

# Project Summary

**Construction of a plant for the production of basalt insulation materials with a capacity of 30000.0 tons per year.**

<b>Type of an offer</b>	<b>Investment project</b>
<b>Amount of investment</b>	<b>23 000 000 €</b>
<b>Payback period of the first production series</b>	<b>3 years</b>
<b>Repayment of investment</b>	<b>100%</b>
<b>Investor rights</b>	<b>Acquisition of % corporate rights</b>
<b>Region</b>	<b>Ukraine</b>
<b>Sphere</b>	<b>High technology</b>

## Description of business idea

The project provides for the creation of a modern production of basalt heat-insulating products for various industries, buildings, aviation, railway and automobile transport.

The advantage of basalt fibers is their high strength and the basalt fibers do not corrode under the influence of acids, alkalis, sea water, and withstand working temperatures from -200 0C to + 700 0C.

Basalt fibers are ecological, do not emit substances dangerous for human health in air and water environment, are non-combustible, unexplosive, and are not carcinogenic. According their physical and technical characteristics, basalt fibers are intermediate between fiberglass and carbon fibers having a low price.

## Full description of the investment project

Our proposed project is based on a technology which was developed by the Research Center at the Academy of Sciences in Ukraine, protected by dozens of patents belonging to a number of Ukrainian scientists and the most important thing is the creation of fiber from stone with unique characteristics. As the expert opinion of Marketsand Markets ([www.marketsandmarkets.com](http://www.marketsandmarkets.com)), the capacity of the global market for basalt fiber products will be at least 25 billion by 2020 and the next 5 years the market will double.

Between basalt and fiberglass insulation there are a number of significant differences:

- The temperature range of basalt fibers is from  $-269^{\circ}\text{C}$  to  $+700^{\circ}\text{C}$ , and glass fibers is from  $-60^{\circ}\text{C}$  to  $+450^{\circ}\text{C}$ ;
- The average diameter of basalt fibers is 4.7 microns, and the average diameter of glass fibers is 3.6 microns, provides higher coefficient of thermal conductivity of products made on its basis;
- glasswool is not resistant to alkalis;
- basalt fibers are stronger that's why crushing the fiber breaks much less ;
- basalt wool practically does not absorb water (up to 1% by weight), glass wool absorbs up to 30% of water.

The use of ultrathin fibers makes possibility to produce materials that replace asbestos, wood, etc. And at the same time they guarantee fire safety, absolute protection from noise, reliable thermal insulation.

Products made of basalt fiber have the following unique characteristics:

- basalt fibers and products are 5-7 times lighter than similar metal products;
- 1.5 times stronger than fiberglass products;
- 10 times cheaper than carbon fiber materials with practically the same characteristics;
- provide special properties, such as radio transparency (not a screen for radio communications), non-flammability and dielectric conductivity;
- not undergo to corrosion, rotting, warping;
- simple reinforcement with chopped basalt fiber of various construction materials increases their fracture and tensile strength by 20-30%;
- heat-insulating covering of walls, facades, roofs, floors, etc. reduces heat loss and gives heat savings of at least 40%.



Products based on basalt fibers are an innovative new class of composite materials. They are used in the construction of important industrial objects with increased fire safety, including nuclear power plants, chemical and petrochemical industries, high-rise buildings, in shipbuilding, car building, automobile and aviation industries.

This material is already used by such companies as TOTAL, BMW, Michelin, Airbus, TOYOTA, the construction enterprises of Ukraine, Europe, America, China, Russia, Poland and Germany.

The raw materials for the production of basalt fibers are basalt rocks of volcanic origin (1/3 of the earth's crust consists of basalts), and basalts are in fact almost a ready-made raw material because the primary melting, enrichment and homogenization are produced by nature.

At the first stage, the enterprise will produce 30000.0 tons of basalt insulation per year. Production staff, when the company operates in four shifts will be 80 people. To ensure high quality products, special attention will be paid to the training and organization of the enterprise management system as ISO-9000 standards.

An additional competitive advantage of the project will be cooperation with the research laboratory of the Academy of Sciences in Ukraine, its task will be scientific support of production, its improvement and the creation of new types of fibers.

The technological process proposed for realization is significantly ahead of the standard technologies used now.

The proposed technical solutions will allow to obtain basalt fibers with new improved physicochemical and mechanical properties. It is supposed to use 2 special types of stoves (furnace) for melting basalt:

1. Cupola. Coke and a small amount of natural gas will be used as fuel for heating the air.

In 2017, a similar furnace (cupola), was successfully tested in Germany and similar furnaces have been already used in Germany, the USA, Russia, Slovenia and China.

2. Electro - arc furnace is uninterrupted one.



## Work done:

- all documents have been prepared for the creation of a new production company on the territory of Ukraine or there is an opportunity to use an real working construction company;
- in the case of locating production on the territory of the Kharkiv region, negotiations were held on about the acquisition of industrial estate with the land plot where there are necessary communications;
- negotiations were held with basalt quarries (Ukraine) about the supply of basalt rubble with a certain chemical composition, the necessary fractions for the future enterprise;
- marketing research of the market of heat-insulating materials in Ukraine took place;
- preliminary agreements were signed with major construction companies connected with their obligations to acquire basalt insulation per year in an amount of at least 20000 tons;
- agreements were reached with Ukrainian design organizations of the drafting and designer supervision for the plant construction. It was identified a possible general contractor for the construction of the plant;
- negotiations were held and a commercial proposal was received from three European companies about an integrated supply of a full construction basalt thermal insulation production line;
- it is prepared a detailed business plan for the construction of a plant for the basalt insulation production

The team formed has the experience, the necessary skills and knowledge to implement this project. The scientists and the team of the developers involved in the project have a large number of patents and publications in the field of basalt fiber production and products based on them, participated in the construction and using similar enterprises in Ukraine, Russia, Poland and China.



The project requires an investment of € 23,000,000:

1 134 000 €, (4.93%) - general design, technical and technological documentation, author's supervision;

3 254 000 €, (14,14%) - the acquisition of land plot, the construction of industrial, warehouse and office buildings. Construction of industrial infrastructure;

8 300 000 €, (36.086%) - the cost of the line for the production of thermal insulation materials with a capacity of 30 000.0 t./year. Installation and adjustment of equipment. Technological staff training;

740 000.0 € (3.21%) - transportation and insurance of equipment;

2 300 000 € (10.0%) - construction of infrastructure objects, heat supply, manufacture of non-standard equipment;

359 000 € (1.56%) - overhead and unforeseen expenses, international certification of finished products;

4 500 000 €, (19,56%) - raw materials, materials, energy carriers;

2 403 000 € (10.47%) - wages of employees and deductions from the fund of wages of ERUs.

These investments are calculated for the construction of a plant in the Kharkiv region, for a specific variant of the melting furnace (cupola). If the investor decides to build a plant in another region, it will be necessary to take into account the costs of building the wastewater treatment plants, non-standard electrical connection, and to determine the type of melting furnace.

The payback period of investments in the creation of an enterprise for the production of basalt insulation is 3 years.

It is proposed to locate this production in the Kharkiv region (or in another region of Ukraine), it will make possible to take advantage of the provided benefits and the getting targeted subsidies according to the program of financing innovative projects in this region.

### **Suppliers of raw materials, product sales**

Raw materials suppliers - basalt quarries (Rivne region, Ukraine).

Consumers - construction companies (Ukraine, Poland, Germany, etc.).

## Additional Information

<b>Stage of the project-</b>	<b>Initial stage</b>
<b>Investment purpose -</b>	<b>Creating a new production</b>
<b>Workplaces -</b>	<b>135</b>
<b>Investor Type -</b>	<b>Direct investment of the required amount, Loan guarantor</b>
<b>Investment form</b>	<b>Direct investment funds, loan, line of credit</b>
<b>Risks -</b>	<b>Low</b>

## Solving social tasks

Creating new workplaces in an area with relatively high unemployment.



## Solving environmental tasks

The project will not harm the environment, we also get an environmentally friendly product.

Waste recycling - 100%.

Project team - competence and experience:

Project Manager (Ukraine).

Responsibilities - overall project directing, management of various companies and projects during the past years, controlling the construction, reconstruction, commissioning and further work of large industrial objects, owning a number of patents of the technological production automation.

Deputy Project Manager (Ukraine), PhD, Economist, Lawyer.

Responsibilities - general management of finance and economics of enterprise, providing the legal support for the activities of enterprise at all stages of production. Successful controlling of the construction and commissioning of industrial and commercial enterprises in Ukraine.

Manager of the scientific and technological part of the project (Ukraine).

Responsibilities - technical control over the start-up of production and its further functioning, staff training, scientific research in the field of basalt fiber and new materials based on it - a well-known scientist and inventor, heads the research institute at the Academy of Sciences in Ukraine.

He has a large number of developments, patents, scientific papers and publications in the field of the production of basalt continuous fiber and products based on it.

Conclusions about the proposed business plan

The proposed products, taking into account the present prices of heat carriers and electricity, have a large stock of prices and it will give the opportunity the company to enter the market with more attractive price than the present one.

The equipment of European manufacturers will ensure the production of high-quality which do not contain phenol-formaldehyde binders, reduce energy costs for the production and provide an opportunity to export a part of the manufactured products.

High quality and low cost will allow the company to take its place in the share of the Ukrainian market of thermal insulation materials and successfully compete in the markets of the near and far abroad.

