

IMPACT

REPORT



INTRODUCTION

This report presents the results of one of the innovation tracks carried out by the teams of the European Interreg project Wonderful.stream (2020-2023). In this project, seven partners from the Euregio Meuse-Rhine have pooled their knowledge, strengths and resources to jointly support small and medium-sized enterprises in their transition to a circular economy.

Wonderful.stream offers companies free advice and guidance on the recovery of their residual flows; it also initiates and facilitates the co-creation of circular solutions with experts in technology, design and business development in the framework of innovation tracks.

This report focuses on the results of the innovation track of the company 3B Fibreglass.



INNOVATION TEAM

DESIGN

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3B FIBREGLASS

With operations in Belgium, Norway and India, 3B Fibreglass is a leading manufacturer of fibreglass solutions for the reinforcement of thermoplastic and thermoset polymers. The products are designed and optimised to serve the automotive industry, the wind industry and to be incorporated into high performance composites.

The company aims to recycle glass fibre waste generated during production. The Battice (Belgium) plant, which is part of the innovation process, produces 115,000 tonnes of glass fibre per year. 3B Fibreglass is positioned in sectors that require fibres of impeccable quality and when the products do not perfectly meet the standards, they are removed from the manufacturing process. The waste thus generated represents a little less than 10% of the company's production, i.e. 7,000 to 12,000 tonnes per year.

Taking care of this waste and burying it in the ground generates considerable costs for 3B Fibreglass as well as a significant environmental impact. Moreover, there will soon be no more space available for burial.

Aware of this problem and wishing to be part of a circular logic, the company has created an internal working group to look for recycling solutions for decommissioned fibres.



Today, 3B Fibreglass has already identified a sector of valorisation for this waste: the brickworks. A partnership has been set up with a company in the building materials sector, which evacuates the waste in return for payment, crushes it internally and integrates it into its products as a substitute for silica, among other things.



The Wonderful.stream project represents, on the one hand, the opportunity for 3B Fibreglass to identify other ways of valorisation for this deposit in order not to be dependent on a single partner.

On the other hand, although 3B Fibreglass carries out in a continuous way an important work on the reduction of the volume of decommissioned fibres, it is necessary to find applications which make it possible to develop the important quantities of waste generated which cannot be buried any more in the medium term.

In the search for applications and partners, the challenge will be to deal with the specificities of the deposit to be recovered: these fibres have a high moisture content and variable dimensions. In addition to the logistics involved in transporting them, processing and drying of this waste may therefore be essential for its recovery. These operations are costly and will counterbalance the added value of the applications, thus reducing the number of possible solutions.

**115 000
tonnes**

The Battice (Belgium) plant, which is part of the innovation process, produces 115,000 tonnes of glass fibre per year.



In addition, due to the similarity of the waste stream with the high quality fibres marketed by 3B Fibreglass, which are easier to use, the project team will have to find competitive applications for these waste fibres.

Despite these constraints, the potential of valorisation of the deposit of the company is interesting because of its characteristics, in particular of reinforcement, similar to commercial fibres. The size of the available stream can also be seen as an asset in the case of a large-scale application. Finally, depending on the transformations envisaged, this waste can become a cheap resource for potential partners.

www.3b-fibreglass.com



CHALLENGES

- 01.** Diversifying the risks associated with dependence on a single partner
- 02.** Valorise a significant volume of waste
- 03.** Dealing with the restrictive characteristics of the waste stream
- 04.** Finding competitive applications compared to the use of commercial fibres

INNOVATION PROCESS

STEP 1

Identification of value-added opportunities

On the basis of existing information and a review of the literature, a mapping of possible applications was carried out.

Three possible applications were identified to be investigated as part of the innovation track:

01. INTEGRATION OF THE STREAM INTO THE COMPRESSION MOULDING PROCESS

Compression moulding is a forming process where the raw material is placed in a heated and compressed mould to obtain the desired shape. However, the use of virgin raw materials in the moulding mix can be costly and have a significant environmental impact. The project team decided to investigate the possibility of using waste glass fibres to replace virgin materials with a similar role.

02. INVESTIGATING THE NON-FLAMMABLE PROPERTIES OF FIBRES

Glass fibres have high fire resistance, which makes them potentially useful in flame retardant applications, such as the manufacture of flame retardant products and the spraying of fibres to extinguish electric vehicle fires. Such applications may avoid the need and cost of drying waste fibres.

03. INTEGRATION OF STREAM INTO AGGREGATE MANUFACTURE

The fibres could be used to make cellular glass aggregates for insulating and draining foundations in the construction sector. 3B Fibreglass had already investigated this option a few years ago, but the composition of the fibre waste did not allow it to be used to produce aggregates. Today, the transformation processes having evolved, it is interesting to verify if the situation has changed.

STEP 2

Investigating the application potential of fibres due to their non-flammable properties

The project team consulted with experts to establish the value of using fibreglass in this sector. The presumed benefit of using the 3B Fibreglass waste stream would be to reduce the amount of virgin material required for these types of products.

ÉTAPE 3

Partner search

The project team canvassed the interest of companies that perform compression moulding or produce glass aggregates to find a potential partner willing to test the use of fibre waste.

RESULTS

To date, the following information has been acquired during this project:

Compression moulding

Research has shown that the integration of fibreglass into the compression moulding technique is plausible. Three companies have expressed an interest in testing the use of the 3B Fibreglass waste stream.

This recovery solution would involve sorting the 3B Fibreglass waste stream and processing the fibres into a more consistent product that could be used in a partner's process.

It turned out that several of the companies contacted to consider a possible partnership were more interested in the company's finished product than in the residual streams. Companies using fibreglass want to ensure that they are using a product with specific characteristics.

Organic glass aggregates

3B Fibreglass is currently consulting with its potential partner to evaluate the technical feasibility of this solution.

Should the feasibility be proven, this solution would be ideal as it would not require any significant transformation of the flux which would be remelted within the framework of the usual activities of the partner company.

Applications related to non-flammable properties

Expert consultation has ruled out the use of fibres in fire-resistant applications.

This is because glass fibres are too heavy for certain applications such as fireproofing.

In other cases, such as the spraying of fibres onto burning vehicles, the applications would not allow sufficient volumes of fibres to be sold.

Finally, the cost of processing the waste for other uses is considered too high. This is particularly the case for the integration of fibre waste in the composition of flame retardants as a filler.

CONCLUSION

The objective of this project was to explore several possible uses for the 3B Fibreglass waste stream to help the company develop solutions to manage this stream as a resource in the future.

The project overturned the hypothesis of using the waste stream in flame retardant products for technical and financial reasons.

The use of the fibres for compression moulding is of interest and tests are now needed to confirm the feasibility of this application.

The possibility of remelting fibre waste for aggregate production still needs to be investigated.

The main obstacle in this project is to find a partner who is willing to use waste fibres instead of commercial fibres which are easier to implement in a process.

IN THE SHORT TERM

- Evaluation of the technical feasibility of using waste fibres to produce organic glass granulates.
- Sounding out the interest of the compression moulding company to carry out initial tests with the waste stream.

IN THE MEDIUM TERM

- Carrying out tests with potential partners for aggregate or moulded product applications.
- Feasibility study of in-house fibre waste management.

ULTERIOR OBJECTIVES

- Implementation of in-house fibre waste management.
- Establishment of partnership(s) by implementing transport and processing logistics for fibre waste.
- Potential steps to exit waste status or recognition of by-products.

Interreg

Euregio Meuse-Rhine

European Regional Development Fund



Interreg EMR transcends borders by enabling collaboration between regional areas in different countries. We are investing in projects on innovation, the economy, social inclusion and training, and territorial cohesion. By encouraging cross-border collaboration, we strengthen the economic and social fabric in the border region between Belgium, Germany, and the Netherlands.

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