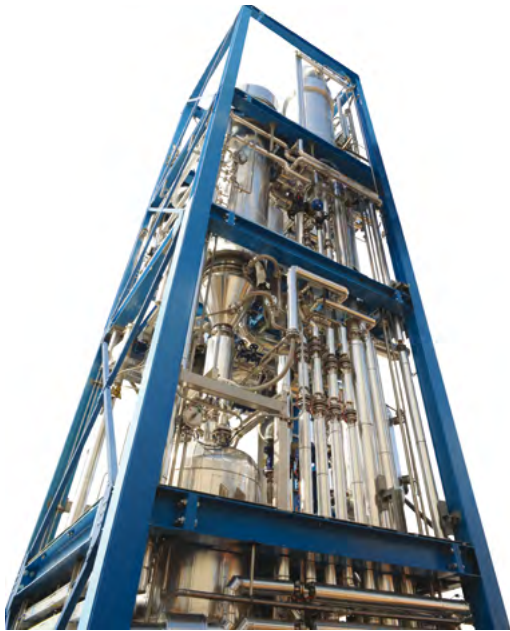




3V Tech is a leading provider of advanced  
**Process Solutions & Process Equipment**



Process Solutions

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Process Equipment

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## BRANDS

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COGEM - MABO - GLASSCOAT - CONSITO

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## Filters, Filter-Dryers & Vacuum Dryers



For the last 40 years Cogeim has been a leading worldwide supplier of solid-liquid separation and vacuum drying equipment to the pharmaceutical, fine chemical and chemical industries.

Cogeim's workshop specializes in manufacturing process equipment, engineered systems and large process skids using high quality construction materials such as stainless steels and special nickel based alloys. Cogeim has held an ISO 9001 certificate since 1994 and is regularly inspected by authorized agencies.



FILTRODRY FEP/SD 012

Design and manufacturing (starting from the raw material such as plates, flanges and forgings) takes place "in house", together with all quality control activities. This vertically integrated organization enables Cogeim to guarantee the highest standard available in the market for this equipment.

Cogeim represents a unique combination of expertise in process engineering and equipment manufacturing and has been the first to introduce to the market several innovations which are now a market standard.

Some examples:



FILTER-DRYER  
MODEL FILTRODRY FEP/XD

Provided with a special four arm agitator that significantly increases the heated surface area in contact with the product and drastically reduces the drying time.



3 O-RING FILTER MEDIA

No screws in contact with the product allows smaller heel volumes, and minimizes dead spaces, optimizing the CIP wash for pharmaceutical GMP productions.



XTRACT-1 FULL DISCHARGE SYSTEM

Based on pneumatic conveying technology, XTRACT-1 performs complete dry solids discharge from flat-bottomed equipment, including the residual heel left under the agitator.



XAM-1

XAM-1, introduces a new generation of sidewall mounted valves, combining on-line measurement of residual solvents with solid product sampling.



MICROWAVE DRYING

Microwave drying is an alternative or auxiliary technology to conventional heating; used to optimize drying and to improve the final characteristics of the solid product.

Special designs are available for Sterile and HAPI pharmaceutical applications where cleaning, complete drainage, sterilization and containment are an integral part of the equipment design, manufacturing and testing.

Cogeim has vast experience in developing process automation systems ensuring:

- ▼ Operator safety
- ▼ Reliable machine control
- ▼ Integrated process control for the equipment and peripheral support

Cogeim can provide very simple solutions to highly complex systems, integrating plant production control, monitoring systems, data recording, history mapping and "recipe" management for different products.



FILTRODRY FEP/SD 200 - 2 sqm Filter-Dryer with heel push and heel discharge isolator.

## Filters, Filter-Dryers & Vacuum Dryers

### SOLID - LIQUID SEPARATION

Nutsche Filter-Dryers are deep bed, solid-liquid separation systems that use a filter screen to promote the development of the filter cake. Use of nitrogen above the cake and vacuum underneath the filter mesh improves the filtration process.

Supply of heating fluid to the jacket in combination with vacuum inside the vessel, generates the appropriate conditions for solvent evaporation and; thus, for wet cake drying.

#### Applications

- Active Pharmaceutical Ingredients (API and HAPI)
- Agrochemical products
- Extraction processes
- Purification processes
- Convection drying



FILTRO - FPP 100  
AGITATED NUTSCHE FILTER



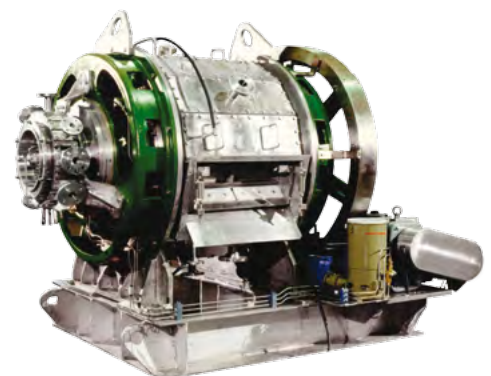
TOTUM - RFE 15  
ALL-IN-ONE REACTOR - FILTER - DRYER

#### Cogeim Filter & Filter-Dryer models:

- ▼ FILTRO FPP Nutsche Filter
- ▼ FILTRODRY FEP/SD Nutsche Two arm Filter-Dryer
- ▼ FILTRODRY FEP/TD Nutsche Three arm Filter-Dryer
- ▼ FILTRODRY FEP/XD Nutsche Four arm Filter-Dryer
- ▼ TOTUM RFE "All - in - one" Reactor-Filter-Dryer

Cogeim also offers filtration equipment developed for thinner filter cakes with lower solids concentration where deep bed filtration may be less effective

- ▼ CLARIFIL FAP Semi - Continuous Leaf Filter
- ▼ ROTAPRESS FRP Continuous Rotary Pressure Filter



ROTAPRESS FRP 04  
CONTINUOUS ROTARY PRESSURE FILTER

## VACUUM DRYING

Vacuum drying is the most efficient drying method for most pharmaceutical and chemical products. Drying occurs using the appropriate combination of vacuum and temperature that generates evaporation of the solvent contained in the cake that is being dried. Agitation ensures the homogenous mixing of the end product, improves the heat exchange factor and, as a final result, reduces drying time.

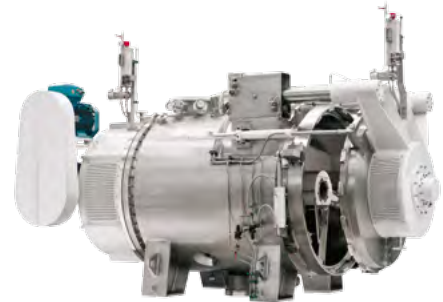
Cogeim offers a wide range of vacuum dryers, all provided with an agitator and each using conduction as the heat transfer method. An optional heated agitator is available to improve drying performance.

### Applications

- Drying filtered cakes from centrifuges, nutsche filters, belt and disc filters, or filter presses that are wet with water and/or solvent
- Drying cakes with high solid content
- Bulk chemical and/or pharmaceutical production
- Food grade applications
- Steam sterilization
- Flame retardants
- Essences, fragrances, aromas, flavors
- Waste and sludge treatment
- Pyrolysis
- Thermal desorption
- Biofuels

### Cogeim Dryer models

- ▼ STERIDRY ES Paddle Dryer
- ▼ STERIDRY EP Paddle Dryer
- ▼ CHEMIDRY EC Paddle Dryer
- ▼ MULTIDRY EV Pan Dryer
- ▼ MIXODRY EMV Vertical Conical Dryer
- ▼ MIXODRY EMV/DE Vertical Helical Agitator Conical Dryer



STERIDRY EP 6000  
PHARMA DESIGN 6000 L PADDLE DRYER



STERIDRY ES  
HORIZONTAL VACUUM PADDLE DRYER



MIXODRY EMV  
VERTICAL CONICAL DRYER