Business plan for the construction of a plant for the production of polymer bituminous binders

LLC "Synthesis Technology"
2017

Contents

2. Privacy agreement

This confidentiality agreement is made in order to prevent persons who have read the business plan of non-disclosure of information contained in it.

We remind you that the persons who got acquainted with the business plan are obliged not to disclose the information contained in it without the prior consent of the management of the project participants - LLC «Sintez Technologies».

In addition, it is forbidden to copy individual parts or the entire business plan, as well as transfer it to third parties without the permission of the developer.

The list of information that the initiator of the project considers confidential:

1. Forms, methods and means of commercial activity.
2. Marketing information.
3. The information specified in the technical documentation of developments.
4. Description of the production process.
5. Presence and content of contracts and agreements with legal entities and individuals, as well as their projects.
6. Sales volumes.
7. Quantitative composition of names and personal information of employees, their positions.

The information and opinions expressed in this document are based on sources believed to be reliable and trustworthy, but do not give a full guarantee their accuracy and completeness.

As sources of information were used:

8. developments, calculations, technical documentation provided by LLC "Synthesis Technologies";
9. results of experimental work carried out on the basis of the SPA "Sinteznefteprodukt", ABZ-1 laboratory, St. Petersburg,
10. mass media and Internet resources.

All data, estimates, plans, proposals and conclusions given for this project, relating to its potential profitability, volumes of production, costs, rate of profit and its future level, are based on the agreed opinions of the team of participants in the project development.

3. Project Summary

This project for the production of polymer bituminous binders was developed at Moscow School of Management Skolkovo as part of the program for the professional training of teams for the management of projects for the development of monocities in the Russian Federation.

The project is aimed at diversifying the economy of the municipal formations of the Kemerovo Region.

The advantages of the investment project in general can be formulated as follows:

1. High investment attractiveness of the project due to the relevance, profitability and payback period less than 3 years.
2. The main business idea is connected with modern and actual production of polymeric bituminous binders.
3. Ecological component of the project: raw materials are rubber crumb, recycled from large-sized tires. The implementation of this project will significantly reduce the accumulated environmental damage.

The business plan is a description of the project for the construction of a plant for the production of polymer bituminous binders.

The initiator of the project is LLC "Synthesis Technology" (TIN 4246021590; KPP (tax registration reason code) 424601001);

The developer of the project for the production of polymeric bituminous binders is STA Skolkovo, LLC "Synthesis Technologies"(TIN4246021590; KPP (tax registration reason code) 424601001).

The project involves the construction of a large plant for the production of polymer bituminous binders with a capacity of 150,000 tons per year.

Construction of production and storage facilities - 297 million rubles.

Construction of tanks for polymeric bituminous binders (hereinafter - PBB), tar, fuel oil and reagents - 80 540 000 rubles.

Production equipment with installation on an individual project - 642.6 million rubles.

A plot of land with facilities and infrastructure - 306 million rubles.

Address: Russia, Kemerovo Region, Anzhero-Sudzhensk, the district of the industrial site of the Yaya oil refinery.

Key indicators of the effectiveness of the investment project are presented in the following table1:

Table 1: Indicators of the effectiveness of the investment project

Indicator name	Value
Investment costs (thousand rubles)	1 800 000,00
Revenue per month (thousand rubles)	262 500,00
Number of new work positions	50
Profitability (%)	27
Payback period (years)	2,1

Analysis of the key project indicators allows us to conclude that high efficiency and quick return on investment, as according to Rosstat data, the average profitability for the production of similar products in 2016 did not exceed 18%.

4. Characteristics of project participants

The purpose of writing the presented business plan is to substantiate the economic efficiency of the organization of production of polymer bitumen binder (PBB). The initiator of the project is the Limited Liability Company "Synthesis of Technology".

Experience of developers of the project LLC "Synthesis Technology".Requisites of LLC "Synthesis Technology":
Legal address: 652470, Russia, Kemerovo region, Anzhero-Sudzhensk city, S. Perovskaya Street, 27-316.
Mailing address: 652470, Russia, Kemerovo region, Anzhero-Sudzhensk city, S. Perovskaya Street, 27-316.
Email Address: 2sintec@gmail.com
TIN: 4246021590
KPP (tax registration reason code): 424601001
OGRN (primary state registration number): 1174205023948
Branch № 5440 VTB 24 (PAO)
BIC 045 0044751
Correspondent account 30101810450040000075
Settlement account 40702810137070000166

1 The director of the project and the General Director of the company SINTEK - Viktor Fedorovich Gluhov, the honored power engineer of Kuzbass, more than ten years he directed the largest power station Tom-Usinskaya GRES, under his leadership the largest projects in the energy sector related to increasing the capacity of existing production facilities and commissioning of new facilities were implemented.

2 The chief economist of the project Tatyana Rusinova, an economist, a graduate of the international faculty of management of the Federal State Educational Institution of Higher Professional Education of the TSU, the Skolkovo Moscow School of Management, has the experience of municipal service and an economist for more than 10 years.

3 The project's lawyer is Mikhail Shevtsov - a lawyer, a graduate of the International Institute of Economics and Law, and has more than 10 years of experience in the field of jurisprudence.

4 Construction and technological support of the project - LLC "Siberian Company", a director - Vyacheslav Parfyonov. This company provided construction work at energy facilities in the Kemerovo region.

5 Management and marketing of the project - Anton Porokhin, an economist, a deputy head of the department of marketing and management of the Novokuznetsk

branch-institute of the Kemerovo state university, a graduate of the Skolkovo Moscow School of Management, an economist for more than 14 years.

6 Urban Nikolay – a candidate of chemical sciences, a head of the scientific and innovation sector of the Novokuznetsk branch-institute of the Kemerovo state university, a scientific secretary of the expert council under the head of the city for innovative industrial development since 2011. (Novokuznetsk)

7 Designing and engineering support of the construction - LLC "Intertekenergo", an executive director - Tsyplenkov K.M. The company "Intertehenergo" was founded in 2011 and specializes in engineering services in the area of generation of heat and electricity transmission and distribution.

5. Brief description of the production process

New technologies for the synthesis of polymer bituminous binders (PBB) are based on the principle of forming a polymer composite from a high molecular weight petroleum agent, polymers (rubber chips), fillers contained in a polymer, a protonated complex, and various modifiers. The main difference from the applied crumb rubber bitumen modification technologies is chemical (nanomolar) transformation of the initial components (raw materials).

The obtained homogeneous polymer -bitumen composition has properties of thermal stability, operational strength, ductility, water resistance, characteristic of cross-linked polymers (rubber) and high-molecular oil components.

Molecular synthesis of polymer-bitumen binders used in this project is a product of modern nanotechnology process. This technology is used on an industrial scale for the first time in the Russian Federation.

The key issue in the construction of the roadway is the quality of bituminous binders in the production of asphalt concrete and compliance with the technology of production. If the second component requires only the resolution of organizational issues, there is no possibility to influence the quality of bitumen traditionally used in the construction of roads. To correct this situation, Rosavtodor made a decision to certify all the bituminous binders produced in accordance with modern requirements that meet world standards, which opens the possibility of creating new materials for independent producers of bituminous binders. Over the past four years, five laboratories have appeared in Russia that are capable of attesting bituminous binders in accordance with the American standard Superpave. The basic evaluation of the American standard is the classification of bituminous binders in terms of performance properties - PG.

Their list includes such parameters as the maximum values of air temperature in summer and in winter. Even the modern domestic product - polymer-bitumen binder PBB 130, has characteristics only + 49 ° C ... 17 ° C, respectively (the cost of such material is about 1.5-2 times higher than standard bitumen).

The company "ECO" conducted research and they showed that the technology developed by us allows to dissolve the rubber crumb in the following oil

environments: bitumen of any brand, fuel oil, tar, heavy oil residues. Using the all above types of raw materials, we have obtained PBB, able to withstand the difference in temperatures up to 120 ° C. Using all of the above types of raw materials, we have obtained PBB, capable of withstanding the difference in temperatures up to 120 ° C. At the same time, the technology makes it possible to obtain a range of products from mastics, waterproofing materials, road bitumen binders to roofing materials.

Technology for the production of polymer bitumen binder concentrates (PBB) is based on a three-stage process for the synthesis of high molecular weight aromatic, naphthenic, asphaltene compounds, polymers, resins, oils contained in heavy petroleum fractions with block polymers based on butadiene, styrene, isoprene, polyamides, and partial destruction of heavy hydrocarbons and their subsequent separation into the fuel mixture.

In the reactor R-101/1-3 (periodic action) are the main processes of partial devulcanization and depolymerization, synthesis of new complex monomers, block copolymers and selective cracking of heavy hydrocarbons. Next, the reaction mixture enters the reactor R-201 (continuous action), where the reactions of oxidative polymerization, polycondensation and oligomerization, the formation of complex organic acids and their anhydrides occur. In the reactors R-301|/1-3 (periodic action) is the stabilization of high molecular polymer mass and its final "drying". Next, the resulting polymer composite is sent to the filling and packaging section or to the production of modified bitumens and other polymeric bitumen binders (depending on the recipes and regimes of the reactor sections). The resulting inert gas and a mixture of light hydrocarbons are diverted to the fuel network with supply for utilization in the incinerator.

The presence of three oil refineries will allow to obtain the best raw materials for the release of higher quality bituminous binders in Kuzbass. There is a unique opportunity to create an enterprise for the production of inexpensive bitumen binders for various purposes. These binders can satisfy the different needs of the region. Despite the availability of a large, constantly replenished volume of rubber KGSH, the proposed technology will allow full recycling of this type of waste. In addition, it will meet the needs for high-quality bituminous binders in a well-developed road construction industry. It is possible to produce inexpensive high-quality roofing materials. The organization of production of bituminous binders will also satisfy the need for some materials for general civil construction.

6. Marketing plan

Petroleum bitumen is a solid or resinous product, which is a complex mixture of hydrocarbons and their derivatives (mainly hydrocarbon compounds with sulfur, oxygen and nitrogen). Petroleum bitumen is produced in refineries from various types of oil, which is differ from each other by chemical composition and properties. Oil in factories is subjected to fractional distillation in order to obtain light products (gasoline, naphtha, kerosene) lubricating oils and other types of petroleum products. Oil residues after selection of lighter by weight fractions - tar, cracking - are subsequently used as a raw material for obtaining petroleum bitumens of specified properties.

The most important properties of bitumen, characterizing their quality, are viscosity, plasticity, softening and brittle temperatures; In addition, it should be noted the high adhesion, which determines the ability of bitumen to adhere in the monolith mineral aggregate grains; they are also capable of imparting hydrophobic properties to materials treated with bitumen.

The main characteristic of the structural and mechanical properties of bitumens is viscosity, which depends mainly on temperature and group composition. Viscosity is resistance of internal layers of bitumen to displacement relative to each other. As the temperature increases, the viscosity decreases, as it decreases, the viscosity increases rapidly, and at negative temperatures, the bitumen becomes brittle.

The functional purpose and application of bitumen of various brands, including for consumption, can be of two types, according to a preliminary definition, depending on the group of buyers, namely: resale or professional use (production consumption). In this case, professional use (industrial consumption) is understood as the use by consumers of supplied bitumen of oil (construction, road, roofing and insulation) for purposes not related to resale.

Proceeding from the all-Russian classifier of products, and also depending on the sphere of final use (use), the following types of oil bitumen are distinguished: oil building bitumen, petroleum road bitumen (PRB), oil roofing bitumen, oil insulating bitumen (OIB).

Oil building bitumen is characterized by high resistance to wetting and to high temperatures, which in turn provides its durability and duration of operation.

Oil building bitumen is used for construction works, including when laying roofing covers and installing foundations, to protect pipelines from aggressive influences.

Petroleum road bitumen is widely used for making cold mixtures of asphalt with concrete.

Viscous petroleum road bitumen is intended as a binder in the construction, repair of road and airfield coatings, bases and for other purposes.

Oil roofing bitumen (impregnating and covering) are widely used for the production of roofing materials.

The production of bitumen in accordance with the needs of consumers is growing every year. If in 2015 in the Russian Federation 6 142 thousand tons of bitumen were

produced, in 2016 the volume was 6 638,5 thousand tons, 8% more than in the previous year.

The largest volume of bitumen production in the Russian Federation among all federal districts falls to the Volga Federal District and is 33% of the total volume. In the second place with a share of 32% is the Southern Federal District, in third place - the Central Federal District with a 25% share. Together, these federal districts are accounted for 91% of Russia's output.

The major share of bitumen production in Russia belongs to such large producers as «Rosneft», «Gazpromneft» and «Lukoil». At the same time, «Rosneft» is the leader in the production of road bitumen. In recent years, there has been an annual increase in bitumen production. It should be noted that about 75% of the total production of bitumen in the country goes to road needs.

For the Russian road industry, polymer bituminous binders (PBB) are relatively new products, on an industrial scale it began to be applied about five years ago, however, demonstrating significant growth dynamics every year. According to the State Company "Rosavtodor" in 2015, the volume of consumption amounted to 253 thousand tons of PBB, a year earlier it reached 190 thousand tons. The volume of PBB was amounted to 298 thousand tons.in 2016. By 2025 the volumes of consumption are forecasted at the level of 500 thousand tons.

The price for the products of the projected plant of polymer bituminous binders is to be determined on the basis of calculation of the cost of production, the cost of Russian and foreign analogues. Goods with identical qualities are absent in the Russian Federation. The product price received by calculation is compared with the price of the closest analogue.

The price for rubber crumb is determined on the basis of calculation of the cost price and comparison of prices for similar products of the producers of the Siberian Federal District.

The result of the determination of minimum prices for the main products of the projected enterprise is shown in the table 2. Similar material of Russian production was taken as an analogue.

Table 2: The minimum price for polymer bituminous binders of the projected plant

№	Product name	Price rub /tone
1	polymer bituminous binders	21 000

7. Organizational plan of the projected enterprise

The project involves the construction of a large plant for the production of polymer bituminous binders with a capacity of 150,000 tons per year.

The implementation of the investment project for the construction of the plant for the production of polymer bituminous binders can be broken down into several stages.

I stage. At this stage, registration of documents for the land plot is carried out (their approval has already been carried out), the coordination of design and estimate documentation (design has already been done). Preliminary work is carried out for the organization of construction of industrial premises, storage tanks for PBB and raw materials (duration 5 months).

II stage. At this stage, the construction and production of equipment is carried out (duration of 9 months).

III stage. At this stage, we hire and train personnel, set up equipment, issue a trial batch of products and reach production capacity (duration 3 months)

The acquisition of equipment and machinery for PBB production

In accordance with the planned volumes of production of polymer bituminous binders and the requirements for equipment, procurement will be carried out in LLC "Korrus-Tech Inc.".

This company was founded in 1997. The main activity of company is supply of road-building and construction machinery and equipment, spare parts and consumables from Finland, Italy, Germany, Eastern Europe and the United States. In recent years, the company has been recognized as the best dealer of such world famous brands as: MASSENZA, ORTECO, METSO MINERALS, MOBA.

The range of equipment in the company is selected in such a way as to fully meet the needs of builders in quality equipment in the performance of production tasks. The proposed technique makes it possible to solve complex problems in the construction of objects of varying complexity.

An analysis of the company's achievements makes it possible to judge the reliability of the acquired equipment. LLC "Corrus-Tech Inc.":

Since 2005 – a member of the Italian association "SITEB" (Bitumen, Asphalt, Roads.);

Since 2010 - a member of the Nizhny Novgorod Association of Low-Rise Construction;

In 2011 - earned the title of "The Best Dealer of the World in 2011"

The company has 12 branches with highly qualified specialists in the cities of Russia and the CIS. The created service centers allow quickly and qualitatively to make installation and repair of the delivered equipment, and also to offer the serviceable equipment for the time of repair to Customers.

For the production of PBB, the equipment of MASSENZA will be purchased. The company produces multipass and single-pass installations.

MASSENZA, a high-performance colloid mill, is used as part of the installation.

The colloid mill (homogenizer) called MASSENZA is specially designed for the production of PBB. During the grinding of the polymer increases the contact surface area of the mixed components, and, accordingly, the swelling and dissolution

processes of the polymer are accelerated. The use of this type of equipment makes it possible to obtain PBB with regulated technical requirements at a temperature not higher than 160 0C, the content of the modifier is not more than 3.5% % and a short duration of the process - not higher than 160 0C.

MASSENZA installations use weighted dosing of bitumen and polymers.

Bitumen is pumped into the unit and passes through a special device according to the Coriolis principle (the measuring system in the casing, measures the flow rate regardless of other fluid parameters such as density, temperature, pressure, viscosity, electrical conductivity, etc.). Polymers are dosed through a polymer hopper and loading auger, which are suspended on load cells, dosing is carried out automatically in the principle of weight loss.

The MASSENZA units are provided with a line for supplying liquid additives directly to the mixer.

This allows you to dose, if a recipe requires, aromatic oils (for example, industrial I-40A oil or another plasticizer) or adhesive additives directly into the mixer, where bitumen is mixed with the polymer modifier.

At the MASSENZA units, the initial bitumen is premixed with the polymer modifier and other liquid additives in the mixer.

Preliminary effective mixing in the mixer is provided by the operation of two three-bladed stirrers driven by an electric motor with a power of 7.5 kW. The mixer is equipped with oil heating coils, membrane level gauges and a temperature control system.

After the development of design estimates and the completion of the project's state expertise in accordance with the individual technical project of LLC "Korrus-Tech Inc.". The required production capacity of the equipment per month is 12,500 tons, per year - 150,000 tons.

The final delivery date and installation of equipment - 01.03.2019.

The total amount of funds provided for in the business plan for the purchase of equipment is 642,500 thousand rubles.

This company produces in addition to equipment for the production of polymer bituminous binders, a large number of road construction equipment.

It is planned to purchase caterpillar mini dump trucks, bitumen trucks, a system for heating bitumen transported in solid form, installations for the production of bitumen emulsion, installations for the production of liquefied bitumen.

The final date of delivery and installation of equipment - 01.02.2019.

The total amount of funds provided for in the business plan for the purchase of equipment is 120,600 thousand rubles.

The organizational structure of the enterprise is a linear structure. The list of key positions according to the staff list is presented in the table 3.

Table 3: The list of key positions

№	Job title	Number of units
1	Director	1
2	Chief of the security service	1
3	Deputy Director for Economics and Finance	1
4	Deputy Director for production	1
5	Lawyer	
6	Secretary	1
7	HR Specialist	1
8	Specialist in labor protection and production control	1
9	Chief Engineer	1
10	Chief Technologist	1
11	Energy worker	1
12	Mechanic	2
13	Sales Manager	1
14	Procurement Specialist	1
15	Sales Specialist	1
16	Chief Accountant	1
17	Accountant	3
18	Driver	4
19	Electrician	4
20	Locksmith	4
21	Shop foreman	4
22	Operator	4
23	Warehouse Operator	4
24	Laboratory assistant	2
25	Workers	4
	Total	**50**

The organizational structure provides that a deputy director for production, a deputy director for economics and finance, a chief of the security service, a secretary and a lawyer are subordinate to the director directly. Further, the structure provides for the organization of work by types of activity and structural units of production.

Calculations of the number of personnel are made and based on the standard time, continuous production and compliance with labor law.

8. Financial plan

The financial plan of the investment project reflects the dynamics of the receipt and expenditure of the plant's funds with a phased increase in production and sales capacity.

The investment costs for the construction of the projected enterprise for the production of polymer bituminous binders are presented in the table 4:

Table 4: The investment costs for the construction of PBB

Naming of expenditures	Amount, thousand rubles.
Construction of industrial and storage facilities	297 000
Construction of tanks for PBB, tar, fuel oil and reagents	80 540
Production equipment	642 600
Land with installed networks (S = 8,633 hectares[4])	306 000
Design and estimate documentation	41 400
Unforeseen expenses 10%	136 754
Equipment	120 600
Operating expenses	175 106
Total	**1 800 000**

Current costs associated with the daily operation of the projected plant for the production of polymer bituminous binders are presented in table 5 respectively. For the billing period, one month is defined.

Table 5: Current costs for the production of polymer bituminous binders (per month, production - 12,500 tons / month).

№	Name	Quantity units	rubles / ton	Amount, thousand rubles
1	Oil fractions	12 500	9 000	112 500
2	Rubber crumb	12 500	1 125	14 062,5
3	Initiating Reagents	12 500	1 650	20 625
4	Auxiliary materials	12 500	370	4 625
5	Electric Energy	12 500	175	2 187,5
6	Transport	12 500	310	3 875
7	Spare parts	12 500	200	2 500
8	Additional operating expenses	12 500	75	937,5
9	Salary fund	-	374,98	4 687,2
	Total		13 279,98	165 999,7

Current income associated with the daily operation of the projected plant is presented in the table 6:

Table 6: Current income

№	Indicator name	Value
1	The volume of production of polymer bituminous binders (tons)	12 500
2	The average cost of 1 ton (rubles)	21 000
	Total per month (rubles)	262 500 000

The plan of cash flow for the projected plant including the cost of investment and current activities is presented in the table 7. The investment period is equal to the "0" period in the operating activity of the enterprise. In this period, production is not carried out, revenues from sales and costs for the production of PBB, respectively, are not taken into account. All activities are focused on the development of investments in accordance with the investment costs plan. Investments by the terms are reflected in the roadmap for the construction of a plant for the production of polymer bituminous binders. Investment costs are included in the amount of 1 800 000 thousand rubles. Financing of investment costs is made in accordance with the road map for the construction of the plant for the production of polymer bituminous binders.

In order to generate business income was provisionally decided that in the first month of the enterprise March 2019 will be sold 80% of its production, in the second month - 90%, in the third month - all manufactured products will be implemented in full, additionally, the remains of production for the first two months of operation of the plant will be implemented.

The costs for production were taken into account in regular intervals on a monthly basis in accordance with the cost included in the cost value.

Table 7: Plan of cash flow of the plant for the production of polymer bituminous binders, thousand rubles

Name	0 period	Mar. 2019	Apr. 2019	May 2019	Jun. 2019	Jul. 2019	Aug. 2019	Sept. 2019	Oct. 2019	Nov. 2019	Dec. 2019	Jan. 2020	Feb. 2020	Total
Production and marketing of products														
Income from sales	0	210000	236250	341250	262500	262500	262500	262500	262500	262500	262500	262500	262500	**3150000**
Investment activities														
Investments	1800000	0	0	0										
Construction of industrial and storage facilities	297000	0	0	0	0	0	0	0	0	0	0	0	0	**297000**
Construction of tanks for PBB, tar, fuel oil reagents	80540	0	0	0	0	0	0	0	0	0	0	0	0	**80540**
Production equipment	642600	0	0	0	0	0	0	0	0	0	0	0	0	**642600**
Land with installed networks (S = 8,633 hectares)	306000	0	0	0	0	0	0	0	0	0	0	0	0	**306000**
Design and estimate documentation	41400	0	0	0	0	0	0	0	0	0	0	0	0	**41400**
Unforeseen expenses 10%	136754	0	0	0	0	0	0	0	0	0	0	0	0	**136754**
Equipment	120600	0	0	0	0	0	0	0	0	0	0	0	0	**120600**
Operating expenses	175106	0	0	0	0	0	0	0	0	0	0	0	0	**175106**
Balance from investment activity	-1800000	0	0	0	0	0	0	0	0	0	0	0	0	**-1800000**
Expenses for production														
Oil fractions	0	112500	112500	112500	112500	112500	112500	112500	112500	112500	112500	112500	112500	**1350000**
Rubber crumb	0	14062,5	14062,5	14062,5	14062,5	14062,5	14062,5	14062,5	14062,5	14062,5	14062,5	14062,5	14062,5	**168750**
Initiating reagents	0	20625	20625	20625	20625	20625	20625	20625	20625	20625	20625	20625	20625	**247500**
Auxiliary materials	0	4625	4625	4625	4625	4625	4625	4625	4625	4625	4625	4625	4625	**55500**
Electric Energy	0	2187,5	2187,5	2187,5	2187,5	2187,5	2187,5	2187,5	2187,5	2187,5	2187,5	2187,5	2187,5	**26250**
Transport	0	3875	3875	3875	3875	3875	3875	3875	3875	3875	3875	3875	3875	**46500**
Spare parts	0	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	**30000**
Operating expenses	0	937,5	937,5	937,5	937,5	937,5	937,5	937,5	937,5	937,5	937,5	937,5	937,5	**11250**
Payroll fund, including 30,2%	0	4687,2	4687,2	4687,2	4687,2	4687,2	4687,2	4687,2	4687,2	4687,2	4687,2	4687,2	4687,2	**56246**
Balance	**0**	**44000,3**	**70250,3**	**175250,3**	**96500,3**	**96500,3**	**96500,3**	**96500,3**	**96500,3**	**96500,3**	**96500,3**	**96500,3**	**96500,3**	**1158003,6**

9. Analysis of the investment risks of the project

Risk - is the possibility of the project in such conditions, which will lead to negative consequences for all or some of the project participants. The implementation of investment projects is influenced by many changes in the political, social, commercial and business environment, changes in technology, productivity and prices, the state of the environment, existing taxation, legal and other issues. All this predetermines the presence in the projects of a certain risk. The probability of occurrence of risk on a quantitative scale is estimated in the following order:

1. Minor (less than 20%);
2. Low (20-39%);
3. Average (40-59%)
4. High (60-79%);
5. Very high (over 80%).

Table 8: Risks in the implementation of the project for the construction of a plant for the production of polymer bituminous binders

№	Risk factors, risk conditions	Degree of risk	Risk management activities
Risks of functioning			
1	Increase in the cost of raw materials, and as a consequence, an increase in the cost of production	2	Reduction of conditional-constant costs, availability of alternative options for the supply of raw materials (creation of a raw materials supplier base, work with several suppliers simultaneously to reduce risks of price increases)
2	Breakage of equipment, physical wear and tear of equipment, technological backwardness	3	Service maintenance of equipment, timely repair and renewal of used equipment taking into account modern scientific achievements, equipment insurance
3	Unskilled actions of personnel due to low qualification, staff turnover	2	Development and implementation of a system for training and staff development. Using a system of incentive payments for achieving planned targets.
Risks of marketing			
4	Reduction in demand for products from buyers, a decline in the market price of PBB	1	Study and analysis of the market, adjustment of the marketing company for product promotion, Development of new product samples in order to increase product competitiveness. Expansion of the sales market, reduction of prime cost with constant product quality due to application of modern production

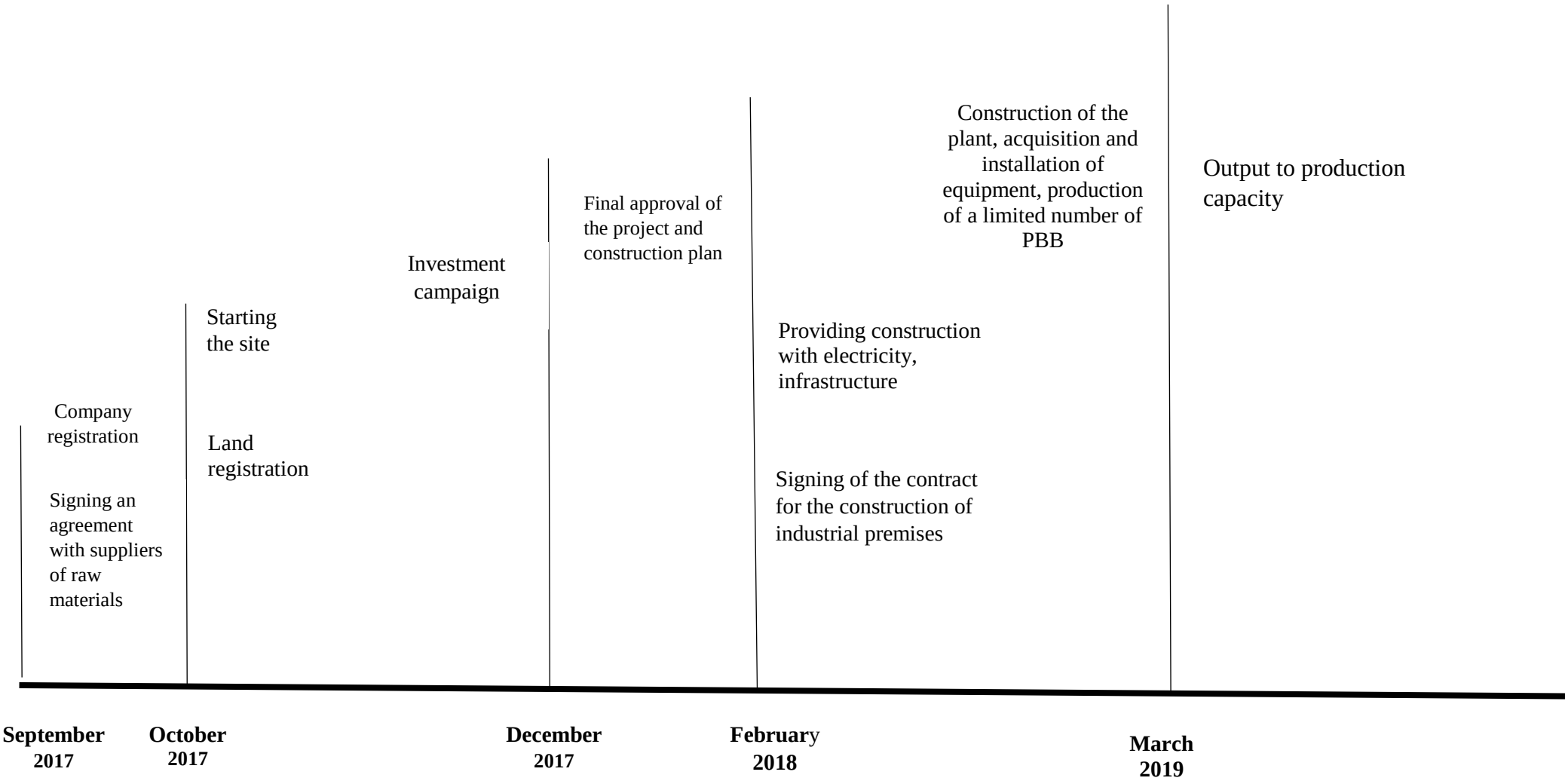
			technologies and energy saving.
5	Decreased quality of products. Spoilage in production.	2	Introduction and use of the quality management system
Risks of financing			
6	Inadequate balance of cash flow	3	Formation of the cash flow budget as a cash flow planning tool
7	Decrease in profitability of production due to deviation of actual cost parameters from planned	?	Planning of unforeseen expenses as part of the costs of the enterprise, careful planning of financial activities, application of modern management accounting tools.

In order to reduce the negative consequences in the event of risks, activities aimed at risk management were developed. Based on the results of the analysis, it can be noted that the sensitivity of the projected enterprise to risks refers to the middle category and even higher. In the event of risks when using a set of specified measures, the damage is reduced to a minimum level.

If the amount of the funds raised through the ICO project will be insufficient, the construction of the plant will be provided at the expense of the project participants' own funds, borrowed funds, as well as through a set of program activities to support investment projects under the current legislation, but accordingly on much less favorable terms.

This enterprise is the first stage in the development of the petrochemical cluster in Kuzbass and in the Siberian Federal District.

Roadmap for the construction of a plant for the production of polymer bituminous binders



Roadmap for the creation of a production of polymer bituminous binders

Project passport:	
Capacity of the enterprise for the production of PBB tons / year	150 000
Capacity of the enterprise for processing of KGS tons / year	37 200
Volume of investments, rub.	1 800 000
Number of employees, people	72
Payroll fund, including deductions to off-budget funds, rub / month	4 687 200
Input value of oil fractions, rub / ton	12 000
Incoming price of rubber chips, rub / ton	9 000
Costs for initiating reagents, rub / ton	3 500
Cost price of the output of rubles / ton	15 124,9760
Price of the output is rub / ton	21 000
Revenues from sales, rubles / year	3 150 000 000
Profit before taxation RUB / year	881 253 600
Ebitda,% to income (without excluding capital servicing costs and depreciation)	27,98
Ebitda,% to income (including 12% annual maintenance costs and depreciation)	26,86

Main activities of the project	**2017**					**2018**												**2019**		
	Aug.	**Sept.**	**Oct.**	**Nov.**	**Dec.**	**Jan.**	**Feb.**	**Mar.**	**Apr.**	**May**	**Jun.**	**Jul.**	**Aug.**	**Sept.**	**Oct.**	**Nov.**	**Dec.**	**Jan.**	**Feb.**	**Mar.**
I Stage. Pre-investment																				
Development of a passport for an investment project for the construction of a plant for the production of polymer bituminous binders (PBB)																				
Development of the passport of the investment project for the construction of a plant for processing large-size tires																				

Conclusion of an agreement of intent with potential investors and purchasers of products (PBB)																				
Registration of an enterprise (registration of constituent documents, opening of a current account)																				
Registration of documents for land plots for the construction of the plant for the processing of KGSH (conclusion of a long-term lease agreement with subsequent redemption, cadastral passport, master plan of the site)																				
Registration of documents for land plots for the construction of the plant for the production of polymer bituminous binders (conclusion of a long-term lease agreement with subsequent redemption, cadastral passport, master plan of the site)																				
Finalization of the design and estimate documentation for the PBB plant																				
State examination of design estimates of the plant																				
Final approval of the building permit																				
Conclusion of the contract with the contractor for the construction of facilities																				
II Stage. Investment																				
Preparatory works before the construction of facilities (surface water withdrawal, organization of traffic on the construction site, etc.)																				
Ensuring the construction of electricity and other necessary infrastructure facilities																				
Construction of production facilities, storage tanks for oil fractions, initiating reagents, PBB																				
Installation work (installation of the bottom and walls of tanks)																				
Connection to infrastructure objects																				
Acquisition of equipment for processing KGSH (scissors for grinding, unloading tegel)																				
Acquisition of equipment for the production of PBB (full cycle from the placement of procurement to commissioning)																				

Hiring and training of personnel																				
III Operational																				
Issue of a trial batch of rubber crumb after the processing of KGSH																				
Issue of the trial PBB lot																				
Output to production capacity																				