

Prepare PE-UHMW shavings efficiently for re-use

Orbilan field report for PE-UHMW processor: cost reduction through fine grinding of shavings created.



Hard plastics



A manually moveable screw conveyor is moved to four silos present at the factory.

Summary:

Orbilan GmbH, Rosendahl, produces large quantities of fine PE shavings in the production of semi-finished products. This **production waste is now used in production in the form of finely-ground powder < 500 µm.**

The thin PE shavings thereby pose a special challenge to milling technology. HERBOLD has delivered a bespoke solution which encompasses the handling of different types of shavings stored in silos.

Application:

Orbilan produces semi-finished products and components with good flow characteristics, low friction values and high resistance to wear from high-performance **ultra-high and high molecular polyethylene (PE-UHMW).**

Large quantities of milling shavings are created in production. These thin and light shavings are a valuable raw material. However, due to their structure, they cannot be baked directly back into sheets. HERBOLD was tasked with developing a reliable process for preparing the shavings into a re-usable form.

The challenge, along with selection of the right machine configuration, was to integrate the pulveriser with sound insulation into an existing silo store. It had to be possible to push a screw conveyor under the hopper of the silo to transport the shavings into the feed funnel of the pulveriser. Production wanted to access the various types in the four silos flexibly with a low preparation expense.

Benefits:

- Recycling of shavings almost without losses
- High capacity of the appliance at up to 450 kg/h
- Can be used flexibly with different PE materials
- Low maintenance and long lifetime of the tools
- Short downtimes due to sturdy construction and ease of repair
- Low-dust production due to filter and extraction technology
- Sound-insulated

Solution:

- A manually moveable screw conveyor is moved individually to the **four silos**
- The stored shavings fall without pressure – into **the screw conveyor** and are fed via an – **old metal separator** for the removal of metallic impurities to the pulveriser.
- In the **pulveriser PU 500**, the chippings are pulverised with a narrow milling gap between the toothed discs: a downstream screening machine separates the finely ground chippings into useable material and oversized material. The oversize material is automatically fed back to the pulveriser.
- The **useable material is transferred pneumatically to a Big Bag station** and is available again for production.
- The **throughput of the automatically controlled appliance** depends on the properties of the input material and is **between 150 and 450 kg/h.**



- The **appliance with sound proofing** was designed to be **compact but accessible** to allow **space saving** integration into the existing silo store.
- All the exhaust air from all appliance parts (pulveriser, screening machine and Big Bag station) is cleared of dust via an automatic ATEX **exhaust air filter**.

Conclusion:

The HERBOLD appliance allows Orbilan flexible preparation of chippings as finely ground powder for use in running production. The process was first successfully tested in the HERBOLD technical centre. High appliance availability is supported by HERBOLD customer services, with its large store of replacement and consumable parts and a mobile team.

HERBOLD Meckesheim GmbH
Industriestr. 33
D-74909 Meckesheim / Germany
Tel.: +49-6226-932-0 Fax: +49-6226/932-495
herbold@herbold.com
www.herbold.com