CASE STUDY

KONGSKILDE
www.kongskilde-industries.com

PET / RECYCLING / SORTING

Automated Conveying Unlocks the Full Value of Optical Sorting for PET Recycler

Novelplast is an Ireland-based PET recycling company processing over 20,000 tonnes of post-consumer plastic waste per year. After investing in a TOMRA optical sorting system to improve material purity, the company needed a reliable conveying solution to make it fully operational. Kongskilde designed and delivered a custom pneumatic system that automated the entire multi-pass sorting process, enabling consistent, high-purity output from day one.

THE CHALLENGE

A new sorting machine, with no conveying solution

Novelplast sources post-consumer PET from suppliers around the world, accepting material in multiple forms including flake, fiber, fines, film, sheet, regrind, and purge. Running two extrusion lines up to 24 hours a day, five and a half days a week, material quality directly affects output.

Novelplast's customers require recycled plastic to meet strict specifications for intrinsic viscosity (IV) and haze. Contaminants such as mixed colours, foreign polymers, sand, and metal vary from batch to batch and, when present in the feed material, cause filter blockages and unplanned downtime.

To control input quality, Novelplast invested in a TOMRA Innosort Flake optical sorting system, targeting a final purity of over 95%. While TOMRA supplied the sorting technology, Novelplast still needed an efficient way to convey material to and from the sorter and manage the multi-pass process required to reach the target purity.

Engineering Manager James Farrelly was responsible for finding a conveying solution that could make the sorter work in practice. The system needed to fit within the existing production space, stay below a 6.5-metre height limit, and achieve a throughput requirement of one tonne per hour.

Novelplast's new TOMRA sorting system required a compact conveying solution capable of managing complex multi-pass material flow within strict space and throughput constraints.

THE FACTS

Material Specifications:

- **Source material:** Post-consumer PET from global suppliers
- **Material forms:** Flake, film, fibre, sheet, fines, regrind, purge
- **Sorting technology:** TOMRA Innosort Flake CRGB NIR
- **Target output purity:** 95%
- **Throughput goal:** 1 tonne per hour
- **Operating schedule:** 24 hours per day, 5.5 days per week
- **Height constraint:** Below 6.5 metres

Optical sorting removes colour contamination and foreign materials from incoming PET, but achieving consistent results depends on material being moved efficiently and consistently through each sorting pass.

THE SOLUTION

After evaluating several options, Novelplast selected Kongskilde to design and deliver the complete conveying system.

The final solution is built around two core components: MultiEvacuators and Rotary Valves.

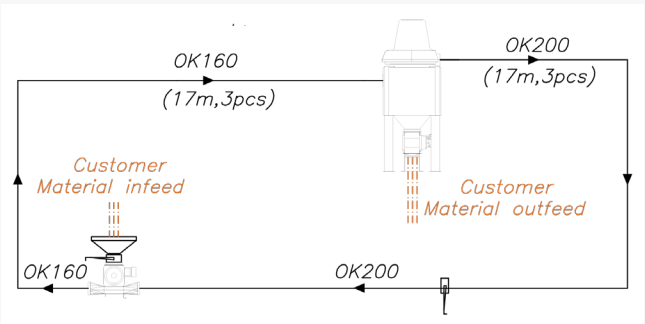
- **MultiEvacuator Systems**
  Six pneumatic conveying systems positioned around the TOMRA move PET flake through each stage of the sorting process, all managed through a single control panel.
- **Rotary Valves**
  Seven rotary valves control metered feed and discharge at each transition point, keeping clean and reject streams fully separated.

How it Works:

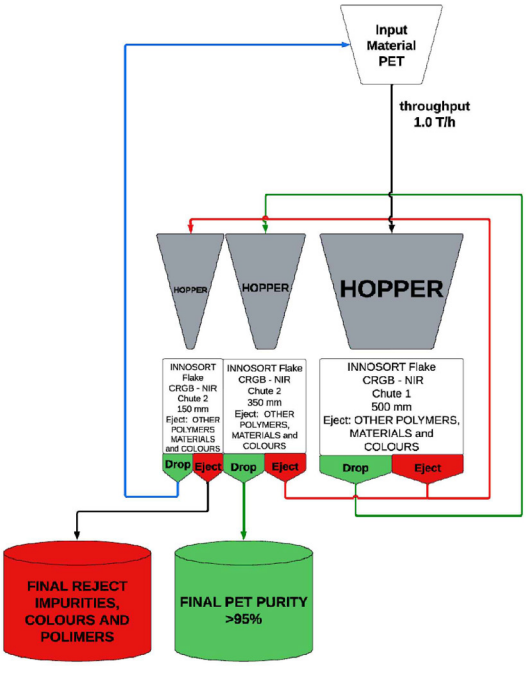
1. Incoming material is fed into hopper one and released through chute one
2. Material that passes moves automatically to hopper two for a second sort
3. Reject material from chutes one and two is directed to hopper three for a third pass
4. Material passing chute three re-enters the process at hopper one
5. Only material that fails all three passes is directed to the reject bag
6. Finished goods advance automatically to the bagging station

The final solution provided Novelplast with a compact and reliable way of managing a complex, multi-chute sorting process. The system fit within the existing warehouse space, required minimal maintenance, and integrated seamlessly with the new TOMRA sorter.

Final and reject material are discharged into big bags automatically.



Six systems work in harmony to achieve full automation of the multi-pass sorting system.



THE ADVANTAGES AND BENEFITS

Since installing the Kongskilde system, Novelplast has seen reliable performance and measurable improvements in day-to-day operations.

- **Fully automated multi-pass sorting:** A complex three-chute sorting process runs without manual intervention between passes, reducing the demand on operators and supporting consistent production output.
- **Consistent material quality:** Higher input quality gives Novelplast greater consistency in meeting the intrinsic viscosity and haze requirements of their customers.
- **Reduced extrusion line disruptions:** Cleaner input material has resulted in fewer filter blockages, improving uptime across both extrusion lines.
- **Space-efficient design:** The conveying system was engineered to fit within the constraints of an existing production facility, working within strict height and floor space limitations without requiring structural changes.
- **Seamless integration:** Kongskilde selected and configured the ideal components for integration with the existing equipment, ensuring a smooth start-up.

> *When we turned on the TOMRA and turned on the conveying system, everything worked. We didn't have one problem to report. It was good to work with somebody who knew exactly what they were doing and kept things simple.*
>
> — James Farrelly, Engineering Manager

MultiEvacuators move material through each stage of the sorting process using a combined blower and cyclone system, housed in soundproofed cabinets for quiet operation.

Rotary Valves regulate material feed and output throughout the sorting process. Rotating blades with polyurethane tips form an airtight seal against the valve housing, containing dust and minimizing air loss.

Ready to improve your production?
Start the conversation today and discover how a pneumatic solution can improve your operations.

KONGSKILDE
Kongskilde Industries A/S
Tel.: +45 7217 6000
industry@kongskilde-industries.com