

Case study:
Vacuum Drying of Kromasil with CT- Dryer
Application

In the production of Kromasil, a silica material for the chromatographic treatment of active pharmaceutical substances a vacuum dryer is used for drying wet filtercake. The solvent to be evaporated is a mixture of acetone, ethanol and water. The acetone, ethanol must be recovered in a condenser and collected in a receptacle. Drying must be done under vacuum and a vapour dust filter keeps the dust, which will occur during processing, within the dryer.


Requirements Products

Product	:	Kromasil (wet cake)
Moisture content	:	Feed 50% W.B. Dry < 0,5 % W.B.
Max product temperature	:	150 °C
Particle size	:	d50 = 1 – 30 µm
Bulk density	:	2000 – 2200 kg/m ³ (wet cake) 1.100kg/m ³ (dry solids)
Description of the product	:	Non-sticky Freeflowing Easily fluidised

After performing tests with this product in our test centre in Doetinchem the following solution is found.

Solution
Dryer

The Hosokawa CT dryer to ensure:

- Fast drying of a free flowing product
- batch integrity
- good cleanability
- minimum of residue after discharge

Filter

:

Filter with automatic reverse jet cleaning with metallic filter bags to keep the fine dust in the vessel. The filter housing is provided with a heating jacket and is isolated to avoid condensation.

CIP

:

With spray balls on strategic places in vessel, filter and outlet valve automatic CIP is possible. A special outlet valve is created to handle both product and CIP cleaning solvents.

Condenser

:

Solvents are recovered by using a condenser and receptacle.

Process Data

Content of the vacuum dryer	:	800 liters of product
Feed capacity	:	350-400 kg / batch (dry mass)
Feed moisture content	:	50 % W.B.
Product moisture content	:	< 0,1 % W.B.
Max. Product temperature	:	150 °C
Design pressure	:	Full vacuum / 6 barg
Design temperature	:	0 / + 165 °C

Conclusion

Batch integrity, good cleanability and a short drying time are realized in the Hosokawa CT Dryer.

