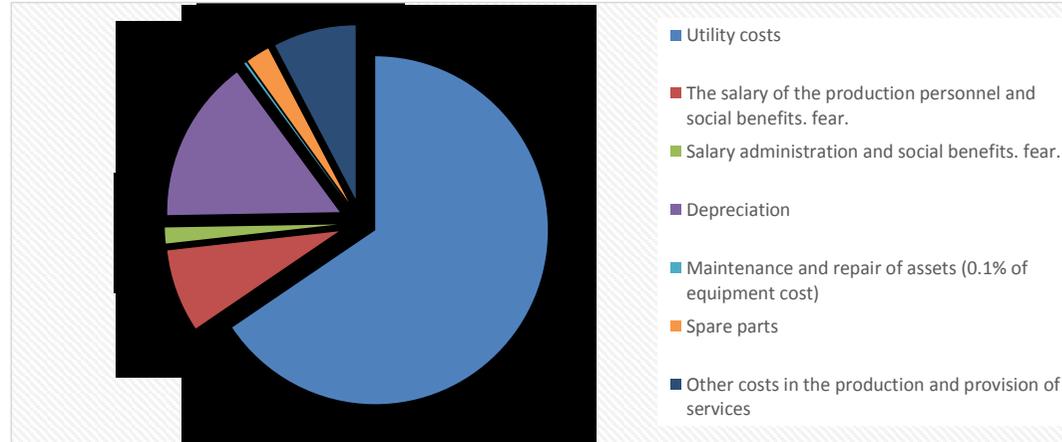
Total cost of the main raw materials		5 167 901,38	62 014 816,62
---	--	---------------------	----------------------

COST OF PRODUCTION AND SERVICES AT FULL CAPACITY

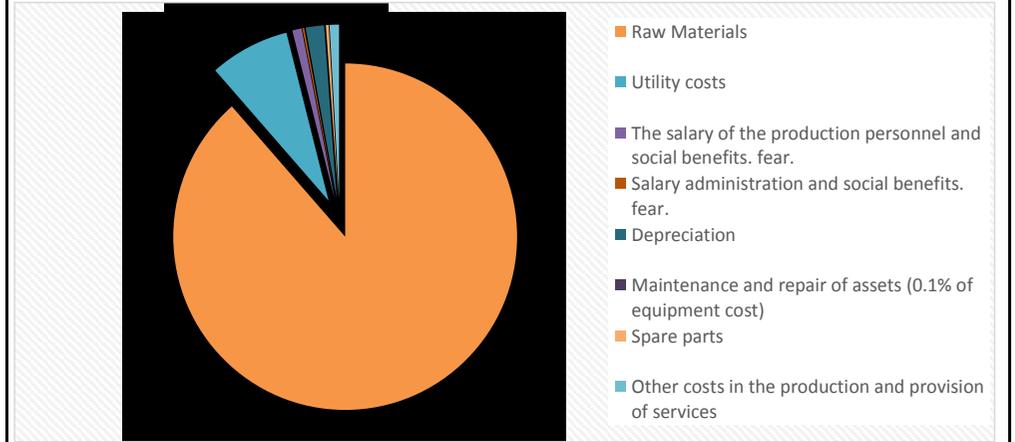
APPENDIX 9

Name	Total costs per year \$ US	The share of fixed costs in total costs (%)	The proportion of variable costs in total costs (%)	Fixed costs \$ US	Variable costs \$ US
Raw Materials	62 014 817	0%	100%	0	62 014 817
including:					
10W LED chip	19 942 018	0%	100%	0	19 942 018
50W LED chip	16 780 480	0%	100%	0	16 780 480
100W LED chip	25 292 318	0%	100%	0	25 292 318
The salary of the production personnel and social benefits. fear.	617 037	0%	100%	0	617 037
Salary administration and social benefits. fear.	118 838	100%	0%	118 838	0
The cost of creating working conditions (5%)	36 794	100%	0%	36 794	0
Utility costs	5 260 082	0%	100%	0	5 260 082
Rent of space	0	100%	0%	0	0
Depreciation	1 212 488	100%	0%	1 212 488	0
Maintenance and repair of assets (0.1% of equipment cost)	16 393	0%	100%	0	16 393
Spare parts	178 950	0%	100%	0	178 950
Other costs in the production and provision of services	620 148	0%	100%	0	620 148
Total:	70 075 547			1 368 119	68 707 427
TOTAL	70 075 547			1 368 119	68 707 427

Annualized EXPENSES EXCLUDING RAW



Annualized costs in response to raw materials



COST OF RAW MATERIAL AND EXPENSES

ANNEX 10a

Naming of expenditures	Unit cost per year	Annual demand	Annual cost at %
Raw materials	62 014 816,62	1	100%
TOTAL COST OF RAW MATERIAL AT FULL CAPACITY PER YEAR			62 014 816,62

ANNUAL COST OF SPARE PARTS

Spare parts	at %
Of the cost of all the equipment	1,50%

The cost of other production costs ANNUALY

Other operating expenses	at %
From raw material cost	1,00%

COST OF PRODUCTION AND SERVICE PROVISION

ANNEX 10b

\$ US	By year							Total:
	1 YEAR	2 YEAR	3 YEAR	4 YEAR	5 YEAR	6 YEAR	7 YEAR	
Cost price:	21 835 754	26 106 068	34 230 439	39 059 436	55 874 667	73 716 845	84 323 545	335 146 754
Local raw material costs	18 604 445	22 399 752	29 721 271	34 080 390	49 239 348	65 333 581	74 915 839	294 294 625
Utility costs	1 578 025	1 951 490	2 589 349	2 969 120	4 289 785	5 691 931	6 526 748	25 596 448
Salary of production and social benefits. fear.	185 111	244 038	323 804	371 295	536 447	711 789	816 185	3 188 670
Depreciation	1 212 488	1 212 488	1 212 488	1 212 488	1 212 488	1 212 488	1 212 488	8 487 413
Maintenance and repair of assets (0.1% of equipment cost)	4 918	5 738	7 377	8 197	11 475	14 754	16 393	68 852
The cost of creating working conditions (5%)	11 038	12 878	16 557	18 397	25 756	33 114	36 794	154 534
Spare parts	53 685	62 633	80 528	89 475	125 265	161 055	178 950	751 590
Other costs in the production and provision of services	186 044	217 052	279 067	310 074	434 104	558 133	620 148	2 604 622
The cost of production and services: In manufacturing and services rendered	21 835 754	26 106 068	34 230 439	39 059 436	55 874 667	73 716 845	84 323 545	335 146 754
period costs:	376 381	417 011	492 536	542 749	701 049	875 356	990 220	4 395 303
Salary administration and social benefits. fear.	134 287	138 584	143 019	147 595	152 318	157 193	162 223	1 035 218
Rent of space	0	0	0	0	0	0	0	0
Distribution costs	27 526	33 846	45 864	53 710	79 250	107 390	125 760	473 347
Transport costs	137 631	169 232	229 322	268 549	396 251	536 951	628 798	2 366 734
Other operating expenses	2 753	3 385	4 586	5 371	7 925	10 739	12 576	47 335
Total taxes	74 184	71 964	69 744	67 524	65 304	63 084	60 864	472 669
Land tax	170	170	170	170	170	170	170	1 187
Property tax	74 000	71 780	69 560	67 340	65 120	62 900	60 680	471 380
water tax * (surface) **	13	13	13	13	13	13	13	88
water tax * (underground) **	2	2	2	2	2	2	2	14
OPERATING COSTS	22 212 135	26 523 079	34 722 976	39 602 185	56 575 716	74 592 202	85 313 765	339 542 057
TOTAL COST OF SERVICES RENDERED AND PRODUCTION	22 212 135	26 523 079	34 722 976	39 602 185	56 575 716	74 592 202	85 313 765	339 542 057

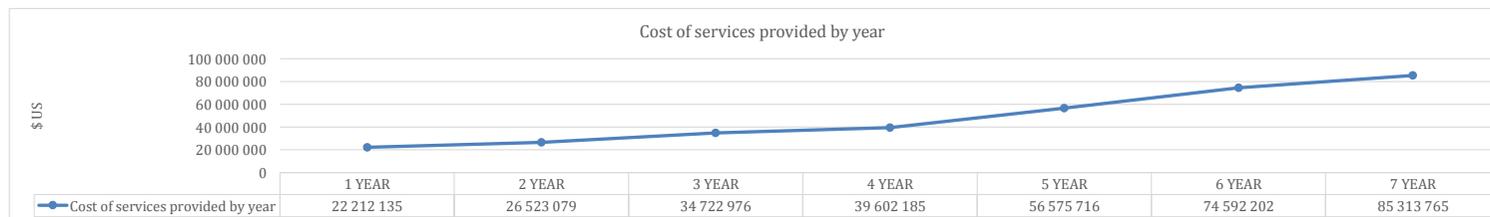
Distribution costs	0,1%	of the gross sales volume
Transport costs	0,5%	of the gross sales volume
Other operating expenses	0,01%	of the gross sales volume
Taxes, including:		
Land tax	503 250	UZS per 1 hectare.
Property tax	2,0%	of the cadastral value
water tax * (surface) **	88,4%	from the volume of water consumed
water tax * (underground) **	11,6%	from the volume of water consumed
VAT	20,0%	of value added
Tax on profits	12,0%	of the profits

Annual price increases Index:

name of expenses	index%
wages	13,0%
Raw materials and supplies	3,2%
energy resources	6,0%

* According to the State Unitary Enterprise "Suvsoz" the percentage of surface water and groundwater for the calculation of tax for the use of water resources for 2019 is as follows: **surface water - 88.4%; groundwater - 11.6%.**

** According to the tax rate for the use of water resources defined in Annex N 14 to the Resolution of the President of the Republic of Uzbekistan from 12.26.2018, N PP-4086

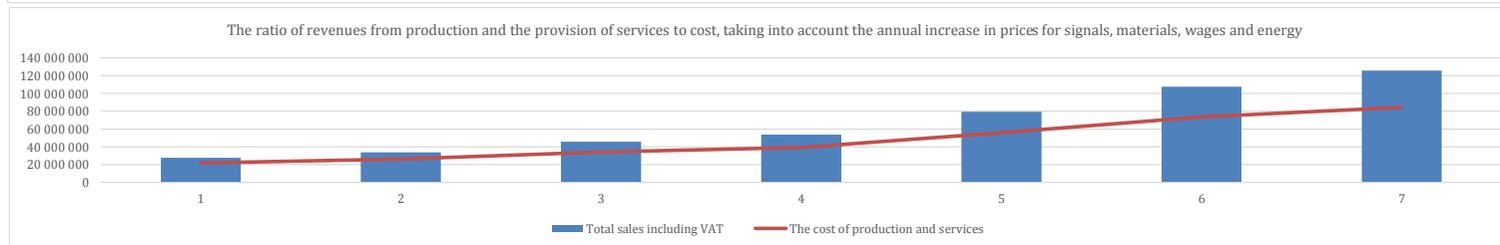
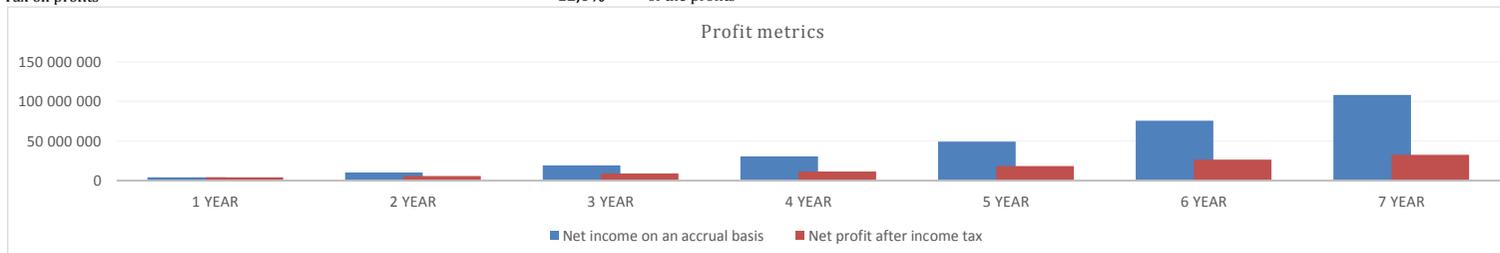


\$ US	By year							
	1 YEAR	2 YEAR	3 YEAR	4 YEAR	5 YEAR	6 YEAR	7 YEAR	Total:
Total sales including VAT	27 526 238	33 846 427	45 864 492	53 709 768	79 250 237	107 390 112	125 759 559	473 346 833
VAT	1 745 361	2 146 106	2 908 137	3 405 584	5 025 032	6 809 302	7 974 056	30 013 578
Offset of VAT on the acquisition of raw materials	1 364 326	1 591 713	2 046 489	2 273 876	3 183 427	4 092 978	4 547 753	19 100 563
Total sales	27 145 203	33 292 034	45 002 844	52 578 060	77 408 632	104 673 788	122 333 256	462 433 817
The cost of production and services	21 835 754	26 106 068	34 230 439	39 059 436	55 874 667	73 716 845	84 323 545	335 146 754
Gross profit	5 309 449	7 185 966	10 772 405	13 518 625	21 533 964	30 956 943	38 009 712	127 287 064
period costs	302 197	345 047	422 792	475 225	635 745	812 272	929 356	3 922 634
Operating profit	5 007 253	6 840 919	10 349 613	13 043 400	20 898 220	30 144 670	37 080 356	123 364 430
Profit before tax	5 007 253	6 840 919	10 349 613	13 043 400	20 898 220	30 144 670	37 080 356	123 364 430
Total taxes	74 184	71 964	69 744	67 524	65 304	63 084	60 864	472 669
Profit before income tax	4 933 068	6 768 955	10 279 868	12 975 875	20 832 915	30 081 586	37 019 491	122 891 760
Income tax 12%	591 968	812 275	1 233 584	1 557 105	2 499 950	3 609 790	4 442 339	14 747 011
Net profit after income tax	4 341 100	5 956 680	9 046 284	11 418 770	18 332 966	26 471 796	32 577 152	108 144 749
Net profit	4 341 100	5 956 680	9 046 284	11 418 770	18 332 966	26 471 796	32 577 152	108 144 749
Net income on an accrual basis	4 341 100	10 297 781	19 344 065	30 762 835	49 095 801	75 567 597	108 144 749	

Coefficients profitability (%)	1 YEAR	2 YEAR	3 YEAR	4 YEAR	5 YEAR	6 YEAR	7 YEAR
Gross profit / total sales	19%	21%	23%	25%	27%	29%	30%
Net income / total sales	16%	18%	20%	21%	23%	25%	26%

Taxes, including:

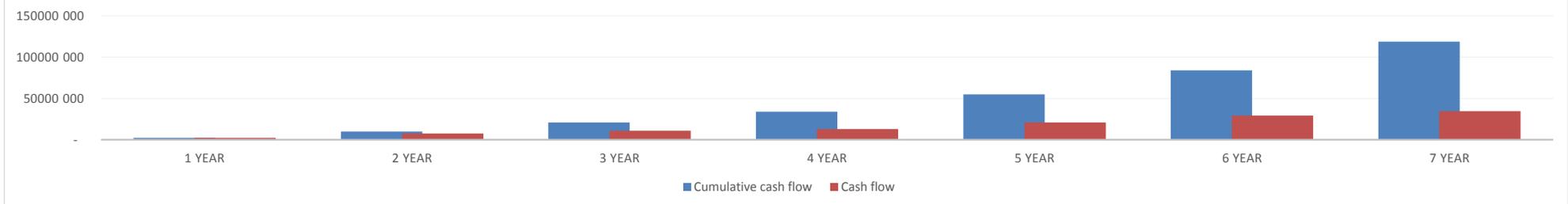
VAT	20,0%	of value added
Tax on profits	12,0%	of the profits



Cash Flow

\$ US	By year								
	0 Year	1 YEAR	2 YEAR	3 YEAR	4 YEAR	5 YEAR	6 YEAR	7 YEAR	Total:
Total sales including VAT	-	27 526 238	33 846 427	45 864 492	53 709 768	79 250 237	107 390 112	125 759 559	473 346 833
VAT		1 745 361	2 146 106	2 908 137	3 405 584	5 025 032	6 809 302	7 974 056	30 013 578
Offset of VAT on the acquisition of raw materials		1 364 326	1 591 713	2 046 489	2 273 876	3 183 427	4 092 978	4 547 753	19 100 563
Total sales		27 145 203	33 292 034	45 002 844	52 578 060	77 408 632	104 673 788	122 333 256	462 433 817
Changes in Working Capital	5 167 901	(3 290 048)	363 719	692 272	411 075	1 432 356	1 519 269	902 411	2 031 054
Cash from services	(5 167 901)	23 855 156	33 655 753	45 695 116	52 989 135	78 840 987	106 193 057	123 235 667	464 464 871
The cost price of production and rendered services (without including depreciation)	-	20 623 266	24 893 580	33 017 952	37 846 948	54 662 180	72 504 358	83 111 057	326 659 341
Gross Cash Receipts	(5 167 901)	3 231 889	8 762 173	12 677 164	15 142 187	24 178 808	33 688 699	40 124 610	137 805 530
Period costs	-	376 381	417 011	492 536	542 749	701 049	875 356	990 220	4 395 303
Income tax 12%	-	591 968	812 275	1 233 584	1 557 105	2 499 950	3 609 790	4 442 339	14 747 011
Operating cash-flow (A)	(5 167 901)	2 263 540	7 532 887	10 951 044	13 042 332	20 977 809	29 203 552	34 692 051	118 663 216
Equity	-								
Investments in fixed assets	23 412 917								
The initial financial outlay	-								
Net cash	23 412 917	2 263 540	7 532 887	10 951 044	13 042 332	20 977 809	29 203 552	34 692 051	118 663 216
Financial need	28 580 818								
Cash flow		2 263 540	7 532 887	10 951 044	13 042 332	20 977 809	29 203 552	34 692 051	118 663 216
Cumulative cash flow	-	2 263 540	9 796 427	20 747 471	33 789 803	54 767 612	83 971 165	118 663 216	

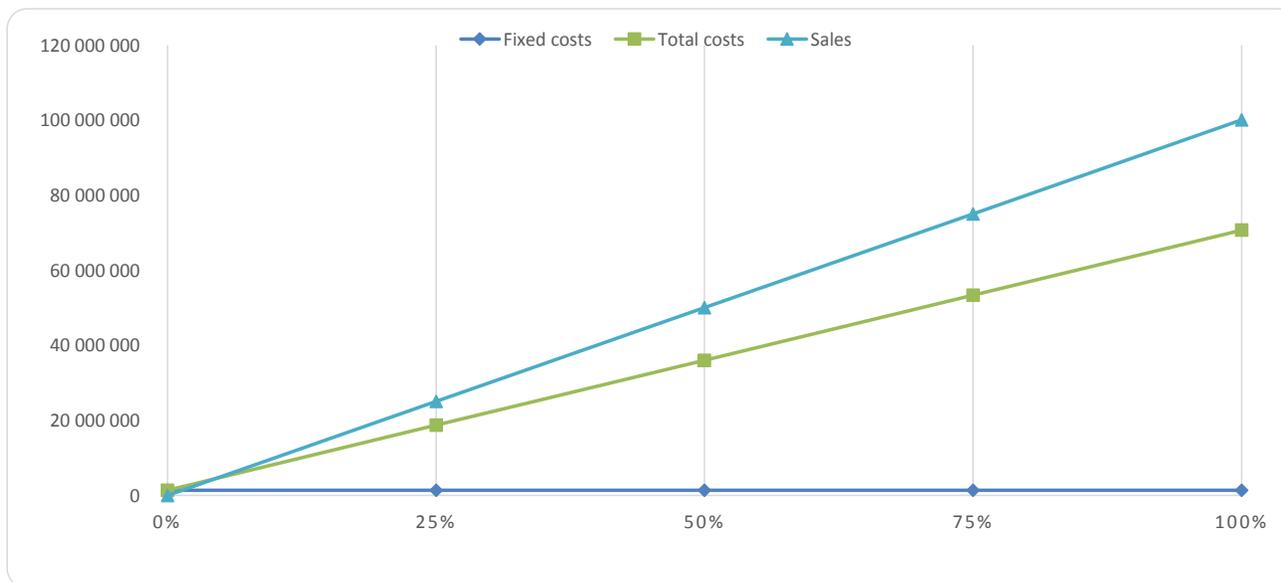
Cash flow figures by year



Analysis of break-even point

APPENDIX 13

Name	Indicators
TOTAL REVENUE AT FULL CAPACITY	100 095 410
Fixed costs at full power	1 368 119
Variable costs at full power	69 318 009
BREAKEVEN POINT	4,4%



THE BASIS FOR CALCULATING WORKING CAPITAL

APPENDIX 14

	days cover	turnover rate (360 / coating Days)	
The period from the sale of	30 days	12 days	Accounts receivable = Total sales / turnover ratio
Stocks of raw materials in stock and work in progress:	30 days	12 days	Stocks of raw materials = Raw materials / turnover ratio
Stocks of finished goods - sales	30 days	12 days	Finished goods inventory = Cost of production / turnover ratio
stocks of spare parts	180 days	2 days	Stocks of spare parts = parts / turnover ratio
The period of payment to suppliers of raw materials	30 days	12 days	Accounts Payable = Raw materials / turnover ratio

CALCULATION OF NET WORKING CAPITAL

	By year							
	0 months	1 YEAR	2 YEAR	3 YEAR	4 YEAR	5 YEAR	6 YEAR	7 YEAR
Accounts payable	-	-	-	-	-	-	-	-
stocks of raw materials	5 167 901	1 550 370	1 866 646	2 476 773	2 840 033	4 103 279	5 444 465	6 242 987
Stocks of finished products	-	1 851 011	2 210 257	2 893 581	3 300 182	4 714 643	6 216 017	7 109 480
stocks of spare parts	-	26 843	31 316	40 264	44 738	62 633	80 528	89 475
TOTAL	5 167 901	3 428 224	4 108 219	5 410 618	6 184 952	8 880 555	11 741 009	13 441 942
Accounts Payable	5 167 901	1 550 370	1 866 646	2 476 773	2 840 033	4 103 279	5 444 465	6 242 987
Net Working Capital	5 167 901	1 877 854	2 241 573	2 933 845	3 344 920	4 777 276	6 296 544	7 198 955
Changes in Working Capital	5 167 901	(3 290 048)	363 719	692 272	411 075	1 432 356	1 519 269	902 411

Calculation of NPV and IRR

APPENDIX 15

Period	Cash flow	The discount rate	NPV	GNI
0 year	(23 412 917)	20,0%		
1 year	2 263 540	20,0%	(21 526 634)	
2 year	7 532 887	20,0%	(16 295 462)	-38%
3 year	10 951 044	20,0%	(9 958 052)	-5%
4 year	13 042 332	20,0%	(3 668 347)	13%
5 year	20 977 809	20,0%	4 762 164	27%
6 year	29 203 552	20,0%	14 542 374	35%
7 year	34 692 051	20,0%	24 224 289	41%

calculation of ID (PI / yield index)

Period	initial costs	cash income	cash flow	Cash flow
0 year	\$ 23 412 917	\$ -	\$ -	\$ -
1 year	\$ -	\$ 27 526 238	\$ 25 262 698	\$ 2 263 540
2 year	\$ -	\$ 33 846 427	\$ 26 313 540	\$ 7 532 887
3 year	\$ -	\$ 45 864 492	\$ 34 913 448	\$ 10 951 044
4 year	\$ -	\$ 53 709 768	\$ 40 667 435	\$ 13 042 332
5 year	\$ -	\$ 79 250 237	\$ 58 272 428	\$ 20 977 809
6 year	\$ -	\$ 107 390 112	\$ 78 186 560	\$ 29 203 552
7 year	\$ -	\$ 125 759 559	\$ 91 067 508	\$ 34 692 051
NPV (NPV)				\$ 33 789 803
ID (PI)				144%

Calculation of the payback period of the project

(PP / payback time)

Period	initial costs	cash income	Cash flow	Cash flow from an accrual basis
0 year	\$ 23 412 917	\$ -	\$ -	\$ -
1 year	\$ -	\$ -	\$ 2 263 540	\$ 2 263 540
2 year	\$ -	\$ -	\$ 7 532 887	\$ 9 796 427
3 year	\$ -	\$ -	\$ 10 951 044	\$ 20 747 471
4 year	\$ -	\$ -	\$ 13 042 332	\$ 33 789 803
5 year	\$ -	\$ -	\$ 20 977 809	\$ 54 767 612
6 year	\$ -	\$ -	\$ 29 203 552	\$ 83 971 165
7 year	\$ -	\$ -	\$ 34 692 051	\$ 118 663 216
(PP / payback time)				4th YEAR

Discounted payback period

(DPP / payback period based discount)

Period	initial costs	Cash flow	Discounted Cash Flow	Discounted cash flows on an accrual basis
0 year	\$ -	\$ -	\$ -	\$ -
1 year	\$ -	\$ 2 263 540	\$ 1 886 283	\$ 1 886 283
2 year	\$ -	\$ 7 532 887	\$ 6 277 406	\$ 8 163 689
3 year	\$ -	\$ 10 951 044	\$ 9 125 870	\$ 17 289 559
4 year	\$ -	\$ 13 042 332	\$ 10 868 610	\$ 28 158 169
5 year	\$ -	\$ 20 977 809	\$ 17 481 508	\$ 45 639 677
6 year	\$ -	\$ 29 203 552	\$ 24 336 293	\$ 69 975 970
7 year	\$ -	\$ 34 692 051	\$ 28 910 043	\$ 98 886 013
(DPP / payback period based discount)				4th YEAR

The calculation of the profitability of the investment project

(ARR, ROI / profitability factor)

Period	initial costs	cash income	Cash flow	The average net profit in 7 years
0 year	\$ 23 412 917	\$ -	\$ -	\$ -
1 year	\$ -	\$ -	\$ 2 263 540	\$ -
2 year	\$ -	\$ -	\$ 7 532 887	\$ -
3 year	\$ -	\$ -	\$ 10 951 044	\$ -
4 year	\$ -	\$ -	\$ 13 042 332	\$ -
5 year	\$ -	\$ -	\$ 20 977 809	\$ -
6 year	\$ -	\$ -	\$ 29 203 552	\$ -
7 year	\$ -	\$ -	\$ 34 692 051	\$ -
in total				\$ 8 447 451
(DPP / payback period based discount)				36%

The average cost per unit of output

APPENDIX 16

	10W LED chip	50W LED chip	100W LED chip
NAMING OF EXPENDITURES	cost Cost per unit of finished product, (US \$)	cost Cost per unit of finished product, (US \$)	cost Cost per unit of finished product, (US \$)
Volume of production	22 204 000,00	11 102 000,00	11 102 000,00
The main costs			
Raw materials			
import	0,90	1,51	2,28
local	0,00	0,00	0,00
Total raw material costs	0,90	1,51	2,28
Additional expenses			
Spare parts	0,002686	0,005373	0,005373
W / board production workers with deductions	0,009263	0,018526	0,018526
Energy costs and infrastructure	0,078966	0,157932	0,157932
Other production costs	0,009310	0,018620	0,018620
Depreciation	0,018202	0,036404	0,036404
Total additional costs	0,12	0,24	0,24
actual manufacturing cost	1,02	1,75	2,52
period expenses			
W / administration fee with deductions	0,001784	0,003568	0,003568
Total expenses for the period	0,001784	0,003568	0,003568
Total unit cost	1,02	1,75	2,52
rate of return	0,46	0,64	1,14
The average selling price	1,48	2,39	3,66
localization level of 1 year	12%	14%	9%

RISKS

APPENDIX 17

stage	types of risk	S (indicator of the significance or severity failure)	O (index of probability or frequency of occurrence of a fault causes)	D (index of probability of a defect or error)	An RPN (risk priority number (Eng. Risk Priority Number))	Σ
Receipt of raw materials to the factory	technological risks	8	5	3	120	557
	risks of breakdowns	6	5	4	120	
	emergency risks	1	5	2	10	
	risks of power outages	3	5	8	120	
	prolongation of maintenance risks	2	5	2	20	
	emergency risks ancillary systems	1	4	3	12	
	risks of failure in providing services	4	6	5	120	
	risks of disruptions in information systems	1	7	5	35	
The production process	technological risks	8	5	6	240	444
	risks of breakdowns	4	5	4	80	
	emergency risks	3	4	4	48	
	risks of power outages	4	5	2	40	
	risks of disruptions in information systems	3	4	3	36	
Storage and transport	technological risks	8	5	6	240	601
	risks of breakdowns	7	6	5	210	
	emergency risks	3	5	5	75	
	risks of failure in providing services	4	4	4	64	
	risks of disruptions in information systems	2	2	3	12	

OUTCOME INDICATORS OF THE PROJECT

APPENDIX 18

TOTAL INCOME INDICATORS PROJECT

\$ US	By year							Total:
	1 YEAR	2 YEAR	3 YEAR	4 YEAR	5 YEAR	6 YEAR	7 YEAR	
Proceeds from sale of finished products and services	27 526 238	33 846 427	45 864 492	53 709 768	79 250 237	107 390 112	125 759 559	473 346 833
The cost price of the production and provision of services	23 185 138	27 889 746	36 818 208	42 290 997	60 917 271	80 918 316	93 182 407	365 202 083
Net profit	4 341 100	5 956 680	9 046 284	11 418 770	18 332 966	26 471 796	32 577 152	108 144 749
accumulated profit	4 341 100	10 297 781	19 344 065	30 762 835	49 095 801	75 567 597	108 144 749	

FINAL PERFORMANCE CASH FLOW

\$ US	By year							Total:
	1 YEAR	2 YEAR	3 YEAR	4 YEAR	5 YEAR	6 YEAR	7 YEAR	
Proceeds from sale of finished products and services	27 526 238	33 846 427	45 864 492	53 709 768	79 250 237	107 390 112	125 759 559	473 346 833
The cost price of the production and provision of services	25 262 698	26 313 540	34 913 448	40 667 435	58 272 428	78 186 560	91 067 508	354 683 617
cash flow	2 263 540	7 532 887	10 951 044	13 042 332	20 977 809	29 203 552	34 692 051	118 663 216
Cumulative cash flow	2 263 540	9 796 427	20 747 471	33 789 803	54 767 612	83 971 165	118 663 216	

Totals for PROJECT COSTS In monetary terms,

\$ US	By year							Total:
	1 YEAR	2 YEAR	3 YEAR	4 YEAR	5 YEAR	6 YEAR	7 YEAR	
the payment of taxes to the state budget	2 411 513	3 030 345	4 211 466	5 030 213	7 590 286	10 482 176	12 477 260	45 233 259



BUSINESS PLAN

FINANCIAL AND ECONOMIC SUBSTANTIATION OF PROFITABILITY AND PERFORMANCE OF ORGANIZING ACTIVITIES FOR THE PRODUCTION OF HOUSEHOLD COMPRESSORS IN THE REPUBLIC OF UZBEKISTAN

CONTENT:

- 1. Objective of the project**
- 2. Customer project**
 - 2.1. The situation in the market, the existing business relationships and goodwill.
 - 2.2. The potential of existing and projected
- 3. Project strategy**
 - 3.1. Assortment and characteristics of the products
- 4. Market and marketing concept ***
 - 4.1. Introduction
 - 4.2. The main characteristics of the market
 - 4.3. Product Characteristics. Market demand
 - 4.4. Review of local industry
 - 4.5. Import Export
 - 4.6. Prospects of development of the industry in the medium and long term
 - 4.7. Qualitative characteristics
 - 4.8. Pricing system on the market
 - 4.9. Legislation
 - 4.10. Summary and Conclusions
- 5. Material resources**
 - 5.1. The classification of raw materials and components
 - 5.2. Project demand for materials and components
 - 5.3. Energy supply
- 6. Site location**
 - 6.1. Feature portion
 - Production structure, property complex
- 7. Technology and Design**
 - 7.1. Production capacity and the development of data
 - 7.2. The production plan in accordance with the project
 - 7.3. Technology and Equipment
 - Manufacturing process
 - Main production equipment
 - 7.4. Manufacturers and suppliers of equipment
 - 7.5. Construction
- 8. Organization of production and overhead costs**
 - 8.1. The organizational structure of the enterprise
 - 8.2. Overhead costs (works general and administrative)
- 9. Workforce**
 - 9.1. The need for a labor force
 - 9.2. to the staff requirements, the need for and the organization of their education
- 10. Driving the project**
 - 10.1. Project implementation stage
- 11. Financial evaluation**
 - 11.1. A set of capital project expenditures
 - 11.2. Total costs for products sold
 - 11.3. Estimation of economic efficiency, taking into account the payback
 - 11.4. Amortization of non-current assets
- 12. Calculation of profits and losses**
 - 12.1. Calculation of profits and losses of the enterprise
- 13. cashflow Calculations**
 - 13.1. Statement of cash flows
- 14. Risk factors**
- 15. Findings**

Memorandum Privacy

This business plan is submitted to the investor only to decide on the financing of the project and cannot be used to copy in any form or for any other purposes, as well as to third parties.

Taking this to the business plan, the recipient (except group of persons defined by senior management Company) takes responsibility and guarantee the return of the copies of the Enterprise set forth in this Business Plan address, if he does not intend to invest in this project.

All data, evaluations, plans, proposals and conclusions presented in this project related to its potential profitability, production volumes, costs, profit margins, the future of its level, cash flow and other financial indicators, based well on the agreed opinion of the management and shareholders of the Company .

The present business plan put the raw data provided by the Company. All prices are taken as of "16" September 2019.

The views and conclusions contained in this business plan, do not necessarily reflect the views and conclusions of the consumers of the information.

The technological part of the project developed in conjunction with specialists and equipment supplier and foreseen to be installed under this project technological equipment corresponding to the common enterprise technology and has a conjugation of all technological transitions to create an industrial complex for the production of household compressors.

Project Summary:

Kind of activity:	Manufacture bit compressors	Objective of the project:	Creation of a modern plant for the production of the bit compressors
Production capacity per year:	1.7 million pieces.	Area information:	Uzbekistan, Tashkent, Tashkent region
Project cost:	27,838,556 \$ US	The area of the land:	3.2 hectares
Cost of equipment:	17 000 000 \$ US	New workplaces:	293 people
The cost of the PBX:	850 000 \$ US	Sales market:	The Republic of Uzbekistan
Cost of construction:	2 000 000 \$ US	workload on years:	1 year and 25% 2-year 35% 3 year or 40% of 4-year 50% 5 year-70% 6 year-90% 7 year-100%
Cost of raw materials and materials:	\$ US 5,405,964 (reserve for 1 month at 100% load equipment)	Total sales: In just 5 years.	79582000 \$ US
Other costs:	380 652 \$ US	Total sales for 5 years.	1104185 pcs.
Net margin:	33%	Breakeven point:	5,3%
Recoupment of the project taking into account the 20% discount:	5th YEAR	NPV on 5th YEAR	1,767,843 \$ US
Accumulated Earnings per 5 YEAR:	50799700 \$ US	IRR on the 5th YEAR	22%
The cumulative cash flow at 5 YEAR:	58,255,674 \$ US	Recoupment of the project without taking into account the discount:	3rd YEAR

1. Objective of the project

Result Business Plan aims to provide an objective description and information on the feasibility and advisability of organizing and creating a modern plant for the production of household compressors.

When laid in the calculation of income and expenses of the project it is efficient, financially sound with an average level of risk.

Cost of the project, the necessary documentation, as well as the cost structure around the project provided in the annex to the Business Plan.

Prospects for the development of this project are:

- ❖ The great demand for compressors in the market of the Republic of Uzbekistan;
- ❖ Lack of speed and mobility demand in the market;
- ❖ The lack of high-quality household compressors on the market;
- ❖ Rapid turnover of funds;
- ❖ Quick payback on investment.

Besides:

- ❖ Thanks to the creation and organization of a modern plant for the production of household compressors planned gradual increase in the speed of future production;
- ❖ Expanding consumer base and the opportunity to become one of the largest producers in the Republic of Uzbekistan.

Refinancing of the profits and a further increase in production volumes will further increase profits and ensure stable operation of the organization in the future.

This project represents the creation and organization of a modern plant for the production of household compressors.

The modern plant will organize the production of household compressors, create production capacity and jobs in the region.

Objectives of the project:

- The organization and the establishment of the domestic production of compressors plant.
- Infrastructure development.
- Implementation of activities on a full cycle.
- Creation of production volumes at planned capacity due to the use of advanced technology and modern equipment.
- The conquest and preservation of a portion of the internal consumer market.
- The implementation of sound production and sales policy to meet the strategic goals of the enterprise.
- Conducting independent research, to update range of finished products.
- Further development and expansion of the company.
- Ensuring their income-earning owners, creation of conditions for the disclosure of entrepreneurial, creative and spiritual potential of employees.

The strategy developed by the project meets the following priorities of the structural transformation of the economy:

- *Increased capacity of the production sector of the Republic of Uzbekistan;*
- *The development of the industry as a whole, as the saturation of the market with quality products.*
- *The use of modern equipment;*
- *The active social policy aimed at creating more jobs and better working conditions, the growth of real incomes and consumption.*

The project will:

For the district's economy:

- To contribute to the regional economy, provide the domestic market with quality products at reasonable prices;
- Improve the social climate in the region (by creating new jobs, and the replenishment of a profitable part of the budget).

For the organizers of the project:

- Securely invest funds through the creation and development of the enterprise;
- To profit from the sale of household compressors.

The basis of the calculations and conclusions on a series of documents on the company:

- ✓ *Costing*
- ✓ *The parameters of the planned volume of production*
- ✓ *Analysis compressors of household technology;*
- ✓ *Specifications for water supply engineering plant, electricity;*
- ✓ *Specifications for the transportation of finished products;*
- ✓ *Methodology for planning, accounting and calculation of production costs;*
- ✓ *The taxation system;*
- ✓ *Regulations on the procedure for determining amortization and depreciation charges referring to the cost of production;*

Based on the macroeconomic and financial results of the project, its high efficiency and low sensitivity to the risks identified, it is believed that the project can be implemented in the current economic environment and subject to inherent baseline.

The calculations shown in the annexes to this business plan are made only on the basis of a new organized activities, as the company will be exclusively focused on this activity, and the company currently has no plans to implement other activities.

2. Customer project

Name:	Association «UZELTEXSANOAT»
Address:	100047 Republic of Uzbekistan, Tashkent, Amir Temur Street, 13.
Project Objectives:	The organization of manufacture of compressors for household appliances at the expense of investment funds.
Information:	Phone: (+998 71) 232-34-29 Fax: (+998 71) 232-34-82 Web site: www.uzeltexsanoat.uz Email: info@uzeltexsanoat.uz

2.1. The situation in the market, the existing business relationships and goodwill.

According to market research company GfC last year, global sales of home appliances and electronics for the first time has exceeded 1 trillion euros. This year, GfC expects sales growth by 2%, so that the global market will grow to a level of 1.03 trillion euros.

The figure of one trillion have 4% more than in 2018. Sales increased telecommunications segments (+ 7%), small household appliances (+ 7%), consumer electronics / photo (+ 6%) and IT / office equipment (+ 1%). In the segment of large home appliances sales fell by 1%.

Position as the largest market in 2019 continues to hold the Asia-Pacific region with a market share of 42%, it is followed by Europe (25%), North America (20%), Latin America (7%) and the region of the Middle East / Turkey / Africa (6%). Chief Expert GfC Markus Kick said that the achievements trillion market for household appliances is a landmark moment for retailers and manufacturers.

Large Appliances - still the second largest segment of the market. it sales totaled about 177 billion euros. For household appliances (refrigerators, microwave ovens, washing machines) last year accounted for about 17% of the market sales. Growth last year showed markets in Latin America (+ 6%), Europe (+ 3%) and Asia Pacific (+ 2%). According to forecasts of the GfC, in 2019 continued global growth, sales will increase by 6%.

Small appliances sales reached EUR 86 billion last year. The main contribution belongs to China, due to which the Asia-Pacific region was the dynamics of 13%. In Latin America, the Middle East / Turkey / Africa, sales rose 10%. In Europe, the figure is 7%. RPM decrease was in North America, 2%.

2.2. The potential of existing and projected

Ministry of Economy and Industry has developed a draft decree of President with the concept of further development of the electrical industry in Uzbekistan until 2025.

It says that the market for electrical engineering industry is also characterized by a high proportion of imports of finished products in the sector of household appliances and power equipment. In 2018 imported products worth \$ 788 million, of which 41% are for products manufactured in the same country.

It also says that in the electrical products manufacturing sector, especially home appliances and electronics, currently a major problem in the domestic market is growing smuggling of goods annually.

It was found that the raw material basis for the localization of electrical products in the country is extremely limited, as in the country there is no production of essential raw materials, such as aluminum, sheet metal, polyvinyl chloride and polystyrene, as well as the need to prepare raw motors and compressors.

The industry experienced a problem with a deficit of working capital, which along with high lending rates leads to an increase in the cost of production and reduces the competitiveness of products in foreign markets, limited opportunities for development and expansion.

Along with the objective geographical location of the country, the possibility of expansion of export activities are limited by high transport costs (up to 10% of the cost of the finished product), non-tariff barriers, as well as the high level of competition, aggressive pricing policies of individual players and the protective measures in foreign markets.

In the electrical industry there is a shortage of qualified engineering personnel and the lack of an effective system of training and engaging. Branch does not have the scientific capacity to create and implement advanced and innovative technologies. The number of laboratories and test bases is insufficient and their level of equipment of modern research equipment - low.

3. project strategy

3.1. The product range

Initiator of the project plans to become a manufacturer and supplier of household compressors. The company plans to present to the implementation of household compressors, complete with:

Name of products
Compressor for domestic refrigerators
Compressor for commercial refrigerators
Compressor for Air Conditioners

- 4. Market and marketing concept**
 - 4.1. Introduction**
 - 4.2. The main characteristics of the market**
 - 4.3. Product Characteristics. Market demand**
 - 4.4. Review of local industry**
 - 4.5. Import Export**
 - 4.6. Prospects of development of the industry in the medium and long term**
 - 4.7. Qualitative characteristics**
 - 4.8. Pricing system on the market**
 - 4.9. Legislation**
 - 4.10. Summary and Conclusions**

SWOT - Analysis

SWOT-analysis, the definition of strengths and weaknesses of the enterprise, as well as the opportunities and threats arising from its immediate environment (the external environment).

Strengths - the benefits of the organization;

Weaknesses - Organization disadvantages;

Opportunities - environmental factors, the use of which will create value to the organization in the market;

Threats - factors that can potentially worsen the situation of the organization in the market.

SWOT - analysis is an important part of the situational analysis, and allows you to answer the following questions:

- Which it is for the Enterprise of strengths, weaknesses, opportunities and threats?
- How can you take advantage of opportunities, using the strengths of the company?
- What are the weaknesses of the enterprise may be used to prevent the opportunities?
- From what strengths can neutralize existing threats?
- What threats, aggravated by weak enterprise parties, should be most wary of?
- How strong competitive position of businesses?

In general, conducting SWOT-analysis boils down to the filling of so-called "matrix SWOT-analysis", which has the following form: left stand two sections (strong and weak side), in which respectively entered all identified at the first stage of the analysis the strengths and weaknesses of the organization . In the upper part of the matrix as there are two sections (opportunities and threats) into which they are introduced all the identified opportunities and threats

Qualitatively determine the list of strengths and weaknesses of the enterprise on the basis of expert estimates, their relationship to the opportunities and threats and make up the matrix of SWOT - analysis.

Identification of strengths and weaknesses is an internal aspect of the analysis. Strengths are the basis for the development strategy of the enterprise, at the same time determine the weaknesses of the need to conduct on the part of the company's management activities aimed at eliminating these disadvantages.



Strengths	Weaknesses
The image of a stable and reliable company, which allows to attract additional consumers	Relative dependence on changes in the exchange rate and the presence probability of modification schemes and execution of transactions in the system of national commodity exchange markets, both from the organizers of the auction, and the state.
Automation equipment: The products at the output of a high-quality performance. Ensuring the production process thanks to the uninterrupted power sources	
Full compliance with the international quality assurance system	The probability of changing the legislative and normative-legal acts, regulating and governing the business in the country, leading to changes in activity and worsening conditions
High qualification and competence of personnel	A new player on the market with no established reputation
Modern production technology and a high level of technical equipment	
Automated equipment of high accuracy and reliability	
Low operating costs and equipment	Not established relationships with suppliers of raw materials

Opportunities	Threats
Creating a high-tech production	The presence of strong competitors, the emergence of new competitors in the sphere of production
Creating a high-quality working conditions	Reducing the solvency of potential customers
Access to new international and domestic markets	Rising prices from suppliers of necessary raw materials for the production of
High rates of growth of production capacity in the country	Presence in the market of vertically integrated players with a guaranteed market for their own production
A sufficient amount of raw material suppliers local production	
The growing share of industry in GDP	Lack of markets for the finished products.

Sales software, sales organization

There are a lot of marketing moves in order to increase sales of their products. However, sales of the scope is fairly specific. That is why to make quality advertising, which would be an exhibitor in the best possible light, very hard.

Sales of products is an integral part of the activities of organizations in market conditions. The company can count on a real commercial success only if rationally organized the marketing of products. In the chain "production-distribution-exchange-consumption" on the share of sales activity account for three of the last link.

The effective functioning of any business is impossible without well-organized sales services. For the sale of goods organization should carry out a set of targeted actions to ensure the movement of goods in the market space.

However, the high efficiency of product sales can only be achieved if the marketing activity of professional management.

Sales organization in the organization and management plays a very important role in the sense that provides feedback to the production to the market, is a source of information on the demand and consumer needs. Therefore, sales policy development forms the basis of the marketing program on how each product and for the separation of production as a whole. If on the basis of calculations it turns out that the cost of implementation of a new product are too high and do not allow for a certain level of profitability, the management of the production department may decide not appropriate for further development and introduction of this product. Experts marketers can not only determine the future profitability of products,

In the process of the organization sales management problem is solved already at the policy development stage company. Speech on the selection of the most effective system of channels and marketing techniques for specifically certain markets. This means that the production from the beginning focused on specific forms and methods of marketing, the most favorable conditions. Therefore, the development of marketing policy is aimed at determining the optimal direction and resources needed to ensure the greatest efficiency of the process of sale of goods. This presupposes an informed choice of organizational forms and methods of marketing activities aimed at achieving the planned outcomes.

Sales program

The price policy of this project formed the basis of the data of the market research and the existing rates in the market. Using these data were generated following prices for its products.

Cost of production:

Name	Selling price in the domestic market with VAT		VAT excluded domestic sales	
		\$ US		\$ US
Compressor for domestic refrigerators	PC.	53,30	PC.	50,60
Compressor for commercial refrigerators	PC.	69.17	PC.	65.74
Compressor for Air Conditioners	PC.	67.15	PC.	62.85

Index increase in the cost of production of 5.4% was used in the calculation of the sales plan. This decision was taken due to the annual increase in prices for raw materials, materials and energy.

5. Material resources

5.1. The classification of raw materials and components

One of the most important elements in the production of a material resources from them depends on the continuity and stability of production.

- Availability of raw materials, proven reserves of raw materials

To date, the market is full of companies engaged in the supply of raw materials needed for production.

Below is a list of possible cooperation organizations to deliver the necessary raw materials for the production of household compressors:

"DALGAKIRAN - UZBEKISTAN"



A country: Uzbekistan

Country code: +998

City: Tashkent

Phone:

District: Mirabad,

(71) 2543681

Str. S.Azimova 79

(90) 9970111

Spare parts and components for compressor equipment

"AZIA TECHNO PROGRESS" LLC



A country: Uzbekistan

Country code: +998

City: Tashkent

Phone:

District: Mirabad,

(71) 2336772

Str. S.Azimova 79

(90) 9970111

Spare parts and components for compressor equipment

SPC Special Metals Ltd.



Metal

A country: Russia

Phone:

City: Yekaterinburg

7 (343) 288-53-42

Sverdlovsk region

email:

Str Yeltsin, d. 1a,

info@specstali.ru

14th floor, room 14

Anshan Iron and Steel Group Corporation



Steel, metal (Iron and Steel)

A country: China

Phone:

396 Nan Zhong Hua Lu,

86) 412-472-3090

Tie Dong District

Website:

Anshan, Liaoning 114003

en.ansteel.cn

Aluminum Corporation of China Limited



Aluminum

A country: China
100,814 No.12B Fuxing Road,
Haidian District, Beijing, People

Phone:
86) 10-6397-1767
Website:
www.chalco.com.cn

"YUQORICHIRCHIQ METALL INVEST" JV



Copper wire

A country: Uzbekistan

Country code: +998

Tashkenstkaya area

Phone:

Area: Yukorichirchik H
pos. BARDANKUL, max. Dustlik

(+99897) 7339000
(+99897) 7379000
Website:
www.ymi.uz

These companies have been selected as potential suppliers of industrial raw materials required.

Also, the company occupies a leading position on the delivery of raw materials to production, including compressors.

- The main raw materials

One of the most critical moments of decision, which depends on the continuity and stability - is to ensure raw material. In a market economy, and raw materials for production are under scrutiny, both in quantitative and qualitative terms, as are over a significant proportion of the cost of the final product, and significantly affect the quality of the products.

These costs for raw materials are taken on the basis of the planned rules cost production costs and details are specified in the design of the project in the application.

5.2. Project needs, and ensuring the availability of materials and components, their classification, supply program

material procurement and sales system - to ensure an uninterrupted supply of plant and auxiliary materials necessary for the operation of the rhythm of production and organization of timely product sales.

Usually logistics system is not organized for each department, and for the whole plant (supply of raw materials is carried out through a system of warehouses, in accordance with the design requirement).

5.3. Energy supply

The modern enterprise is a major consumer of energy resources necessary for the process of production, as well as for the normal functioning of the business units. Under the energy resources we understand all available resources that are consumed in the production and viability of the Company who participate in mutual settlements with external suppliers and between departments. To them we include electricity, thermal energy, a variety of technical gases and special fluids, sewage. Thousands of kilowatt-hours, and a large number of Gcal of heat and other energy uses modern industrial enterprise.

Selection of the most cost-effective energy should be based on a comprehensive solution of issues of energy, technology, organization of production and the economy through a comparative analysis of unit costs (consumption rates) process fuel and energy, non-recurring expenses for the development and implementation of measures to reduce standards.

Consumed energy can now be purchased from both purchased and produced in-house. The enterprise can produce electricity - on the rating power plant, steam and hot water - a boiler, generating gas - generating station. supply company has specific features, consisting of the need for immediate use of the energy produced and uneven demand for it during the day and time of year. Therefore, the uninterrupted supply of energy should be ensured through the establishment of reserves of power equipment capacity.

Large losses of pressure in the air network with their considerable extent does not allow for a centralized maintenance of the enterprise with compressed air, even within the company. Typically, stationary or mobile compressor stations are used to supply compressed air disposed near the consumer shops.

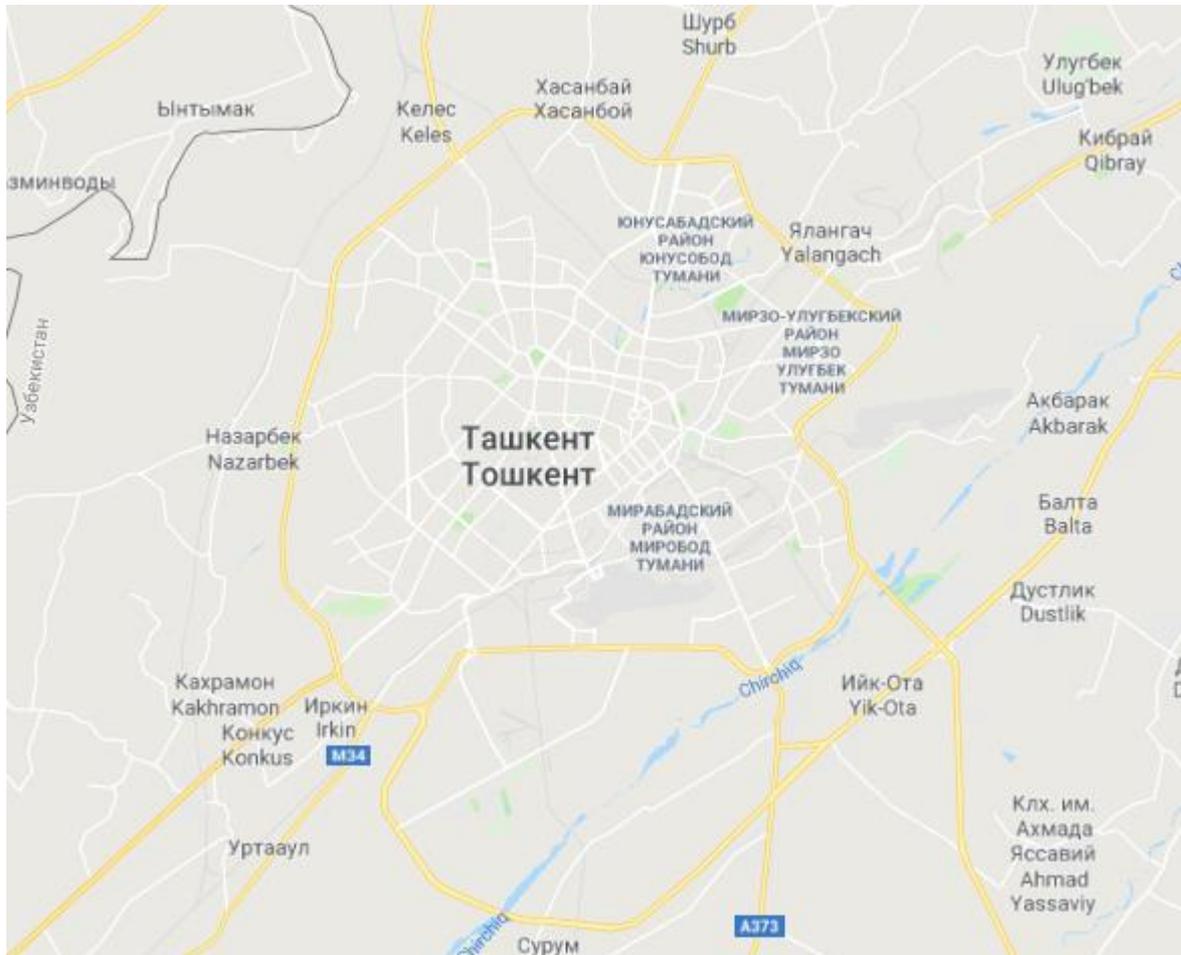
Centralized supply system ensures reliable and uninterrupted supply of energy and reduce enterprise operating costs of production and non-recurring costs associated with obtaining the necessary enterprise energy.

Name	unit of measurement	monthly demand	unit cost	Monthly cost
			\$ US	\$ US
electric power	501 902.9	.0474	23774	501 902.9
Water	1 130.0	0.0895	101	1 130.0
Garbage	0.5	4.4105	2	0.5
TOTAL			23878	

6. Site location

6.1. Feature portion

Estimated location for construction of a plant for the production of household compressors will be located in the city of Tashkent, Tashkent region.



- **Production structure, property complex**

Recommended total area for the organization of the plant for the production of household compressors 3.2 hectares.

In the proposed enterprise will be the following production areas and departments: storage of raw materials warehouse, office building, hangars and sheds for storage of necessary equipment.

7. Technology and Design

7.1. Production capacity and the development of data

Justification of potential and actual capacities on production enterprise incorporated in the means of labor is the basis for the formation of its production program.

Production capacity - a measure that reflects the company's ability to maximize (subdivision, consolidation or sectors) for the implementation of commercial output in natural silt cost units, related to a specific time period (shift, day, month, quarter, year).

Quantitative values of production capacity due to the scientific and technical level of production technology, the nomenclature (range) and product quality, as well as the peculiarities of work organization, the availability of energy, raw materials and labor resources, the level of organization of labor, specialization and cooperation, bandwidth transport, storage and distribution services. The instability of the factors affecting the value of production capacity, generates a plurality of index, so they are subject to periodic review. In production management practice, there are several types of concepts that characterize the production capacity: the design, the launcher, the development, the actual, planned, input and output over the period inputted, outputted, carrying.

In general, the production capacity can be defined as the maximum possible production in the same period of time with the designated conditions of use of the equipment and production resources (space, energy, raw materials, and human labor). A leading factor in the production capacity and determining its name, is equipment that is part of a means of changing the material of the production process.

The simplest and most accurate gauges of production capacity are natural units:

Production capacity is measured, as a rule, in the same unit in which the planned production of the product in real terms (tons, pieces, meters). For example, the production capacity mining enterprises determined in tons mining, metallurgical plants - in tonnes metal smelting and production of rolled products; engineering plants - in pieces manufactured machines; capacity of sugar mills and other food industry - in tons of raw materials, processed into finished products.

Product, which has a wide product scale, production capacity can be expressed in conditional physical units. If the company produces several kinds of products, the production capacity shall be established for each type separately.

The fuller the time used capacity, the more output is produced, the lower its cost, the more quickly the manufacturer to accumulate funds for the reproduction of production and improvement of the production system: replacement of equipment and technologies of production and reconstruction of organizational and technical innovations.

The increase in output of existing equipment and production areas through automation and other means of intensification of technological processes reduces the need for new investments, causes a reduction in operating costs, savings in raw materials, improves the ecological safety.

Project production capacity is determined in the design and manufacture reflects its capacity to carry out the project in the operation of the business environment. Actually reached capacity reclaimed called for stable operation. Depending on the development and current state of the production capacity acquired its specific values for the period of start-up of production (start-up), actually prevailing when the current fluctuations in demand for the products of (actual) or in the calculation of production volumes (planned).

During each planning period may vary capacity. The larger the planning period, the probability of such changes above. The main reasons for the changes are:

- installation of new pieces of equipment to replace obsolete or emergency;
- depreciation of equipment;
- commissioning of new facilities;
- change the performance of equipment in connection with the intensification of its mode of operation or in connection with the change of quality of raw materials, catalyst life, adsorbents, cleaning, change of corrosion protection, etc.
- modernization of equipment (replacement assemblies, units, grippers, conveyor elements and the like);
- changes in the structure of the starting materials, raw material composition or intermediates, methods of selecting the fractions of the heat exchange methods, metering calibration etc .;
- the duration of operation of the equipment during the planning period, taking into account stops for repairs, preventive maintenance, process interruptions;
- specialization of production;
- equipment operations (cyclical, continuous);
- organizing repairs and routine maintenance.

Of considerable importance is the increase of production capacity, which is achieved by the technical retrofitting and improving of the production process. Production capacity at the beginning of the period, as a rule - a year, called the input and at the end of period (years) - closed production capacity.

The production capacity of the project is taken on the basis of technical characteristics of equipment. According to the technical specifications for the production of household compressors equipment, production capacity of 1 720 810,00 units of finished products per year, with 100% utilization of equipment. The table below shows the volume of production in the breakdown:

Name of products	U edited	The volume of production in the year	Production volume per month	The volume of production per day	Production volume per hour
Compressor for domestic refrigerators	PC.	1 110 200.00	92 516.67	3 558.33	222.40
Compressor for commercial refrigerators	PC.	166 530,00	13 877.50	533.75	33.36
Compressor for Air Conditioners	PC.	444 080,00	37 006.67	1 423.33	88.96
TOTAL:		1 720 810,00	143 400.83	5 515.42	344.71

In calculating a minimum production capacity breakeven point should be 5-6% of the maximum possible power. In these terms of performance, revenues from sales of finished products will exceed the costs.

Due to the high demand for this type of product according to market research and best payback input project production capacity is set at 25%. Output production capacity of the project, which will be 100% production capacity is scheduled for 7-year project.

Data on the production plan are as follows:

Name of products	By year							Total:
	1 YEAR	2 YEAR	3 YEAR	4 YEAR	5 YEAR	6 YEAR	7 YEAR	
DEVELOPMENT OF RANGE (%)	25%	35%	40%	50%	70%	90%	100%	59%
Compressor for domestic refrigerators	25,0%	35%	40%	50%	70%	90%	100%	59%
Compressor for commercial refrigerators	25,0%	35%	40%	50%	70%	90%	100%	59%
Compressor for Air Conditioners	25,0%	35%	40%	50%	70%	90%	100%	59%
Production quantities								
Compressor for domestic refrigerators	277 550.0	388 570.0	444 080.0	555 100.0	777 140.0	999 180.0	200.0 1 110	4551 820.0
Compressor for commercial refrigerators	41 632.5	58 285.5	66 612.0	83 265.0	116 571.0	149 877.0	166 530.0	682 773.0
Compressor for Air Conditioners	111 020.0	155 428.0	177 632.0	222 040.0	310 856.0	399 672.0	444 080.0	1820 728.0
PHYSICAL unsold goods								
Compressor for domestic refrigerators	23 129.2	32 380.8	37 006.7	46 258.3	64 761.7	83 265.0	92 516.7	379 318.3
Compressor for commercial refrigerators	3 469.4	4 857.1	5 551.0	6 938.8	9 714.3	12 489.8	13 877.5	56 897.8
Compressor for Air Conditioners	9 251.7	12 952.3	14 802.7	18 503.3	25 904.7	33 306.0	37 006.7	151 727.3
TOTAL OUTPUT								
Compressor for domestic refrigerators	254 420.0	356 189.0	407 073.0	508 841.0	712 378.0	915 915.0	1017 683.0	4172 499.0
Compressor for commercial refrigerators	38 163.0	53 428.0	61 061.0	76 326.0	106 856.0	137 387.0	652.0 152	625 873.0
Compressor for Air Conditioners	101 768.0	142 475.0	162 829.0	203 536.0	284 951.0	366 366.0	407 073.0	1668 998.0
TOTAL	394 351.0	552 092.0	630 963.0	788 703.0	1104 185.0	668.0 1 419	1577 408.0	6467 370.0

In the first half year of the project scheduled to work on the preparation of the project to the start of production. Complex measures for the gradual phasing start of the project is of strategic importance to the implementation.

These include: the preparation of all necessary documents for the creation of new production, contracts for the purchase of necessary equipment, industrial raw materials, auto-vehicles for the transportation of finished products and raw materials, carrying out plant construction work, delivery of production equipment, carry out installation and commissioning of production equipment, training and education.

From the data shown in the table shows that the use of production equipment on 25% of the volume of output is 394,351 pcs.

With an annual increase in production volume by 10-20%, to 7, the volume of the planned production and sales amounted to 1,577,408 units.

7.2. The production plan in accordance with the project

Annual production program is based on the technical characteristics of the equipment used in the process, the data of marketing research as well as normative and legislative acts on labor, operating in the territory of the Republic of Uzbekistan:

- Production capacity - 1720810 pcs. in year.
- The number of working hours per week for production staff (at 6-day working week and two interchangeable system) 96 hours;

Data on the timetable							
Number of shifts per day						change	2.00
Work shift						hour	8.00
The average number of working days in a month						day	26,00
The number of working months in a year						month	12,00
Data on capacity development plan							
Years the project	Scope	unit of measurement	2021	2022	2023	2024	
Percentage growth of the volume of production			100%	122%	130%	140%	
Name of products			1 YEAR	2 YEAR	3 YEAR	4 YEAR	
The total volume of production of compressors for household refrigerators in a year	domestic	PC.	500 000,00	610 000,00	793 000,00	1 110 200,00	
The total volume of production of compressors for commercial refrigeration, in the year	domestic	PC.	75 000,00	91 500,00	118 950,00	166 530,00	
The total volume of production of compressors for air conditioners, a year	domestic	PC.	200 000,00	244 000,00	317 200,00	444 080,00	

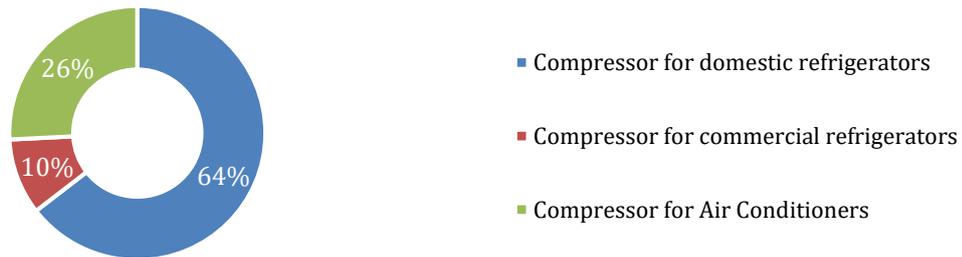
The annual production volume at maximum loading capacity is given in the table.

➤ Production of domestic compressors:

Name of products	Unit	The volume of production in the year	Production volume per month	The volume of production per day	Production volume per hour
Compressor for domestic refrigerators	PC.	1 110 200.00	92 516.67	3 558.33	222.40
Compressor for commercial Refrigerators	PC.	166 530,00	13 877.50	533.75	33.36
Compressor for Air Conditioners	PC.	444 080,00	37 006.67	1 423.33	88.96
TOTAL:		1 720 810,00	143 400.83	5 515.42	344.71

Name of products	Unit	The proportion in total production,%
Compressor for domestic refrigerators	%	64.52%
Compressor for commercial refrigerators	%	9.68%
Compressor for Air Conditioners	%	25.81%
Total:		100.00%

Share in the total volume of production, in%



The calculations for this project, the predicted production and sale of products are designed taking into account the establishment of the level of development of productive capacities. The first half of the year will go to the delivery and installation of equipment, training facilities, organizational matters.

7.3. Technology and Equipment

- Justification of the choice of technology and equipment, circuits, process, advantages and disadvantages, the reliability of equipment and guarantee vendor

Selection and calculation of technological equipment - a very important stage of the design. Because, as far as qualified to solve this issue in the design will depend on such factors as the quality and yield, productivity, profitability.

The initial data are:

- flowsheet and production modes;
- grocery calculations;
- management mode (plot separation line).

- **Types of compressors**

A compressor unit for compression and displacement of various gases, including air, for various devices and pneumatic tools. Compressor technique is widely used in industry, construction, medicine, etc. Existing types of compressors and their classification criteria define the operation of this equipment.

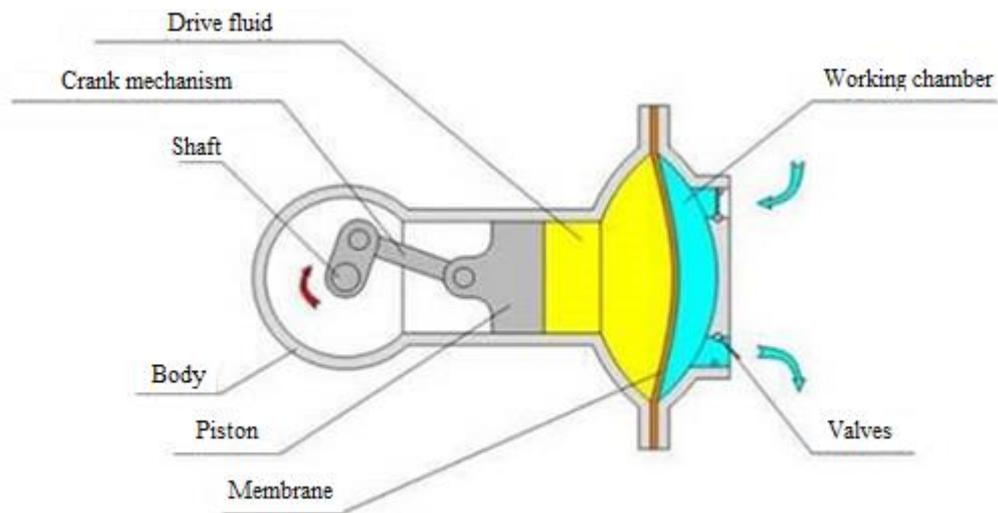
Types of positive displacement compressors

Displacement type compressor equipment is divided into 3 groups:

- membrane;
- piston;
- Rotary.

Membrane compressor

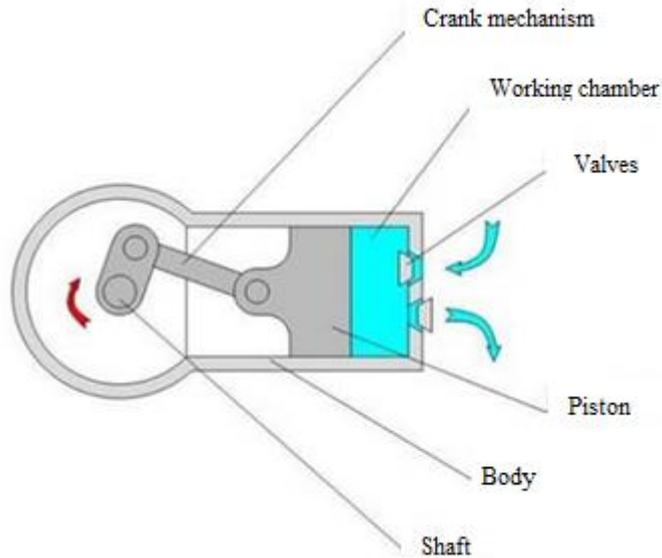
Have in the chamber an elastic membrane, usually a polymer. Due to the reciprocating motion of the piston diaphragm bends in different directions. As a result, movement of the membrane the volume of the working chamber varies. The valves according to the position of the membrane or air is admitted into the chamber, or discharged.



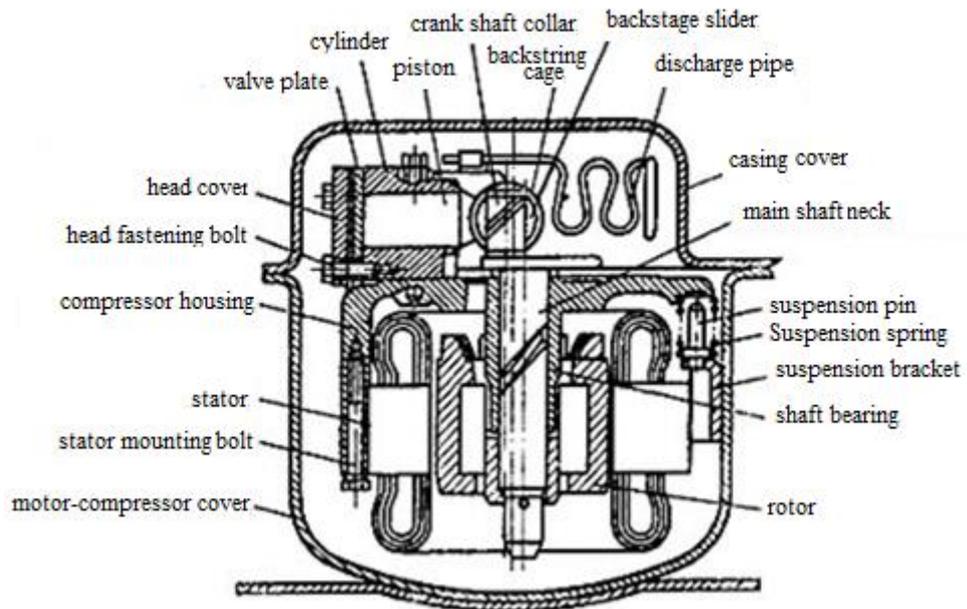
Coming in motion by a pneumatic membrane may, membrane-piston, electric or mechanical drive.

Piston compressor

Due to the crank mechanism of a piston reciprocating motion in the working chamber, causing its volume then decreases, increases.

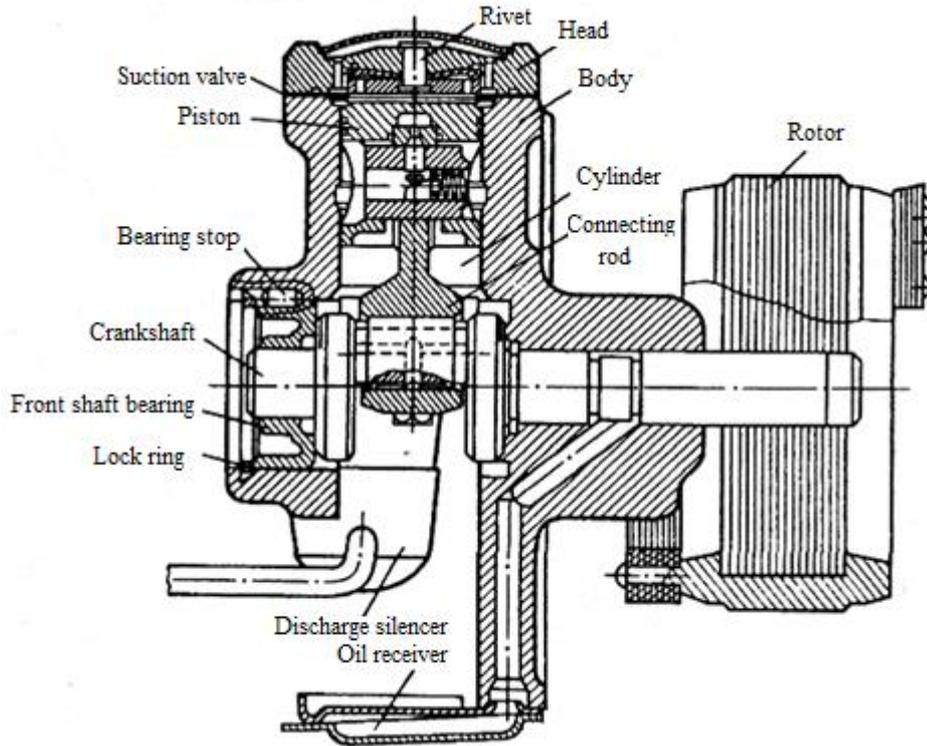


Piston type compressors are installed in the working chamber of one-way valves, shut-off the air movement in the opposite direction. Despite the good performance, piston devices have drawbacks: a rather high level of noise and vibration is noticeable.



Rotary compressor

In the rotary compressors of air compression is rotating elements - rotors. Each item in dependence of the length and pitch of the screw is constant compression, which also depends on the hole shape for the gas outlet.



In such compressors, valves are not installed. Also, the unit structure contains nodes that can cause imbalance. Through this it can operate at high rotor speed. With this construction, the machine gas flow rate reaches high values at small dimensions of the compressor itself.

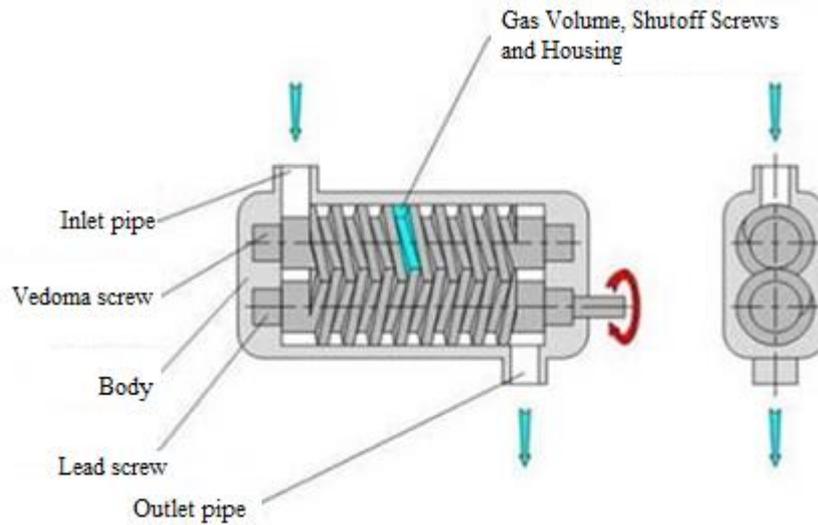
Rotary compressors are divided into several subspecies.

Oil-free compressor

Have asymmetrical propeller profile that increases the efficiency of the unit by reducing gas leaks during compression. For simultaneous counter-rotation of rotors used external gear. During operation, the rotors are not in contact, and they do not require lubrication, so the air coming out of the unit has no impurities. To reduce internal leakage of machine parts and housing are manufactured with high accuracy. Also oil-free devices may be multi-stage in order to remove the difference between inlet temperature and outlet air unit, which limits pressure rise.

Screw compressor

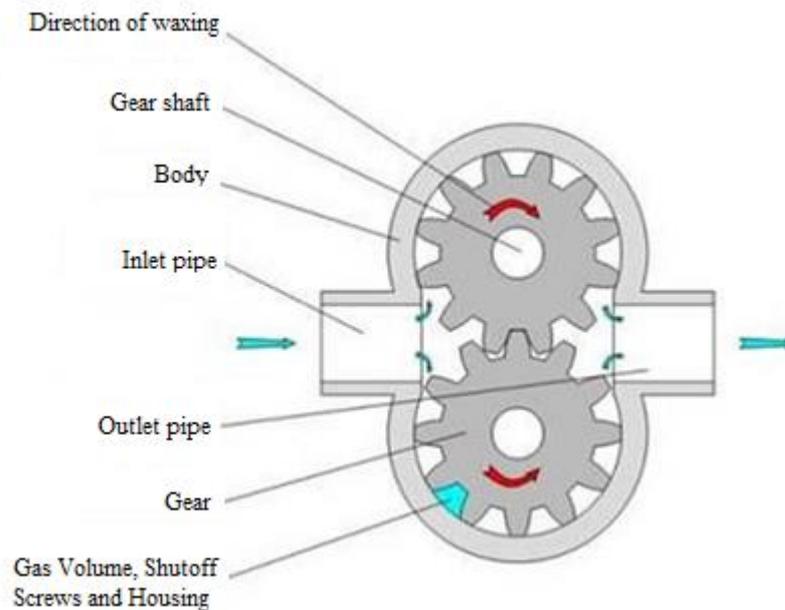
They consist of one or several screws which are engaged, installed in a sealed housing.



Working space is created between the casing and the screws during their rotation. This type of compressor has good performance and continuous air supply. To reduce friction between members of a hook screws, which increases the wear of parts is applied lubricant. If required to receive compressed air (gas) lubricants without additives, the oil-free screw machines are used. In the past, in order to reduce friction, the moving parts are made of anti-friction materials.

Toothed compressor

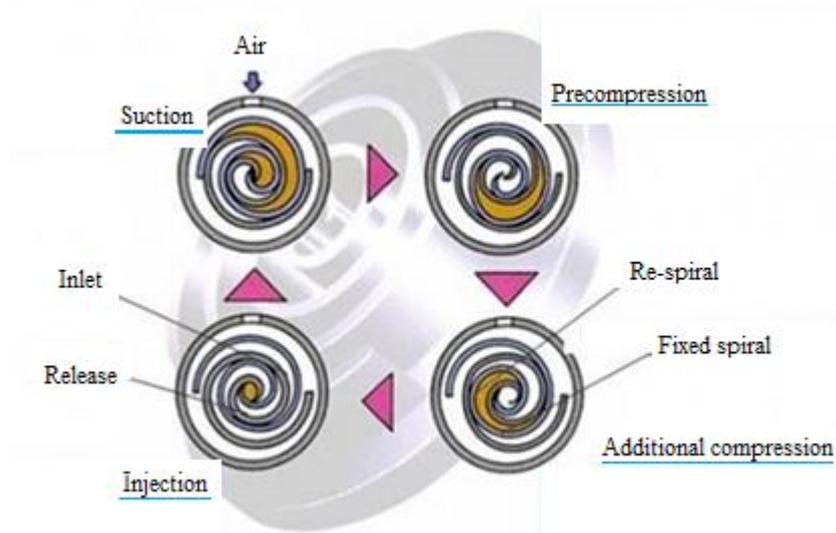
These compressors are called gear-as their main components are the gears. They during operation are rotated in opposite directions, creating a working chamber between the teeth and the walls of the housing.



When entering into engagement teeth on the side of the outlet unit decreases the chamber volume, whereby the pressurized air exits through the nozzle. Compressors of this type are widely used in situations that do not require air supply or gas under high pressure.

Spiral compressor

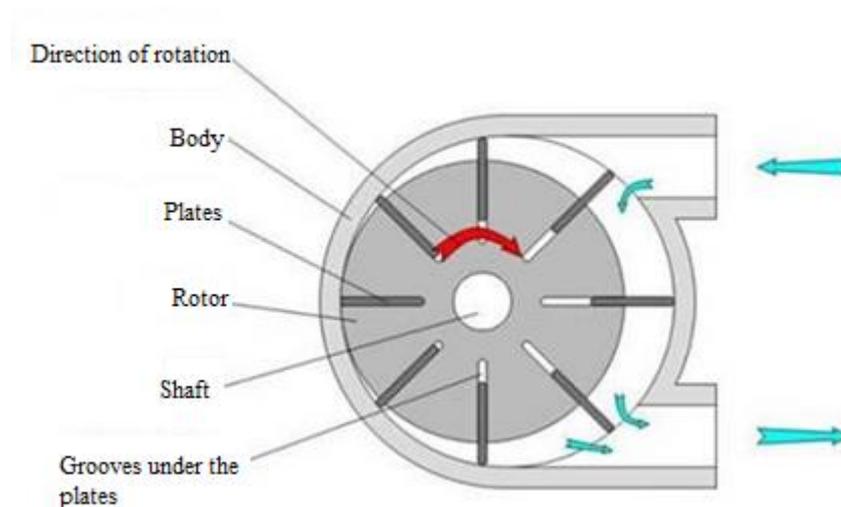
It is a kind of oil-free rotary type compressors. Helical devices as compressed gas in the volume that decreases gradually.



The main elements of this unit are spiral. One spiral fastened motionless kopruse device. Other mobile, connected to the drive. The phase shift between the coils equals 180° , thereby forming air voids with variable volume.

Rotary-plate compressor

The plate compressor has a rotor with slotted grooves. They inserted a certain number of the moving plates. As seen from the figure below, the rotor axis does not coincide with the housing axis.

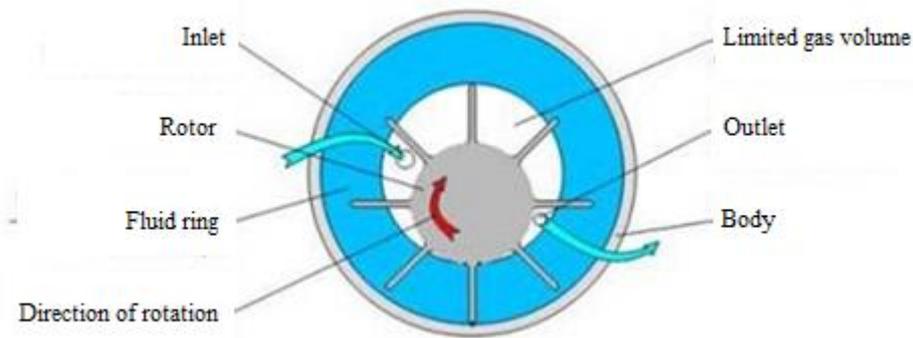


The plates are moved during rotation of the rotor by centrifugal force from the center to the periphery and are pressed against the inner surface of the housing. The result is the creation of a continuous working chambers bounded by adjacent rotor plates and the housings and apparatus. Due to the offset axes varies the volume of the working chambers.

Liquid ring compressor

In these aggregates uses auxiliary liquid. In the statically fixed housing apparatus mounted with the rotor plates.

Structural features of this machine - is displaced to the rotor axis and the housing relative to each other. The housing is filled with liquid, which takes the form of a ring, pressing against the walls of the apparatus due to drop its rotor blades. Thus there is a limited working space filled with gas between the liquid ring, rotor blades and the housing. The volume of the working chambers is changed by rotating the rotor with offset axis.

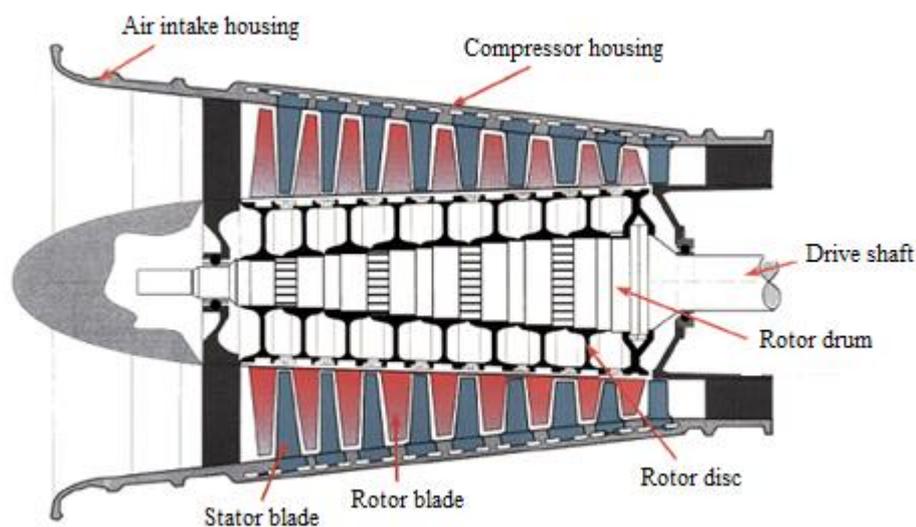


Types of dynamic compressors

Phones with a dynamic principle of operation is divided into axial, centrifugal and jet. They differ among themselves impeller type and the direction of air flow.

axial machines compressors

In axial flow compressors of gas moves along the rotational axis through the fixed and movable guides impellers. Air flow axially apparatus dialed gradually, and the energy conversion takes place in the guide.

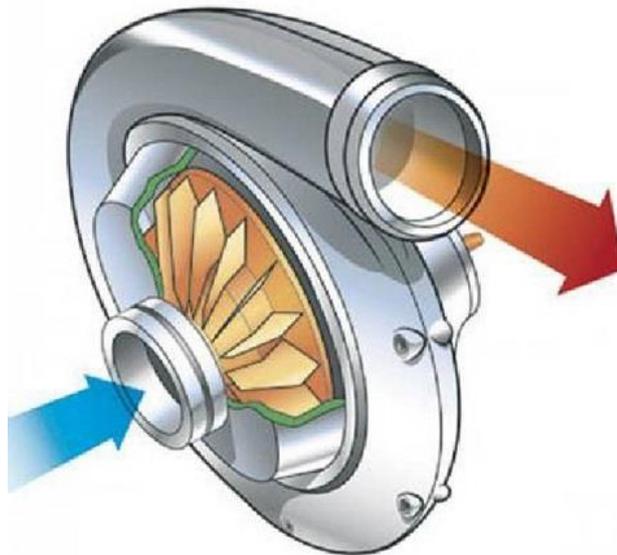


For axial compressors is characterized by:

- High speed;
- high efficiency;
- High feed air stream;
- compact size.

centrifugal compressors

Centrifugal compressors are configured for radial airflow output. The flow of air coming into contact with a rotating impeller with radially extending impellers due to the centrifugal force is thrown out against the walls of the housing. Further, air flows into the diffuser, and wherein the process of compression.

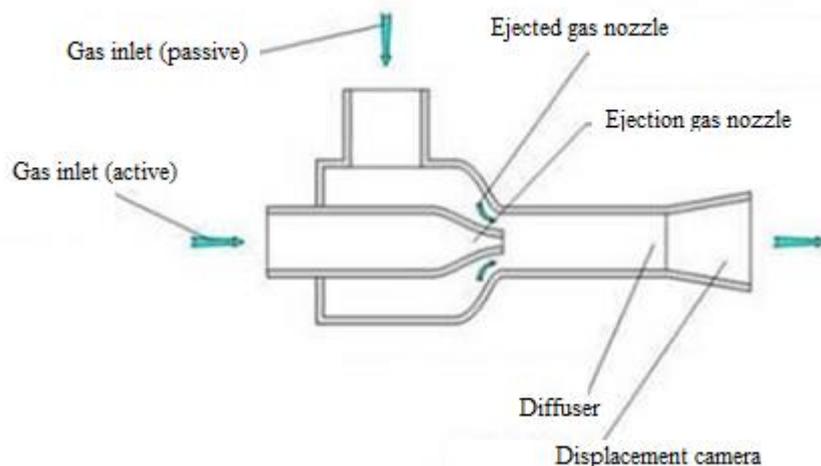


Centrifugal apparatus have nodes with reciprocating movements, however, ensures an even air flow, by virtue of which can be adjusted. Also, this type of units are durable and economical.

Jet compressors

In the ink jet apparatus operating principle for increasing a gas pressure (passive) energy uses active gas.

For this purpose the device 2 supplied gas streams: one low pressure (passive), and the second - high (active). At the outlet of the device is formed with a gas flow pressure above a passive, but smaller than that of the active gas.



Classification of compressors by other parameters

In addition to the classification of the compressors on the basis of compression can be divided data units by the following parameters:

- **Type of drive.** Compressors may operate as electric motors and internal combustion engines (ICE). Accordingly, the units come with direct drive (coaxial) and a belt drive. Typically, the direct drive compressor - this unit stores. Coaxial compressor draws consumer affordable price and widely used in cottages in garages etc. as the air pressure outputted apparatus does not exceed 0.8 MPa. If we compare the petrol and diesel air compressor, the latter is more reliable in operation. Also, diesel has a simple arrangement and easy to maintain.
- **Cooling system.** Apparatuses are a liquid and air-cooled or without it.
- **Terms of Use.** Devices can be stationary operating only indoors from the mains, and mobile (portable), operation of which is permitted in the open air and at low temperatures. For example, mobile compressors with internal combustion engines are widely used in areas where there is no centralized power.
- **Final pressure.** By this parameter sets are divided into four groups. Aggregates low pressure (0,15-1,2 MPa) used in the composition of installations for compressing gas (air). medium pressure device (1,2-10 MPa) applied for separation, liquefaction and transportation of gases in oil refining, gas and chemical industries. Pressure Washer (10-100 MPa) and ultra-high pressure (more than 100 MPa) are used for synthesis gas plants.
- **Performance.** Indicated in units of volume per certain period of time (m³ / min). Performance of the unit depends on parameters such as shaft rotation speed, the cylinder diameter, the length of the piston stroke. The performance of devices can be divided into 3 categories: small - up to 10 m³ / min; medium - from 10 to 100 m³ / min; large - over 100 m³ / min.

In addition, compressors are divided depending on the application in general-purpose machines, petrochemical, chemical, energy, etc.

▪ Manufacturing process

Classification of the compressors used in the compressor and chiller. The main technical requirements for parts and assembly units of compressors

Compressors - the most important energy devices used in refrigeration, industrial processes in the chemical, petrochemical, oil, gas, steel, food processing and other industries.

Compressors that are used in the industry of the principle of operation is divided into:

- Piston compressors;
- Centrifugal (turbochargers) compressors;
- Axial compressors;
- Screw compressors;
- Diesel compressors.

The most widely used piston, centrifugal and rotary screw compressors.

Piston type compressors are used to compress air or different gases.

Performance: small - 1 m³ / min, the average - from 10 to 100 m³ / min, a large - over 100 m³ / min.

The final gauge pressure: low - 25 kg / cm³, average - to 100 kg / cm³, high - up to 350 kg / cm³ or higher (in the production of polyethylene Synthesis - 2200 kg / cm³).

Operation: simple - the gas is compressed from one side of the working piston (without criss-cross small vertical performance) and dual - both sides of the piston are operating (all crosshead machine).

Design:

the arrangement of the axes of the working cylinders: vertical, horizontal, angular, V - and W - shaped (at W - shaped single vertical axis, the other two angled 22,50-li to the horizon);

- By the number of rows of cylinders: single-row, double row;
- According to the arrangement of cylinders: with parallel and serial;
- By the nature of a crank mechanism connected to the piston: crosshead and; without criss-cross
- In the method of cooling the cylinder and compressed gas: water and air-cooled;
- By the nature of the drive from the electric motor and steam engine;

Number of cylinders: single, double and multi-cylinder. compression method - one-stage (one or more cylinders, operating in parallel, the compressed gas is fed into a single pipe); two stage (compression occurs sequentially in two different pressure cylinders); multistage (the number of operating cylinders more than two).

Anchoring - mobile compressors are shipped assembled on one frame or chassis with an engine and do not require installation. Stationary compressors are installed on concrete foundations in special facilities (compressor stations). In this case compressors are supplied by individual nodes (applies to all types of compressors).

Centrifugal compressors compressing gas at a pressure of 3 - 4 atm to 1000 mm water column - fans to 3 - 4 bar. - blowers.

Compressor drives - electric, steam and gas turbines.

Productivity - from 100 to 6500 m³ / min, the degree of compression - from 1.2 to 9, power consumption - from 50 to 18,000 kW, the number of revolutions per minute - from 1500 to 20000.

Weight of individual machines - up to 100 tons.

For efficiency centrifugal compressor piston inferior, but the creation of the piston compressors for high performance encounters insurmountable difficulties.

Screw compressors - compressors, where the first working chamber is isolated and then reduced in volume, the gas injected therein is compressed, then the cavity is opened and communicates with the discharge area where the pressurized gas is displaced. Developing the final pressure depends on the velocity and determined from the resistance-external network, and the performance is directly proportional to the number of revolutions, i.e. pressure and performance may vary independently.

These compressors are not very sensitive to shock and impact (which is important when used in land transport and mobile installations), have small dimensions and specific metal costs, there is no need for high-capacity gas collector, as Gas supply - uniform, do not need a heavy-duty foundation since no translationally moving parts, inflation gas not contaminated with lubricant.

Productivity - 0.01 m³ / s 11 m³ / s; Compression ratio - from 2.5 to 10 (typically not more than 8); The number of revolutions of the order of 10000 rev / min (top rotor). Drives - electric engines, diesel engines, steam turbines. Can be made cooled and non-cooled compressors. Cooling body - water or air (at a compression ratio more than 5), cooling the rotor - by passing therethrough an oil.

High reliability and ease of operation of screw compressors is also worthy of attention.

Reliability and durability of compressor machines is directly dependent on the quality of their design, manufacturing and installation.

When designing a new type of compressor are taken into account the latest achievements of science and technology, results of experimental research, operating experience and refinement.

The task of designing and manufacture of the organization is to create conditions for high quality production of compressors.

The main technical requirements for compressor parts that define the particular process technology, the following:

- ✓ The items should be made of materials provided by the drawings, which in its properties must conform to established standards (GOST, TU, etc.);
- ✓ Castings and forgings should not have defects that could, would not have the form, the geometric dimensions and internal structure prevent produce from these parts to perform their function;
- ✓ Casting and weldments and joints are designed for operation under pressure and containing water or oil, and should be sealed to withstand established for them hydraulic and other tests;
- ✓ Do not expose the surface treatment of parts, which are outside of the machine should be cleaned to such an extent that they provide the possibility of high-quality decorative finishing machines;
- ✓ Details shall be manufactured in accordance with the size-mi, tolerances and surface quality requirements indicated in the drawings;
- ✓ When processing, assembly, storage and transportation of parts must be taken against damage, corrosion, nadirov, nicks and other damage, reducing the quality of parts;
- ✓ Operations are inaccessible or difficult to control the quality (. Welding, brazing, bonding, etc.) must be entrusted to the skilled worker;
- ✓ Assembly and fitting works must be carried out accurately and carefully, especially in the alignment.

The main technical requirements for compressors:

- When assembling the compressor must be made installed labeling parts and assembly units providing easy assembly and packaging;
- The rotating parts of compressors shall be statically and dynamically balanced;

- Compressors must be tested on the bench for the purpose of you-the phenomenon of quality alignment and assembly, checking for compliance with performance;
- After the test, the compressors must be preserved and packaged.

Technological characteristics of the compressor production

General-purpose compressors used to provide compressed air of various pneumatic tools, devices and equipment, and are commercially available serially. Special and refrigeration compressors are manufactured batch and mass. Heavy powerful compressors are manufactured individually.

The number of types of parts for the compressor in complete delivery volume reaches 1000-1500.

Structure of the materials used.

Iron (blank) is 45-65% of the total weight of all the materials. Allowances for processing iron castings 10 - 50 mm. 0.8-0.85 metal utilization factor. Production of a wooden model for the castings in earthwork form. Quality control of castings is carried out in foundries. Determination of mechanical properties is performed according to the method float control (Samples - witnesses).

Carbon steel grades of 2, 20, 25, 30, 40, 45, 40A, 45A is 32-50% of the total weight of the materials.

The method of obtaining blanks - casting, open die forging hammers and forging presses. Machining allowance 10-60 mm, the coefficient of metal utilization 0.45-0.55.

Alloy steel grades 40H, 45H, 40H, 43n, 20HM, 12HN3A, 30KhGSA, 35HNM up to 5% of the total weight of the materials. Control of forging blanks - size and chemical composition (rapid method spectroanalysis) is produced in the workshops. Forgings mechanical properties test after rough machining and heat treatment. Machining allowance 10-60 mm, the coefficient of metal utilization 0.45-0.55.

Nonferrous metals (copper, bronze, brass, babbitt, solder) applied with great limitation and make up to 5% of the total weight of the materials.

Other materials (rubber, paronit) up to 1% of the total weight of the materials.

AT Smith shops for the manufacture of many parts (especially the hull) is applied markings (10% of the total of machine operations).

▪ Main production equipment

Machining of parts produced mainly on the universal equipment.

Basic equipment:

- ❖ **Large-sized machines** (Turning and screw-cutting with centers of 150-750 mm and the distance between the centers of 750-10000 mm);
- ❖ **Turret lathes** for processing bar material with a diameter up to 5 mm;
- ❖ **One rack-turning machines** (Diameter chuck to 1200 mm);
- ❖ **Double column vertical lathes** (Diameter chuck to 5000 mm);
- ❖ **Vertical Drilling Machines** for hole diameters up to 50-75 mm;
- ❖ **Radial drilling machines** for machining holes of 5 to 75 mm at a radius of the trunk to 3000 mm;
- ❖ **Horizontal boring machines** boring spindle have a diameter of from 50 to 5000 mm;
- ❖ **Milling Machines** with a working surface table 1250 × 4250 mm;

- ❖ Flat grinding machines section with a diameter from 300 to 1000 mm;
- ❖ Planing machines provide handling parts width up to 2000 mm and a length of 8,000-10,000 mm).

equipment identification	Country of origin	The average price per unit of \$ US equipment
Turning and screw-cutting lathes	China	30 000,00
	Countries of Europe	36 000,00
	Russia and CIS countries	34 000,00
turret lathes	China	300 000,00
	Countries of Europe	335 000,00
	Russia and CIS countries	320 000,00
One rack-turning machines	China	167 000,00
	Countries of Europe	180 000,00
	Russia and CIS countries	130 000,00
Double column vertical lathes	China	300 000,00
	Countries of Europe	315 000,00
	Russia and CIS countries	315 000,00
Vertical Drilling Machines	China	5 100,00
	Countries of Europe	5 100,00
	Russia and CIS countries	4 000,00
Radial drilling machines	China	25 000,00
	Countries of Europe	20 000,00
	Russia and CIS countries	20 000,00
Horizontal boring machines	China	000.00 150
	Countries of Europe	200 000,00
	Russia and CIS countries	000.00 150
Milling Machines	China	391 000,00
	Countries of Europe	420 000,00
	Russia and CIS countries	400 000,00
Flat grinding machines	China	45 000,00
	Countries of Europe	60 000,00
	Russia and CIS countries	50 000,00
Planing machines	China	210 000,00
	Countries of Europe	212 000,00
	Russia and CIS countries	200 000,00

The required amount of equipment will be known when creating the detailed budget documentation and analysis of the planned production of a group of manufacturing engineers and specialists.

Universal hardware feature is not always satisfied with the production, therefore, resort to "small" modernization, and the adaptation of individual machines to perform unintended their design functions, while at the same time the possibility of normal use (eg, flat grinding machine can be adapted to handle the keyways grooves on the shafts).

AT recent years widely introduced special machines (for processing crankpins and cheeks internal crankshaft milling blades centrifugal discs solid milled compressors). The specific weight of these

machines will increase with programs normalized volume parts or individual elements and parts to the organization of group processing techniques.

Are used computer-controlled machines and transfer machines.

The complexity of the machining is 50-60%; fitting and assembly work 40-50% of the entire complexity of producing a compressor.

Process large compressor production cycle is 60-80 days, small - 30-40 days. When used individually manufacture special tools, cutting and measuring tools only for those items that cannot be handled by means of universal tools and instruments. With increased production up to 80-100 items per year appears the economic feasibility of production processing of most parts using special tooling.

Direction of compressor development

AT construction area is necessary to develop normal ranges (types and key operating parameters) compressors, to reduce the range of sizes, to improve the design of screw compressors, to improve the design of compressors to simplify and techno-logical constructs.

AT technology and organization of production - to reduce the cost of manufacturing compressors and improve their quality for which:

- In the procurement departments of larger loading implement mechanization cupola furnaces, and knockout Land preparation flasks molding machine parts and manufacturing rods. Making preparations - forgings translate into stamping. Mechanized cleaning processes and stumps cast and forged billets (hydro and pneumatic stump). Establish obtain blanks close in size to the drawing details of the size-lei. The use of casting in a metal mold, investment casting will reduce machining allowances and lower metal by-passages;
- In Smith shops introduce more advanced technology progressive (increasing coefficient equipping of technical processes, in particular to increase the number of complex devices, special adjustments); apply more widely universal - modular devices (USP) and universally - assembled overhead conductors (USNK); wider implement multihead machines, specialized and custom; greater use of standard technological processes on the basis of a constructive
- Technological classification of parts and assembly units. It should also specialize compressor plants, and production at each plant a limited number of standard sizes of compressors a constructive series. A number of standardized units and normalized assembly parts can deliver specialized plants (e.g., piston rings, valves, automatic).

7.4. Manufacturers and suppliers of equipment

Ltd. "Rubicon"



Metal-cutting machine tools,
equipment

GWEIKE Laser



laser equipment

Ltd. "UZSTANEX"



Metal cutting machines, press-
forging equipment

Yamazaki Mazak
Corporation



Machining centers, laser cutting
machines, CNC turning centers,
and others.

Sandvik Coromant



metal cutting tools

A country: the Russian Federation

City: Izhevsk

Area: Quarterly, 82

A country: China

Provinces: Shandong

City: Jinan

Area: "Gao Xin"
building "Yin He" C-504

A country: Uzbekistan

City: Tashkent

Area: Yashnabadsky
Str. Aviasozlar, d. 9, office 1.

A country: Japan

1-131 Takeda, Oguchi-cho, Niwa-gun, Aichi-Prefecture.

A country: Sweden

City: Sandviken

Representation dealers

www.stanki-katalog.ru

Phone:

73412664505

Website:

credo@udm.ru

Phone:

8 653 188 020 976

Website:

sale@wklaser.com

Phone:

998 (71) 296 13 66

998 (90) 990 13 65

998 (90) 995 13 65

email:

info@uzstanex.uz

country code: +998

Phone:

(71) 2336772

(90) 9970111

Website:

www.mazak.com

Website:

www.sandvik.coromant.com

**Anyang Xinsheng Machine
Tool Co., Ltd. Yamazaki
Mazak Corporation**



A country: China

Phone:

863 722 118 985

Email:

West Xiang Road, New High-Tech District, Anyang City,

Mtx1015@vip.126.com

**Machining centers, laser cutting
machines, CNC turning centers,
and others.**

7.5. Construction

The normal functioning of plants is determined by the creation of rational management of the shop, ensuring the work of the process equipment, systems and services, and comfortable working conditions for staff.

The normal functioning of plants is determined by the creation of rational management of the shop, ensuring the work of the process equipment, systems and services, and comfortable working conditions for the staff formulate the basic requirements for the guild economy

Building basic industrial purposes intended to cover the equipment to perform the basic technological and auxiliary processes and staff in most cases, the building is a supporting structure for mounting intrashop Conveyor mechanisms and energy communications

Volume planning solutions building workshops are subject to the scheme of technological process (taking into account the possible expansion and perspectives are agreed), which will provide an assortment quality and output at the same time takes into account the conditions of the organization of construction and possible unification of constructions Rational exchange planning solutions building workshops are characterized by compact design with maximum use of production space and lockable rooms . optimal from the point of view of construction workers and the placement on the general plan configuration management, unification of constructive elements These solutions provide the same parallel arrangement of spans, the same type of grid columns and the same height Retreats are suitable in the case of production requirements relating to the organization of rational freight traffic,

As a rule, placed in shops multidisciplinary buildings with wide spans columns on the axes 12, 18, 24, 30, 36 and 42m (sometimes 15, 21, 27, 33 and 39 m). Selecting spans the width of the production depends on the type and configuration of the installed equipment. In buildings, manufacturing plants may provide support spans of the same or smaller width, in particular -. A pitch multiple of 3 m They arranged ventilation and electrical heating furnaces smoke extraction equipment, maintenance services, office, sometimes domestic premises. In the absence of sufficient production areas or if there is a high ground water level, or individual spans all building management operate with so-called technical floor, wherein disposed communication electrical facilities, ventilation systems,

Column spacing in the building of workshops depending on the requirements of the process varies from 6 to 36 m usually at the rows of buildings column spacing of 12 m, which is associated with a more convenient fastening enclosing wall structures of the building, and in some cases -. 6, 18 and 24 m; rows of columns on the inner step is from 12 to 36 m.

For production plants most often construct buildings with columns resting on the electric bridge cranes, load capacity is determined by the weight of the transported goods and a replacement of the equipment used during repairs. The use Ros buildings small plants that produce, for example, thin-walled pipes with small diameters. In such shops are widely used outdoor mechanized and manual transport. Promising the construction of separate spans Ros, mainly non-technological purpose, with the service installed in their outdoor machinery equipment such as mobile cranes

The height of the plants was determined taking into account the building with a secure service set hoisting means of technological equipment, transportation of metal equipment, facilities, metal stacks in warehouses intermediate and finished goods sides of the rolling stock. The total height of the building determined by the height setting intrashop electric bridge cranes, cranes clearance (height) and the height of the roof structure.

Frameworks shops buildings made of metal, concrete and mixed structures. building elements (columns, beams, trusses, floors) must withstand a load of technology and vehicles. Depth of the foundations and pillars of the building configuration depends on the design calculations, taking into account the load on the building and the characteristics of the soil, and on the depth of the underground facilities, located near the columns as in the shop, and beyond.

The floors in shops are made of materials well resisting mechanical stress, and heat impact and corrosive media. Flooring should be easily maintainable, quickly replaceable and easy to clean. Load floors may range from 30 and 250 kN / m². Usually the floors in the main spans are made of concrete slabs with a frame Plot iron or steel plates. Floors can be Asphalt concrete (in areas not exposed to temperature extremes), adobe, brick, stoneware paving (the areas of heating furnace, a metal warehouses). The bus electrode premises basement oil, smoker's hydraulics etc. arrange flooring tiles, flooring and plastic coated.

All buildings design workshop using as the main production of artificial lighting, in addition to natural through the glazed window openings in the walls, as well as add-ons to the lamp on the roof.

8. Organization of production and overhead costs

8.1. The organizational structure of the enterprise

Management of all business activities will be carried out in areas Director:

- Economics and finance;
- Management of the current industrial, economic and financial activities of the Company;
- Supply, marketing and sale of products;
- Social development;
- Ensuring the safety of property and security work.

8.2. Overhead costs (works general and administrative)

Overhead at full capacity consists of the following major items of expenditure:

- Wages of workers;
- Taxes and other charges that are not directly included in the cost;

- The cost of routine maintenance and repair of equipment;
- Labor costs, etc.

9. Workforce

9.1. The need for a labor force

The project will be implemented by means of attracting qualified personnel - both desktop and engineering.

State employees will be 293 people.

The number of manufacturing personnel determined taking into account the mode of operation of the equipment, the level of mechanization, automation and others.

State employees represented in the table.

	Workplaces	Average monthly Doll. USA	The total monthly Doll. USA	TOTAL ANNUAL STAFF PHOT
PRODUCTION				
Administrative maintenance department	5.0	158	789	9474
warehouse workers	10.0	179	1789	21474
the driver of the electric vehicle	4.0	200	800	9600
Technical Control Department	10.0	189	1895	22737
assembly line workers	200.0	168	33684	404211
Engineering group	5.0	184	921	11053
laboratory workers	10.0	184	1842	22105
Shop for metal working	9.0	168	1516	18189
paint shop	8.0	168	1347	16168
Logistics	7.0	189	1326	15916
Total:	268		45911	550926
Total production staff	268		45911	
social insurance payment (12% of the payroll, but not less than 65% * 1 minimum wage)		12%	5509	
Total with CAP:			51420	
ADMINISTRATIVE STAFF				
Office and administration	twenty	368	7368	88421
the department	5	295	1474	17684
Total:	25		8842	106105
Total administrative staff	25		8842	
social insurance payment (12% of the payroll, but not less than 65% * 1 minimum wage)		12%	1061	
Total with CAP:			9903	
TOTAL	293		61323	

9.2. to the staff requirements, the need for and the organization of their education

To work on the enterprise will be attracted qualified staff.

To comply with the working conditions at the workplace created by the requirements of safety and sanitation is necessary to make the certification.

work and rest is set in accordance with the law, collective agreement or employment contract.

Workers will use special clothing, shoes and other necessary facilities, Washing and neutralizing agents in accordance with the established norms.

Production personnel will have specific technical knowledge. An indispensable condition for the existence of the qualification will be in employment. If necessary, training will be conducted at the enterprise.

10. Driving the project

10.1. Project implementation stage

Schedule cyclic organization of industrial activity for 3 years	With the division by year												
	1 YEAR				2 YEAR				3 YEAR				
Marketing research	■												
Preparation of all package of documents required for production	■												
Development of Business Plan	■												
Construction works		■	■	■	■	■	■						
Pre-certification		■	■										
Organization of the production site				■	■	■	■						
Purchase of raw materials and equipment		■	■										
Delivery of raw materials and equipment		■	■	■	■	■							
Connecting to external networks and communications				■	■	■							
Laying and connection to utility networks				■	■	■							
Experimental-industrial run						■							
Recruitment			■	■	■	■							
Training				■	■	■	■						
Ensuring the production process						■	■						
Market research and consideration of industrial distribution problems	■	■	■	■	■	■	■	■	■	■	■	■	■
Start of production of household compressors										■			

11. Financial evaluation

11.1. A set of capital project expenditures

Financing of the project is planned to carry out at the expense of investment funds in foreign currency.

The total project cost is 27 838 556 \$ US.

NAME	Formed EQUITY	INVESTMENT formed SEREDSTVA	TOTAL
	IN FOREIGN CURRENCY Doll. USA	IN FOREIGN CURRENCY Doll. USA	IN FOREIGN CURRENCY Doll. USA
FIXED ASSETS			
purchase			
Buildings	-	2000000	2000000
Power Machines and Equipment	-	80000	80000
Working machinery and equipment	-	17000000	17000000
Furniture	-	44000	44000
computers	-	19250	19250
transportation	-	850000	850000
Other fixed assets	-	150000	150000
Registration, the formation of the authorized capital, paperwork	-	10030	10030
project work	-	7716	7716
Acquisition of land	-	104211	104211
Preparation of utilities (power, gas, water and sewage), landscaping and outdoor lighting.	-	14062	14062
Installation works, creation of utility systems	-	1041609	1041609
Installation technology training work on it	-	617249	617249
Obtaining necessary permits	-	96445	96445
The organization of the advertising company	-	17368	17368
Total:	-	22051940	22051940
INITIAL WORKING CAPITAL			
Initial working capital (raw materials and material costs for the organization of production at 100% load, 1 month)	-	5405964	5405964
Total:	-	5405964	5405964
FINANCIAL COSTS			
The costs of customs procedures (on the basis of the loan amount)	-	89 650,00	89650
Transportation costs (calculated on the loan amount)	-	268 950,00	268950
Pre-project costs	-	22 051.94	22052
Total:	-	380652	380652
TOTAL COST OF THE PROJECT	-	27838556	27838556

Major capital costs for the project are:

- ✓ Buildings;
- ✓ Power Machines and Equipment;
- ✓ Working machinery and equipment;
- ✓ Furniture;
- ✓ Computers;
- ✓ Craft;

- ✓ Other fixed assets;
- ✓ Registration, the formation of the authorized capital, the paperwork;
- ✓ Project work;
- ✓ Acquisition of land;
- ✓ Preparation of utilities (power, gas, water and sewage), landscaping and outdoor lighting;
- ✓ Installation work, the creation of public utilities;
- ✓ Installation technology training work on it;
- ✓ Obtaining necessary permits;
- ✓ The organization of the advertising company.

For the organization of the plant for the production of household compressors necessary administrative and domestic buildings, as well as the construction of fences and barriers, warehouses, sheds for storage of materials needed for the production and the necessary equipment, as well as protection from the rain. The total value of the buildings, constructions and structures is according to preliminary estimates 2 million \$ US.

The main equipment for the production of the bit compressors, maximum production capacity of 1 720 810,00 units. finished products per year. The cost of this set of equipment is 17 000 000. \$ US.

Power Machines and equipment include transformer substation and a generator for uninterrupted power supply. Planned to purchase six transformer substations and two each to reduce the risk by disabling or failure of one of them. The generator will provide an alternative source of electricity in the absence of supply from the main thoroughfares. The cost of transformers and substations is 80 000 \$ US.

Furniture and computer equipment necessary for setting up the administrative facilities for bookkeeping and other administrative staff. A set of furniture and computer equipment is 63 250 \$ US.

For the transportation of finished products, as well as the delivery of the necessary raw materials for the production of needed vehicles (cars, trucks, loaders). The total cost of road transport is 850 000 \$ US.

The financial costs of the project will include the initial costs for the organization of activities such as: Pre-project development costs of market research and business plan, registration of vehicles, the cost of customs duties, as well as certification of the planned production of goods.

Not unimportant is to provide the plant with raw materials and materials necessary for the smooth production. The project provides an initial working capital, including the commodity and material costs for the organization of production at 100% load, at 1 month. The costs of the initial working capital is 5 405 964 \$ US.

Based on data from the total cost of the project mentioned above is 27 838 556 \$ US.

11.2. Total costs for products sold

To determine the future viability of the project are important realistic forecasts of production costs. Production costs should be calculated as the total annual costs of products sold, as well as the specific costs per unit of output.

For the analysis and study of the planned production program and break-even analysis is necessary to determine the main cost items directly related to each individual type of product.

When assessing the cost of production at the plant, a project should take into account industry guidelines for planning, accounting and determination of the cost of products, works and services.

Material costs include raw materials, basic and auxiliary production materials and spare parts. Costs of production personnel include fixed and variable costs depending on the types of work and cost elements. The costs of wages and social security of employees directly involved in the production (variable costs) are recognized as material costs, pay and social security personnel associated with the production as a whole (fixed costs) relate to overhead cost.

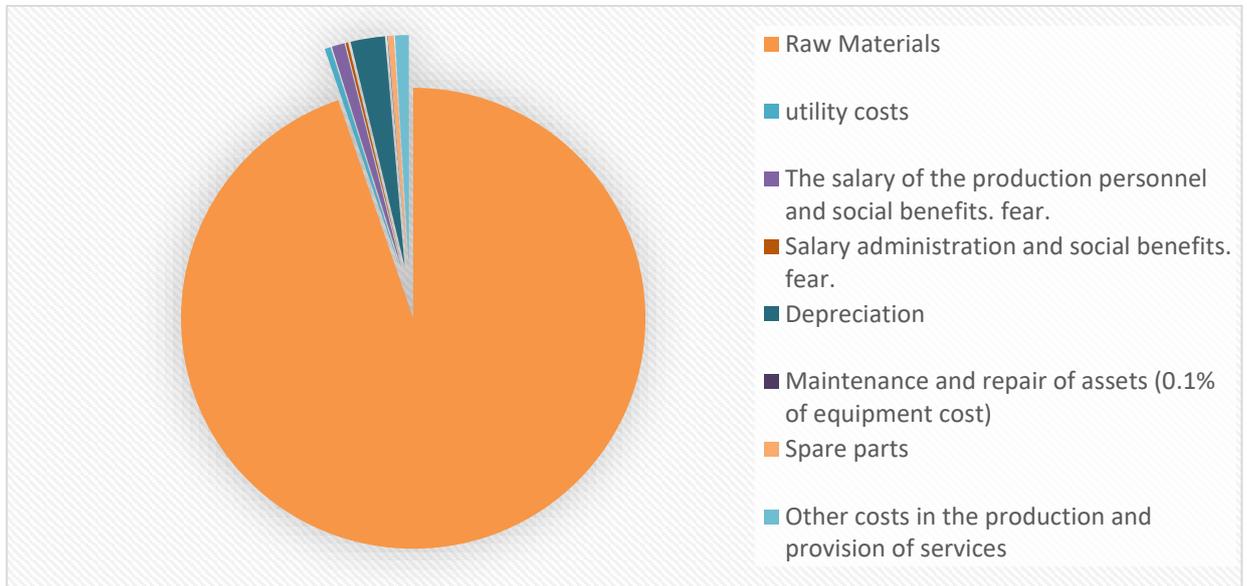
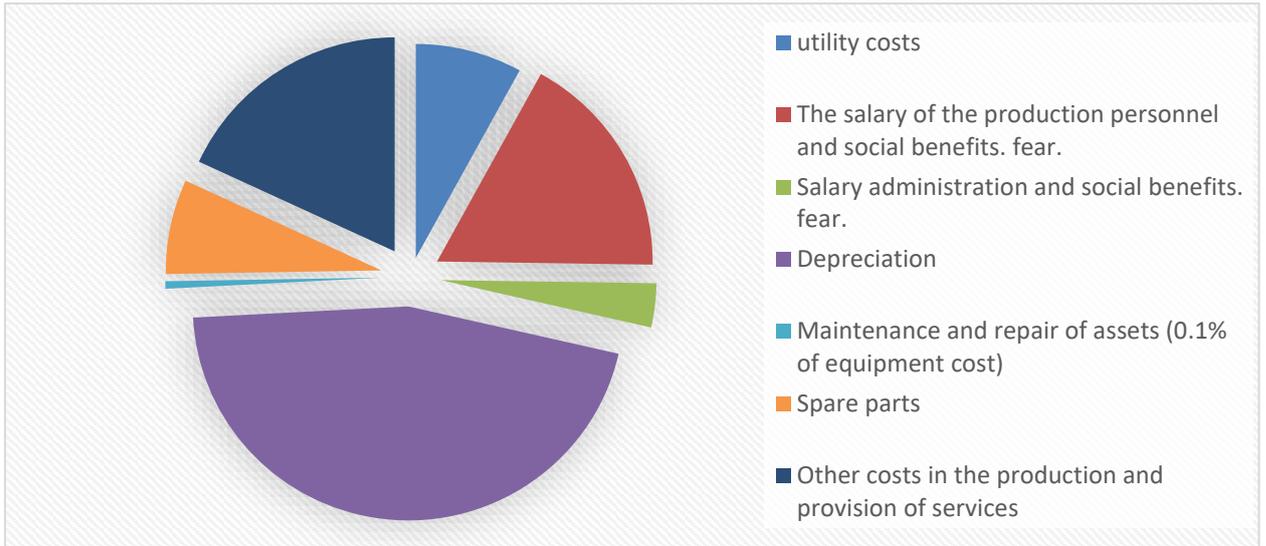
Overhead costs other than fixed costs for staff costs take into account the costs of raw materials, operating costs, technology costs, as well as costs related to the site and on the environmental measures and other costs (indirect costs).

Total economic costs accounted for in accordance with the procedure and checklist adopted in the industry and tax authorities.

The table below shows the cost of the production and provision of services:

Name	Total costs per year Doll. USA	The share of fixed costs in total costs (%)	The proportion of variable costs in total costs (%)	fixed costs Doll. USA	variable costs Doll. USA
Raw Materials	64871571	0%	100%	0	64871571
including:					
<i>Compressor for domestic refrigerators</i>	41200416	0%	100%	0	41200416
<i>Compressor for commercial refrigerators</i>	7309014	0%	100%	0	7309014
<i>Compressor for Air Conditioners</i>	16362141	0%	100%	0	16362141
The salary of the production personnel and social benefits. fear.	617037	0%	100%	0	617037
Salary administration and social benefits. fear.	118838	100%	0%	118838	0
The cost of creating working conditions (5%)	36794	100%	0%	36794	0
utility costs	286532	0%	100%	0	286532
rent of space	0	100%	0%	0	0
Depreciation	1633488	100%	0%	1633488	0
Maintenance and repair of assets (0.1% of equipment cost)	20143	0%	100%	0	20143
Spare parts	256200	0%	100%	0	256200
Other costs in the production and provision of services	648716	0%	100%	0	648716
Total:	68489319			1789119	66700200
TOTAL	68489319			1789119	66700200

Based on this graph and table shows that, excluding raw material costs and the main item of expenditure (40%) is the depreciation of production equipment, buildings and structures. The high amount of depreciation due to the high cost of production equipment and machinery acquired.



When considering the total costs of the craft is the main flow of raw materials and materials that is 95% of the total expenditure or 64 871 571 \$ US.

11.3. Estimation of economic efficiency, taking into account the payback

Net present value - the sum of the discounted cash flow value of the project, cast to the present day.

The indicator represents the difference between all cash inflows and outflows, given the current point in time (the time of the investment project evaluation).

It shows the amount of cash that the investor expects to receive from the project, after the cash inflows will pay for the initial investment costs and recurrent cash outflows associated with the project.

IRR (English internal rate of return, standard abbreviations -. IRR (GNI)) - is the interest rate at which the net present value (net present value - the NPV) is equal to 0. NPV is calculated based on cash flow, discounted to the present day.

Period	cash flow	The discount rate	NPV	GNI
0 year	(27838556)	20,0%		#NUMBER!
1 year	1401013	20,0%	(26671045)	
2 year	8698480	20,0%	(20630435)	-42%
3 year	10540165	20,0%	(14,530,802)	-11%
4 year	14701278	20,0%	(7,441,066)	8%
5 year	22914712	20,0%	1767843	22%
6 year	31805709	20,0%	12419511	31%
7 year	37740434	20,0%	22952174	37%

Calculation payback at a discount rate of 20% indicates a positive result for the fifth year, and the NPV is 1 767 843 \$ US and 22% of GNI.

Profitability index(English PI, DPI, Present value index, Profitability Index, benefit cost ratio.) - investment performance, which is the ratio of income to the discounted amount of investment capital. Other synonyms yield index, which carry the same economic sense: the index of profitability and profitability index.

Period	initial costs	cash income	cash flow	Cash flow
0 year	\$ 27,838,556	\$ -	\$ -	\$ -
1 year	\$ -	\$ 23,034,613	\$ 21,633,601	\$ 1,401,013
2 year	\$ -	\$ 33,988,230	\$ 25,289,750	\$ 8,698,480
3 year	\$ -	\$ 40,939,292	\$ 30,399,127	\$ 10,540,165
4 year	\$ -	\$ 53,934,808	\$ 39,233,530	\$ 14,701,278
5 year	\$ -	\$ 79,582,340	\$ 56,667,628	\$ 22,914,712
6 year	\$ -	\$ 107,840,263	\$ 76,034,554	\$ 31,805,709
7 year	\$ -	\$ 126,286,639	\$ 88,546,205	\$ 37,740,434
			NPV (NPV)	\$ 35,340,935
			ID (PI)	127%

The payback period of the investment project (Payback Period, PP)- it is the ratio of the initial investment in the project to the average profitability of the project. If several investors, each calculates the payback period and its investments in the investment project, and the ratio of its investment in the project to its average annual income in this project.

Period	initial costs	cash income	Cash flow	Cash flow from an accrual basis
0 year	\$ 27,838,556	\$ -	\$ -	\$ -
1 year	\$ -	\$ -	\$ 1,401,013	\$ 1,401,013
2 year	\$ -	\$ -	\$ 8,698,480	\$ 10,099,492
3 year	\$ -	\$ -	\$ 10,540,165	\$ 20,639,657
4 year	\$ -	\$ -	\$ 14,701,278	\$ 35,340,935
5 year	\$ -	\$ -	\$ 22,914,712	\$ 58,255,647
6 year	\$ -	\$ -	\$ 31,805,709	\$ 90,061,357
7 year	\$ -	\$ -	\$ 37,740,434	\$ 127,801,790
			(PP / payback time)	3rd YEAR

Discounted payback period - payback period in the present value.

Discounted payback period				(DPP / payback period based discount)
Period	initial costs	Cash flow	Discounted Cash Flow	Discounted cash flows on an accrual basis
0 year	\$ -	\$ -	\$ -	\$ -
1 year	\$ -	\$ 1,401,013	\$ 1,167,511	\$ 1,167,511
2 year	\$ -	\$ 8,698,480	\$ 7,248,733	\$ 8,416,244
3 year	\$ -	\$ 10,540,165	\$ 8,783,471	\$ 17,199,714
4 year	\$ -	\$ 14,701,278	\$ 12,251,065	\$ 29,450,779
5 year	\$ -	\$ 22,914,712	\$ 19,095,594	\$ 48,546,373
6 year	\$ -	\$ 31,805,709	\$ 26,504,758	\$ 75,051,131
7 year	\$ -	\$ 37,740,434	\$ 31,450,361	\$ 106,501,492
			(DPP / payback period based discount)	4th YEAR

ROI (return on investment) -This ROI. It allows you to calculate the efficiency of investment companies. The article describe in more detail what the ROI, as it is considered, we present the formulas and examples of calculation.

The calculation of the profitability of the investment project (ARR, ROI / profitability factor)				
Period	initial costs	cash income	Cash flow	The average net profit in 7 years
0 year	\$ 27,838,556	\$ -	\$ -	\$ -
1 year	\$ -	\$ -	\$ 1,401,013	\$ -
2 year	\$ -	\$ -	\$ 8,698,480	\$ -
3 year	\$ -	\$ -	\$ 10,540,165	\$ -
4 year	\$ -	\$ -	\$ 14,701,278	\$ -
5 year	\$ -	\$ -	\$ 22,914,712	\$ -
6 year	\$ -	\$ -	\$ 31,805,709	\$ -
7 year	\$ -	\$ -	\$ 37,740,434	\$ -
in total			\$ 127,801,790	\$ 8,835,234
			(DPP / payback period based discount)	32%

Based on the payback figures, we can judge the profitability and viability of the project.

Short payback period and high coefficients are caused not by high costs for the organization of the project, as well as the low cost of the required production of raw materials, a small amount of full-time employees and moderate demand for this type of products.

11.4. Assessing the impact of the financial results of the country's economy

Act of 12/24/2018, the № LRU-508 in tax code amended and changed. Resolution of the President of 12.26.2018, № PP-4086 approved tax rates for 2019, as well as the procedure for taxation of certain categories of taxpayers. In this case, the main change is the payment of taxes, depending on the volume of sales.

In 2019 VAT payers will become an enterprise with an annual turnover of more than 1 billion soums.

The income tax rate for the majority of legal entities decreased in 2019:

- ✓ for other legal persons (with some exceptions) - from 14 to 12%.

Based on the information above, we can safely say that according to preliminary calculations tax payments throughout the life of the project will amount to more than 41 000 000 \$ US.

Totals for PROJECT COSTS In monetary terms,								
\$ US	By year							
	1 YEAR	2 YEAR	3 YEAR	4 YEAR	5 YEAR	6 YEAR	7 YEAR	Total:
the payment of taxes to the state budget	1783867	2766139	3431179	4659267	7080498	9818976	11713605	41253531

11.5. Amortization of non-current assets

Amortization of non-current assets

Changes made to the January 1, 2019 on income tax from legal entities - revised marginal rate of depreciation of fixed assets subject to amortization for tax purposes specified in Article 144 of the Tax Code and some groups of fixed assets reduced depreciation rates, depending on the period of use. Namely, the annual depreciation rate:

- on buildings and buildings reduced from 5% to 3%;
- Structures for left unchanged at 5%;
- transfer devices for lowered from 8% to 5%;
- for power machines and equipment have been reduced from 8% to 5%;
- on working machines and equipment by activity (except backhaul) reduced from 15% to 8%;
- by cell transport (rail, sea and air) are reduced from 8% to 4%.

Amortization and depreciation for tax purposes for each subgroup is calculated by applying the depreciation rate, but not higher than the limit established by the Tax Code of the Republic of Uzbekistan.

Thus, the project will take into account the depreciation of existing and acquired property.

Object for amortization	residual value	Rate (per year)%
Acquired fixed assets		
Buildings	2000000	3%
Power Machines and Equipment	80000	5%
Working machinery and equipment	17000000	8%
Furniture	44000	15%
Computers	19250	15%
Transportation	850000	20%
Other fixed assets	150000	20%
Total:	20143250	

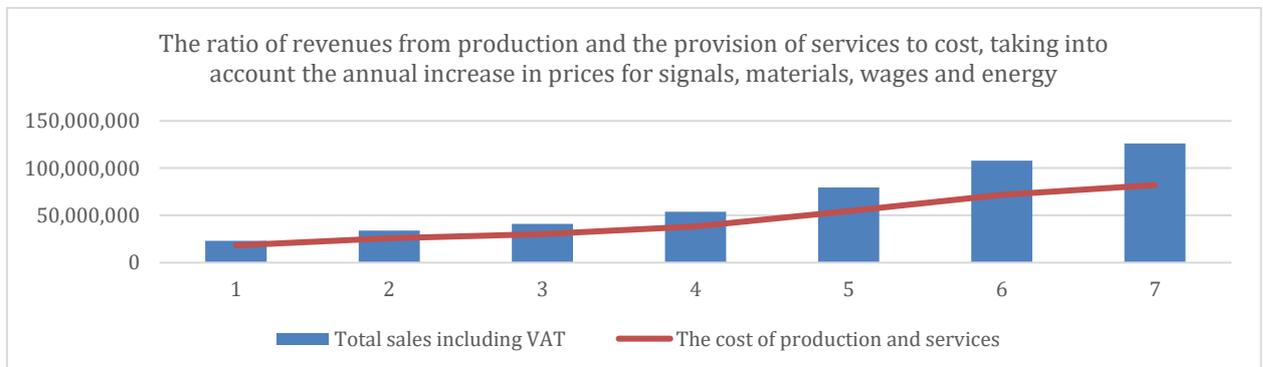
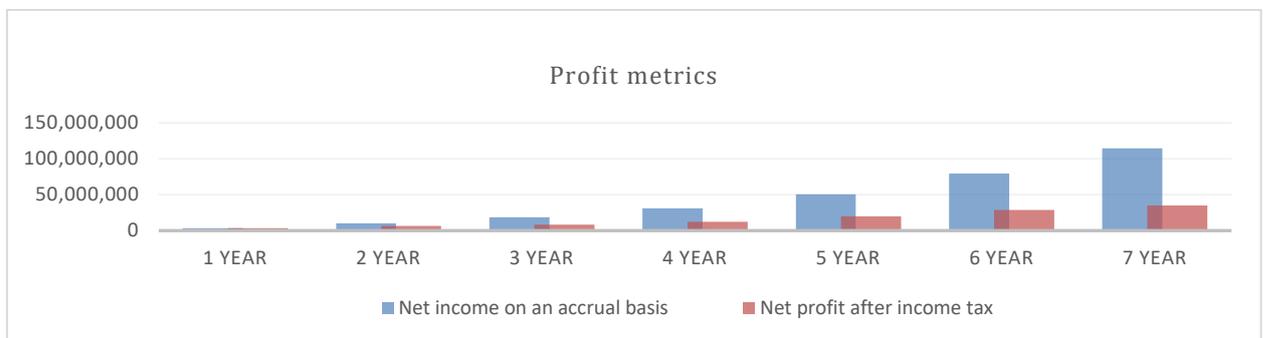
A detailed calculation of depreciation costs of existing and acquired fixed assets is shown in the Appendix.

12. Calculation of profits and losses

12.1. Calculation of profits and losses of the enterprise

In the calculation of gains and losses and other deductions into account the divisions of the application, taking into account the existing taxes.

Estimated earnings and cash flow from the project for a period of 7 years, calculated in accordance with the plan of production and sales (see. Appendix).



Accumulated profits for the whole project for 7 years for the production of household compressors will be 114 720 284 \$ US.

TOTAL INCOME INDICATORS PROJECT								
\$ US	By year							Total:
	1 YEAR	2 YEAR	3 YEAR	4 YEAR	5 YEAR	6 YEAR	7 YEAR	
Proceeds from sale of finished products and services	23034613	33988230	40939292	53934808	79582340	107840263	126286639	465606186
The cost price of the production and provision of services	19445875	27561403	32402427	41572584	59697294	79148309	91058010	350885902
Net profit	3588738	6426827	8536865	12362224	19885047	28691955	35228629	114720284
Accumulated profit	3588738	10015565	18552429	30914653	50799700	79491655	114720284	

It is estimated that the discounted payback of the project is 5 years, with accumulated earnings per 5 years of 50 799 700 \$ US.

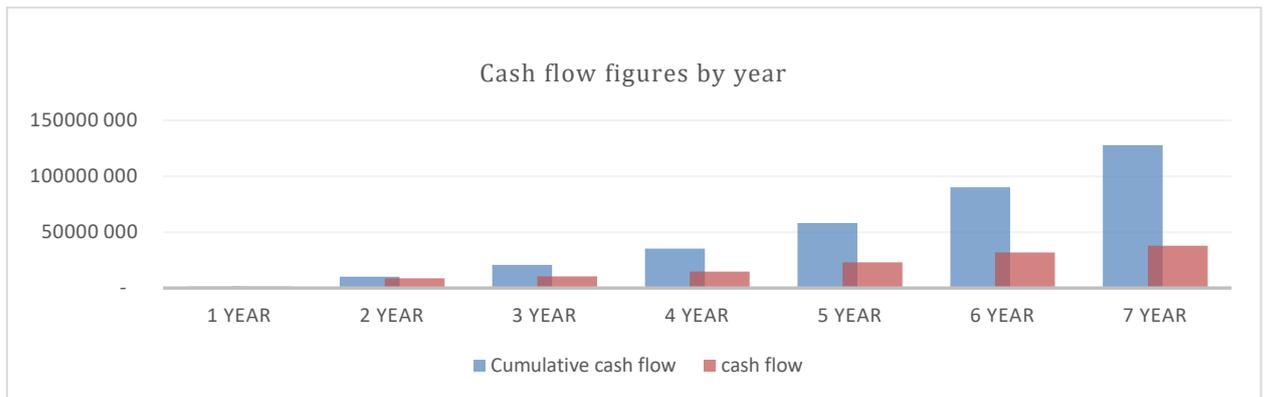
13. Cashflow Calculations

13.1. Statement of cash flows

Particular attention is paid to the flow of production. The financial plan for the current activity of the company, excluding the project is as follows.

After creating a plant for the production of household compressors, planned annual increase in the volume of production at the current activity;

The financial viability of the project confirmed the positive balance of available funds throughout the consideration of the horizon.



The cumulative cash flow for the whole project for 7 years for the production of household compressors will be 127 801 790 \$ US throughout the planning period, it will be positive.

FINAL PERFORMANCE CASH FLOW								
\$ US	By year							Total:
	1 YEAR	2 YEAR	3 YEAR	4 YEAR	5 YEAR	6 YEAR	7 YEAR	
Proceeds from sale of finished products and services	23034613	33988230	40939292	53934808	79582340	107840263	126286639	465606186
The cost price of the production and provision of services	21633601	25289750	30399127	39233530	56667628	76034554	88546205	337804395
cash flow	1401013	8698480	10540165	14701278	22914712	31805709	37740434	127801790
Cumulative cash flow	1401013	10099492	20639657	35340935	58255647	90061357	127801790	

With regard to the current annual flow, it is also positive for the entire period of activity, even at very conservative calculations.

Cash flow from the project taking into account all deductions and taxes are shown in the financial and economic calculations.

14. Risk factors

Quality household compressors have always paid and will be paid a lot of attention, because the use of these products is directly related to security issues.

Manufacturers seeking to be competitive and have a solid reputation in the market, should carefully monitor the quality of its products and the risks that may affect the achievement of this goal.

controlled:

- commercial
- profitability risk
- production risks
- financial risks
- raw material supply disruption risk

uncontrolled:

- regulatory risks
- political risks
- environmental risks

FROM to reduce the release of non-conforming products were analyzed potential operational risks in the enterprise, is currently the most critical.

Types of occupational risks:

- risks of major industrial activity: technological risks, the risks of damage, accident risks.
- risks ancillary production activities: Risks power outages, longer equipment repair risks, the risks of emergency assistance systems.
- risks providing productive activities: the risk of failures in the work of providing services; failure risk information systems; risks in the sphere of circulation.

To assess risks applied FMEA method (analysis of failure modes and effects), the most commonly used for identification of component failures, systems, or processes that can lead to non-compliance with their assigned function. In this case, the method used to determine the risk priority value RPN ($RPN = S \cdot O \cdot D$), and for further calculating the total risk for each of the production steps, and identifying the most risky step.

FMEA- analysis is a technology that the possibility of defects and their impact on consumers. FMEA-analysis is carried out for the developed products and processes in order to reduce consumer risk from potential defects.

Block diagram of the qualitative assessment of the investment risks of the project:

For all the above types of potential defects determine their effects based on experience and knowledge of the members of the competition committee. For each defect effects expert determine the significance score S using a table of points of significance. Relevance score ranges from 1 (the least significant risk) to 10 (for the most significant risks).

For each identified risk score determines the impact I on the progress of the process using a special table. Ball impact varies from 1 (for the risks did not affect the project) to 10 (for the risks that fail the business plan).

For each dedicated risk score is determined by the probability of G in the implementation by means of a special table. Credit occurrence varies from 1 (for risk, occurrence of which is unlikely) to 10 (for the risk, the likelihood of occurrence of which no doubt commission). This scale is based on the subjective criteria which are based on various assumptions.

After obtaining expert S, O estimates and D define the priority of draft risk (HRR)

$$RPN = S \cdot O \cdot D$$

For risks that have multiple effects that can influence the final result of the implementation is determined by the number of RPN. Each RPN HRR may have a value from 1 to 1000.

Folding, derived from the analysis of the project HRR, we get the priority number of the project's risk (RPN). It must be determined in advance and set limit value of risk priority (RPN). If RPN PChRpr obtained by calculation exceeds RPN PChRgr the project data is not allowed for further assessment of the competition.

Stage	Types of risk	S (indicator of the significance or severity failure)	O (index of probability or frequency of occurrence of a fault causes)	D (index of probability of a defect or error)	An RPN (risk priority number)	Σ
Receipt of raw materials to the factory	technological risks	8	5	3	120	557
	risks of breakdowns	6	5	four	120	
	emergency risks	one	5	2	10	
	risks of power outages	3	5	8	120	
	prolongation of maintenance risks	2	5	2	20	
	emergency risks ancillary systems	one	four	3	12	
	risks of failure in providing services	four	6	5	120	
	risks of disruptions in information systems	one	7	5	35	
The production process	technological risks	8	5	6	240	444
	risks of breakdowns	four	5	four	80	
	emergency risks	3	four	four	48	
	risks of power outages	four	5	2	40	
	risks of disruptions in information systems	3	four	3	36	
Storage and transport	technological risks	8	5	6	240	601
	risks of breakdowns	7	6	5	210	
	emergency risks	3	5	5	75	
	risks of failure in providing services	four	four	four	64	
	risks of disruptions in information systems	2	2	3	12	

Based on the obtained calculation totals RPN each step does not exceed 1,000.

In the process of implementing this project should focus on technical and technological risks, the occurrence of which in the worst scenarios can cause the creation of critical situations.

*The potential risk to the organization of this type of enterprise is the implementation of the project by forming a greater cost of the project, at the expense of credit funds.

Potential risks of the enterprise presented production risks, commercial risks, financial risks and risks related to force majeure.

Legal risks - these are the risks associated with the imperfection of the legislation, fuzzy paperwork, the uncertainty of court action in case of disagreement founders.

Despite the fact that Uzbekistan has established and improved legal and regulatory framework, to ensure that the activities of business entities, created by both local and foreign investors can not even deny the existence of the factors affecting the legal risks. These include: the availability of the bureaucracy, the ongoing process of improving the legislation.

Risk reduction measures:

- Clear and unambiguous wording of the relevant articles in the documents;
- Attraction to process documents of experts with practical experience in this area;
- Allocation of the necessary funds to pay for high-end lawyers and interpreters.

Technical risks- risks related to the complexity of the work and the lack so far of the technical project. Possible underutilization of equipment and the delay in commissioning of engineering systems.

The company will attract highly qualified specialists for setting up equipment that reduces the technical risks to a minimum.

Risk reduction measures:

- Formation of the necessary requirements in the technical specification under development, the definition of a rigid material liability in the contract for execution of works;
- Accelerated study linking technical equipment and technical facilities;
- Conclusion on a "turnkey" contracts with sanctions for discrepancies and missed deadlines.

Production risks- risks related to the insufficiently high quality of products / services. A significant risk may be a lack of highly qualified personnel.

Risk reduction measures:

- Precise scheduling and management of the project;
- Training of qualified personnel.

Environmental risks - it risks associated with environmental pollution and emissions into the atmosphere and discharges into water.

Environmental risk assessment - identification and assessment of the probability of events that have adverse effects on the environment, public health, business activity and due to environmental pollution, violation of environmental requirements, emergency situations of natural and technogenic character.

Marketing risks - risks related to the output of the delay in the market, wrong choice of a marketing strategy, pricing errors, insufficient market research.

Competitor analysis shows that this market segment is poorly developed. In this regard, it should be thoroughly aware of their main advantages and focus on their main efforts and resources.

Measures to reduce risks:

For the company, which aims to win market share from competing firms, marketing objectives should be a priority.

The measures include:

- Creating a strong marketing service;

- Marketing strategy development;
- Marketing research: volumes, pricing, the buyer;
- Research on the segmentation of internal and external market.

Financial risks - related to the probability of loss of financial results (money), insolvency, consumer demand volatility, lower prices competitive disadvantage of working capital.

One of the financial risk factors is the need for timely investment, the presence of which is a prerequisite for the start of the project: how they linger, so delayed the start of the project.

Measures to reduce risks:

- The variety offered project financing schemes, both through its own funds and by borrowing;
- Development of investment - financial strategy, which aims to get into a profitable operation of the zone;
- A complex of measures to search for investment resources for business development.

Natural - natural risks - these are the risks associated with the manifestations of the elemental forces of nature: earthquake, flood, storm, fire, epidemics, drought, etc.

Measures to reduce risks:

- Compulsory insurance.

Evaluation of project opportunities

Before offering this project for consideration, initiator of the project was carried out in-depth analysis of the existing situation in the market of Uzbekistan, really taking into account all factors that may have an impact on all stages of the project.

Based on these financial results, as well as the overall analysis of the entire program for the production, which is a graph of the activities of the project, an analysis of the current situation in the domestic and foreign markets, markets, potential competition from other similar companies operating in this segment, possible operational risks, as well as other factors, we can conclude about the viability and effectiveness of the ideas and actions presented and will be implemented in a given the project.

15. Findings

Findings - The result of the project makes it possible to be optimistic to decide on its implementation in relation to its projected profitability, low risk of direct financial benefits for the organizers.

The analysis of business plans to the following conclusions:

- Management risk is minimized because the enterprise is coordinated by an experienced manager with extensive experience in production, greatly reduces the risk of possible occurrence of failures in the enterprise;
- Projected cash flows are sufficient to prompt the enterprise.

In general, this project will provide an opportunity to implement the idea of the project initiators, as well as participate in the process of profound economic transformations taking place in Uzbekistan at this stage.

Analysis of financial stability characterized by the company's solvency, which in turn reflects the availability of stocks and costs the sources of their formation. After spending the analysis of the below given calculation (application) of the cash flows of real money it can be seen that the resulting gross income completely covers all costs, taxes, and other expenses. After all payments is still sufficient amount of net profit, which will focus on working capital and for the further expansion of the company. This means that the proposed project is efficient, cost effective and sustainable.

PROJECT COST

ANNEX 1

NAME	Formed EQUITY IN FOREIGN CURRENCY \$ US	INVESTMENT FUNDS IN FOREIGN CURRENCY \$ US	TOTAL IN FOREIGN CURRENCY \$ US
FIXED ASSETS			
purchase			
Buildings	-	2 000 000	2 000 000
Power Machines and Equipment	-	80 000	80 000
Working machinery and equipment	-	17 000 000	17 000 000
Furniture	-	44 000	44 000
Computers	-	19 250	19 250
Transportation	-	850 000	850 000
Other fixed assets	-	150 000	150 000
Registration, fomirovanie share capital, paperwork	-	10 030	10 030
project work	-	7 716	7 716
Purchase of land	-	104 211	104 211
Preparation of engineering communications (power, gas, water and sewage), landscaping and outdoor lighting.	-	14 062	14 062
Installation works, creation of utility systems	-	1 041 609	1 041 609
Installation technology training work on it	-	617 249	617 249
Obtaining necessary permits	-	96 445	96 445
Organization of an advertising company	-	17 368	17 368
Total:	-	22 051 940	22 051 940
INITIAL WORKING CAPITAL			
Initial working capital (raw materials and material costs for the organization of production at 100% load, 1 month)	-	5 405 964	5 405 964
Total:	-	5 405 964	5 405 964
FINANCIAL COSTS			
The costs of customs procedures (on the basis of the loan amount)	-	89 650,00	89 650
Transportation costs (calculated on the loan amount)	-	268 950,00	268 950
Pre-project costs	-	22 051,94	22 052
Total:	-	380 652	380 652
TOTAL COST OF THE PROJECT	-	27 838 556	27 838 556

Depreciation expense

APPENDIX 2

Object for amortization	Residual value	Rate (per year)%	By year							Total:	
			1 YEAR	2 YEAR	3 YEAR	4 YEAR	5 YEAR	6 YEAR	7 YEAR		
Acquired fixed assets											
Buildings	2 000 000	3%	60 000,0	60 000,0	60 000,0	60 000,0	60 000,0	60 000,0	60 000,0	60 000,0	420 000,0
Power Machines and Equipment	80 000	5%	4 000,0	4 000,0	4 000,0	4 000,0	4 000,0	4 000,0	4 000,0	4 000,0	28 000,0
Working machinery and equipment	17 000 000	8%	1 360 000,0	1 360 000,0	1 360 000,0	1 360 000,0	1 360 000,0	1 360 000,0	1 360 000,0	1 360 000,0	9 520 000,0
Furniture	44 000	15%	6 600,0	6 600,0	6 600,0	6 600,0	6 600,0	6 600,0	6 600,0	6 600,0	46 200,0
computers	19 250	15%	2 887,5	2 887,5	2 887,5	2 887,5	2 887,5	2 887,5	2 887,5	2 887,5	20 212,5
transportation	850 000	20%	170 000,0	170 000,0	170 000,0	170 000,0	170 000,0	170 000,0	170 000,0	170 000,0	1 190 000,0
Other fixed assets	150 000	20%	30 000,0	30 000,0	30 000,0	30 000,0	30 000,0	30 000,0	30 000,0	30 000,0	210 000,0
Total:	20 143 250		1 633 487,5	11 434 412,5							
Acquired fixed assets											
financial costs	380 652	14%	54 378,8	54 378,8	54 378,8	54 378,8	54 378,8	54 378,8	54 378,8	54 378,8	380 651,9
TOTAL:	20 143 250		1 633 488	11 434 413							
Accumulated amortization			1 633 488	3 266 975	4 900 463	6 533 950	8 167 438	9 800 925	11 434 413		

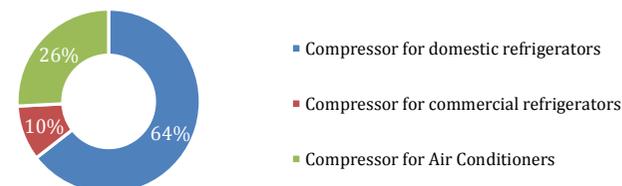
The volume of production at full capacity

ANNEX 3a

DATA ON PRODUCTION

Name of products	Measurement units	The proportion of the total volume in%
Compressor for domestic refrigerators	%	64,52%
Compressor for commercial refrigerators	%	9,68%
Compressor for Air Conditioners	%	25,81%
Total:		100,00%

Share in the total volume of production, in%



DATA types of manufactured products

The maximum volume of production

Name of products	Measurement units	The volume of production in the year	Production volume per month	The volume of production per day	Production volume per hour
Compressor for domestic refrigerators	PC.	1 110 200,00	92 516,67	3 558,33	222,40
Compressor for commercial refrigerators	PC.	166 530,00	13 877,50	533,75	33,36
Compressor for Air Conditioners	PC.	444 080,00	37 006,67	1 423,33	88,96
TOTAL:		1 720 810,00	143 400,83	5 515,42	344,71

Data on capacity development plan

Years the project	Scope	Measurement units	2021	2022	2023	2024
Percentage growth of the volume of production			100%	122%	130%	140%
Name of products			1 YEAR	2 YEAR	3 YEAR	4 YEAR
Total amount production of compressors for household refrigerators in a year	domestic	PC.	500 000,00	610 000,00	793 000,00	1 110 200,00
Total amount production of compressors for commercial refrigeration, in the year	domestic	PC.	75 000,00	91 500,00	118 950,00	166 530,00
Total amount production of compressors for air conditioners, a year	domestic	PC.	200 000,00	244 000,00	317 200,00	444 080,00

Data on the timetable

Number of shifts per day	change	2,00
Work shift	hour	8,00
The average number of working days in a month	day	26,00
The number of working months in a year	month	12,00

PRODUCTION PLAN

APPENDIX 4a

Name of products	Number of services at 100% powerful. in year		The level of unsold products at the end of the period
Compressor for domestic refrigerators	1 110 200	PC.	8,33%
Compressor for commercial refrigerators	166 530	PC.	8,33%
Compressor for Air Conditioners	444 080	PC.	8,33%

Name of products	By year							Total:
	1 YEAR	2 YEAR	3 YEAR	4 YEAR	5 YEAR	6 YEAR	7 YEAR	
DEVELOPMENT OF RANGE (%)	25%	35%	40%	50%	70%	90%	100%	59%
Compressor for domestic refrigerators	25,0%	35%	40%	50%	70%	90%	100%	59%
Compressor for commercial refrigerators	25,0%	35%	40%	50%	70%	90%	100%	59%
Compressor for Air Conditioners	25,0%	35%	40%	50%	70%	90%	100%	59%
Production quantities								
Compressor for domestic refrigerators	277 550,0	388 570,0	444 080,0	555 100,0	777 140,0	999 180,0	1 110 200,0	4 551 820,0
Compressor for commercial refrigerators	41 632,5	58 285,5	66 612,0	83 265,0	116 571,0	149 877,0	166 530,0	682 773,0
Compressor for Air Conditioners	111 020,0	155 428,0	177 632,0	222 040,0	310 856,0	399 672,0	444 080,0	1 820 728,0
PHYSICAL unsold goods								
Compressor for domestic refrigerators	23 129,2	32 380,8	37 006,7	46 258,3	64 761,7	83 265,0	92 516,7	379 318,3
Compressor for commercial refrigerators	3 469,4	4 857,1	5 551,0	6 938,8	9 714,3	12 489,8	13 877,5	56 897,8
Compressor for Air Conditioners	9 251,7	12 952,3	14 802,7	18 503,3	25 904,7	33 306,0	37 006,7	151 727,3
TOTAL OUTPUT								
Compressor for domestic refrigerators	254 420,0	356 189,0	407 073,0	508 841,0	712 378,0	915 915,0	1 017 683,0	4 172 499,0
Compressor for commercial refrigerators	38 163,0	53 428,0	61 061,0	76 326,0	106 856,0	137 387,0	152 652,0	625 873,0
Compressor for Air Conditioners	101 768,0	142 475,0	162 829,0	203 536,0	284 951,0	366 366,0	407 073,0	1 668 998,0
TOTAL	394 351,0	552 092,0	630 963,0	788 703,0	1 104 185,0	1 419 668,0	1 577 408,0	6 467 370,0

PLAN OF INCOME FOR THE PRODUCTION

ANNEX 5a

Name of products	Selling price in the domestic market with VAT		VAT excluded domestic sales		The cost price with VAT	mark-up	VAT (value added tax)	VAT (value added tax)
	\$ US		\$ US		\$ US	\$ US	%	\$ US
Compressor for domestic refrigerators	PC.	53,30	PC.	50,60	37,11	36%	20%	2,70
Compressor for commercial refrigerators	PC.	69,17	PC.	65,74	48,59	35%	20%	3,43
Compressor for Air Conditioners	PC.	67,15	PC.	62,85	41,39	52%	20%	4,29

Name of products	By year							
	1 YEAR	2 YEAR	3 YEAR	4 YEAR	5 YEAR	6 YEAR	7 YEAR	Total:
Sales excluding VAT								
Compressor for domestic refrigerators	12 874 917	18 997 347	22 882 527	30 146 230	44 481 626	60 276 019	70 586 418	260 245 083
Compressor for commercial refrigerators	2 508 879	3 701 906	4 459 022	5 874 453	8 667 884	11 745 704	13 754 827	50 712 675
Compressor for Air Conditioners	6 396 507	9 438 208	11 368 467	14 977 199	22 099 314	29 946 289	35 068 677	129 294 661
TOTAL	21 780 304	32 137 461	38 710 015	50 997 883	75 248 823	101 968 011	119 409 922	440 252 419
Sales including VAT								
Compressor for domestic refrigerators	13 561 555	20 010 502	24 102 884	31 753 971	46 853 893	63 490 623	74 350 890	274 124 316
Compressor for commercial refrigerators	2 639 765	3 895 030	4 691 644	6 180 917	9 120 078	12 358 465	14 472 402	53 358 302
Compressor for Air Conditioners	6 833 294	10 082 698	12 144 764	15 999 920	23 608 369	31 991 176	37 463 347	138 123 568
TOTAL	23 034 613	33 988 230	40 939 292	53 934 808	79 582 340	107 840 263	126 286 639	465 606 186

Index increase in the cost of products sold by year

Name of product	index%
Compressors	5,4%

UTILITY COSTS AT FULL CAPACITY

APPENDIX 6

Name	Unit of measurement	Monthly demand	unit cost \$ US	Monthly cost \$ US
electric power	kW / h	501 902,9	0,0474	23 774
Water	m3	1 130,0	0,0895	101
Garbage	m3	0,5	4,4105	2
TOTAL				23 878

Name	Unit of measurement	Annual demand	unit cost \$ US	Annual cost \$ US
electric power	kW / h	6 022 835,0	0,0474	285 292
Water	m3	13 560,0	0,0895	1 213
Garbage	m3	6,0	4,4105	26
TOTAL				286 532

PLANNED STAFFING COMPANY

APPENDIX 7

	Workplaces	Average monthly \$ US	The total monthly \$ US	In total for a year
PRODUCTION STAFF				
Administrative maintenance department	5,0	158	789	9 474
warehouse workers	10,0	179	1 789	21 474
the driver of the electric vehicle	4,0	200	800	9 600
Technical Control Department	10,0	189	1 895	22 737
assembly line workers	200,0	168	33 684	404 211
Engineering group	5,0	184	921	11 053
laboratory workers	10,0	184	1 842	22 105
Shop for metal working	9,0	168	1 516	18 189
paint shop	8,0	168	1 347	16 168
Logistics	7,0	189	1 326	15 916
Total:	268		45 911	550 926
Total production staff	268		45 911	
social insurance payment (12% of the payroll, but not less than 65% * 1 minimum wage)		12%	5 509	
Total with CAP:			51 420	
ADMINISTRATIVE STAFF				
Office and administration	20	368	7 368	88 421
the department	5	295	1 474	17 684
Total:	25		8 842	106 105
Total administrative staff	25		8 842	
social insurance payment (12% of the payroll, but not less than 65% * 1 minimum wage)		12%	1 061	
Total with CAP:			9 903	
TOTAL	293		61 323	

**COST OF RAW MATERIAL AT FULL CAPACITY BY
by name**

ANNEX 8

Compressor for domestic refrigerators

Name	Unit	the origin of raw materials	Demand for units.	Price per unit of	Price per unit of	Costs by 1 unit.	Total VAT 1 units.	Monthly	Monthly cost	Annual cost
				measure. Without VAT	measure. VAT included	products	products	production volume	\$ US	\$ US
				\$ US	\$ US	\$ US				
Mid-grade steel	kg	imported	0,85200	0,79158	0,84211	0,71747	0,04305	92 516,67	66 378,27	796 539,28
Rolled steel	kg	imported	2,12800	0,79158	0,84211	1,79200	0,10752	92 516,67	165 789,87	1 989 478,40
Rolled steel	kg	imported	1,06400	0,79158	0,84211	0,89600	0,05376	92 516,67	82 894,93	994 739,20
steel for	kg	imported	0,74400	0,79158	0,84211	0,62653	0,03759	92 516,67	57 964,13	695 569,52
Cast iron	kg	imported	2,12800	0,51453	0,54737	1,16480	0,06989	92 516,67	107 763,41	1 293 160,96
electrodes	kg	imported	0,14000	0,95979	1,02105	0,14295	0,00858	92 516,67	13 225,01	158 700,17
babbit	kg	imported	0,32000	3,79032	4,03226	1,29032	0,07742	92 516,67	119 376,34	1 432 516,13
bronze	kg	imported	0,64000	3,94194	4,19355	2,68387	0,16103	92 516,67	248 302,80	2 979 633,55
copper pipe	kg	local	0,32000	4,23000	4,50000	1,44000	0,08640	92 516,67	133 224,00	1 598 688,00
Copper pipes	kg	local	0,16000	2,39548	2,54839	0,40774	0,02446	92 516,67	37 722,92	452 675,10
rolled copper	kg	local	0,05200	5,17955	5,51016	0,28653	0,01719	92 516,67	26 508,65	318 103,86
aluminum rolling	kg	local	0,02000	3,27102	3,47981	0,06960	0,00418	92 516,67	6 438,81	77 265,71
Brass grid	m	local	0,01200	9,89474	10,52632	0,12632	0,00758	92 516,67	11 686,32	140 235,79
caustic soda	kg	local	0,53200	6,34500	6,75000	3,59100	0,21546	92 516,67	332 227,35	3 986 728,20
soda ash	kg	local	0,21200	0,24440	0,26000	0,05512	0,00331	92 516,67	5 099,52	61 194,22
asbestos sheet	kg	local	0,06400	1,01126	1,07581	0,06885	0,00413	92 516,67	6 369,92	76 439,06
asbestos rope	kg	local	0,12400	4,39677	4,67742	0,58000	0,03480	92 516,67	53 659,67	643 916,00
paronitis	kg	imported	0,42400	5,30645	5,64516	2,39355	0,14361	92 516,67	221 443,12	2 657 317,42
Rubber sheets	kg	local	0,32000	2,12737	2,26316	0,72421	0,04345	92 516,67	67 001,54	804 018,53
kerosene	kg	local	0,42400	0,77702	0,82661	0,35048	0,02103	92 516,67	32 425,60	389 107,19
Petrol	kg	local	0,11600	2,42581	2,58065	0,29935	0,01796	92 516,67	27 695,31	332 343,74
oil compressor	kg	imported	0,17200	4,89789	5,21053	0,89621	0,05377	92 516,67	82 914,41	994 972,93
viscin oil	kg	imported	0,42400	1,34450	1,43032	0,60646	0,03639	92 516,67	56 107,36	673 288,31
Oils for refrigerating machines	kg	imported	0,64000	14,44871	15,37097	9,83742	0,59025	92 516,67	910 125,25	10 921 502,97
fixation	kg	local	0,21200	0,84600	0,90000	0,19080	0,01145	92 516,67	17 652,18	211 826,16
linseed oil	kg	local	0,06400	1,04613	1,11290	0,07123	0,00427	92 516,67	6 589,57	79 074,89
enamel paints	kg	local	0,06400	8,15677	8,67742	0,55535	0,03332	92 516,67	51 379,58	616 554,94
oil paints	kg	local	0,06400	6,33742	6,74194	0,43148	0,02589	92 516,67	39 919,45	479 033,39
Genuine Leather	m2	local	0,00800	0,53065	0,56452	0,00452	0,00027	92 516,67	417,82	5 013,81
cleaning material	kg	local	0,53200	1,06129	1,12903	0,60065	0,03604	92 516,67	55 569,69	666 836,26
Electric motor	PC.	local	1,00000	3,95740	4,21000	4,21000	0,25260	92 516,67	389 495,17	4 673 942,00
Total:						37,11	2,23		3 433 367,97	41 200 415,68

The ratio of imported raw materials to the local in the production of 1 unit. finished products:

	\$ US	at %
imported	23,048	62,10%
local	14,0632	37,90%

Compressor for commercial refrigerators

Name	Unit	the origin of raw materials	Demand for units.	Price per unit of	Price per unit of	Costs by 1 unit.	Total VAT 1 units.	Monthly production volume	Monthly cost	Annual cost
				measure. Without VAT	measure. VAT included	products	products		\$ US	\$ US
				\$ US	\$ US	\$ US			\$ US	\$ US
COST OF RAW MATERIALS										
Mid-grade steel	kg	imported	1,15600	0,79158	0,84211	0,97347	0,05841	13 877,50	13 509,38	162 112,57
Rolled steel	kg	imported	2,88800	0,79158	0,84211	2,43200	0,14592	13 877,50	33 750,08	405 000,96
Rolled steel	kg	imported	1,44400	0,79158	0,84211	1,21600	0,07296	13 877,50	16 875,04	202 500,48
steel for	kg	imported	1,01200	0,79158	0,84211	0,85221	0,05113	13 877,50	11 826,55	141 918,62
Cast iron	kg	imported	2,88800	0,51453	0,54737	1,58080	0,09485	13 877,50	21 937,55	263 250,62
electrodes	kg	imported	0,18800	0,95979	1,02105	0,19196	0,01152	13 877,50	2 663,90	31 966,75
babbit	kg	imported	0,43200	3,79032	4,03226	1,74194	0,10452	13 877,50	24 173,71	290 084,52
bronze	kg	imported	0,86800	3,94194	4,19355	3,64000	0,21840	13 877,50	50 514,10	606 169,20
copper pipe	kg	local	0,43200	4,23000	4,50000	1,94400	0,11664	13 877,50	26 977,86	323 734,32
Copper pipes	kg	local	0,21600	2,39548	2,54839	0,55045	0,03303	13 877,50	7 638,89	91 666,71
rolled copper	kg	local	0,07200	5,17955	5,51016	0,39673	0,02380	13 877,50	5 505,64	66 067,72
aluminum rolling	kg	local	0,02800	3,27102	3,47981	0,09743	0,00585	13 877,50	1 352,15	16 225,80
Brass grid	m	local	0,01600	9,89474	10,52632	0,16842	0,01011	13 877,50	2 337,26	28 047,16
caustic soda	kg	local	0,72400	6,34500	6,75000	4,88700	0,29322	13 877,50	67 819,34	813 832,11
soda ash	kg	local	0,28800	0,24440	0,26000	0,07488	0,00449	13 877,50	1 039,15	12 469,77
asbestos sheet	kg	local	0,08800	1,01126	1,07581	0,09467	0,00568	13 877,50	1 313,80	15 765,56
asbestos rope	kg	local	0,17200	4,39677	4,67742	0,80452	0,04827	13 877,50	11 164,67	133 976,07
paronitis	kg	imported	0,57600	5,30645	5,64516	3,25161	0,19510	13 877,50	45 124,26	541 491,10
Rubber sheets	kg	local	0,43200	2,12737	2,26316	0,97768	0,05866	13 877,50	13 567,81	162 813,75
kerosene	kg	local	0,57600	0,77702	0,82661	0,47613	0,02857	13 877,50	6 607,48	79 289,77
Petrol	kg	local	0,17240	2,42581	2,58065	0,44490	0,02669	13 877,50	6 174,14	74 089,73
oil compressor	kg	imported	0,23200	4,89789	5,21053	1,20884	0,07253	13 877,50	16 775,71	201 308,48
viscin oil	kg	imported	0,57600	1,34450	1,43032	0,82387	0,04943	13 877,50	11 433,20	137 198,37
Oils for refrigerating machines	kg	imported	0,86800	14,44871	15,37097	13,34200	0,80052	13 877,50	185 153,61	2 221 843,26
fixation	kg	local	0,28800	0,84600	0,90000	0,25920	0,01555	13 877,50	3 597,05	43 164,58
linseed oil	kg	local	0,08800	1,04613	1,11290	0,09794	0,00588	13 877,50	1 359,10	16 309,20
enamel paints	kg	local	0,08800	8,15677	8,67742	0,76361	0,04582	13 877,50	10 597,04	127 164,46
oil paints	kg	local	0,08800	6,33742	6,74194	0,59329	0,03560	13 877,50	8 233,39	98 800,64
Genuine Leather	m2	local	0,00800	0,53065	0,56452	0,00452	0,00027	13 877,50	62,67	752,07
cleaning material	kg	local	0,72400	0,63987	0,68071	0,49283	0,02957	13 877,50	6 839,30	82 071,61
Electric motor	PC.	local	1,00000	3,95740	4,21000	4,21000	0,25260	13 877,50	58 424,28	701 091,30
Total:						48,59	2,92		609 084,53	7 309 014,33

The ratio of imported raw materials to the local in the production of 1 unit. finished products:

	\$ US	at %
imported	31,255	64,32%
local	17,3382	35,68%

Compressor for Air Conditioners

Name	Unit	the origin of raw materials	Demand for units.	Price per unit of measure. Without VAT	Price per unit of measure. VAT included	Costs by 1 unit. products	Total VAT 1 units. products	Monthly production volume	Monthly cost	Annual cost
				\$ US	\$ US	\$ US			\$ US	\$ US
COST OF RAW MATERIALS										
Mid-grade steel	kg	imported	0,97200	0,79158	0,84211	0,81853	0,04911	37 006,67	30 290,93	363 491,17
Rolled steel	kg	imported	2,43200	0,79158	0,84211	2,04800	0,12288	37 006,67	75 789,65	909 475,84
Rolled steel	kg	imported	1,21600	0,79158	0,84211	1,02400	0,06144	37 006,67	37 894,83	454 737,92
steel for	kg	imported	0,85200	0,79158	0,84211	0,71747	0,04305	37 006,67	26 551,31	318 615,71
Cast iron	kg	imported	2,43200	0,51453	0,54737	1,33120	0,07987	37 006,67	49 263,27	591 159,30
electrodes	kg	imported	0,16000	0,95979	1,02105	0,16337	0,00980	37 006,67	6 045,72	72 548,65
babbit	kg	imported	0,36400	3,79032	4,03226	1,46774	0,08806	37 006,67	54 316,24	651 794,84
bronze	kg	imported	0,72800	3,94194	4,19355	3,05290	0,18317	37 006,67	112 977,77	1 355 733,26
copper pipe	kg	local	0,36400	4,23000	4,50000	1,63800	0,09828	37 006,67	60 616,92	727 403,04
Copper pipes	kg	local	0,18400	2,39548	2,54839	0,46890	0,02813	37 006,67	17 352,55	208 230,54
rolled copper	kg	local	0,06000	5,17955	5,51016	0,33061	0,01984	37 006,67	12 234,76	146 817,16
aluminum rolling	kg	local	0,02400	3,27102	3,47981	0,08352	0,00501	37 006,67	3 090,63	37 087,54
Brass grid	m	local	0,01200	9,89474	10,52632	0,12632	0,00758	37 006,67	4 674,53	56 094,32
caustic soda	kg	local	0,60800	6,34500	6,75000	4,10400	0,24624	37 006,67	151 875,36	1 822 504,32
soda ash	kg	local	0,24400	0,24440	0,26000	0,06344	0,00381	37 006,67	2 347,70	28 172,44
asbestos sheet	kg	local	0,07200	1,01126	1,07581	0,07746	0,00465	37 006,67	2 866,46	34 397,58
asbestos rope	kg	local	0,14400	4,39677	4,67742	0,67355	0,04041	37 006,67	24 925,78	299 109,37
paronitis	kg	imported	0,48800	5,30645	5,64516	2,75484	0,16529	37 006,67	101 947,40	1 223 368,77
Rubber sheets	kg	local	0,36400	2,12737	2,26316	0,82379	0,04943	37 006,67	30 485,70	365 828,43
kerosene	kg	local	0,48800	0,77702	0,82661	0,40339	0,02420	37 006,67	14 928,01	179 136,14
Petrol	kg	local	0,13600	2,42581	2,58065	0,35097	0,02106	37 006,67	12 988,15	155 857,75
oil compressor	kg	imported	0,19600	4,89789	5,21053	1,02126	0,06128	37 006,67	37 793,55	453 522,54
viscin oil	kg	imported	0,48800	1,34450	1,43032	0,69800	0,04188	37 006,67	25 830,56	309 966,69
Oils for refrigerating machines	kg	imported	0,72800	14,44871	15,37097	11,19006	0,67140	37 006,67	414 106,99	4 969 283,85
fixation	kg	local	0,24320	0,84600	0,90000	0,21888	0,01313	37 006,67	8 100,02	97 200,23
linseed oil	kg	local	0,07200	1,04613	1,11290	0,08013	0,00481	37 006,67	2 965,31	35 583,70
enamel paints	kg	local	0,07200	8,15677	8,67742	0,62477	0,03749	37 006,67	23 120,81	277 449,72
oil paints	kg	local	0,07200	6,33742	6,74194	0,48542	0,02913	37 006,67	17 963,75	215 565,03
Genuine Leather	m2	local	0,00800	0,53065	0,56452	0,00452	0,00027	37 006,67	167,13	2 005,52
cleaning material	kg	local	0,60800	0,52391	0,55735	0,33887	0,02033	37 006,67	12 540,51	150 486,16
Electric motor	PC.	local	1,00000	3,95740	4,21000	4,21000	0,25260	37 006,67	155 798,07	1 869 576,80
Total:						41,39	2,48		1 363 511,78	16 362 141,39

The ratio of imported raw materials to the local in the production of 1 unit. finished products:

	\$ US	at %
imported	26,287	63,51%
local	15,1065	36,49%

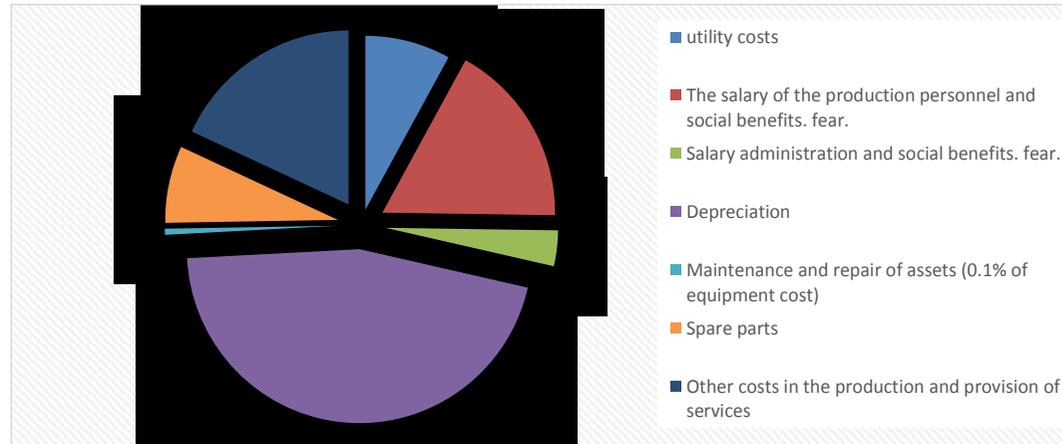
Total cost of the main raw materials		5 405 964,28	64 871 571,40
---	--	---------------------	----------------------

COST OF PRODUCTION AND SERVICES AT FULL CAPACITY

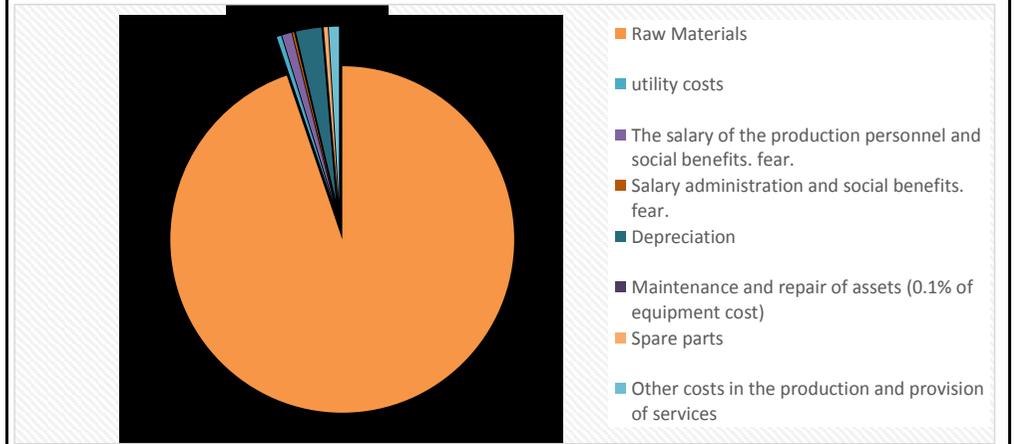
APPENDIX 9

Name	Total costs per year \$ US	The share of fixed costs in total costs (%)	The proportion of variable costs in total costs (%)	fixed costs \$ US	variable costs \$ US
Raw Materials including:	64 871 571	0%	100%	0	64 871 571
<i>Compressor for domestic refrigerators</i>	41 200 416	0%	100%	0	41 200 416
<i>Compressor for commercial refrigerators</i>	7 309 014	0%	100%	0	7 309 014
<i>Compressor for Air Conditioners</i>	16 362 141	0%	100%	0	16 362 141
The salary of the production personnel and social benefits. fear.	617 037	0%	100%	0	617 037
Salary administration and social benefits. fear.	118 838	100%	0%	118 838	0
The cost of creating working conditions (5%)	36 794	100%	0%	36 794	0
utility costs	286 532	0%	100%	0	286 532
rent of space	0	100%	0%	0	0
Depreciation	1 633 488	100%	0%	1 633 488	0
Maintenance and repair of assets (0.1% of equipment cost)	20 143	0%	100%	0	20 143
Spare parts	256 200	0%	100%	0	256 200
Other costs in the production and provision of services	648 716	0%	100%	0	648 716
Total:	68 489 319			1 789 119	66 700 200
TOTAL	68 489 319			1 789 119	66 700 200

Annualized EXPENSES EXCLUDING RAW



Annualized costs in response to raw materials



COST OF RAW MATERIAL AND EXPENSES

ANNEX 10a

Naming of expenditures	Unit cost per year	annual demand	Annual cost at %
Raw materials	64 871 571,40	1	100%
TOTAL COST OF RAW MATERIAL AT FULL CAPACITY PER YEAR			64 871 571,40

ANNUAL COST OF SPARE PARTS

Spare parts	at %
Of the cost of all the equipment	1,50%

The cost of other production costs ANNUALY

Other operating expenses	at %
From raw material cost	1,00%

COST OF PRODUCTION AND SERVICE PROVISION

ANNEX 10b

\$ US	By year							Total:
	1 YEAR	2 YEAR	3 YEAR	4 YEAR	5 YEAR	6 YEAR	7 YEAR	
Cost price:	18 317 736	25 752 089	30 067 344	38 297 772	54 584 501	71 864 216	82 133 944	321 017 602
Local raw material costs	16 217 893	23 431 612	27 635 912	35 650 327	51 507 592	68 343 216	78 366 888	301 153 440
utility costs	71 633	106 303	125 377	161 737	233 677	310 056	355 531	1 364 314
Salary of production and social benefits. fear.	154 259	244 038	287 826	371 295	536 447	711 789	816 185	3 121 840
Depreciation	1 633 488	1 633 488	1 633 488	1 633 488	1 633 488	1 633 488	1 633 488	11 434 413
Maintenance and repair of assets (0.1% of equipment cost)	5 036	7 050	8 057	10 072	14 100	18 129	20 143	82 587
The cost of creating working conditions (5%)	9 198	12 878	14 718	18 397	25 756	33 114	36 794	150 854
Spare parts	64 050	89 670	102 480	128 100	179 340	230 580	256 200	1 050 420
Other costs in the production and provision of services	162 179	227 050	259 486	324 358	454 101	583 844	648 716	2 659 734
The cost of production and services: In manufacturing and services rendered	18 317 736	25 752 089	30 067 344	38 297 772	54 584 501	71 864 216	82 133 944	321 017 602
period costs:	314 982	384 896	430 533	513 182	673 155	849 202	965 555	4 131 505
Salary administration and social benefits. fear.	134 287	138 584	143 019	147 595	152 318	157 193	162 223	1 035 218
rent of space	0	0	0	0	0	0	0	0
Distribution costs	23 035	33 988	40 939	53 935	79 582	107 840	126 287	465 606
Transport costs	115 173	169 941	204 696	269 674	397 912	539 201	631 433	2 328 031
Other operating expenses	2 303	3 399	4 094	5 393	7 958	10 784	12 629	46 561
Total taxes	40 184	38 984	37 784	36 584	35 384	34 184	32 984	256 089
Land tax	170	170	170	170	170	170	170	1 187
Property tax	40 000	38 800	37 600	36 400	35 200	34 000	32 800	254 800
water tax * (surface) **	13	13	13	13	13	13	13	88
water tax * (underground) **	2	2	2	2	2	2	2	14
OPERATING COSTS	18 632 718	26 136 986	30 497 876	38 810 954	55 257 656	72 713 419	83 099 499	325 149 108
TOTAL COST OF SERVICES RENDERED AND PRODUCTION	18 632 718	26 136 986	30 497 876	38 810 954	55 257 656	72 713 419	83 099 499	325 149 108

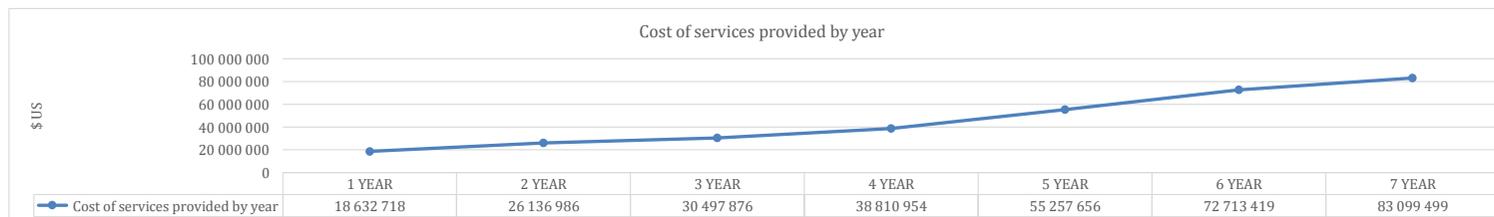
Distribution costs	0,1%	of the gross sales volume
Transport costs	0,5%	of the gross sales volume
Other operating expenses	0,01%	of the gross sales volume
Taxes, including:		
Land tax	503 250	UZS per 1 hectare.
Property tax	2,0%	of the cadastral value
water tax * (surface) **	88,4%	from the volume of water consumed
water tax * (underground) **	11,6%	from the volume of water consumed
VAT	20,0%	of value added
Tax on profits	12,0%	of the profits

Annual price increases Index:

name of expenses	index%
wages	13,0%
Raw materials and supplies	3,2%
energy resources	6,0%

* According to the State Unitary Enterprise "Suvsoz" the percentage of surface water and groundwater for the calculation of tax for the use of water resources for 2019 is as follows: **surface water - 88.4%; groundwater - 11.6%.**

** According to the tax rate for the use of water resources defined in Annex N 14 to the Resolution of the President of the Republic of Uzbekistan from 12.26.2018, N PP-4086

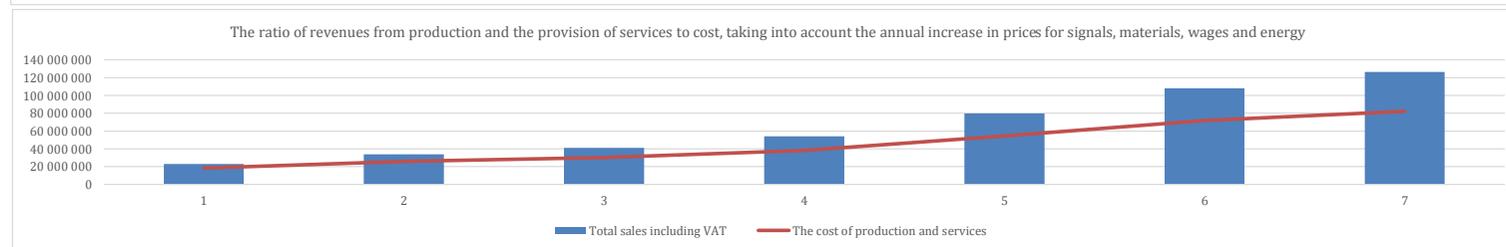
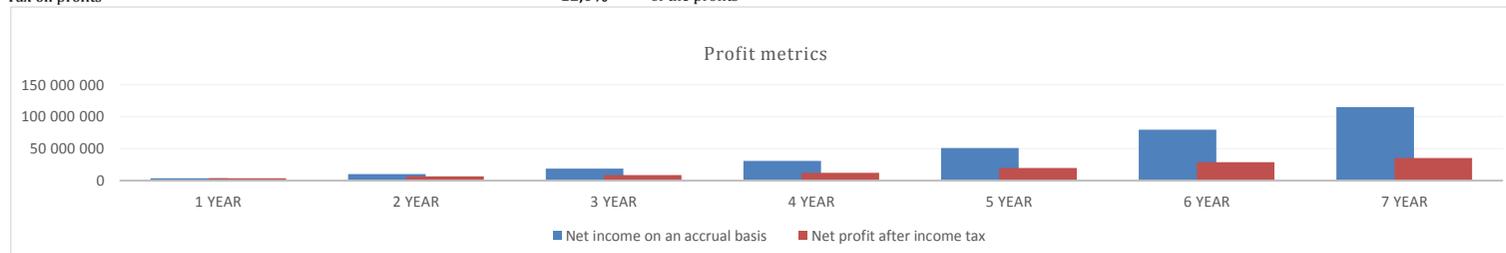


\$ US	By year							
	1 YEAR	2 YEAR	3 YEAR	4 YEAR	5 YEAR	6 YEAR	7 YEAR	Total:
Total sales including VAT	23 034 613	33 988 230	40 939 292	53 934 808	79 582 340	107 840 263	126 286 639	465 606 186
VAT	1 254 309	1 850 769	2 229 277	2 936 925	4 333 517	5 872 252	6 876 717	25 353 766
Offset of VAT on the acquisition of raw materials	930 525	1 302 737	1 488 844	1 861 053	2 605 476	3 349 902	3 722 111	15 260 648
Total sales	22 710 829	33 440 198	40 198 859	52 858 936	77 854 299	105 317 913	123 132 033	455 513 067
The cost of production and services	18 317 736	25 752 089	30 067 344	38 297 772	54 584 501	71 864 216	82 133 944	321 017 602
Gross profit	4 393 093	7 688 108	10 131 515	14 561 163	23 269 799	33 453 697	40 998 089	134 495 465
period costs	274 798	345 912	392 748	476 598	637 771	815 018	932 571	3 875 416
Operating profit	4 118 295	7 342 196	9 738 767	14 084 566	22 632 028	32 638 678	40 065 518	130 620 048
Profit before tax	4 118 295	7 342 196	9 738 767	14 084 566	22 632 028	32 638 678	40 065 518	130 620 048
Total taxes	40 184	38 984	37 784	36 584	35 384	34 184	32 984	256 089
Profit before income tax	4 078 111	7 303 212	9 700 983	14 047 981	22 596 644	32 604 494	40 032 533	130 363 959
Income tax 12%	489 373	876 385	1 164 118	1 685 758	2 711 597	3 912 539	4 803 904	15 643 675
Net profit after income tax	3 588 738	6 426 827	8 536 865	12 362 224	19 885 047	28 691 955	35 228 629	114 720 284
Net profit	3 588 738	6 426 827	8 536 865	12 362 224	19 885 047	28 691 955	35 228 629	114 720 284
Net income on an accrual basis	3 588 738	10 015 565	18 552 429	30 914 653	50 799 700	79 491 655	114 720 284	

Coefficients profitability (%)	1 YEAR	2 YEAR	3 YEAR	4 YEAR	5 YEAR	6 YEAR	7 YEAR
Gross profit / total sales	19%	23%	25%	27%	29%	31%	32%
Net income / total sales	16%	19%	21%	23%	25%	27%	28%

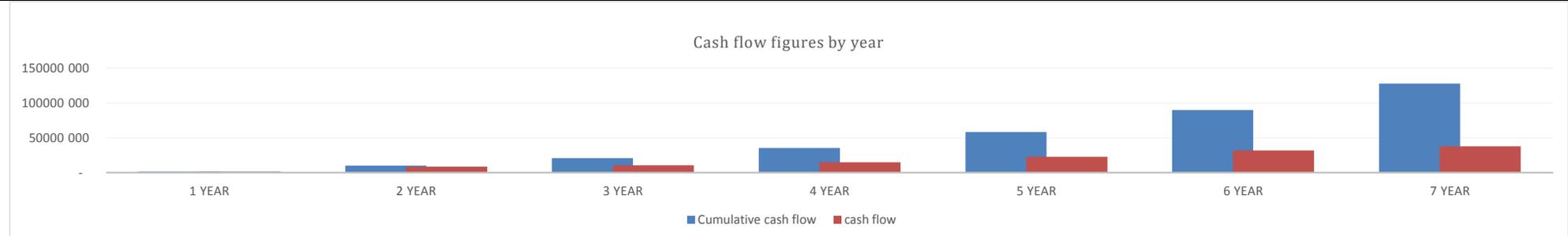
Taxes, including:

VAT	20,0%	of value added
Tax on profits	12,0%	of the profits



Cash Flow

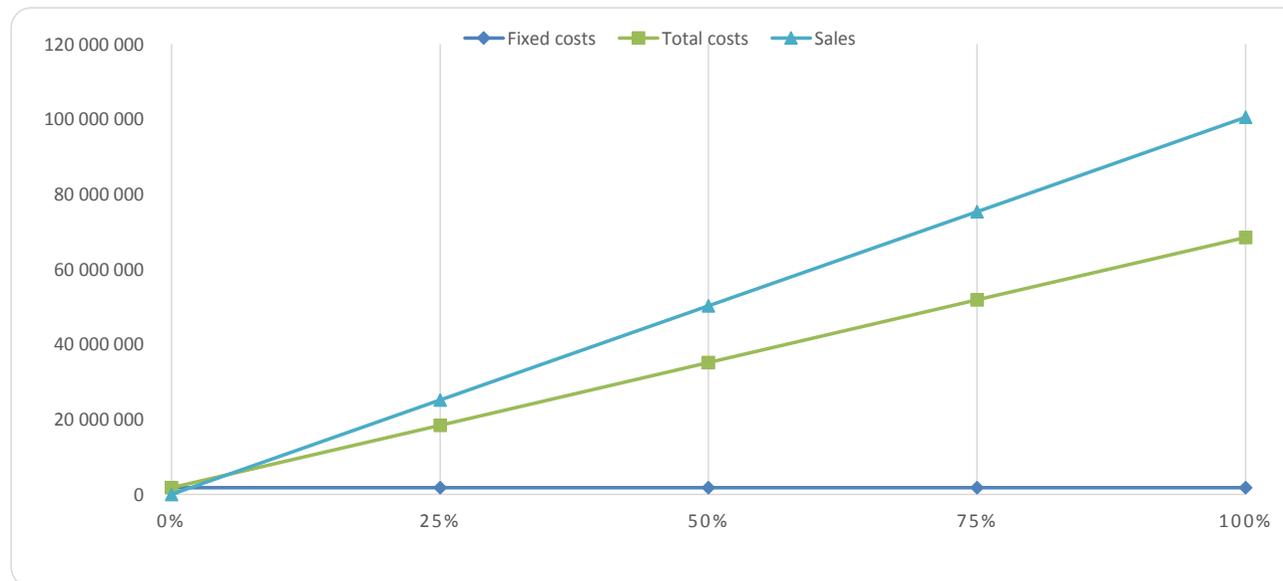
\$ US	By year								
	0 Year	1 YEAR	2 YEAR	3 YEAR	4 YEAR	5 YEAR	6 YEAR	7 YEAR	Total:
Total sales including VAT	-	23 034 613	33 988 230	40 939 292	53 934 808	79 582 340	107 840 263	126 286 639	465 606 186
VAT		1 254 309	1 850 769	2 229 277	2 936 925	4 333 517	5 872 252	6 876 717	25 353 766
Offset of VAT on the acquisition of raw materials		930 525	1 302 737	1 488 844	1 861 053	2 605 476	3 349 902	3 722 111	15 260 648
Total sales		22 710 829	33 440 198	40 198 859	52 858 936	77 854 299	105 317 913	123 132 033	455 513 067
Changes in Working Capital	5 405 964	(3 821 213)	638 166	369 813	705 566	1 396 178	1 480 267	878 317	1 647 094
Cash from services	(5 405 964)	18 889 617	34 078 363	40 568 672	53 564 502	79 250 478	106 798 180	124 010 350	457 160 161
The cost price of production and rendered services (without including depreciation)	-	16 684 248	24 118 602	28 433 856	36 664 285	52 951 013	70 230 729	80 500 457	309 583 190
Gross Cash Receipts	(5 405 964)	2 205 368	9 959 762	12 134 815	16 900 217	26 299 465	36 567 451	43 509 893	147 576 971
period costs	-	314 982	384 896	430 533	513 182	673 155	849 202	965 555	4 131 505
Income tax 12%	-	489 373	876 385	1 164 118	1 685 758	2 711 597	3 912 539	4 803 904	15 643 675
Operating cash-flow (A)	(5 405 964)	1 401 013	8 698 480	10 540 165	14 701 278	22 914 712	31 805 709	37 740 434	127 801 790
Equity	-								
Investments in fixed assets	27 838 556								
The initial financial outlay	-								
Net cash	27 838 556	1 401 013	8 698 480	10 540 165	14 701 278	22 914 712	31 805 709	37 740 434	127 801 790
financial need	33 244 520								
cash flow		1 401 013	8 698 480	10 540 165	14 701 278	22 914 712	31 805 709	37 740 434	127 801 790
Cumulative cash flow	-	1 401 013	10 099 492	20 639 657	35 340 935	58 255 647	90 061 357	127 801 790	



Analysis of break-even point

APPENDIX 13

Name	Indicators
TOTAL REVENUE AT FULL CAPACITY	100 515 005
Fixed costs at full power	1 789 119
Variable costs at full power	66 700 200
BREAKEVEN POINT	5,3%



THE BASIS FOR CALCULATING WORKING CAPITAL

APPENDIX 14

	days cover	turnover rate (360 / coating Days)	
The period from the sale of	30 days	12 days	Accounts receivable = Total sales / turnover ratio
Stocks of raw materials in stock and work in progress:	30 days	12 days	Stocks of raw materials = Raw materials / turnover ratio
Stocks of finished goods - sales	30 days	12 days	Finished goods inventory = Cost of production / turnover ratio
stocks of spare parts	180 days	2 days	Stocks of spare parts = parts / turnover ratio
The period of payment to suppliers of raw materials	30 days	12 days	Accounts Payable = Raw materials / turnover ratio

CALCULATION OF NET WORKING CAPITAL

	By year							
	0 months	1 YEAR	2 YEAR	3 YEAR	4 YEAR	5 YEAR	6 YEAR	7 YEAR
Accounts payable	-	-	-	-	-	-	-	-
stocks of raw materials	5 405 964	1 351 491	1 952 634	2 302 993	2 970 861	4 292 299	5 695 268	6 530 574
Stocks of finished products	-	1 552 727	2 178 082	2 541 490	3 234 246	4 604 805	6 059 452	6 924 958
stocks of spare parts	-	32 025	44 835	51 240	64 050	89 670	115 290	128 100
TOTAL	5 405 964	2 936 243	4 175 551	4 895 722	6 269 157	8 986 774	11 870 010	13 583 632
Accounts Payable	5 405 964	1 351 491	1 952 634	2 302 993	2 970 861	4 292 299	5 695 268	6 530 574
Net Working Capital	5 405 964	1 584 752	2 222 917	2 592 730	3 298 296	4 694 475	6 174 742	7 053 058
Changes in Working Capital	5 405 964	(3 821 213)	638 166	369 813	705 566	1 396 178	1 480 267	878 317

Calculation of NPV and IRR

APPENDIX 15

Period	Cash flow	The discount rate	NPV	GNI
0 year	(27 838 556)	20,0%		
1 year	1 401 013	20,0%	(26 671 045)	
2 year	8 698 480	20,0%	(20 630 435)	-42%
3 year	10 540 165	20,0%	(14 530 802)	-11%
4 year	14 701 278	20,0%	(7 441 066)	9%
5 year	22 914 712	20,0%	1 767 843	22%
6 year	31 805 709	20,0%	12 419 511	31%
7 year	37 740 434	20,0%	22 952 174	37%

calculation of ID (PI / yield index)

Period	initial costs	cash income	cash flow	Cash flow
0 year	\$ 27 838 556	\$ -	\$ -	\$ -
1 year	\$ -	\$ 23 034 613	\$ 21 633 601	\$ 1 401 013
2 year	\$ -	\$ 33 988 230	\$ 25 289 750	\$ 8 698 480
3 year	\$ -	\$ 40 939 292	\$ 30 399 127	\$ 10 540 165
4 year	\$ -	\$ 53 934 808	\$ 39 233 530	\$ 14 701 278
5 year	\$ -	\$ 79 582 340	\$ 56 667 628	\$ 22 914 712
6 year	\$ -	\$ 107 840 263	\$ 76 034 554	\$ 31 805 709
7 year	\$ -	\$ 126 286 639	\$ 88 546 205	\$ 37 740 434
			NPV (NPV)	\$ 35 340 935
			ID (PI)	127%

Calculation of the payback period of the project

(PP / payback time)

Period	initial costs	cash income	Cash flow	Cash flow from an accrual basis
0 year	\$ 27 838 556	\$ -	\$ -	\$ -
1 year	\$ -	\$ -	\$ 1 401 013	\$ 1 401 013
2 year	\$ -	\$ -	\$ 8 698 480	\$ 10 099 492
3 year	\$ -	\$ -	\$ 10 540 165	\$ 20 639 657
4 year	\$ -	\$ -	\$ 14 701 278	\$ 35 340 935
5 year	\$ -	\$ -	\$ 22 914 712	\$ 58 255 647
6 year	\$ -	\$ -	\$ 31 805 709	\$ 90 061 357
7 year	\$ -	\$ -	\$ 37 740 434	\$ 127 801 790
			(PP / payback time)	3rd YEAR

Discounted payback period

(DPP / payback period based discount)

Period	initial costs	Cash flow	Discounted Cash Flow	Discounted cash flows on an accrual basis
0 year	\$ -	\$ -	\$ -	\$ -
1 year	\$ -	\$ 1 401 013	\$ 1 167 511	\$ 1 167 511
2 year	\$ -	\$ 8 698 480	\$ 7 248 733	\$ 8 416 244
3 year	\$ -	\$ 10 540 165	\$ 8 783 471	\$ 17 199 714
4 year	\$ -	\$ 14 701 278	\$ 12 251 065	\$ 29 450 779
5 year	\$ -	\$ 22 914 712	\$ 19 095 594	\$ 48 546 373
6 year	\$ -	\$ 31 805 709	\$ 26 504 758	\$ 75 051 131
7 year	\$ -	\$ 37 740 434	\$ 31 450 361	\$ 106 501 492
			(DPP / payback period based discount)	4th YEAR

The calculation of the profitability of the investment project

(ARR, ROI / profitability factor)

Period	initial costs	cash income	Cash flow	The average net profit in 7 years
0 year	\$ 27 838 556	\$ -	\$ -	\$ -
1 year	\$ -	\$ -	\$ 1 401 013	\$ -
2 year	\$ -	\$ -	\$ 8 698 480	\$ -
3 year	\$ -	\$ -	\$ 10 540 165	\$ -
4 year	\$ -	\$ -	\$ 14 701 278	\$ -
5 year	\$ -	\$ -	\$ 22 914 712	\$ -
6 year	\$ -	\$ -	\$ 31 805 709	\$ -
7 year	\$ -	\$ -	\$ 37 740 434	\$ -
in total			\$ 127 801 790	\$ 8 835 234
			(DPP / payback period based discount)	32%

The average cost per unit of output

APPENDIX 16

	Compressor for domestic refrigerators	Compressor for commercial refrigerators	Compressor for Air Conditioners
NAMING OF EXPENDITURES	cost Cost per unit of finished product, (US \$)	cost Cost per unit of finished product, (US \$)	cost Cost per unit of finished product, (US \$)
Volume of production	1 110 200,00	166 530,00	444 080,00
The main costs			
Raw materials			
import	23,05	31,25	26,29
local	14,06	17,34	15,11
Total raw material costs	37,11	48,59	41,39
Additional expenses			
Spare parts	0,076923	0,512821	0,192308
W / board production workers with deductions	0,185263	1,235088	0,463158
Energy costs and infrastructure	0,086030	0,573534	0,215075
Other production costs	0,194774	1,298496	0,486936
Depreciation	0,490448	3,269656	1,226121
Total additional costs	1,03	6,89	2,58
actual manufacturing cost	38,14	55,48	43,98
period expenses			
W / administration fee with deductions	0,035681	0,237871	0,089202
Total expenses for the period	0,035681	0,237871	0,089202
Total unit cost	38,18	55,72	44,07
rate of return	15,12	13,45	23,08
The average selling price	53,30	69,17	67,15
localization level	40%	44%	40%

RISKS

APPENDIX 17

stage	types of risk	S (indicator of the significance or severity failure)	O (index of probability or frequency of occurrence of a fault causes)	D (index of probability of a defect or error)	An RPN (risk priority number)	Σ
Receipt of raw materials to the factory	technological risks	8	5	3	120	557
	risks of breakdowns	6	5	4	120	
	emergency risks	1	5	2	10	
	risks of power outages	3	5	8	120	
	prolongation of maintenance risks	2	5	2	20	
	emergency risks ancillary systems	1	4	3	12	
	risks of failure in providing services	4	6	5	120	
	risks of disruptions in information systems	1	7	5	35	
The production process	technological risks	8	5	6	240	444
	risks of breakdowns	4	5	4	80	
	emergency risks	3	4	4	48	
	risks of power outages	4	5	2	40	
	risks of disruptions in information systems	3	4	3	36	
Storage and transport	technological risks	8	5	6	240	601
	risks of breakdowns	7	6	5	210	
	emergency risks	3	5	5	75	
	risks of failure in providing services	4	4	4	64	
	risks of disruptions in information systems	2	2	3	12	

OUTCOME INDICATORS OF THE PROJECT

APPENDIX 18

TOTAL INCOME INDICATORS PROJECT

\$ US	By year							Total:
	1 YEAR	2 YEAR	3 YEAR	4 YEAR	5 YEAR	6 YEAR	7 YEAR	
Proceeds from sale of finished products and services	23 034 613	33 988 230	40 939 292	53 934 808	79 582 340	107 840 263	126 286 639	465 606 186
The cost price of the production and provision of services	19 445 875	27 561 403	32 402 427	41 572 584	59 697 294	79 148 309	91 058 010	350 885 902
Net profit	3 588 738	6 426 827	8 536 865	12 362 224	19 885 047	28 691 955	35 228 629	114 720 284
accumulated profit	3 588 738	10 015 565	18 552 429	30 914 653	50 799 700	79 491 655	114 720 284	

FINAL PERFORMANCE CASH FLOW

\$ US	By year							Total:
	1 YEAR	2 YEAR	3 YEAR	4 YEAR	5 YEAR	6 YEAR	7 YEAR	
Proceeds from sale of finished products and services	23 034 613	33 988 230	40 939 292	53 934 808	79 582 340	107 840 263	126 286 639	465 606 186
The cost price of the production and provision of services	21 633 601	25 289 750	30 399 127	39 233 530	56 667 628	76 034 554	88 546 205	337 804 395
cash flow	1 401 013	8 698 480	10 540 165	14 701 278	22 914 712	31 805 709	37 740 434	127 801 790
Cumulative cash flow	1 401 013	10 099 492	20 639 657	35 340 935	58 255 647	90 061 357	127 801 790	

Totals for PROJECT COSTS In monetary terms,

\$ US	By year							Total:
	1 YEAR	2 YEAR	3 YEAR	4 YEAR	5 YEAR	6 YEAR	7 YEAR	
the payment of taxes to the state budget	1 783 867	2 766 139	3 431 179	4 659 267	7 080 498	9 818 976	11 713 605	41 253 531