

# Lab-Filter-Dryer

## Nutsche Filter Vacuum Dryer



**DK™**  
**Drying Kinetics**

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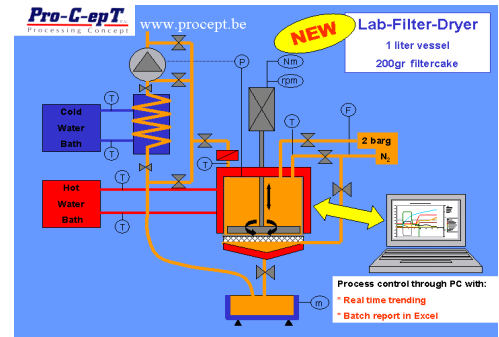


## Lab-Filter-Dryer: Fully integrated and automated “glass” lab scale Filter Dryer

For early-stage filtration and drying kinetic studies of API / NCE, scale-up and process validation

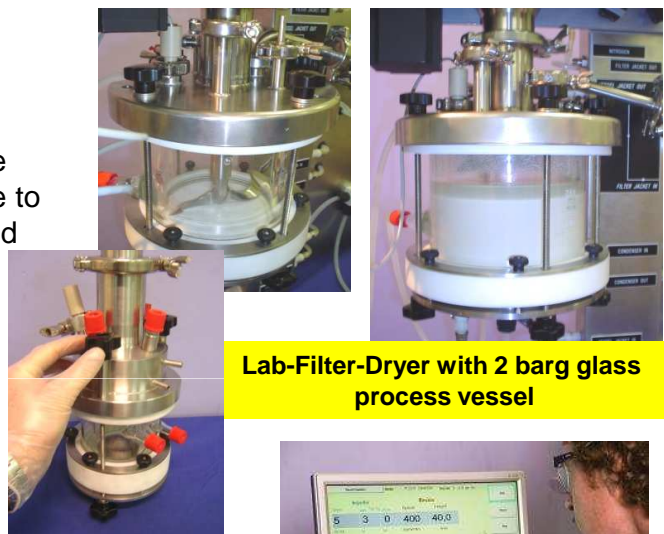
### Key Features:

1. Miniaturisation: 1/2/5 liter slurry (30-2.500 g API)
2. Accuracy: calibrated critical process parameters
3. Visibility: glass process vessel (stainless optional)
4. Automation: PC intergrated with automatic batch reporting in Excel
5. Containment: flexible or fixed isolator integration
6. GMP/GAMP: full qualification available
7. P.A.T.: NIR-, RAMAN-, UV, pH, CONDUCTIVITY, MASS SPECTROMETRY integration



### Typical processes:

- Loading of slurry: by vacuum or gravity
- Mixing slurry of approx. 1-5 litre by turning the impeller clockwise
- Filtration of slurry by applying pressure to the slurry's top surface to and/or pulling vacuum below the filtermedia to remove major liquid
- Cake densification-compression by turning the impeller counterclockwise
- Cake breaking by turning telescopically the impeller clockwise
- Vacuum drying with solvent recovery
  - through the bottom and/or top outlet, below the filter media
- Vacuum end drying



### Specifications:

- Variable speed impeller with telescopic movement, turning clock and anti-clock wise
- Flanged stainless steel cover
- Glass flanged process vessel diameter of **13cm** (2 liter slurry) **optionally** ; **20 cm** (5 liter slurry) and **8 cm** (1 liter slurry)
- Cake height is min.2cm and max. 10cm
- Glass vessel can have 2bar overpressure (optionally 6-10 bar steel process vessel)
- Process temperatures between -10 till 95 DegC
- Controlled Nitrogen purge gas assisted drying and inertisation
- Vacuum system, dust filter, glass condenser, bypass, vacuum pump, process pressure control
- The system is build on a frame to be incorporated in a hood
- Critical process parameters: impeller torque, compression force on cake, product temperature, impeller speed, pressure over filter cake, process pressure, mass recovered liquid, product temperature, process vapour/vessel/condensor/filter jacket temperature
- PC/PLC automation package: **“real time”-trending and batch reporting in Excel of all critical process data and batch identification**
- Many options available: 6-10 bar steel process vessel, trolley, cooling & heating unit, MIR-NIR-RAMAN integration, Hastelloy HC22 contact parts, Validation IQ/OQ/SQ, **high containment solutions**



Different bottom filter media as cloth, wedged wire ss, active carbon, ...