



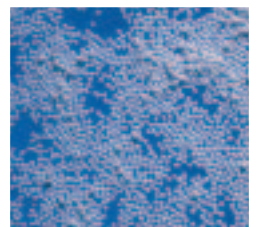
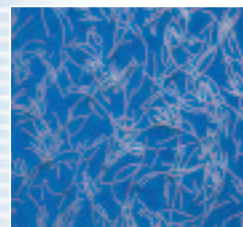
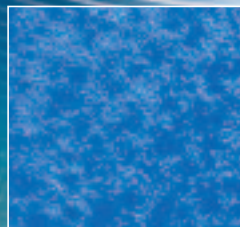
Process Engineering
Division

Niro Pharma Systems

AEROMATIC
BUCK
COLLETTE
COURTOY
FIELDER
NICA
NIRO

Aeromatic-Fielder Nica™ Pelletizing System

- Granulation
- Extrusion
- Spheronization
of Pharmaceuticals



The Nica™ Pelletizing System

Modular concept

The unique modular concept of the NICA™ Pelletizing System facilitates optimized solutions to meet process needs exactly.

Mixer / granulator, extruder and spheronizer modules are combined to create a complete integrated pellet production plant, or selected individually to suit specific requirements. Modules can be operated in either batch or continuous mode, for maximum flexibility of operation, and can be used stand-alone, or integrated with other up-or down-stream equipment such as fluid bed processing systems.

Ideal for both product development and full-scale production applications, process scale-up of the Nica™ Pelletizing System is easy – it's simply a factor of processing time.

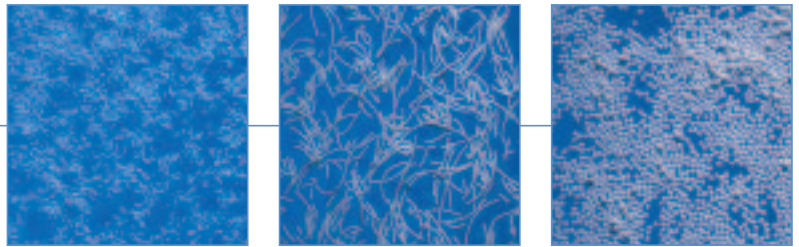
NICA™ Granulator

The NICA™ Granulator instantly mixes and granulates dry powder ingredients in a continuous process. Pre-blended powders are dispersed on a high speed wheel and mixed with an atomized granulating fluid. Less than 100g of product is in the mixing stream at any one time, so scale-up depends only on process time. The same machine can produce a few kilograms on a laboratory scale or volume production up to 360kg/hr. The unique compact design ensures that powder hold-up is minimal and cleaning is quick and easy. Discharge may be direct into the NICA™ Extruder.

The NICA™ Granulator can also be used for dispersing and coating of powders and can be set up to discharge directly into a batch or continuous fluid bed dryer.

- Instant processing
- Contained operation
- Simple, time-dependent scale-up
- Small foot-print
- Easy to clean





NICA™ Extruder

The NICA™ Extruder is based on unique low-shear technology designed to minimize work input and temperature rise. It is ideal for sensitive products which could be damaged by more intensive systems. A wide range of extrusion screen sizes and configurations are offered, for optimization of pellet diameter, surface quality and size distribution.

Used for both batch and continuous production, the NICA™ Extruder has no stagnant areas, and no significant product hold-up. A compact design eases installation and cleaning.

With a simple reconfiguration of the extruder, formulations that require a high degree of work input can be processed.

- Efficient low-shear technology
- Wide choice of extrusion screens
- Gentle on product
- Small foot-print
- Easy to clean



Capacities

Mixer / Granulator	M6		
Typical Through-put	2-6kg/min. (wet mass)		
Extruder	E140	E220	
Typical Through-put	0.5-2kg/min.	2-8kg/min.	
Spheronizer	S320	S450	S700
Typical Capacity	0.2-1.0kg	0.4-2.0kg	2-10kg

NICA™ Spheronizer

The NICA™ Spheronizer features a smooth-edged, close-fitting friction wheel for good sphericity of pellets and a tight pellet size distribution. This patented design eliminates problems of edge-milling and undesirable fines common with traditional technology. Optimization of the process is achieved by choice of cycle time, wheel speed, product loading, friction pattern and regulation of air-flow past the wheel periphery.



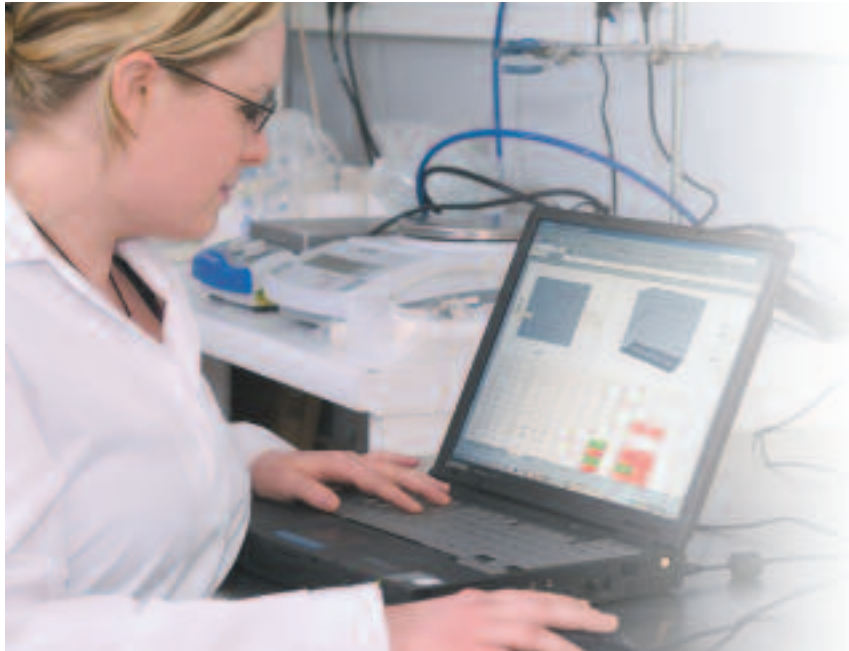
The NICA™ Spheronizer is fed directly by the NICA™ Extruder. For high volume applications, two batch spheronizers may be fed by a single continuous extruder.

- Good pellet sphericity
- Produces no fines
- Versatile system
- Easy to operate
- Easy to clean



The Nica™ approach

Complete systems supply



Aeromatic-Fielder offers a complete engineering service from systems design to process integration and optimization.

Plant design

- Turnkey pellet production facility
- System integration
- Contained processing - automatic charging, discharging and materials handling
- Customized CIP systems

Controls options

- Graphical MIMIC operator interface
- On-line monitoring and trending
- Recipe handling
- Batch management / bar coding
- CIM integration

Validation services

- Full IQ / OQ documentation
- Site qualification / validation support
- Technical support and maintenance
- Training



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Central Know-How on a Global Scale

Based on a strong commitment to research and development, pharmaceutical technology centers in Belgium, Denmark,

Switzerland, the UK, Singapore, and USA provide global technical support and know-how to the pharmaceutical industry. These centers of excellence give customers access to a range of test facilities and expert teams with technical and process know-how.

Our teams work closely with our customers to optimize processes and evaluate their products, enabling them to achieve their process and production goals.



Contracting Profitable Experience

A world leader in supplying pharmaceutical equipment, Niro Pharma Systems offers manufacturers all over the world the

opportunity to enter into a profitable partnership for development and contract. NPS combine advanced in-house technology with a thorough understanding of the pharmaceutical industry to help customers maximize their development results.

Niro Pharma Systems is world leader in providing advanced processing solutions for solid dosage forms to the pharmaceutical industry. Based on a dedication to research and durable quality, Niro Pharma Systems offers a wide range of solutions, from individual pieces of equipment to complete integrated plants, by uniting the state-of-the-art technologies of Aeromatic, Buck, Collette, Courtoy, Fielder, Nica and Niro.

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