

PLASTIC WASTE / CONVEYING / RECYCLING

Pneumatic Conveying Reduces Manual Handling in Municipal Waste Sorting

A Danish waste recycling facility sorts household plastic, metal, and glass waste before the materials are sent for recycling. Manual handling required repetitive twists and throwing movements, affecting both operator working conditions and sorting efficiency. Kongskilde delivered a pneumatic conveying system that transfers the lightweight waste directly from the sorting line to the next process stage or to outdoor collection containers.

THE CHALLENGE

Making manual sorting easier on operators

The facility handles close to 2,000 tonnes of household waste each year, separating recyclable plastic, metal, and glass by hand before the material moves on for recycling.

Handling the different plastic, metal, and glass fractions required repeated twisting and throwing motions, putting operators at risk of injury and slowing the sorting process.

The facility wanted to improve working conditions, increase sorting speed, and keep the space cleaner, all without disrupting the manual sorting process already in place.

Key requirements included:

- Reduce physical strain on operators
- Convey PET, HDPE, mixed plastic, and residual light waste from the sorting line
- Keep heavy glass waste separate from the lighter material fractions
- Avoid drafts around operators at the suction points
- Reduce labor demand while maintaining sorting capacity



Before installation of the new pneumatic solution operators manually moved the sorted waste into collection containers.

THE FACTS

Material specifications:

- PET, HDPE, mixed plastic, and residual household waste

System specifications:

- Suction points: 5
- Pipe diameter: Ø400 mm
- Max. horizontal conveying distance: 25 m
- Max. vertical conveying distance: 5 m
- Pipe layout: Up to five 90° bends
- Annual conveying volume: Approx. 277 tons



Pneumatic conveying solution with suction points reduces manual handling directly at the sorting line.



The existing recycling facility was retained and upgraded with pneumatic waste conveying.

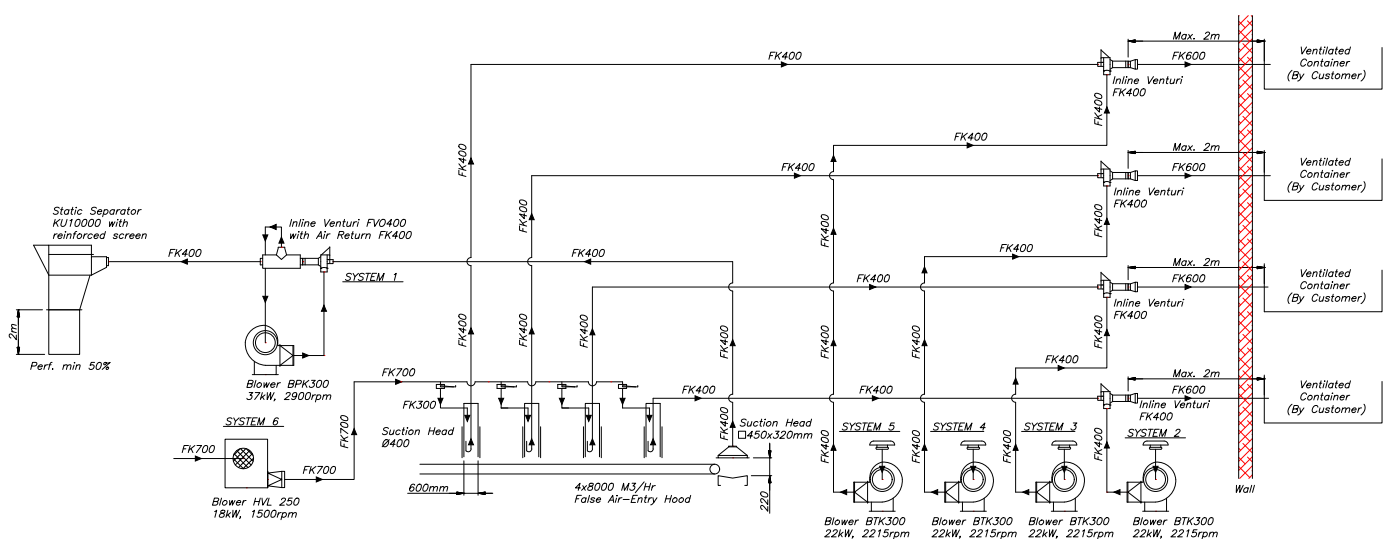
THE SOLUTION

The facility needed to reduce manual sorting of household waste while improving operator safety and throughput, without raising operating costs. Kongskilde designed a pneumatic conveying system with five suction points integrated into the existing sorting line. Airflow captures and transports the lightweight material, while heavier glass continues separately by gravity. The sorted plastic fractions and residual light waste are then conveyed directly to outdoor collection containers.

How It Works

- **FVO 400 Venturi with Air Return (BPK300 Blower):** Extracts lightweight material from the initial sorting stage to the main sorting conveying line. The airflow removes lightweight items from the conveyor belt while heavier glass is sorted out by gravity and continues to a collection container.
- **KU Static Separator:** Discharges the extracted items onto the main sorting conveyor.
- **Suction Heads (Main Line):** Operators sort PET, HDPE, and mixed plastic into three suction heads positioned above the main sorting conveyor. A fourth suction head at the end of the conveyor belt removes the remaining light waste, while heavier glass continues separately to another conveyor transporting it to a container.
- **False-Air Supply System:** A dedicated blower feeds four false-air entry hoods positioned at the sorting-line suction points, balancing airflow so operators aren't working in a draft.
- **ITF Venturi Systems:** Four units located in the basement convey the separated material streams through Ø400 mm piping to outdoor collection containers supplied by the facility, for transport to the recycling plant.
- **BTK300 Blowers:** Each of the four individual conveying lines runs on its own BTK300 blower, keeping the material streams independent from suction point to container.

The system retains the existing workflow at the waste sorting facility while reducing repetitive manual handling.



THE ADVANTAGES AND BENEFITS

The pneumatic conveying system reduces manual handling of recyclable material, while supporting a cleaner and more efficient sorting process at the sorting facility.

- **Less Physical Strain:** Suction points positioned at the sorting line reduce repetitive twisting and throwing previously required to handle the lightweight waste.
- **Lower Labor Requirement:** After installation, the sorting operation could be run with one fewer employee.
- **More Efficient Material Handling:** PET, HDPE, mixed plastic, and residual light waste are conveyed directly from the sorting line to their designated collection points.
- **Reliable Material Separation:** Pneumatic extraction removes lightweight materials while heavier glass continues separately to its own collection stream.
- **Cleaner Working Environment:** Enclosed pneumatic transfer helps contain dust and waste during transport, contributing to a cleaner sorting area, healthier working environment and minimized maintenance.
- **277 Tonnes Conveyed Annually:** Approx. 277 tonnes of plastic and light waste pass through the Kongskilde conveying system each year as part of the facility handling close to 2,000 tonnes of household waste annually.



Suction points at the sorting line reduce repetitive lifting, twisting, and throwing.



Separated material streams are conveyed directly to outdoor collection containers.

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 6050
industry@kongskilde-industries.com

