

USER REPORT

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Amortized within only six months

S-Max 2 granulators from WITTMANN reduce unit costs and enhance competitiveness

More sustainability, creation of a circular economy, fluctuating raw material and energy prices – these current challenges are bringing in-house recycling of sprue and production scrap into focus. It pays off to check into which products regrind can be blended. A well-known manufacturer of electronic components has been able to cut unit costs in injection molding production thanks to in-house recycling. The new S-Max 2 granulators from WITTMANN paid back their purchase price within just six months.

The processing company manufactures sophisticated electronic components on 15 injection molding machines with clamping forces ranging from 15 to 120 tons. These include many different plugs and connectors for technical and industrial applications.

“We are using many of our products here ourselves”, explains the injection molding department manager. “For example, in the injection molding machines and robots. This is certainly a decision-making factor in choosing our suppliers”.

The most recently acquired machines on the company’s production floor – two servo-hydraulic SmartPower models – have come from WITTMANN. The energy efficiency of WITTMANN injection molding technology was a further consideration in favor of choosing this equipment.

Blending in up to 25 per cent regrind

The cooperation with WITTMANN has already existed for many years, since in materials handling the processor also relies on solutions from Austria. WITTMANN supports every project with extensive know-how, counseling and solutions tailored precisely to fit the customer’s needs.

Nevertheless, the market is analyzed thoroughly for each new project, and products from several different suppliers are always evaluated. Most recently, this was done two years ago, when the company decided to recycle sprue and production scrap in-house and return them to the injection molding process.

For a long time, it was considered impossible for customers to accept a proportion of recycled material in their parts. But the current demand for a circular economy has prompted the industry to rethink this point. “We have carried out numerous tests with recycled materials and thoroughly analyzed the quality of the injection molded parts”, explains the injection molding department manager. “Many plugs have filigree structures with thin-walled areas. We had to make sure that we can fill the cavities completely and maintain the required product attributes with recycled material, too.”

The tests proved successful. The percentage of regrind which can be blended in with the virgin material was defined for each individual product. Up to 25 per cent is possible for parts produced at the company’s facility.

Easy grinding of parts with high fiberglass content

Sprue and production scrap such as start-up parts and rejects are now collected in boxes at the machines and brought to the new recycling center by the machine operators. This center is located in the middle of the injection molding hall and consists of four brand-new S-Max 2 granulators from WITTMANN. A separate lattice box is placed in front of the granulators for each different variety and color of main material. Strict single-variety collection of scrap to be processed is an important prerequisite for producing high-quality parts from regrind.

The main materials include various types of polyamides as well as PBT, ABS and polypropylene, all flame retardant modified and mixed with fiberglass. Materials with very high fiberglass contents of up to 60 per cent are being processed.

As soon as a lattice box is full, one of the granulators is started. The recycling center is operated and supervised by the injection molding staff. So, the overall responsibility lies in one hand.

Targeting homogeneous granulate

“We investigated several different granulators at the fair and carried out grinding tests with our own material at the respective suppliers”, explains the injection molding department manager. At WITTMANN’s technical lab in Nuremberg, the sprue from our plugs was ground on an S-Max 2 granulator. The result proved convincing. This granulator delivered a highly homogeneous granulate with grain diameters ranging from 3.5 to 4 mm, and the proportion of dust development was below that of other granulators we had tested.”

“The S-Max 2 screenless granulator series is designed for processing engineering plastics and parts which are hard to grind”, says Wolfgang Prütting, Regional Sales Manager at WITTMANN BATTENFELD Germany. The grinding tools have a long service life even with high fiberglass content.

Compact design and integrated sound insulation are further advantages showing their positive effect most distinctly when the granulators are not run in a separate room, but directly in the production hall instead.

Direct onward forwarding of granulate

S-Max 2 granulators come equipped with a filling level sensor as standard. As soon as the collecting container is full, the grinder stops. To enable continuous operation, WITTMANN has designed a special solution for this particular customer. Instead of switching off the grinder, the signal from the filling level sensor is used to switch on an integrated vacuum conveyor unit. In this way, the material is transported directly from the granulator's collecting container into a material bin.

The bin is then passed on to the central materials handling system with a lot of dryers, material loaders and a coupling station located on the floor above the storage room. Forklifts are used to lift the bins filled with granulate to the upper level and there connected with Gravimax blenders – which have also come from WITTMANN. The gravimetric blending system enables gram-accurate metering of the granulate to be blended in with the virgin material.

Virgin material consumption significantly reduced

Since start-up of the in-house recycling project, the consumption of virgin material has gone down continuously, with an immediate effect on unit costs to improve the manufacturer's competitiveness. Most recently, several patents have expired, resulting in intensified competitive pressure. "Using recycled materials is our only way to achieve competitive unit costs", says the processor. "The new granulators have already amortized themselves within only six months."



Fig. 1a+b: The new recycling center on the injection molding production floor: four S-Max 2 granulators from WITTMANN have been acquired for in-house recycling.



Fig. 2: 15 injection molding machines are installed at the plant, ready to produce a great variety of different plugs and connectors. The newest machines are two SmartPower models from WITTMANN. The WITTMANN machines' energy efficiency was the decisive argument in the decision-maker's choice.



Fig. 3: The material bin filled with granulate is lifted to the upper floor towards the central materials handling system, using a fork lift with sophisticated safety devices.



Fig. 4a+b: The granulate is fed into the materials handling system with gram-accurate precision by Gravimax gravimetric blenders from WITTMANN.

All photos: WITTMANN

The WITTMANN Group

The WITTMANN Group is a globally leading manufacturer of injection molding machines, robots and auxiliary equipment for processing a great variety of plasticizable materials – both plastic and non-plastic. The group of companies has its headquarters in Vienna, Austria and consists of two main divisions: WITTMANN BATTENFELD and WITTMANN. Following the principles of environmental protection, conservation of resources and circular economy, the WITTMANN Group engages in state-of-the-art process technology for maximum energy efficiency in injection molding, and in processing standard materials and materials with a high content of recycles and renewable raw materials. The products of the WITTMANN Group are designed for horizontal and vertical integration into a Smart Factory and can be interlinked to form an intelligent production cell.

The companies of the group jointly operate ten production plants in six countries, and the additional sales companies at their 36 different locations are present in all major industrial markets around the world.

WITTMANN BATTENFELD pursues the continued strengthening of its market position as a manufacturer of injection molding machines and supplier of comprehensive modern machine technology in modular design. The product range of WITTMANN includes robots and automation systems, material handling systems, dryers, gravimetric and volumetric blenders, granulators, temperature controllers and chillers. The combination of the individual areas under the umbrella of the WITTMANN Group enables perfect integration – to the advantage of injection molding processors with an increasing demand for seamless interlocking of processing machines, automation and auxiliaries.

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