

POLYCARBONATE / RECYCLING / AIRWASH

Vacuum Conveying and Dedusting for Polycarbonate Recycling

Highline Polycarbonate is a New Jersey-based specialty polycarbonate sheet producer that reclaims post-consumer material and reprocesses it into optical-grade sheet. When the company built a dedicated recycling facility, it needed a system that could convey regrind from the grinder, remove dust and static, and package it cleanly. Kongskilde delivered a vacuum-based Air Wash system that conveys, dedusts, and bags polycarbonate regrind in a fully contained process.

THE CHALLENGE

Highline Polycarbonate produces specialty polycarbonate sheet for high-performance applications requiring exceptional clarity, including laser-blocking, military, and other custom uses.

To support this standard, The company built a dedicated recycling facility in New Jersey to take back used polycarbonate sheet from customers, process it down to regrind, and convert it back into new optical-grade sheet. The output can match, and in some cases exceed, the quality achievable with virgin resin.

To make that possible, Highline needed a system that could convey regrind from the grinder, remove dust and static, and package it cleanly without contaminating the output.

The final system had to address several specific challenges:

- Polycarbonate regrind is abrasive and static-prone, requiring a system configured specifically for the material.
- Any residual dust or fines would compromise optical clarity and impact resistance in the finished sheet.
- All captured dust had to remain fully contained to meet state environmental requirements.



Highline's new facility is dedicated exclusively to clear polycarbonate, with every piece of equipment and every process step designed around material purity.

THE FACTS

Material Specifications:

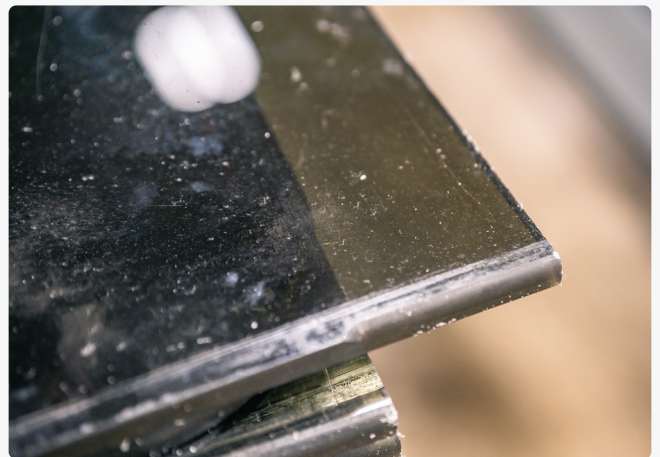
- **Material:** Post-consumer polycarbonate sheet sourced from global suppliers
- **Material characteristics:** Abrasive and static-prone polycarbonate
- **Output requirement:** Optical-grade quality suitable for re-use
- **End uses:** High-performance applications including laser-blocking, military, and other custom uses requiring exceptional clarity

System Requirements:

- Turn-key solution covering conveying, dedusting, and bulk bag filling
- Integration with existing granulator, operated from a single control panel
- Fully contained process with no dust released into the facility
- Air filtration to meet state environmental requirements
- Compact design to accommodate limited ceiling height in available facilities



Polycarbonate reground is abrasive and static-prone. Dust must be fully extracted and contained before the material can be reprocessed into high-grade sheet.



Recycled polycarbonate processed to the right standard can be used in the same high-performance applications as virgin material.

THE SOLUTION

Highline needed a complete system to convey polycarbonate regrind directly from the granulator, remove all dust and fine particles, and deposit clean material into bulk bags without releasing processed dust into the facility. The system was designed, supplied, and installed by Kongskilde's certified installation team.

System Components:

- **AirWash 100:** A vacuum-based conveying and dedusting unit that pulls regrind directly from the grinder under negative pressure and removes dust and fines through a two-stage cleaning process.
- **Heavy-Duty AK Rotary Air Lock Valves:** Specified for polycarbonate's abrasive characteristics to ensure long service life throughout the system.
- **Anti-Static Unit:** Neutralizes static charge in the regrind as it moves through the system, preventing fine particles from building up on pipe walls and surfaces.
- **PolyVac 50:** Receives clean regrind and fills Super Sack bulk bags on a pallet-mounted weighing scale, allowing operators to monitor fill weight in real time.
- **K-Series 750 Filter:** Captures dust from both the AirWash and PolyVac 50 at 99% efficiency at 0.3 microns, returning filtered air to the facility interior.

How it Works:

1. Regrind is drawn from the granulator under vacuum into the AirWash
2. A vortex separates fine dust particles while heavier regrind falls through
3. The anti-static unit deionizes the polycarbonate dust as it is removed
4. Clean regrind drops into the PolyVac and is discharged into bulk bags
5. All dust and fines are captured by the K-750 filter; purified air is returned to the facility and captured fines drop into sealed barrels

The result is a fully contained process that takes regrind from the granulator to the bulk bag without releasing dust into the facility or compromising the quality of the output.



A single integrated system covers every step from granulator discharge to bulk bag. Conveying, dedusting, bagging, and air filtration is all contained within one system.



Clean, dust-free regrind drops into the collection hopper. At this stage, dust and fines have already been fully extracted and captured by the filter system.



Dust extracted during conveying and dedusting is captured at 99% efficiency and collected in sealed barrels.

THE ADVANTAGES AND BENEFITS

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

- **High-purity regrind:** The AirWash removes dust and fine particles from ground polycarbonate, producing regrind that consistently meets strict clarity and performance requirements with no adjustments required since commissioning
- **Clean facility:** Processed dust never reaches the facility environment. All fines are captured in sealed barrels and directed to third-party processors rather than going to landfill.
- **Simple operation:** The system is interlocked with the granulator control panel, so the granulator cannot run without the conveying system already active.
- **Easy integration:** Kongskilde coordinated directly with the granulator manufacturer on all electrical and mechanical connections, ensuring the system worked correctly from day one.
- **Fast commissioning:** Pre-installation coordination with the granulator manufacturer meant the system was ready upon arrival and commissioning was completed in a single day.
- **Capacity for growth:** The system capacity exceeds current throughput needs, giving Highline room to grow without modifying the system.

“

It became clear fairly early on in that process that we, in the Kongskilde equipment, had a solution that would meet our needs and was a very high quality piece of equipment.”

— Martyn Kelly, Co-Owner

Ready to improve your production?

Start the conversation today and discover how a pneumatic solution can improve your operation.



The AirWash pulls regrind from the granulator under vacuum, removing dust and fines through a two-stage cyclonic and anti-static process.



The Polyvac receives dedusted regrind from the AirWash and discharges it into Super Sack bulk bags for shipment.

KONGSKILDE
Kongskilde Industries A/S

Tel.: +45 7217 6000
industry@kongskilde-industries.com

