

CASE STUDY

**APPLICATION:
COLLECTION OF POLYETHYLENE FILAMENTS**

**CUSTOMER:
TETXTILE COMPANY**

**BENEFITS:
COLLECTING A LARGE AMOUNT OF FILAMENTS CONTINUOUSLY,
AVOIDING WORKFLOW INTERRUPTIONS**



Polyethylene filaments are a type of residual waste generated during production processes in textile industries. If this waste isn't properly removed, it can accumulate, clogging and blocking machinery, which leads to malfunctions and slows down the production process.

To efficiently manage large quantities of polyethylene filaments, it's essential to have a **vacuum system designed for continuous suction** to minimize downtime.

We designed a **customized vacuum system** featuring a double pre-separator, allowing suction and discharge continuously. This setup enabled them to efficiently collect and dispose of large quantities of polyethylene filaments simultaneously.

To ensure a **safe operating environment**, the system includes an **alarm feature** that alerts workers when stepping away from the machinery is necessary. This proactive approach:

- allows operators to perform their maintenance tasks safely;
- minimizes exposure to hazards during collection and discharge.



OUR CUSTOM VACUUM INSTALLATION

FOR THE COLLECTION OF POLYETHYLENE FILAMENTS



The **vacuum system** we designed includes a powerful suction unit and two pre-separators that work alternately to prevent downtime.



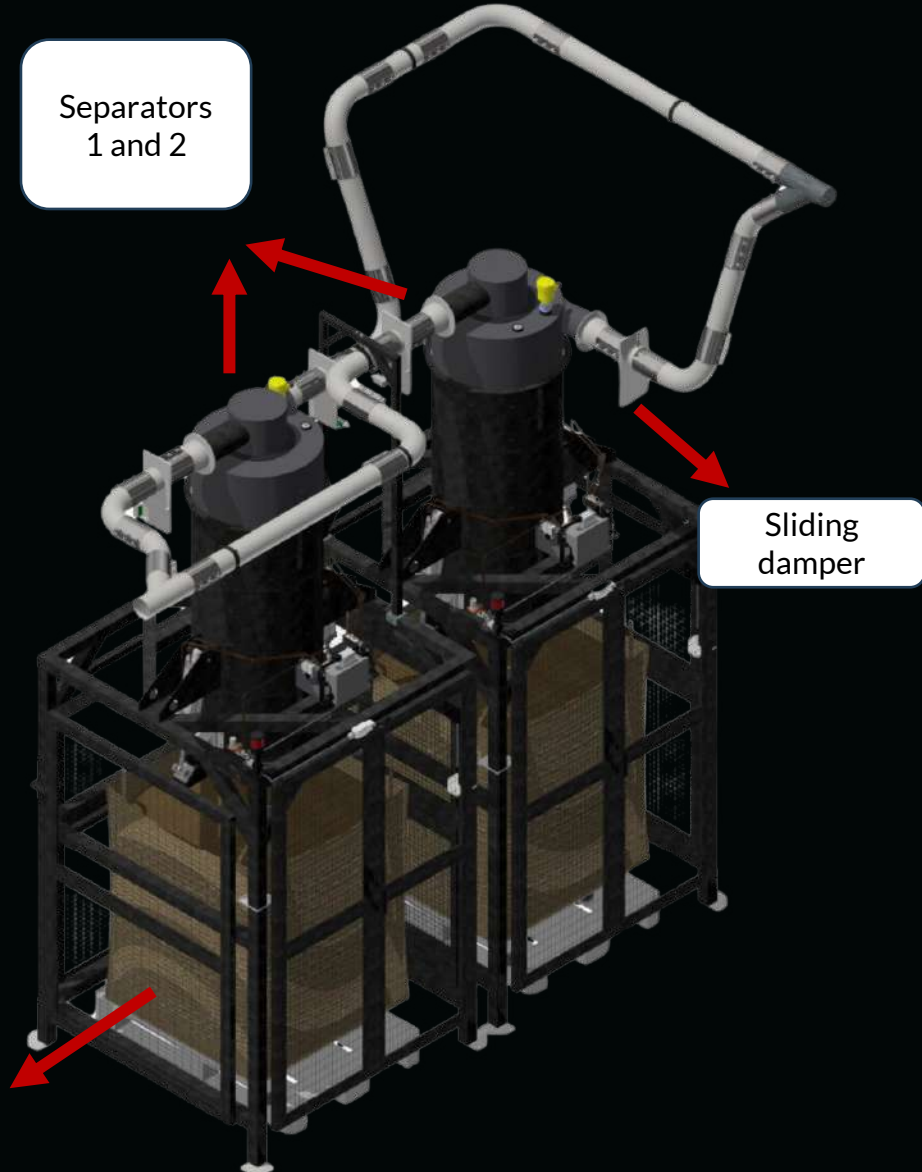
Puma 18 suction unit

HOW DOES IT WORK?

The strength of this vacuum system lies in the two pre-separators, **which allow simultaneous suction and discharge** in an alternating manner. The switch time between pre-separators can be set based on the workload, for example, every 10 minutes.

This system ensures a continuous, uninterrupted work cycle.

Given **the high volumes of material** managed, discharge is done into large Big Bags.



Separators 1 and 2

Sliding damper

Discharge system in Big-Bags

SAFETY SYSTEM OVERVIEW

To **ensure operator safety**, the discharge areas of the pre-separators are protected by **two cages with gates**. When a pre-separator is discharging or in operation, the gate locks, preventing entry for routine maintenance tasks. This status is visually indicated by a system of 4 flashing lights, with **2 above the separators and 2 in the discharge area**. The lights indicate the status of the separators and the discharge zone.



Pre-separator's
pneumatic
discharge

Discharging



Pre-separator lights: red when the pre-separators are in operation, otherwise green.
Discharge area lights: red when the pre-separators are operating, green when the pre-separators are neither operating nor discharging. When the light is green, the area is safe to access.

When the **light turns from green to orange**, only 5 minutes remain before access is restricted, requiring personnel to vacate the area.

If someone attempts to access the separators by opening the gates while the system is operating and the lights are red, **a siren immediately sounds**, and the entire system shuts down.

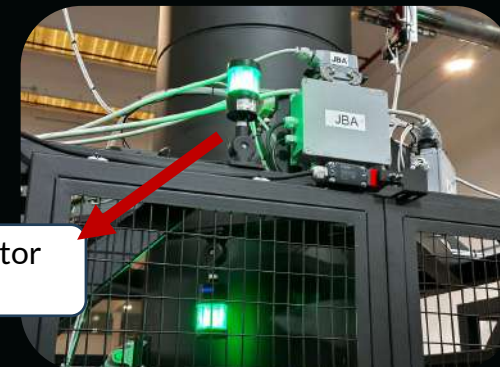


The area is safe to
access

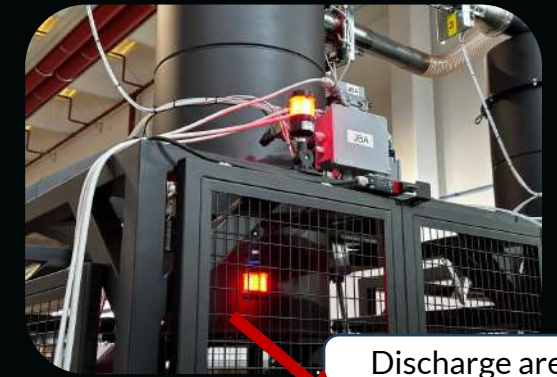
5 minutes left before
the access is restricted

Access triggers an
automatic
shutdown.

Pre-separator
light



Discharge area
light



SAFETY SYSTEM OVERVIEW

Through the **control panel**, it's possible to set the operating time for each separator before they switch, e.g. 10 minutes. However two **electronic level sensors** trigger an early switch, if one separator fills up too soon.

This feature prevents overflows, ensures uninterrupted operation, and maximizes the efficiency of the vacuum process.



Control panel



Level sensors

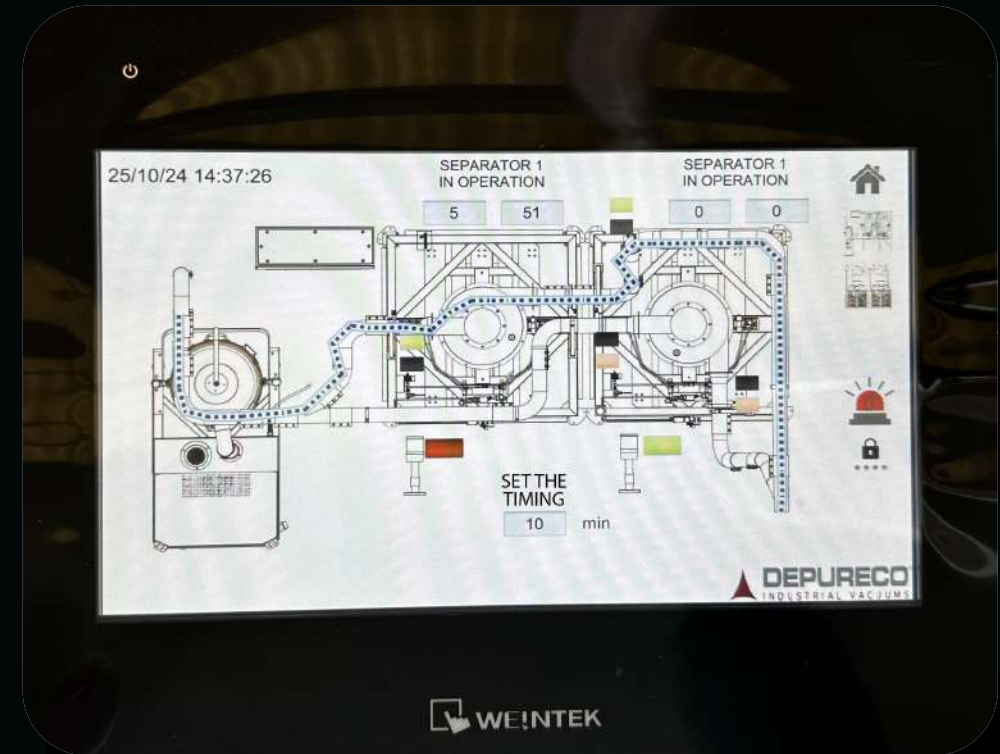
CONTROL PANEL 4.0

The plant is set up for **remote management 4.0**, which enables the transmission of operational data to the company's ERP.

With this setup, you **can track key performance metrics**, optimize processes, and make data-driven decisions to enhance productivity.

The intuitive control panel further **simplifies operation**, offering a user-friendly interface that ensures quick access to essential information and adjustments.

This innovative approach connects the gap between machinery and business management.



Control panel

EXPLORE OUR INSTALLATIONS

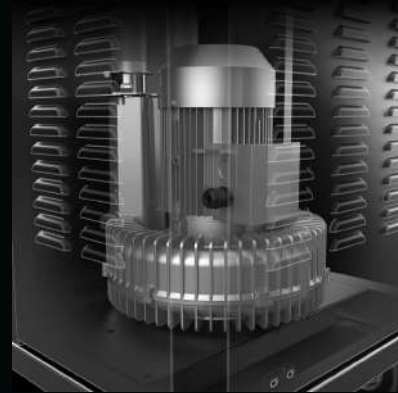
VACUUM UNIT

The chosen vacuum unit for this installation is the **powerful Puma 18**, a three-phase industrial vacuum with the following features.

POWER: 12,5 KW

FILTER SURFACE: 45.000 CM2

CAPACITY: 175 LITERS



Side channel
blower



M class antistatic
star filter



Completely
grounded



Tangential inlet



175 liters
Collection bin

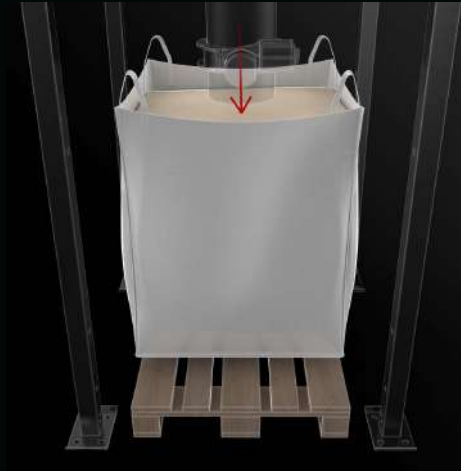


Connection
100/100 mm

EXPLORE OUR INSTALLATIONS

2 X SEPARATOR Ø 570 MM WITH PNEUMATIC DISCHARGE

In this setup, the two separators are aligned and interconnected to ensure continuous discharge.



Big Bag



Completely grounded



Level sensor



Pneumatic discharge

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