



ZIM Success Story

Central Innovation Programme for SMEs

Cooperation Projects 110



A Second Life as EUR-Pallets

Conventional procedures for recycling PET require a series of complex and expensive steps in order to remove labels, caps, adhesives, seals, and other incompatible components. In this project, a new recycling technique (and corresponding equipment) was developed for unwashed, mixed, and multi-layer PET, as well as PET and PA bottles.

Since they were first introduced in the late 1980s, the use of bottles made of PET (polyethylene terephthalate) has quickly broadened into a wide range of applications around the world. The annual production of these bottles increases by around six per cent every year. Along with single-use PET containers, bottles made of thicker plastic that only need to be replaced after 20-25 returns are also used in Germany. Sooner or later, however, the question arises as to how bottles can be recycled in the most efficient way. The recycling processes used up to this point only work with PET bottles that have been washed, dried, and cleared of all incompatible components (labels, caps, adhesives, seals, etc). These steps are expensive, tedious, and resource-intensive. A PET bottle-washing system alone costs around €9 million.

In low-wage countries, used PET bottles are taken apart and sorted by hand. This

is why such countries continue to import and recycle large quantities of used PET bottles, including from Europe.

The partners in this international research project thus set their sights on coming up with a different, more cost-effective recycling solution.

The product and its innovation

This complex R&D effort comprised a number of individual developments that were key to the project's success. One of the partners' more crucial accomplishments involved a new technique for recycling unwashed, mixed, and multi-layer PET (as well as PET/PA bottles). At the same time, they managed to assemble a prototype of a new system for recycling PET composites. The Austrian project partner also developed a laboratory unit optimised for compounding plastics and analysing label removal during the recycling process.

PET refuse that has undergone this new procedure can then serve as material for new end products – EUR-pallets, for example. Such pallets are manufactured by means of an injection-moulding technique fine-tuned for this purpose.

The numerous customer requests received by MBM Maschinenbau Mühldorf GmbH following the completion of this project led to further advancements in the recycling system in question. It is now capable of refining not only PET bottles, but other PET materials as well, including multi-layer packaging film, packaging and cans used in the food and beverage industry, and packaging that contains polycarbonate. Recycling materials like these was previously impossible.

Market and customers

Both the new procedure and the equipment involved have met with a high level of customer interest. MBM is currently presenting its pilot system to a long list of potential clients. These systems will cost around €2-3 million depending on the intended area of use, and the company is expecting to receive orders starting this year.



An MBM installation for recycling PET composites

The partners

MBM Maschinenbau Mühldorf GmbH operates in the field of special-purpose mechanical engineering. It offers custom machines, components, and assembly services in connection with machines and plants. MBM was founded in 1988 and currently employs 206 people.



EUR-pallets made of recycled PET

Maschinen und Anlagenbau Schulz GmbH plans, designs, manufactures, and sells machines and installations for recycling, refining, extruding, and compounding synthetic materials. It was founded in 2006 and has 40 employees at present.



Refined PET material

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