

PURE LOOP: Efficient recycling of injection mouldings

From rejection to re-injection

Six years ago, injection moulding parts manufacturer AREXIM chose a PURE LOOP shredder-extruder combination as a recycling solution for their production waste. Thanks to its high flexibility for processing different materials, simple operation and low maintenance, the ISEC 101 E machine has proven its worth many times over. It ensures excellent cost efficiency in recycling and supports the plastics processor in Bulgaria in achieving their goal of a waste-free production cycle.

July 2021 - AREXIM, headquartered in Smolyan, Bulgaria, specialises in the production of plastic parts and injection moulds and has become a leader in this field since its inception in 1991. Their customers include well-known companies in the tool, electrical and automotive industries. As might be expected, the company has an extensive range of machines. This includes almost 100 injection moulding machines from various manufacturers, with which over 1,000 different plastic parts are produced, including multi-component parts and glass-fibre reinforced parts. "By the end of 2021, we will have added another 20 injection moulding machines to our production equipment," declares CEO Kiril Asenov.

In proportion to the growing production capacity, the volume of recycled pellets produced from production waste has also increased over the years. In 2018 there were around 290 tonnes, while in 2020 there was a significant increase to 361 tonnes of recycled pellets per year, produced using the ISEC evo 101 E machine. Depending on the injection moulding application, recycled pellets are fed back into the production process in proportions of five to 25 percent thanks to their high quality.

Flexible material all-rounder

"With the variety of input material to be recycled that Arexim collects during their production processes, our shredder-extruder technology comes into a class of its own," says Merlijn van Essen, Sales Manager at PURE LOOP. Thanks to the intelligent combination of the double feed ram system and single-shaft shredder, they are able to process a very broad spectrum of different material types and forms. According to Asenov, the decisive factor for AREXIM is this: "We produce plastic parts with a glass fibre content of up to 50 percent, which place extreme demands on the wear parts of the recycling machine due to their abrasive effect. The system must therefore be particularly robust and the treatment temperature as low as possible, what in the future might help us to run materials with flame retardents without difficulties."

The input materials are fed into the machine on a conveyor belt, shredded and melted. The flow of material from the cutting chamber of the shredder into the compression zone of the extruder is controlled by an aperture with a continuously variable feed gap to ensure a uniform conveying speed even when the cutting chamber is filled semi-continuously. This means the system can easily handle different material shapes fed in directly one after the other. Asenov also mentions the high throughput and ease of operation as further points for satisfaction with this machine. "Of course running materials with a glass fibre content up to 50 percent leads to higher maintenance of the machine than processing materials without any glass fibre. However the overall cost and efficiency balance is satisfactory. It also helps us conserve natural resources and brings us a step closer to our objective of a waste-free production cycle", he says.

Even more safety at work

ISEC technology is also ahead in terms of occupational safety, as Van Essen reports: "Compared to alternative processing methods, in which the injection moulded parts to be recycled are first ground, the fine dust pollution of the ambient air caused by the glass fibre content, among other things, is significantly lower during the repelletising process with our shredder-extruder combination."

Photo:



*Todor Glavinkov, Facilities Manager at Arexim Engineering EAD, in Smolyan in front of the ISEC 101 E machine.
(Photo: Arexim)*



Six years ago, injection moulding parts manufacturer AREXIM chose a PURE LOOP shredder-extruder combination as a recycling solution for their production waste. (Photo: Arexim)