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Sorema launches upstream de-inking process

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De-inking - ink removal - is an important but underestimated part of the process of recycling. It involves the removal of cured ink systems from a plastic substrate to allow the printed plastic packaging to be recycled and reused in the manufacturing process. This process must be a thorough one, if good-quality recyclate is to be achieved.

According to Sorema, the inks that remain behind in the recycled material can alter the colour and/or the transparency of the material, create defects on the final product and degrade to form odour, gassing or migratable species. Current de-inking technologies rely on the thermal degradation of the inks during extrusion, with their elimination during the degassing and filtration phase of the melt. While efficient, these processes are unable to eliminate high ink loads. Any flakes and granules contaminated by ink residues that are reused in new food contact packaging act as contaminants. However, once the inks are removed, the plastic can potentially be recycled back into its original application.

Sorema has therefore introduced a de-inking process upstream of the extrusion phase, which yields materials with minimal printing ink residues. The new technology is also an improvement on Sorema's existing range of solutions for ink removal and is based on the proven process of "batch" washing.

The de-inking module is an advanced washing system, developed by Sorema, for the removal of inks and successfully combines several techniques. These include a volumetric or gravimetric feeding of the inflow material, a controlled and independent dosage of chemical additives and a high friction hot water washer with a defined residence time adjustable to each specific type of ink and material. Both rigid and flexible plastic materials can therefore be washed in a single plant. The flakes then undergo one or more rinsing and drying steps, prior to being extruded into granules.

The Sorema “de-inking” process is mainly applied to post-industrial waste, but it is also being studied for use in post-consumer waste recycling plants.

Sorema’s laboratory is open to customers for de-inking tests in order to validate the process with their products and optimise the chemical formulation and washing times. These tests can also include in-house extrusion to verify the achieved results.

The turnkey washing and recycling plants supplied by the company are able to handle all stages of the process, including cleaning the chemical de-inking circuit and wastewater treatment. Thanks to Sorema’s collaboration with sister company Teknodepurazioni Aquae, a wastewater treatment phase can be integrated into the washing and recycling installations. This wastewater technology, which treats the wastewater generated by the de-inking process, combines mechanical filtration processes with high-speed centrifuges, sedimentation with chemical adjuvants and purification with ozone and activated carbon treatments.