

Expanded Polystyrene: Nationwide Collection and Recycling of EPS Insulation Board Offcuts Begins 9th September 2024



As part of the research project **EPSolutely**, partners from various federal states in Austria have developed a concept for an EPS circular economy. Now, a nationwide pilot trial is starting.

Styrofoam (Expanded Polystyrene, EPS) is used in house construction for thermal insulation, with insulation boards being cut to the correct size. If the resulting offcuts are to be recycled into new boards in line with a true circular economy, an efficient and functional system for retrieving the material from construction sites is required. Over the past two and a half years, the consortium of the **FFG** research project **EPSolutely**, led by Fraunhofer Austria, has developed such a system. Now, the nationwide pilot trial is being launched. The project partners have already demonstrated that both the production of new boards from the recycled material and the processing of contaminated material are technically feasible.

On the road to a real circular economy for this raw material, numerous questions need to be answered, one of which is: **How can the logistics of material retrieval be organised?** The consortium, made up of 13 partners, has developed a concept for nationwide collection, which is now being tested. **5,000 collection bags equipped with QR codes** have been distributed to locations where insulation boards are cut during house construction. The offcut material is collected in these bags. Through the QR code, processors access an online app where the bags can be registered for collection. The postcode of the construction site determines which project partner is responsible for the transport and reuse of the Styrofoam. A barcode on the collection bag enables its clear identification and tracking. After collection, the material is processed by the project partners into new insulation boards.

The nationwide coordinated collection of insulation board offcuts involves companies such as **Austrotherm** (Pinkafeld and Purbach locations), **Austyrol Dämmstoffe GmbH** (Mödling), **Flatz GmbH** (Lauterach), **HIRSCH Porozell GmbH** (Glanegg), **Steinbacher Dämmstoff GmbH** (Erpfendorf), and **swisspor Austria** (Gleiß).

During the development of the app, **data security, transparency, and usability** were of particular importance. Christoph Pröbstl, Project Manager at Austrotherm GmbH, explains: "We have created an integrated, easily expandable system solution for inter-company coordination of EPS waste collection, providing the foundation for a cross-organisational collection system. Data security was a priority, as we did not want any data exchange between companies, for both practical and legal reasons."

Before the concept for material retrieval could be developed, numerous trials had to be carried out. In addition to the mentioned partners, **LUST Malereibetrieb & Vollwärmeschutz GmbH** provided initial test material and an analysis of current facade construction processes. The **PORR Group** carried out initial tests on-site to assess functionality.

A key question was whether parts made from the reclaimed raw material are equal in quality to those made from new materials and whether contaminants can be removed before recycling. Both questions were answered positively based on trials conducted during the project.

Maximilian Bernard, Head of Research and Development at Steinbacher Dämmstoff GmbH, states: "The biggest challenge is the varying quality of the delivered material, ranging from different colours (white, grey, green, etc.) to various raw materials like EPS and XPS, and foreign materials such as screws and plaster residues. Despite these differences, the new EPS boards must consistently meet high quality standards."

The large-scale pilot trial now underway aims to evaluate and optimise the processes. **Stephan Keckeis**, Project Manager at Fraunhofer Austria, says: "For the first time, we have managed to set up a nationwide operation in Austria. Simple workflows, reusable bags, and an easy-to-use app were developed."

At the conclusion of the project in December 2024, the results of the pilot trial will be presented.

Project partners in EPSolutely include: Austrotherm GmbH, Flatz GmbH, Fraunhofer Austria Research GmbH, HIRSCH Porozell GmbH, LIEBHERR-HAUSGERÄTE LIENZ GmbH, Lindner-Recyclingtech GmbH, LuSt Malereibetrieb & Vollwärmeschutz GmbH, O.Ö. Landes-Abfallverwertungsunternehmen GmbH, PORR Umwelttechnik GmbH, Saubermacher Dienstleistungs AG, Steinbacher Dämmstoff GmbH, SUNPOR Kunststoff GmbH, XXXLutz KG. Additionally, swisspor Österreich GmbH & Co KG and Austyrol Dämmstoffe GmbH are active "Letter of Intent" partners involved in the collection concept.

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