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DIPLOMA DESIGN:

**Recommendations for the implementation of the economic
part**

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Recommendations for the implementation of the economic part

Economic activity of chemical production enterprises is an important component of the national economy, which provides other types of activity chemical products (mineral fertilizers, solvents, catalysts, polymeric materials, building mixtures, etc.). Therefore, future technologists of chemical production should know not only the principles of implementation of professional technologies, chemical processes, ways of synthesis of chemical products, methods of their production and specific activity of chemical enterprises, but also possess the methods of economic justification of these processes, evaluate their efficiency, choose among them the most optimal and reliable systems for the organization, control and management of chemical production. The completion of the bachelor's degree work by students contributes to the formation of future professionals of professionally significant skills to ensure the efficient production of competitive products by chemical enterprises. The manual presents the structure and stages of implementation of the economic part of the diploma work of the bachelor of specialty - 161 Chemical technology and engineering, educational programs: «Chemical technologies of inorganic ceramic materials», «Chemical technologies of inorganic and organic binders and composition materials», «Chemical technology cosmetic means and nutritional supplements».

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INTRODUCTION

The development of market relations in Ukraine necessitates the training of specialists-practitioners of any kind of activity of the national economy, which would ensure the production of quality and competitive products, introduce modern progressive technologies, be able to form a highly efficient and mobile labor collective and provide the company with an adequate amount working capital. Professional training at the Faculty of Chemical Technology is subject to the formation of such specialists. Its important component is the discipline "Economics and Organization of Production", which aims at forming not only the economic component of professional training of specialists for chemical enterprises of Ukraine, but also provide practical experience of adaptation to a market economy.

Chemical enterprises are an important component of the national economy that provides other industries with chemical products (mineral fertilizers, solvents, catalysts, polymeric materials, construction mixtures, biologically active substances, etc.). Therefore, future technologists of chemical production should know not only the principles of implementation of professional technologies, chemical processes, ways of synthesis of chemical products, methods of their production and specific activity of chemical enterprises, but also possess the methods of economic justification of these processes, evaluate their efficiency, choose among them the most optimal and reliable systems for the organization, control and management of chemical production.

The completion of the bachelor's degree work by students as a continuation and synthesis of the knowledge and skills acquired in the course of studying economics and production organization contributes to the formation of professionally important skills for future specialists of ensuring the efficient production of competitive products by chemical enterprises. The manual presents the structure and stages of the economic part of the bachelor's thesis work for students of specialty - 161 Chemical technology and engineering, educational programs: «Chemical technologies of inorganic ceramic materials», «Chemical

technologies of inorganic and organic binders and composition materials», «Chemical technology cosmetic means and nutritional supplements».

The purpose of the economic part of the bachelor's degree work is to develop future specialists of theoretical knowledge and practical skills in economics and production organization at chemical enterprises of the national economy, which allow to carry out economic substantiation of chemical production processes, evaluate their efficiency, choose among them the most optimal and provide reliable systems organization, control and management of chemical production.

The task of the economic part of the bachelor's thesis work is to form future specialists:

- economic bases of their professional activity;
- skills to make a material balance selected environmental protection technology, to substantiate the project of production of inorganic and organic binder and composite materials;
- skills to act in the changing conditions of the market system, to justify the costs, profits, profitability and price and marketing policy of the enterprise in order to find customers and buyers of products and professional services;
- skills to navigate in the directions development of national and world economy.

1. Characteristics of the enterprise and the selected product type

Chemical enterprise as a primary, economically independent, organizationally separated link of the production sphere of the national economy with the rights of a legal entity carries out economic activity - produces products, performs works, renders services in order to obtain a corresponding profit (income). According to the Economic Code of Ukraine, economic activity is the activity of economic entities in the field of social production, aimed at the production and sale of products, works or the provision of services of value nature and a certain price determination.

The choice and characteristics of the enterprise in the course of the economic part of the bachelor's thesis includes:

- defining the purpose of the enterprise's economic activity, for example, production of goods (provision of services) to meet the needs of consumers (specific producers) in the specified goods (services);
- characteristics of production, technological capabilities, product range and production volumes of goods (services). The feasibility of substantiating the assortment of the enterprise is associated with the possibility of a significant reduction in fixed (overhead) costs, which are distributed among all assortment units, while reducing the specific cost of production. Therefore, it is advisable to summarize and present in table 1 several products of the product range.

Table 1 - Assortment of goods (services) of the enterprise

Type of products	Share in total production, %

The next step is to justify the specific needs of consumers of chemical products:

- the name of the product, the main consumer qualities of the product;
- main technical and economic characteristics of the consumer;
- Existence of competitive analog products on the market (market research), their quality, price, consumer preferences, etc .

2. The development of the technological scheme of the process of production of the selected products

Economic feasibility of chemical technology of production of chemical enterprises it is advisable to start with the development of estimated structural (conceptual) the technological scheme as a set of processes of production of a given product minimal cost, of specified quality and quantity. Its development should be based on certain technical and economic indicators which are largely determined technologically chosen methods of synthesis of substances or the production of certain products.

At this stage it is necessary to study the existing processes and production counterparts, their advantages and disadvantages, and also innovative tendencies in the improvement of existing production technologies, selection of structural materials for manufacturing equipment, justification of norms of expenses of raw materials, components, low-value fixed assets, as well as the selection of necessary production and administrative staff.

Given that the same product can be obtained by various methods, from different types of raw materials, the determining factor in the justification of the process is the cost of raw materials, which comprises a significant portion of production costs.

Chemical engineering process is a combination of physical, chemical and physico-chemical operations to transform raw materials into desired products. The beginning of the flowsheet is the analysis of the stages of a particular process chemical production, preparation of material balance and output of each stage of the process, as well as the operation of the equipment specified substances or articles (Fig. 1).

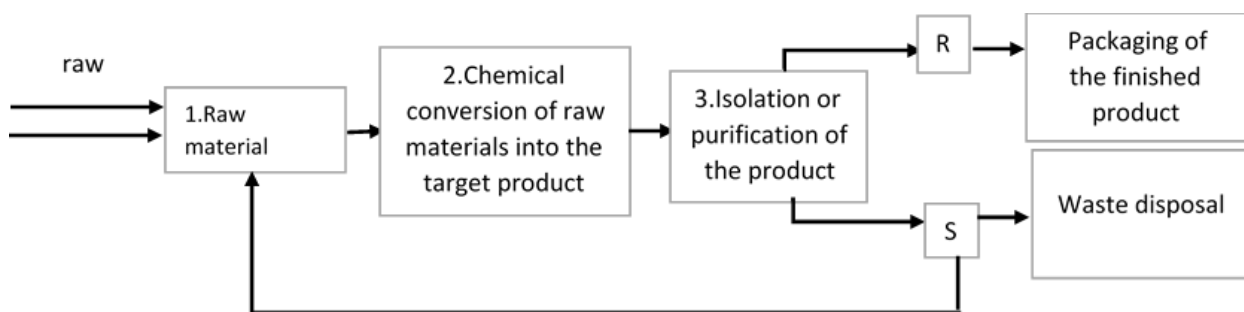


Fig. 1 - Schematic diagram of the simplest chemical production:

- 1 - preparation of raw materials;
- 2 - chemical transformation of raw materials into the target product;
- 3- isolation or purification of the target product,
- R - the target product;
- S is a by-product;
- A - raw material R S.

The first stage of the chemical production is raw material preparation to the implementation of chemical transformations. In General, these physical processes: crushing, grinding, dissolving, heating, concentration, enrichment, purification from impurities and the like. The task of the first stage – to provide raw material of such properties that would ensure the most efficient chemical transformation and yielded the desired product at the lowest cost.

After preparation of raw materials is the second stage of chemical transformation, which is the determining factor in any chemical process, because it is at this stage of valuable component of raw material is converted into the target product. Due to chemical transformation of a mixture, the chemical composition of which differs from the composition of initial raw materials. The presence of the stage of chemical transformation is an indication that the production applies to the chemical.

The third stage is the selection of the target product and its purification from impurities, which is associated with the fact that during chemical reactions simultaneously with the target (R) can be formed by-product (S) and convert the raw material is usually incomplete, with the consequence that the resulting product is

contaminated, which requires additional cleaning. Unreacted the starting material must be returned to the process in the first or second stage of chemical production.

All three stages form the basis of the chemical industry. They ensure the fulfillment of his primary goal – to produce the prescribed quality in the required quantity and forming a main subsystem. But the chemical industry could not function without the necessary equipment, provision of raw materials, energy, significant amounts of water as a coolant, solvent and reagent. At the same time, the development of market relations and the chemical industry put forward new requirements for all industries. The purpose of their operation is not only on the product but also compliance with such technological principles of complex use of raw materials, rational use of energy resources, protecting the environment from harmful industrial emissions and effluents. Therefore, the structure of each chemical production necessary to provide a set of waste disposal, clean emissions, the existence of ancillary subsystems, utilities, water treatment and wastewater, proper management and saving resources.

Therefore, each stage of chemical production of a given substance or article involves a resource filling in the sequence:

- direct material resources - working capital (raw materials, components, semi-finished products, fuel, energy, water, etc.);
- fixed assets (machines, mechanisms, technologies, devices, buildings, structures, etc.) are involved;
- necessary workers (workers, employees, managers, support staff, others) who, through means of labor, transform work objects into new substances, products, that is, finished goods.

When developing a structural flow chart of a chemical process or production, it should be remembered that continuous production has significant advantages over periodic, in particular, the possibility of stepwise specialization of the involved equipment at each stage of production over time, and therefore, predicted or controlled in the direction of the specified quality parameters synthesized substances or articles and use of modern scientific and technological achievements.

Considering the efficiency of the use of the resources involved, continuous production is appropriate first and foremost for large and medium volumes, and periodic production for small ones.

3. Organization of work of chemical enterprises

Organization of work of chemical enterprises is focused on the specifics of their production activities. A considerable number of chemical enterprises operate under conditions of continuous production. This means that the company works 365 days a year, 24 hours a day and is:

$$T_{\text{of the enterprise year}} = 365 * 24 = 8760 \text{ hours / year} \quad (1)$$

According to the Labor Code, each employee must work a certain number of hours during the year under normal working conditions, which is determined by the formula and is:

$$T_{\text{employee year}} = \frac{365 - Th}{7} * 40 - (Th^* - 1) * 1 = \frac{365 - 11}{7} * 40 - (8 - 1) * 1 = \\ = 2015 \text{ h/year} \quad (2)$$

where, 365 - number of days per year;

$Th = 11$ days - the number of holidays in Ukraine in the current period.

$\frac{365 - Th}{7}$ - number of working weeks per year;

40 - the length of the working week of an employee in accordance with the Code of Laws on Normal Working Conditions in Ukraine;

$\frac{365 - Th}{7} * 40$ - standard amount of time worked by an employee per year, h / year.

Th^* - the number of holidays per year, which are weekends, before which the working day is reduced by 1 hour.

The enterprise in the conditions of continuous production works 8760 h / year, and the employee 2015 h / year. Therefore, for proper recruitment of jobs in normal production conditions, the number of required teams will be:

$$N_{br} = (T \text{ of the enterprise year}) / (T \text{ of the employee year}) = \\ = 8760/2016 = 4,37 \approx 4 \text{ brigade} \quad (3)$$

Suppose there are 5 brigade involved in the production process. In such circumstances, one team will finish 63% of the time. However, if 4 brigade are involved in the production process, each of them works 9% of the time during the year, which is compensated by their remuneration.

An axiom should be guided in order to construct an effective variability schedule under continuous production and normal working conditions: the number of brigade outputs in one shift should be equal to the number of brigade. In our case, these 4 brigade work alternately in 3 shifts.

An important concept in drawing up the variability chart is the change in turnover T_m / o as the number of days between brigade exits into one shift, which is determined by the schedule of variability and is the number of days through which the same brigade begins its work in the same shift that it started on. the beginning of the variability graph. Thus, the actual time worked by the employee during the year is determined by the formula:

$$T_{\text{employee}}^{\text{factual}} = \frac{365}{T_{\text{shift/turnover}}} * (T_{\text{shift/turnover}} - T_{\text{weekends}}) * t_{\text{shift h}} / \text{year} \quad (4)$$

where, $T_{\text{shift/turnover}}$ - number of days of change of turnover;

T_{weekends} - the number of days off of turnover;

t_{shift} - duration of change, hours

Based on the formula 3, for the organization of the production process in the conditions of continuous production requires 4 teams, not 5. The processing of workers will be determined by the formula:

$$T_{\text{recycling}} = T_{\text{employee}}^{\text{factual}} - T_{\text{employee year}} \quad (5)$$

The estimated duration of changes in normal production conditions will be:

I shift: 8am - 4pm

II shift: 16.00 - 00.00

III shift: 00.00 - 06.00

However, chemical industries often have adverse conditions in which the duration of the change is not 8, but 6 hours a day. In such circumstances, the employee must work for the year:

$$T_{\text{workers harmful}}^{\text{year}} = \frac{365 - Th}{7} * 36 = \frac{365 - 11}{7} * 36 = 1890 \text{ h / year} \quad (6)$$

where, 365 - number of days per year;

Th = 11 days - number of holidays in Ukraine in the current period;

$\frac{365 - Th}{7}$ - number of working weeks per year;

36 - the length of working week of an employee in harmful working conditions, in accordance with the Labor Code of Ukraine.

Therefore, the company operates 8760 h / year under harmful conditions of continuous production and 1890 h / year. Therefore, for the proper staffing of jobs in hazardous production conditions, the number of required teams will be:

$$N_{\text{brigade}} = \frac{T \text{ of the enterprise year}}{T_{\text{workers. harmful year}}} = \frac{8760}{1890} = 4,8 \approx 5 \text{ brigade} \quad (7)$$

We also provide an approximate organization of the duration of changes in harmful production conditions:

I shift:: 8am - 2pm

II shift:: 14.00 - 20.00

III shift: 20.00 - 02.00

IV shift: 02.00 - 08.00.

According to the formulas and justifications, schedules of production variability are constructed.

4. Rationale for production costs of selected products

The production costs of the enterprise are primarily related to the production assets as a set of fixed assets and current assets of the enterprise (Table 2).

Table 2 - General structure of production assets of the enterprise

Production funds of the enterprise					
Productive funds			Funds of circulation		
Fixed assets		Current assets	Final product	Enterprise cash	Receivables ¹
Passive	Active	Items of work			
Fixed assets		Working capital			

Fixed assets are means of labor that participate in many cycles of the production process and transfer their cost to the cost of the finished product in parts in the form of depreciation in the course of their technological use and wear.

In accordance with Clause 4 of PF 7, fixed assets are tangible assets held by an enterprise for the purpose of using them in the production process or supplying goods, providing services with an expected useful life of more than a year (or an operating cycle, if more than a year).

Previously, the concept of "fixed assets" was used. However, with the advent of tax law, the term "fixed assets" has begun to be used in accounting, and the term "fixed assets" is still used in economic analysis, although both terms mean the same objects. One of the first definitions of the term "fixed assets" belongs to A. Smith, who noted that "the fund is any accumulation of products of land and industrial labor, which becomes capital only when it brings the owner income or profit."

The fixed assets, expressed in monetary terms, are called fixed assets of production.

In the structure of fixed assets are allocated active funds - those that are directly involved in the production process - technology, machinery, equipment and passive funds - those that create the necessary conditions for production - industrial buildings, structures, and other objects (Fig. 5).

¹ receivable- the amount owed to the enterprise by legal entities and individuals as a result of economic relations with it.

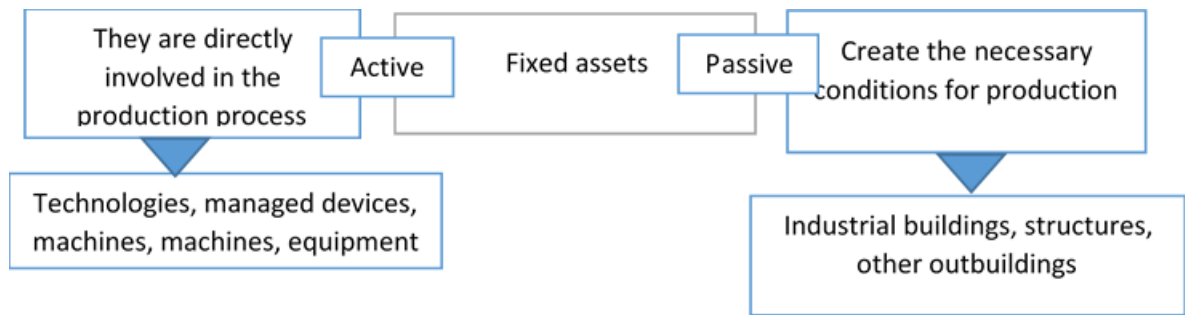


Fig. 5. Division of fixed assets into active and passive

In the process of selecting fixed assets, it is necessary to take into account not only their value, but also the cost of their acquisition, delivery and installation.

Current assets include items of labor that are involved in the production process once (raw materials, components, labor, etc.) and transfer all their value to the finished product during one production cycle. Thus, the value of circulating funds is reimbursed in the cost of the finished product in full in each turnover of capital and fully returned to the enterprise in cash if successful sale of goods. Table 3 shows the main differences.

Table 3 - Main differences between fixed and current assets

The main criteria	Fixed assets	Current assets
Including	Means of work (technologies, machines, buildings, structures)	Work items (raw materials, semi-finished products, components, etc.)
How is production involved?	Repeatedly	Once
How is it spent?	It gradually wears out	Fully consumed
How do they transfer their cost to the cost of products produced?	Gradually, in parts, as we wear	Completely and completely

Along with fixed and current funds (production funds) that serve the process of production, economists distinguish between circulation funds that serve the process of circulation (procurement of goods, sale of finished goods) and include finished goods, cash in the bank account and accounts receivable - buyers for goods or services sold by the company on credit.

Circulation funds and circulating funds are rotated in the same way (they are used for one turnover), so they are often combined and called monetary assets (table 4).

Table 4 – Production costs by economic elements

Production cost of production	<p>Direct Material Costs:</p> <ul style="list-style-type: none"> – consumption of raw materials and materials except for returned waste; – costs of purchases of semi-finished products and component parts; – fuel and energy consumption; – the cost of packaging and packaging material; – costs of construction materials; – spare parts costs; – expenditures of agricultural materials; – other material expenses;
	<p>Direct labor costs:</p> <ul style="list-style-type: none"> – wages of production workers who directly service process equipment at appropriate rates and tariffs; - bonuses, incentives, compensation, vacation pay, other labor costs.
	<p>Social deductions to the Pension Fund - 22% on wages</p>
	<p>Depreciation of fixed assets and intangible assets for industrial purposes:</p> <ul style="list-style-type: none"> - depreciation of fixed assets and non-current intangible assets; - depreciation of other non-current tangible assets.
	<p>Other direct costs:</p> <ul style="list-style-type: none"> –research and development costs; –cost of works, third-party services and utilities; –cost of renting, repaying loans and servicing them; –losses due to lack for technological reasons; –the cost of inventories sold; –amount of bad receivables ; –losses from operating exchange rate differences; –losses from inventory depreciation, shortages and damage to values; –recognized penalties; –costs of maintaining objects of socio-cultural purpose; –other operating expenses.
General production costs	<ul style="list-style-type: none"> – production management costs; – expenditure on fixed assets and intangible assets of general purpose; – costs for improving technology and production organization; – costs for heating, lighting, water supply, sewerage and other maintenance of industrial premises; – expenditures on labor protection, safety and environmental protection; – other general production costs.

Totality cost of production of certain products represents a cost indicator - the cost, which is appropriate to form in accordance with the current regulatory document - Regulation (Standard) of accounting - 16 "Costs" [11], which embodies

the most generalized approach to the classification of costs, summarizing the five direct production costs, as well as overhead costs that are apportioned between the types of products in the product range (Table 4).

Predicted preliminary economic indicators of future production, it is advisable to take primarily from the experience of production-analogues or to determine simplified indicative cost calculations. In the course of designing new businesses and expanding existing ones, it is advisable to analyze the impact of increasing the capacity of the enterprise on the cost of production, as well as on the capital expenditures, raw materials, components, MNMA, fuel, energy, wages of production workers together with the ESA on the production unit output, as well as depreciation of the underlying fixed assets of the enterprise.

The increase in production capacity is primarily due to the increase in the volume of chemical equipment, reaction and auxiliary equipment. However, such an increase causes a reduction in both the specific energy consumption and its losses during the technological process. The increase in capacity also does not affect workshop and factory costs, and therefore their specific values are also reduced.

4.1. Justification of direct material costs per unit of output

In accordance with P (C) BO 16 "Expenditures" direct material costs per unit of production (rate of consumption of resources, kg, t, units, m³, etc.) are justified as costs for raw materials, components, fuel, energy, utilities, spare parts, low value non-current assets (MNMA). The latest according to P (C) BO-7 "Fixed Assets" - special tools, devices, items, the term of use of which is more than one year. The enterprises have been granted the independent right to attribute to the MNMA tools and devices worth up to 6 thousand UAH. They can be written off at cost once. To justify electricity costs, it is advisable to use the formula:

$$C_{el.en.} = W \times \alpha \quad (8)$$

where W is the amount of electricity consumed, kW;

α - tariff cost of electricity, UAH / kW*h.

Annex 1 lists electricity tariffs in force since January 1, 2020.

These costs should be summarized in Table 5²:

Table 5 - Direct material costs

№ п/п	Resource name	Unit of measurement	Price	Number of resources	Need for a month	Need for a year
1.	Consumption of raw materials and materials	UAH				
2	Costs of purchases of semi-finished products and component parts	UAH				
3	Fuel	UAH / L				
4	Electricity	UAH per kW / h				
5	Utilities	UAH / m ²				
6	MHMA					
Total:						

4.2. Rationale for the cost of labor of production staff and administrative and technical enterprise

The main modern forms of remuneration are hourly and business. Each of them has features of accrual. Yes, the direct hourly wage system is the amount of time worked by an employee and is calculated by the formula:

$$W_{hourly}^{straight} = TR \times t, \text{ UAH} \quad (9)$$

t - is the number of hours worked by the employee, h .; TR - tariff rate of remuneration, UAH / h.

It should be noted that since January 1, 2020, the minimum wage in Ukraine is 4723 UAH / month, respectively, the minimum wage rate will be:

$$TR_{min} = 4723 / 4723 / 21/8 = 28,31[\text{UAH} / \text{h}] \quad (10)$$

² The number of rows in a table and all other tables changes according to the number of elements required

Where 4723 UAH - current minimum wage in Ukraine as of 01/01/2020, (the Cabinet of Ministers of Ukraine reviews the minimum wage annually);

21 - number of working days of the month;

8 - standard working hours, hours.

It should be noted that the remuneration of production workers is carried out in accordance with the statutory fixed tariff net of grades and coefficients for remuneration of employees of institutions, institutions and organizations of certain sectors of the budgetary sphere, which is presented in Annex 2.

Hourly-paid wages are partly similar to the previous system, including bonuses for quality work and are calculated using the formula:

$$W_{hourly-prem} = TR \times t + P, \text{ UAH} \quad (11)$$

where P - bonuses for quality work, UAH.

Another form of remuneration is a direct piecework system, which provides remuneration at the developed rates for certain types of work performed and is calculated by the formula:

$$W_{detachable}^{straight} = \sum_{i=1}^n P_i \times Q_i, \text{ UAH} \quad (12)$$

P_i - cost of performing the i th operation, type of work, UAH / unit;

Q_i - number of completed works or units of production, units.

At the same time, the part-bonus system of remuneration also takes into account the additional payments for the quality of the performed works (services).

$$W_{detachable}^{straight} = \sum_{i=1}^P P_i \times Q_i + P, \text{ UAH} \quad (13)$$

where P - bonuses for quality hard work, UAH.

A part-progressive system of remuneration provides for remuneration based on the normalized (basic) prices of production. However, its undoubted advantage is the motivation of employees to increase overtime output while maintaining proper product quality. A part-progressive system of remuneration is calculated by the formula:

$$W_{detachable}^{programm} = \sum_{i=1}^n P_{bas} \times Q_{bas} + (Q_{act} - Q_{bas} \times 1,1) \times P_{inc}, \text{UAH} \quad (14)$$

R_{bas} - basic price for production of unit of production, UAH / unit;

P_{inc} - increased price for the production of excess quantities of products, UAH / unit;

Q_{bas} - planned (basic) production, performance of works, services, units;

Q_{act} - actual production, performance of works, services, units;

1.1 is a coefficient of higher price for exceeding the norm by not less than 10%.

The collective form of time payment provides for the distribution of the earned value of the aggregate remuneration between the participants of the labor collective according to their participation and is determined by the formula:

$$W_i = \varphi_i * N_i, \text{UAH} \quad (15)$$

$$N_i = K_i * t_i * CTU_i \quad (16)$$

$$\varphi_i = PF / \sum N_i \quad (17)$$

W_i – wages of the i th worker's brigade, UAH.; φ_i – base percentage participation of each employee in the completed task, UAH/Bal.; N_i – the number of points of the i th team member in the implementation of works (services); K_i – qualification level i -team member as per the tariff rate; t – time spent working the i -th member of the staff, an hour. CTU – labor force participation rate of the i th team member in the implementation of the General scope of work is determined by the team.

So, the justification for the remuneration of production personnel and administrative and technical enterprise involves the analysis of the personnel structure of the enterprise and the distinction between employees, whose wages is based on salaries (referred to as semi-fixed costs of the enterprise) and employees, whose wages piecework subject to the discharge of the employee (referred to as conditionally-variables costs of the enterprise). In the wage Fund of the enterprise in addition to staff salaries included and charges of the enterprise on a salary to the Pension Fund [13].

The wage Fund (WF) is a set of wages of employees together with social contributions to the Pension Fund, which is determined by the formula:

$$WF = W + \text{Accrual to the Pension Fund UAH} \quad (18)$$

W – total wage of employees, UAH.

Accruals to the Pension Fund amount to 22% of wages and are mandatory to target taxes in a single social contribution (ERU).

The salary costs of employees performing the current repair of the Electromechanical equipment is estimated on the basis of the repair regulations. Data of the personnel structure and payroll summarize in table 6.

№	Position	Form of payment	Number of employees	Salary, ths UAH		
				per month	for the quarter	per year
Administrative and technical staff						
1.		rate				
2.						
Total						
Social deductions to the Pension Fund (22 %)						
WF						
Production staff						
1.		detachable				
2.						
Total						
Social deductions to the Pension Fund (22 %)						
WF						

4.3. Substantiation of the value involved of the fixed assets involved and depreciation

According to P(C)BU 7 "fixed assets" main resources are land, capital costs associated with their improvements, buildings, constructions, transfer devices, machines, equipment, vehicles, tools, devices, inventory (furniture) working and productive cattle perennial plantations other fixed assets and other tangible assets: library collections, low-value tangible assets (MNMA), temporary structures, natural resources, container inventory, and the like.

According to p. 14.1.138 the Tax code of Ukraine fixed assets – are tangible assets of the company, the cost of which exceeds UAH 6000 designated by the owner for use in business activities for a period of more than one year from the date of commissioning. Their value is constantly decreasing due to physical and moral wear and tear. This process is called depreciation. Thus, depreciation is a process of gradual transfer of value of fixed assets, intangible assets of the company for finished products, works, services within the existing depreciation deductions. The national standard is a company to choose one of five methods of calculating depreciation of property, plant and equipment. Depreciation method the company chooses their own.

The cost of the equipment, devices and apparatus taking current prices and new samples for the expected cost of production /estimated premium/ discount/ compared to the base equipment installed, depending on complexity /simplification/ sample. Annex 3 presents the current depreciation of the equipment.

The cost of the main and auxiliary tasks is determined by the current price list and separate price list. At the same time, expenses for carrying out current repairs of the equipment and materials (spare parts) for their conduct are included in the amortised cost of fixed assets. In determining the capital costs include the cost of necessary equipment, instruments, apparatus, etc. including the cost of shipping and installation of equipment at the production site; construction, expansion or conversion of industrial buildings, constructions or their parts related to the

4.4. Justification of other direct costs

Other direct costs include research and development costs, third-party services, utilities and rentals, loans and their maintenance, technological shortage losses, bad receivables, operating exchange differences, fines, penalties, penalties, withholding costs. socio-cultural purposes, etc. Let us summarize the other direct costs in Table 8.

Table 8 - Justification for other direct costs

Types of services	Data sources	Cost of services, UAH.	
		for a month	for a year
1. Protection	Agreement		
2. Advertising	Agreement		
3. Rent	Agreement		
3. Transportation costs	Calculations		
Total:			

4.5. Justification total production costs

According to P(s)BU 16 "Expenses are part of total production costs expenses include:

- the management costs of production (wages of the administration of the departments, sections, etc.; contributions to social activities and medical insurance of staffs of shops, plots; costs for business trips personnel departments, sections and the like);
- depreciation of fixed assets overhead (Guild, district, linear) purposes;
- amortization of intangible assets overhead (Guild, district, linear) purposes;
- the costs of maintenance, operation and repair, insurance, operating lease of fixed assets, other non-current assets of General production purpose.

- the costs of improving the technology and organization of production (wages and deductions for social activities of workers engaged in improving the technology and organization of production, improve product quality, increase its reliability, durability and other operating characteristics in the production process; costs of materials, purchased component parts and semi-finished products, payment of services of outside organizations and the like);
- the cost of heating, lighting, water supply, drainage and other maintenance of production facilities;
- maintenance costs of the production process (salaries of overhead personnel; deductions for social events, medical insurance for workers and apparatus production management; expenses for technological control over production processes and quality of products, works, services);
- the cost of health, safety and environmental protection;
- other costs (in-plant movement of materials, parts, semi-finished products, tools of the compositions to the plants and finished products to the warehouse; shortage of work in progress; shortage and loss from damage of material assets in shops; payment delays and the like).
- Summarise the costs in table 9.

Table 9 – total production costs

Types of services	Data source	Cost of services, UAH.	
		For a month	For a year
1.			
2.			
Total:			

4.6. Justification of the break-even volume of production

In order to substantiate the break-even volume of production, it is necessary to determine the volume of production, which will first of all cover the expenses incurred by the enterprise, and will also allow the enterprise to obtain the desired profits. In order to solve the break-even problem, all costs incurred by an enterprise are divided into conditional and conditional variables.

Conditional production costs include the costs of maintenance and management of production, which remain unchanged or almost unchanged as the volume of activity changes. These include: depreciation, payroll for administrative and technical personnel with charges, company rent, municipal tax, environmental pollution charges, fire alarm costs, and more.

Conditional variable costs include the cost of producing a certain type of product, namely, the cost of raw materials, materials, components, fuel, energy, wages of production workers, etc. The value of these costs is proportional to the volume of output, so it changes with the change in output. Conditionally fixed and conditional variable costs of the enterprise are summarized in Table 10.

Table 10 - Contingent and Contingent Costs of an Enterprise

Cost Articles	Data sources	Costs (UAH)			
		for 1 unit.	For a month	for the quarter	For a year
Contingent costs					
1. FOP of administrative and technical staff	tab. 6				
2. Depreciation	tab. 7				
3. Rent	tab. 8				
4. Protection	tab. 8				
5. Advertising	tab. 8				
6. Total expenditures	tab.9				
Total conditional costs					
Conditional variable costs					
1. Direct material costs	tab.5				
2. FOP production staff	tab 6				
3. Transportation costs	tab. 8				
Total variable costs					

In order to justify the relationship between production volumes, profits and costs, it is advisable to set prices based on break-even production. At the same time, special attention is paid to the analysis of output, which allows to determine the critical volume of production of goods at which the costs are equal to the proceeds from the sale of

goods. In this case, the company has neither profit nor loss, which means such production volume of goods, which covers the costs incurred by the enterprise.

The justification of break-even production is based on the following assumptions:

- the price of sale of goods, as well as the prices of consumed production resources, are unchanged;
- the costs of the enterprise are divided into fixed, which remain constant with changes in production volumes, and variables that change in proportion to production volumes;
- revenue from the sale of goods is proportional to the volume of its sales;
- when changing the level of profitability, and thus the proceeds from the sale can be several points of break-even volume of production;
- the range of products is constant if the company produces several products (the value of marginal profit in this case will depend on the range of products, and the points of critical production volumes are justified for each product unit of the product).
- production volume equals sales volume.

Algebraically, the critical point of production (break-even point) can be found as follows:

$$TR = FC + VC \quad (19)$$

$$TR = Q * P = FC + AVC * Q \quad (20)$$

$$Q(P - AVC) = FC \quad (21)$$

$$Q = FC / P - AVC = FC / MR \quad (22)$$

FC, VC - fixed, variable costs in the cost of production (all its volume); P is the selling price of the product; TR - sales revenue; Q - volume of production (sales); AVC - specific average variable costs; MR is the marginal profit margin.

At the break-even point, marginal profit equals the amount of fixed costs.

The critical selling price (selling price), given a given volume of sales, fixed and average variable cost per unit of goods (AVC), at the level of which the total cost is covered and is calculated as follows:

$$P = FC / Q + AVC \quad (23)$$

The value of critical revenue from the sale of goods (services), it is advisable to calculate the formula:

$$TR = \frac{FC}{1 - \frac{AVC}{P}} \text{ або } TR = \frac{FC}{\frac{MR}{P}} \quad (24)$$

Thus, a reasonable break-even point will allow you to determine the required production volumes to cover the costs incurred.

4.7. The justification of the overhead of the enterprise

An important aspect of the formation of the cost of goods is the justification of overhead costs, which are associated with fixed costs, the absolute value of which with the increase (decrease) of output does not change significantly. Conditional costs include the costs associated with the maintenance and management of production activities of workshops, production units, as well as the cost of meeting the economic needs of production. are invoices, that is, distributed among all types of products of the enterprise, if such enterprise produces. Enterprise overhead is determined by the assortment, production program of the enterprise and is formed by distributing the contingent costs between all units of the product range, which is shown at the beginning of the tutorial in Table 1. The overhead calculation data are recorded in Table 11.

Table 11 - Calculation of enterprise overhead

Indexes	Data sources	per unit	For a month	for a Quarterly	For a year
1. Conditional fixed (overhead) costs, thousand UAH.	tab. 10				
2 Share of output in total production, %.	tab.1				
3. Overhead, thousand UAH.	p.1 * p.2 / 100%				

5. Justification of the cost of production

The cost of production consists of contingent and contingent (overhead) costs, which are summarized in Table 12.

Table 12 - Justification of the cost of goods (services)

Cost Articles	Data sources	Costs (UAH)			
		per unit	For a month	for a Quarterly	For a year
1. Conditional variable costs	tab.10				
2 Contingent costs (overhead)	tab10 or11				
3. Cost	p.1+p.2				

6. Justification of the efficiency of the enterprise

Economic efficiency is characterized by the highest possible results of the activity of the economic entity, and enterprises in particular with the most optimal use of the resources involved.

It should be noted that in the characterization of efficiency as an economic term in the Western economic literature, the notion of "Pareto-efficiency" (by the name of the famous Italian economist V. Pareto), according to which the economic efficiency of the national economy is its state, under which it is impossible to increase the degree of satisfaction of the needs of at least one person, unless the situation of other members of society is worsened.

The main feature of such systems is the cost nature of the means (costs, expenses) of achieving the goals (results), and in some cases the goals themselves (in particular, profit).

In general, the indicator of economic efficiency can be expressed by the formula:

$$E = \frac{e}{VR} \quad (25)$$

where E - the indicator of economic efficiency, UAH;

e - the magnitude of the economic effect, UAH;

VR - the cost of resources (funds, means of production, objects of labor, labor factors, time, etc.) to ensure the specified economic effect, UAH.

In the analysis of efficiency as a characteristic of the system of internal relations between its systemic factors, the most accurate is the reflection of their movement in space and time, which means choosing the most productive direction of development, which is determined by the ratio of the result to the expenses incurred over a period of time.

Efficiency as a basis for making economic decisions is used to form the material-structural, functional and systemic characteristics of economic activity. Such characteristics of economic activity as integrity, multilateralism, dynamism, interconnectedness of its different parties are reflected through the category of efficiency.

Thus, the generalized economic efficiency of the enterprise is a quantitative ratio of economic activity to production costs:

$$E = \frac{results}{costs} * 100\% \quad (26)$$

However, the actual assessment of efficiency involves the selection of target objects, which are the elements of the enterprise, the links between them and the processes that are carried out in the process of economic activity.

In the economic literature, there is a complex classification of the evaluation of the effectiveness of the enterprise, in particular, by the use of resources, the organization of economic processes, the effectiveness of the structure of fixed assets, working capital, equity and borrowed capital, management decisions, communications to improve the efficiency of production of goods and services, etc. The classification of the performance targets of the enterprise is presented in Table 13.

The economic effect reflects the various cost indicators that characterize the intermediate and final outputs of the enterprise (in a business combination). Such indicators include the volume of commodity, net or sold products, the amount of profit received, the savings of certain types of production resources, or the total savings from the decrease in the cost of production, etc.

Table 13 - Classification of business performance targets

Efficiency	Management	Narrow (control systems only)		
		Broad (enterprise as a whole)		Functions, units, time
	Use of resources	Capital	The main one	Active part Passive part
			Reverse	Material costs Funding
		Against	By staff categories (managers, specialists, employees, key production workers)	
			By professional competence and qualification	
	Intangible assets			
	Processes	Production		
		Marketing		
		Investment (real and financial)		
		Finance		
		Public Relations (Public Relations)		
		Business processes		
	Structures	Production		By units
		Organizational		According to the hierarchy
Communications	Material flows			
	Information			
Of services	By nomenclature and assortment			

Generalized by G.K. Agadzhanov [1, p. 288]

The social effect is to reduce the length of the workweek, expand jobs and increase employment, improve working conditions, leisure, environmental conditions, life safety and more. However, it should be noted that the social effect is often not only positive, but also negative (for example, the emergence of unemployment, increased inflation, deterioration of environmental performance). Therefore, economic and social efficiency is often the basis of governance.

Assessment of cost effectiveness is necessary to make managerial decisions on organizational, technical and socio-economic measures, the overall results of economic activity of the enterprise over a certain period of time. Therefore, on their basis, the best (optimum) ways of application of new technology, technologies,

organization of production, increase of production capacity, quality improvement and updating of product range, etc. are substantiated.

However, the most significant economic category of the efficiency of the enterprise's business activity is profitability, which characterizes the efficiency of the business activity of the enterprise and provides expanded reproduction of the resources involved. To analyze the efficiency of the enterprise use appropriate indicators that are determining the effectiveness of the enterprise.

The profitability of the enterprise is characterized by two interrelated but not identical indicators: profit and profitability (Fig. 6).

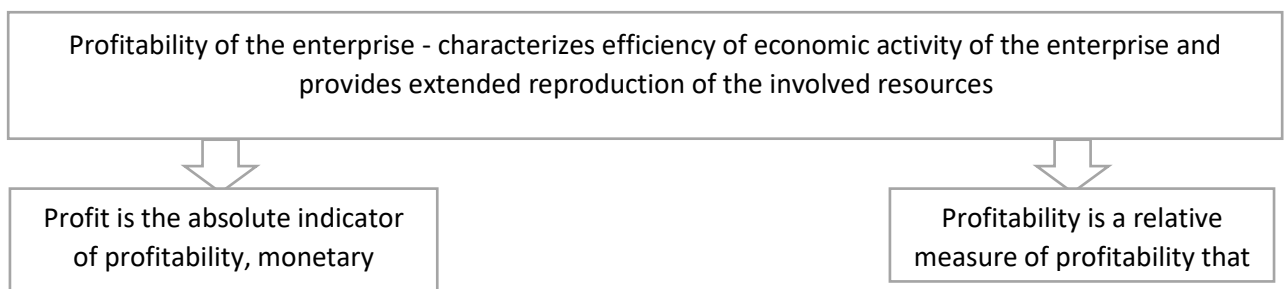


Fig. 6. The profitability of the enterprise

Profit is the absolute monetary value of the results of operations of the company for a certain period, however, profitability is a relative measure of return, which reflects the efficiency of committed resources and implemented business expenses. Profit and profitability – the main quality indicators of economic efficiency of the enterprise, describing its financial condition, the success and feasibility of the developed program of economic and social development. Profitability and profit are closely linked. Thus, the net profit of the enterprise creates the conditions for increasing profitability.

The absolute indicator of the effectiveness of the company profit is:

- the main purpose of business, the main motive of any business, the main criterion for success;
- not guaranteed income of the enterprise, as a result of his economic activities (in case of failure or action of force majeure the company may not have profits to lose equity, so it is considered a cost of risk of business activity;

- part of the company's revenues from this activity, which excluded from its cost;
- cost performance, which is measured in a monetary form;
- market value of invested capital in the market;
- the criterion of efficiency of production activity of the enterprise (the profit margin of the enterprise in comparison with the industry characterizes the skill, experience, training, initiative management personnel to operate in conditions of market economy, to have a successful partnership;
- the protective mechanism of bankruptcy of the enterprise, since its presence contributes to the reduction in the share of attracted capital and the efficiency of use of own capital; the greater the profits, the less external sources of funds, and the higher the level of self-financing and its competitiveness in the market;
- the main financial source of enterprise development and ensuring its sustainable development, because it provides the scientific and technical improvement of its material base and produce all forms of investment;
- a source of economic development of the state and meet the social needs of society through the mechanism of taxes and the redistribution through state and local budgets for socially important needs of the society in the implementation of various social programs as employees and the public, especially unprotected layers.

Relative indicators of enterprise profitability indicators, reflected by the ratio of achieved results and implemented enterprise costs and determined as a percentage according to the formula:

$$N_{pr.} = \frac{P_{gross}}{V_{gross.}} \times 100\% \quad (27)$$

Profitability has a number of modifications: profitability of used resources (production funds, total assets, equity) and profitability of products (costs for its production and sale).

According to Section 3, “Enterprise Profit Tax”, the Tax Code of Ukraine, profit is part of the gross income of the enterprise (firm) excluding all expenses for production and commercial activities.

Profit is not an arithmetic probability, which is determined only at the end of the reporting period (month, quarter, year). This is a specific goal of the enterprise, which is quantified, so it is advisable to plan and determine profit from the outset. Therefore, in the course of substantiation of the level of profitability of the goods (services) it is necessary first to justify the amount of replenishment of own production funds; second, to consider the problem of break-even of this type of products; third, to conduct a market research of the product.

In a market economy, the magnitude of profits should reflect property relations or other financial obligations, such as paying dividends to shareholders or borrowing, and so on. The recommended distribution of company profits by funds is as follows:

Production Development Fund (FGD) - 50%;

Social Development Fund (FSR) - 25%;

premium fund (PF) - 10%;

dividends to the founders - 15%.

The data of justification of the necessary level of profit are summarized in table 14.

Table 14. Justification of the level of profitability of the goods

Cost Articles	Data source	unit measuremet.	Indicators Value.
1. Cost per unit of production	table. 12	UAH	
2. Production volume per year	Forecast	UAH	
2. Needed profit	$\Pi\Pi.2,1+2,2+2,3+2,4$ $+2,5+ 2,6+2,7$	UAH	
2.1. Loans and their servicing	Loan agreement	UAH	
2.2. Means PDF	Collective agreement	UAH	
2.3. Means SDF	Collective agreement	UAH	
2.4. Means BF	Collective agreement	UAH	
2.5. Cash payments to the owners of the enterprise	Collective agreement	UAH	
2.6. Financial reserve	$(2.1+2.2+2.3+2.4+2$ $.5)*0.05/0.95$	UAH	
2.7. Income tax	$(2.1+2.2+2.3+2.4+2$ $.5)*0.18$	UAH	
3. Required level of profitability of products	$\Pi.2 / \Pi.1*100\%$	%	

7. Substantiation of profitable output

If the enterprise plans to receive a certain amount of profit, then the required volume of production of the goods (services) is determined taking into account the desired amount of profit:

$$Q_{pr} = \frac{FC+\Pi}{P-AVC} \quad (28)$$

8. Justification of the value of production

Taking into account the need to fill the production funds of the enterprise, the proper level of profitability of products (services) substantiate the value of the unit of production (services). It should be noted that value added tax (VAT), which is paid by all business entities in accordance with section 5 of the Tax Code

of Ukraine, converts the value of the goods (services) to its price. The value of VAT is 20% of value added of the goods (services). Determine the value of VAT and the price of goods (services). Let's summarize the justification results in Table 15.

Table 15. Justification of cost and price of products

Cost Articles	Data source	Unit of measurement	Indicators Value
1. Cost per unit of goods (services)	table 14	UAH	
2. Rate of profitability	table 14	%	
3. "Normal" specific profit	$p.1 * p.2 / 100\%$	UAH	
4. Cost per unit production	$p.1 + p.3$	UAH	
5. VAT	$p.4 * 0,2$	UAH	
6. Selling price of the product (services)	$p.4 + p.5$	UAH	

9. Market pricing of products on the basis of comparison with the prices of competing counterparts

In order to analyze the boundaries of changes in the selling price in a free market, it is necessary to conduct a marketing research on analog products. The results of the studies are recorded in table 16.

Table 16 - Comparative analysis of the formed price with the prices of competitive analog products

Types of prices	Data source	Unit of measurement	Indexes
1. Estimated production unit price of VAT	Table 15	UAH	
2. Market prices of analogues on the market	Marketing market research	UAH	
Minimum		UAH	
maximum		UAH	
average		UAH	
3. Adjusted sales price			

10.Substantiation of the value of capital investments in production

In controlling the cost of a project, it is advisable to take into account cost changes made by project stakeholders as project participants can calculate its cost in various ways. First of all, this concerns the cost of the resource project required for the operations. At the same time, it is advisable in project cost management to predict the impact of management decisions made on its maintenance and technical support, on-going ongoing consumer and operating costs and implementation results. For example, limiting the number of actual design compliance checks to a design drawing can reduce the cost of a project, but significantly reduce its quality and increase customer operating costs. Let us justify and summarize in table 17 the amount of required investments.

Table 17 - Substantiation of capital goods production

Articles of investment	Value, thousand UAH.
Direct material costs:	
• costs of raw materials except recovered waste	
• the cost of purchasing semi-finished products and components	
• fuel and energy costs	
• the cost of spare parts	
• other material costs	
Direct labor costs of production workers	
• wages at the rates and tariffs of production workers	
• bonuses, incentives, compensation of production workers	
• payment of vacations of production workers	
• other costs of time spent by production workers	
Social contributions to the Pension Fund - 22% of the wages of production workers	
The value of fixed assets and intangible assets for industrial purposes:	
• initial cost of fixed assets involved, non-current intangible assets (including transportation, installation and dismantling)	
Other direct costs:	
• costs for research and development of innovative products	
• costs of third-party services (security, advertising, rental, etc.)	
• utility costs	
• repayment of loans (investments) and their servicing	
• other direct costs	
Total expenditures:	
• production management costs (remuneration of management staff together with the ESA to the Pension Fund, business trips, etc.)	
• expenditure on fixed assets and intangible assets of general purpose	
• the cost of improving technology and production organization	
• costs for heating, lighting, water supply, drainage and other maintenance of industrial premises	
• expenditures on labor protection, safety and environmental protection	
• other overhead costs	
Total investment for the project	

11. Estimation of payback on investment

Payback period (additional investment):

$$P_{\text{per}} = K/GP, \text{ years} \quad (29)$$

where GP is the average annual amount of cash flow (operating cost savings) for a certain period, UAH.

For short-term investments the period is measured in months, for long-term investments it is measured in years.

12. Analysis of product quality

With the entry into force of the Law of Ukraine "On Market Supervision and Control of Non-Food Products", the manufacturer and importer are responsible for non-compliance with the requirements of the legislation on consumer protection along with the final sellers of their products. How to prepare your own goods for sale, what documents should accompany the products and how they should be decorated?

According to Art. 4 of the Consumer Protection Law, consumers have the right to:

- the proper quality of the product or service;
- product safety;
- necessary accessible, reliable and timely product information.

At the same time, according to Art. 6 of the Law on Consumer Protection:

- the seller (manufacturer, contractor) is obliged to convey to the consumer the products of the proper quality, as well as to provide information about these products;

- the seller (manufacturer, contractor), at the consumer's request, is obliged to provide documents confirming the proper quality of products;

- requirements for products for their safety for life, health and property of consumers, as well as safety for the environment are set by regulatory documents.

How practically a manufacturer should implement the requirements of this article?

Product information, according to Art. 15 of the Law on Consumer Protection must contain:

- the name of the product and the indication of the goods or services under which they are sold;
 - the name of the regulatory documents to which the products of national producers must meet;
 - data on the basic properties of the products (including the list of raw materials used in the process of their preparation, including nutritional supplements), the nominal quantity (weight, volume, etc.), the conditions of use by individual categories of consumers and the warnings regarding the use of a specific product;
 - information on the content of harmful substances that are established by regulatory acts and information about the conditions of storage of products during the period of use;
 - the manufacturer in case of detection of incorrect information about the product (if it does not harm the health or property of the consumer) within a week removes these products from sale and brings the information about it to conformity;
 - date of manufacture;
 - warranty obligations of the manufacturer (contractor);
 - rules and conditions for efficient and safe use of products;
 - the shelf life (term of service) of the product (consequences of work), information about the necessary actions of the consumer after their termination, as well as about the possible consequences in case of failure to perform these actions;
 - the name and location of the manufacturer (contractor, seller) and the company that performs its functions in accepting consumer claims, as well as performing repairs and maintenance.
- Regulatory documents confirming the proper quality of products are:
 - certificate of Compliance;
 - declaration of conformity;

- quality certificate issued by the manufacturer;
- sanitary-epidemiological conclusion;
- test report in a certified laboratory;
- phytosanitary certificate, etc.

For drafting of normative documents certifying the quality of products (works, services) the relevant quality or safety services, technical control of the enterprise are guided by the Law of Ukraine "On Standardization". According to the Law, a normative document is a document that establishes rules, general principles or characteristics of different activities or their results. This term covers such concepts as "standard", "code of established practice", "specifications".

Code of practice and technical conditions can be a standard part of the standard or a separate document. Consequently, the product or service must meet the requirements of accepted standards in Ukraine. Currently in our country there is a harmonization of existing standards with the European, so the legacy standards of the Soviet era is gradually declining. In their place are put into effect standards that generally accepted in Europe.

According to article 14 of the law of Ukraine "On protection of consumer rights" the consumer has the right to safety of life, preservation of health, environment and property in the ordinary conditions of use, storage and transportation of products.

Of goods (results of works), the use of which after a certain period of time is dangerous to the life, health, consumer, environment or may harm property of the consumer, sets the lifetime (expiration date). These requirements may apply to the product as a whole and on its separate parts.

Products, which acts of the legislation or other normative documents stipulate mandatory requirements to the safety of life, health of consumers, their property, the environment, and provides for the application of the national conformity mark, must go through the established procedure of conformity assessment. The manufacturer has the right to mark their products with the national mark of conformity in the

presence of the Declaration of conformity and / or certificate of compliance issued in accordance with the law.

Sale of products without the national conformity marking and / or without a certificate of conformity or Declaration of conformity is prohibited.

In the process of chemical production needs to be input, intermediate and output quality control of products. The input controls are the equipment and raw materials.

A standard is a consensus-drafted document that specifies common and multiple rules of use, instructions or characteristics of an activity or its results, including products, processes or services.

Code of Conduct (Code of Conduct) - A document that sets out the practical rules or procedures for the design, manufacture, installation, maintenance, operation of equipment, structures or products.

Specifications - A document that sets out the technical requirements for the production of processes or services.

Quality control performs analytical chemist, analyzing samples of raw materials coming from the warehouse. Raw material analysis performed by chemical methods, where I analyze the presence of impurities and the purity of the product, which comes. The control is made immediately after the arrival of raw materials to the warehouse and 1 time per month regardless of the date of delivery. Carry out inspections of containers, which arrived on product packaging. Checking the purity of raw materials is carried out in accordance with current standards. The starting materials and the resulting product's quality is verified on the basis of existing standards. The results are recorded in the PC database. Chief technologist keeps a log of input control, which contains the following sections: raw material supplier and the results of the control of raw materials.

Current control is carried out by the analytical intervals of time and determines the content of the target product. Monitoring is carried out using special instruments. It can be destructive and non-destructive. The results are recorded in the database.

Equipment is checked at the stage of its purchases, and each shift before starting the production line, engineer or the chief engineer. Current repair of the equipment, if necessary, can be carried out during the production cycle (except equipment that is idle during this period) before or after it. The overhaul will be carried out once a year, during simultaneous leave for all working staff (in the winter).

For the products prepared by the passport of quality – made in any form of written document issued by the manufacturer and proof of certain properties of the product within the current quality standard (Appendix 4).

CONCLUSIONS

The conclusions summarize the economic feasibility of the selected chemical technology and summarize the main technical and economic indicators in table 18.

Table 18. Main technical and economic indicators

Indexes	Value
Annual output, units.	
Investment, thousand UAH	
Cost of production, ths. UAH	
Product price, UAH	
Profit, thousand UAH	
Profitability, %	
The coefficient of economic efficiency	
Period of return of investments, years	

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APPENDICES

Annex 1

Tariffs for electricity distribution services, effective from January 1, 2020

№	Power Distribution Companies	Tariffs for electricity distribution services	
		1 class of voltage, UAH / MWh	Class 2 voltage, UAH / MWh
1	PJSC "VINYTSYA OBLENERGO"	135,15	766,83
2	PrJSC "VOLYNOBOLENERGO»	97,77	666,97
3	JSC "DTEK DNIPROVSKI ELECTRICITY"	62,55	430,41
4	JSC "DTEK DONETSKI ELECTRICITY"	152,18	748,59
5	JSC "ZHYTOMYROBLENERGO"	153,42	791,36
6	PrJSC "ZAKARPATTIA OBLENERGO"	181,46	838,69
7	PJSC "ZAPORIZHYA OBLENERGO"	69,93	525,03
8	PrJSC "DTEK KIEV ELECTRICITY MAP"	63,06	229,29
9	PrJSC "KYIV OBLENERGO"	157,98	557,24
10	PrJSC "KIROVOGRADOBLENERGO"	201,12	818,45
11	PrJSC "LVIVOBLENERGO"	123,65	634,02
12	JSC "MIKOLAIV OBLENERGO"	133,32	641,17
13	JSC "ODESA OBLENERGO"	114,54	623,10
14	PJSC "POLTAVA OBLENERGO"	91,99	642,46
15	JSC "PRICARPATTIA OBLENERGO"	109,41	804,45
16	PrJSC "RIVNE OBLENERGO"	135,18	647,21
17	JSC "SUMYOBLENERGO"	100,46	798,63
18	OJSC "TERNOPILOBLENERGO"	142,50	806,45
19	JSC "KHARKIV OBLENERGO"	142,80	519,45
20	JSC "KHERSON OBLENERGO"	221,42	671,97
21	JSC "KHMELNYTSKOBLENERGO"	142,46	778,00
22	PJSC "CHERKASIOBLEENERGO"	101,15	605,57
23	JSC "CHERNIVTSIOBLENERGO"	98,40	687,01
24	PJSC "CHERNIGIV OBLENERGO"	166,55	794,75
25	DEMP PRAT "ATOMSERVIS"	12,20	479,33
26	SE "REGIONAL ELECTRICAL NETWORKS"	73,17	258,86
27	PRT "DTEK PEM-ENERGOVYGLYL"	26,18	397,91
28	DTEK HIGH-SPEED NETWORKS LLC	25,07	295,82
29	JSC "UKRZALIZNITSYA"	118,13	463,44
30	Communal enterprise "CITY ELECTRICAL NETWORKS"	57,70	572,43
31	PRET "PEM" CEC "	86,86	514,87
32	PE "GARANT ENERGY M" *	136,01	537,20
33	PE "GARANT ENERGY M" **	142,69	940,08
34	LLC "LUGANSK ENERGY COMMUNITY"	316,88	1145,82

* on the territory of Novoyavorivsk, Ivano-Frankivsk, urban settlement Shklo, p. Novy Yar, p. Forest, x. Okelets, x. Batogi, p. Old people, p. Stairs of Yavoriv district of Lviv region

** in the territory of the city of Novyi Razdil of Lviv region

Annex 2.

The only tariff grid of discharges and coefficients for the payment of employees of institutions, institutions and organizations of certain branches of the budget sphere

Tariff discharges	Introduced tariff rates
1	1
2	1,09
3	1,18
4	1,27
5	1,36
6	1,45
7	1,54
8	1,64
9	1,73
10	1,82
11	1,97
12	2,12
13	2,27
14	2,42
15	2,58
16	2,79
17	3
18	3,21
19	3,42
20	3,64
21	3,85
22	4,06
23	4,27
24	4,36
25	4,51

Annex 3.

Terms of use and depreciation rates of fixed assets, other non-current assets in accordance with paragraph 145.1 of the Tax Code

Groups	The name of the group of fixed assets	Minimum terms of use, years	Minimum depreciation rate,% / year
group 1	ground section	-	-
group 2	capital expenditures for improvement of land not related to construction	15	7
group 3	buildings,	20	5
	constructions,	15	7
	Transmitting devices	10	10
group 4	Machinery and equipment	5	20
	of them:		
	Computers and related devices, computer programs, the cost of which exceeds 6000 UAH	2	50
group 5	vehicles	5	29
group 6	instruments,instruments, inventory (furniture)	4	25
group 7	animals	6	15
group 8	perennial plantations	10	10
group 9	other fixed assets	12	9
group 10	library funds	-	-
group 11	low-valuenon-negotiable tangible assets	-	-

group 12	Temporary (non-titular) structures	5	20
group 13	natural resources	–	-
group 14	inventory packaging	6	17
group 15	rolled items	5	20
group 16	Long-term biological assets	7	15

Annex 4.



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сертификат № 27

Дисперсия ПВА-35П

ТУ У 24.3-25101682-010-2004

Дата изготовления 03.12.2012

№ п/п	Наименование показателей	Норма по ТУ У 24.3-25101682-010-2004	фактически
1	Внешний вид и цвет дисперсии	Вязкая жидкость белого или слегка желтоватого цвета, без комков и посторонних механических включений. Допускается поверхностная пленка.	Соотв.
2	Внешний вид и цвет пленки	Гладкая однородная прозрачная или слегка желтоватая. Допускается незначительная мутность.	Соотв.
3	Массовая доля остаточного мономера, %, не более	0,4	Соотв.
4	Массовая доля нелетучих веществ, %	35±2	35,34
5	Условная вязкость по стандартной кружке ВМС, с	10-80	58
6	Показатель концентрации водородных ионов (рН)	4,5-6,0	4,64
7	Осаждение при разбавлении, %, не более	5	3,32
8	Клеящая способность, Н/м (кг/см), не менее	600(0,6)	625 (0,625)
9	Диаметр частиц, мкм	1-3	Соотв.

Гарантийный срок хранения - 12 месяцев в таре производителя при температуре не ниже +5°C.

Показатели безопасности в пределах требований СанПиН 4603-88

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Дата выдачи сертификата 03.12.2012



ПРОИЗВОДСТВЕННАЯ
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ООО «ОМЕГА»

