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Film producer enhances recycling with rotary batch mixers

Omnova Solutions significantly improved recycling capabilities at its US plant by investing in rotary batch mixers from Munson Machinery.



Rotary batch mixer controls particle-size distribution.



Munson says its 700-TSC-300 achieves batch uniformity in about three minutes and discharges with no residue.

Omnova supplies printed flexible and rigid films to commercial and residential product makers for flat and three-dimensional (3D) lamination to wood, metal, particle board and substrates used in high-end and commodity products.

Applications include cabinets for kitchens, bath and healthcare; home and office hospitality furniture; retail displays; wall and floor coverings; and interiors of recreational vehicles.

The plant compounds, calenders, prints, embosses, and coats primarily PVC films. Despite significant reductions in waste through SixSigma and other continuous improvement programs, Omnova's calendering process still generated process waste material that could be recycled.

In an effort to effectively re-utilise this material and improve the plant's environmental footprint, Omnova invested in a recycling program.

Low reuse rate

Omnova's options to recycle material were initially limited.

To improve the recycling process, Omnova invested in a Munson 700-TSC-300 rotary batch mixer with capacity of 8,165 kg and 8.5 cu m. The company granulated its start-up and process waste material, reducing its particle size and then blended it in the mixer.

Plant process engineer Steve Reed said "The homogeneous mixing ac-

tion of the Munson machine produced high-quality recycled blends that could be added back into compound formulations in-house or sold outside to brokers."

One benefit of the machine's mixing efficiency was to reduce variations in particle size distribution. This prevents particle segregation and problems arising from different melt temperatures during re-processing.

The company was recycling a handful of colours at the time - black, white and blends of red, green and blue. The ability of the mixer to produce consistent blends made in-house recycling possible.

"The blends that we were releasing to production had to be within a pretty tight colour tolerance," said Reed. As a result of the mixer's blending capabilities, he was able to build the company's recycling activities into a viable operation.

The rotary batch mixer achieves homogeneous blending through the use of specially designed internal mixing flights that tumble, turn, cut and fold the batch. The gravity-fed process produces uniformly mixed batches in 3 minutes or less and achieves full discharge. The mixer has a small footprint, dust-tight operation and low energy consumption.

Market changes affect reclaim

As Omnova's business grew, so did its need for recycling capacity. With more materials and colours added to the production schedule, Omnova invested in a second, smaller Munson rotary batch mixer with a capacity of 2,268 kg.



Omnova invested in a second, smaller rotary batch mixer to meet growing in-house demand for recycled material.



Munson says the mixing action of this rotary batch mixer provides homogenous, high quality recycle.



Omnova maintains an extensive inventory of recycled colours for blending with virgin resin.



Plant process engineer, Steven Reed, inspects the quality of recycle that will be reused in the company's film compounding operations.



Steven Reed checks rolls of material prior to granulation and reuse.

According to Munson, while Omnova evaluated machines from other manufacturers, its equipment stood out in two categories: distribution of particles by particle size (i.e., good mixing) and colour consistency.

Omnova currently manufactures over 1,500 custom colours. Reed spent a lot of time fine tuning the process of colour matching virgin and recycled material figuring out how to use both in order to obtain good colour consistency. "The more control over colour matching, the better our ability to recycle back into grade 1 material" he said.

Part of commitment to sustainability

Omnova's recycling operation at its Pennsylvania plant fits perfectly with a company commitment to reduce waste as part of a Vision 2014 sustainability initiative. Under the program, the company has set specific energy and waste reduction goals to achieve by the year 2014.

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