



After LIFE plan
Paper–hemp insulation pilot production

LIFE Project Number

LIFE17 ENV/LV/000335

LIFE PROJECT Acronym

LIFE PHIPP



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1. PROJECT DATA

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| Project location: | Ata Kronvalda iela 40/22-601, Cēsis, Latvija, LV-4101 |
| Project start date: | 03/09/2018 |
| Project end date: | 30/06/2023 |
| Project duration: | 58 months |
| Total budget: | 2 676 504 EUR |
| EU contribution: (%) of eligible costs: | |
| Name of Beneficiary: | BALTICFLOC, SIA |
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2. INTRODUCTION

The Project Paper – hemp insulation pilot production (further in the text the Project) has been implemented in Cēsis, Latvia in company SIA BALTICFLOC, which is a private entity that has been an active paper recycler for over 10 years. When working with wastepaper the company often finds itself in situations where very poor quality wastepaper is delivered to the production plant, which is not suitable for recycling and the production of new, high-quality products. For this type of raw material to not have to be taken to a landfill, the company started looking for solutions to use it in the production process. This is how the recipe for a new heat insulation material and the idea for the LIFE project was created.

In this project, the company developed a technical solution, carried out a public procurement and installed a pilot production line for the production of an innovative product. The development of this product involves the recycling of low-grade wastepaper, which is combined with high-quality hemp fibre to form soft heat insulation boards “BFlex”.

Since the only and main beneficiary of the project is a private company, it is impossible to separate the project from the company. It is part of the company's overall goals and achievements. The company is proud of the execution of this project and plans to continue it along with the development of the entire company.

PROJECT OBJECTIVES:

- Promote the use of recycled paper and hemp fibre heat insulation material “BFlex” in building insulation.
- Increase recycling of low-quality wastepaper and avoid landfilling or incineration of paper fibre.
- Along with the distribution of “BFlex” material in the market, reduce the demand for mineral wool in the market and its negative impact on the environment. Thus, reducing the consumption of primary energy in the production of mineral wool, and the amount of persistent waste in the environment at the end of the life cycle of mineral wool.
- Along with the reduced demand for mineral wool in the market, its production will decrease, reducing CO₂ emissions from producing mineral wool heat insulation. Also, the amount of CO₂ will be reduced by encapsulating it in hemp fibre and recycled wastepaper.

ASSESSMENT OF THE SITUATION AT THE END OF THE PROJECT

The pilot production line BF TECHNOLOGY established in the company produces thermal insulation material BFlex. In this material, low-grade wastepaper is used as a raw material and mixed with high-quality hemp fibre, the material forms soft thermal insulation boards. During the implementation of the project, we understood the fibres we use in the materials and understood what we want to change in the recipe in the future. One of the fibres is a two-component binder, which is produced from various polyethene and polypropylene. They are cheaper if they are manufactured for the first time, but recycled binders are also available on the market. The company will continue to build its image by recycling paper into various products and wants to achieve the most environmentally friendly raw materials possible. Therefore, it is planned to replace this fibre with an innovative, environmentally friendly binder in the product

formula. We have talked about such a possibility with scientists at the Latvian State Institute of Wood Chemistry and agreed on long-term cooperation in the discovery, testing and use of the fibre. The other component in the material is the fire extinguishing additives Boron Acid and Borax, which we want to replace. Boron Acid and Borax are safe for human health and the environment; however, it is becoming less and less in the depths of the earth and the complete removal of these natural salts from the production of thermal insulation materials is expected. We want to hurry ahead of time and replace it in time with our materials by creating a small chemistry laboratory in the production facility. In it, we will freely experiment with new flame-retardant additives and their incorporation into materials.

3. DISSEMINATION AND COMMUNICATION OF THE RESULTS AFTER THE END OF THE PROJECT

The communication strategy implemented during the project was successful. It attracted widespread interest in the new product and the project. Therefore, after the end of the project, we plan to continue this strategy. The success was based on the graphic design skills of the marketing and communication specialist, which allowed the creation of high-quality Internet marketing campaigns, banners, brochures and other visual communication without the need to look for it outside the company. At the end of the project, the marketing and communication specialist chose not to continue working in the company, however, she has agreed to cooperate as a freelance artist and continue to create a visual identity even after the end of the project.

The main communication channel will remain the Internet. It is a fast and effective way to convey information to the widest and most diverse audience possible. It has its own structure, and each interested party can find information in a specific place, for example, on the project's website or on the company's Facebook account. The company is also popular among the local media, and we always agree to participate in programs or articles about the company's activities that are closely related to the project. To reach an international audience, we still plan to participate in international exhibitions. The popularity of each product outside the borders of Latvia develops little by little, it is built at international exhibitions and conferences. The project has given the company a very good start to recognition in Europe. And we plan to continue this path to various construction exhibitions in Europe. After the project, the company will retain the position of Replication and Transfer Manager and his duties include direct communication with industry specialists and potential customers. No less important in the project were networking events. We will not plan them specifically, but we will be open to new communication with other LIFE projects and other environmental protection projects or events.

Distribution and communication activities that we plan to use in the future to inform the wider public about the ongoing development of the LIFE program project are highlighted in more detail.

DISSEMINATION AND COMMUNICATION ACTIONS

The marketing and communication activities carried out during the project were successful and reached the intended audience. They attracted attention to both the company and the newly created thermal insulation material. In the next five years, we plan to continue 6 activities - website development, social network Facebook ads, publications in industry magazines on online platforms, networking events with other

projects, various visual information materials, participation in international industry exhibitions. The person responsible for all activities is the company's marketing and communications specialist and they will be financed from the company's core business income. During this period, we will emphasize the development of the overall image of the company, informing about the introduction of new products into production and renewed recipes of existing products, cooperation with other projects and cooperation with scientific institutions.

1. We will continue to develop the company's **website** - https://www.balticfloc.lv/life_phipp/. The separately created section of the LIFE project will remain active, and we will continue to inform the public about the results of the project.

2. As far as the company plans to cooperate with scientists in the future to create new industrially usable fibres and materials, various **publications in industry journals** are essential for information dissemination. Although during the project we created publications for paper magazines, we concluded that every such magazine also has an online version. In the future, we will create informative publications for online industry magazines.

3. During the project, a successful **networking** with the Waste to Resources project of the LIFE program was established. We plan to continue this and actively participate in the events organized by the project. We are also open to cooperation with other projects of a similar nature.

4. We will continue to create **visual materials** about the company's products. These materials make it easier for customers to understand technical information and for company representatives to explain the properties and application of materials more easily. Visual information materials (**brochures and banners**) are best used at international exhibitions to attract the attention of potential new customers and cooperation partners.

5. The company regularly participates in **international construction industry exhibitions**. During the project, we had the opportunity to visit more such exhibitions and we noticed that long-term cooperation with potential customers has been established. Although participation in exhibitions is expensive, the company will continue to participate in them within the limits of its funds.

4. THE AFTER – LIFE OBJECTIVES AND METHODOLOGY

When implementing a project in a private company, it is not possible and there is no need to separate it from the company's operations. The future of the project corresponds directly to the company's goals to continue the activities started with the pilot production line BF TECHNOLOGY and the new material BFlex. The company plans to create new products, separate a new production line, and continue the successful cooperation with the scientists of the Latvian State Institute of Wood Chemistry. For the operation of the After LIFE plan and the achievement of the goals, funding will be allocated from the company's profits, and two more European Union projects were written and approved. The persons responsible for the fulfilment of the objectives of the After LIFE plan are the company's Replication and Transfer Manager and the Company Manager.

OBJECTIVES:

1. BF TECHNOLOGY will continue to operate as a pilot production line. We will test the recycling of textile waste fibre more widely. Create a recipe for a new product, BFlex T. We plan to implement this goal in cooperation with Finnish textile processing companies. Textile waste is known to be one of the biggest polluters worldwide and it is already known that textiles are difficult to recycle due to the diverse composition of their fibres. When creating the product, we will try textiles with different fibre compositions. We need to make sure that heating the fibre does not change its state.
2. Replacement of BFlex material fire retardant additive. The company has long-standing successful cooperation with scientists from the Latvian State Institute of Wood Chemistry. Until now, the fire safety of the cellulose thermal insulation material was ensured by Borax and Boric Acid, however, among manufacturers of cellulose thermal insulation materials, there is a systematic reduction of this additive in the industry. That's why it's important to develop new additives, test them and be the first on the market to get the right to add them to materials.
3. Replacement of the BFlex material binder. During the project, we used a BICO binder, which is a fibre of two polymers that melt at different temperatures. This fibre is very versatile, it is designed for a wide production profile. Materials that are not woven but are bonded as fibres melt by heating them at high temperatures. This binder comes in different specifications, melts at different temperatures, has different lengths and is produced from both virgin and recycled polymers. However, the market price for recycled fibre is high, and thus the price of the final material produced is also increasing. The goal is to find and test a biodegradable binder together with scientists from the Latvian State Institute of Wood Chemistry.
4. Separate the hemp processing line from the overall BF TECHNOLOGY pilot production line. For hemp processing, a more extensive processing line is needed. Already during the project, the company chose to invest its own funds to expand the hemp fibre production line. When processing a hemp roll, both hemp fibre and straws are formed. The fibre is further added in the production of the BFlex material, but the straws remain. Hemp straws have a good market and have a wide range of uses, for example, both as animal bedding and in the construction industry as the main component of hemp concrete. The company decided to separate this hemp fibre production line from the overall BF TECHNOLOGY pilot production line and create a separate product from the by-product of hemp processing.
5. Test the wood waste fibre in the pilot production line of BF TECHNOLOGY. Create a new thermal insulation material based on wood fibre.

Table No 1 Planned After LIFE actions.

| Code | Objectives and actions | When | Where | Who | Sources of finance | Needed finances | Priority |
|------|---|-------------|---------------------|----------------------|----------------------------------|-----------------|----------|
| 1. | Formulation of new product BFlex T | | | | | €€€€€ | *** |
| 1.1. | Familiarize and try textile fibres of different composition | 2024 - 2026 | Balticfloc premises | R&T Manager | Own budget; Project financing | | |
| 1.2. | Creation of a demo building in Europe | 2026 - 2028 | European Union | R&T Manager | Own budget; Project financing | | |
| 2. | Replacement of BFlex material fire retardant additive | | | | | €€€€€ | *** |
| 2.1. | Creation of a chemistry testing room | 2024 - 2025 | Balticfloc premises | R&T Manager | Own budget; Project financing | | |
| 2.2. | Testing different flame retardant additives | 2025 - 2027 | Balticfloc premises | Chemical Engineer | Own budget; Project financing | | |
| 2.3. | Customization of the production line | 2026 - 2028 | Balticfloc premises | Company Engineer | Own budget; Project financing | | |
| 3. | BFlex material binder replacement | | | | | €€€€ | ** |
| 3.1. | Discovery/creation of at least 3 potential biobased binders | 2024 - 2026 | LVKKI premises | Scientist | Own budget | | |
| 3.2. | Testing of binder properties in the material production environment | 2026 - 2028 | Balticfloc premises | R&T Manager | Own budget | | |
| 4. | Separate hemp processing production line | | | | | €€€€€ | * |
| 4.1. | Purchase/lease of production space | 2025 | | Company Manager | Own budget | | |
| 4.2. | Creation of production space (construction of communications, etc.) | 2025 - 2026 | | Engineer | Own budget | | |
| 4.3. | Moving the production line to the new premises | 2026 | | Engineer/ Workers | Own budget | | |
| 4.4. | Production line installation | 2027 | | Engineer/ Workers | Own budget | | |
| 4.5. | Production testing | 2027 - 2028 | | R&T Manager | Own budget | | |

Legend:

Budget needed:

€ = up to 5 000 EUR;
 €€ = between 5 000 and 10 000 EUR;
 €€€ = between 10 000 and 50 000 EUR;
 €€€€ = between 50 000 and 100 000 EUR;
 €€€€€ = more than 100 000 EUR.

Priority:

*** = the action is necessary and crucial for reaching the objectives;
 ** = it would be very good to implement this action;
 * = this action may be implemented if there are free financial means.