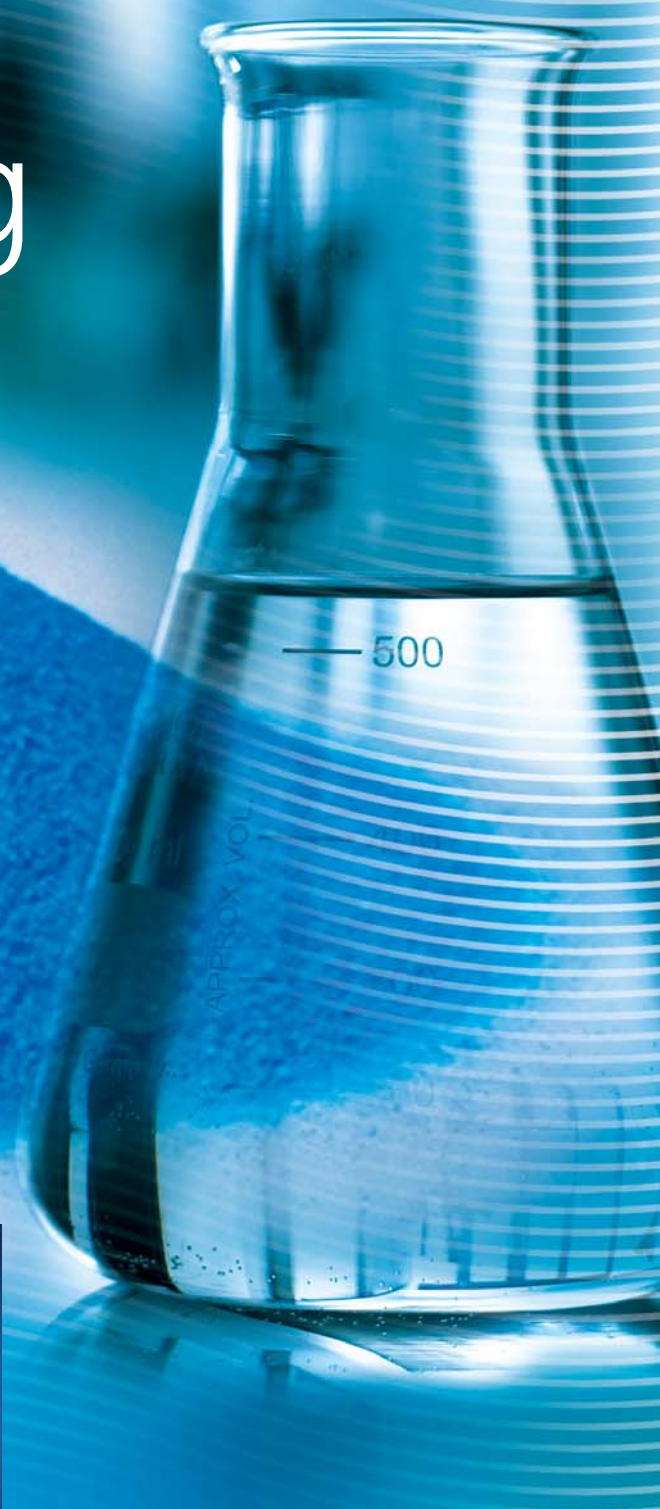


Spray Drying

- Scale Up from Research
to Industrial Production





A world leader in lab scale spray drying, Büchi offers the perfect solution for first trial processing, feasibility studies, process development, and regular product research.

The Mini Spray Dryer B-290 is the laboratory equipment for quick and gentle drying of products from water or organic solvent based feeds. Its impressive features include efficient performance with short set-up times, an effective integrated nozzle cleaning mechanism, and a high degree of flexibility.



*Mini Spray Dryer B-290
Water evaporation up to 1,0 kg/h
Drying chamber diameter: 150 mm
Bench-top installation*

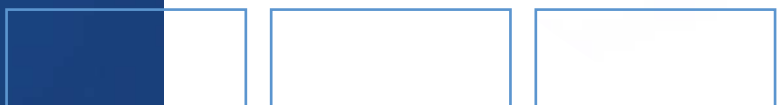
Spray Drying Competence from Idea to

Spray drying is a well established and widely used process in many industries. It is a unique unit operation transforming liquid to powder in a simple and robust continuous process. The liquid may be a solution, an emulsion, a slurry, a paste or even a melt. To ease your way from initial trials in the research lab to full scale industrial production, the two leading suppliers of spray drying systems, in small scale BÜCHI Labortechnik AG, in large scale GEA Niro A/S, have teamed up to co-operate in offering their comprehensive know-how.

The Challenge of Scale Up

In spray dryer operation the size of the drying chamber plays an important role in determining the heat and mass transfer as well as the drying gas flow pattern. General scale-up procedures have yet to be established.

A small spray dryer is particularly useful for initial trials. In many cases the results from a successful spray drying test conducted on the Büchi Mini Spray Dryer can be utilized in the scale up procedure to industrial production.




Success

A plant with a larger drying chamber offers a wider range of options for creating powder particles with specific properties. When thermoplastic or hygroscopic substances are to be dried, it may therefore be more expedient to select a Niro pilot plant spray dryer for test work right from the beginning.

Our Partnership – an Advantage to You

When you decide to work with Büchi and Niro, you get access to the largest spray drying knowledge base in the industry, right from the first trials in research to the complete planning, design, erection, and start-up of a full scale production plant.

Based on decades of experience and thousands of installations worldwide Büchi and Niro simply help you scale your spray drying operation to any level – easily, efficiently, and fast.



PHARMASD™
Pharma Spray Dryer type PSD-4
Water evaporation up to 70 kg/h
Drying chamber diameter: 2500 mm
Height: 6000 mm



MOBILE MINOR™
Pilot Plant Spray Dryer
Water evaporation up to 7,0 kg/h
Drying chamber diameter: 800 mm
Room height: ≥ 2850 mm



Niro's test station in Copenhagen offers a full range of drying technologies including a spray drying facility approved by the Danish Medicines Agency for GMP production of investigational medicinal products

GEA Niro A/S

For more than 70 years Niro has supplied spray drying plants to manufacturers all over the world. Whether the plant produces 16 tonnes of milk powder per hour or just 100 g of a precious catalyst, the initial steps in developing the industrial product are often taken in Niro's test station.

Niro's expertise in converting liquids (solutions or suspensions) into powders with customer defined characteristics is thus widely recognized. A few examples from the pharmaceutical industry: Fine particles for inhalation, solid dispersion to increase bioavailability, encapsulation for controlled drug release or taste masking.



A company of mg technologies group

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Niro is a world leader in industrial drying, with spray drying, freeze drying, and fluid bed processing as core technologies. The Niro companies are part of the Process Engineering Division of the GEA Group.



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Büchi is a leading world-wide supplier for labs in the chemical, pharmaceutical, and food industry. Key technologies include evaporation and separation for research laboratories as well as near infrared spectroscopy and reference methods for quality control purposes.