

PharmaConnect®



Aeromatic-Fielder Technologies

*the fast way to **CONNECT** your product development*

GEA 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, GEA 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, Lyophil, Nica and Niro.

One Control Module

CONNECT Multiple Process Options

PharmaConnect® 'plug and play' approach enables a number of diverse process modules from GEA Pharma companies to be docked to ONE control module.

The primary processes are based around Aeromatic-Fielder's PMA™ Granulator technology, providing the user with the ability to process batches from 100g up to 25kg and over.

A range of standard bowl sizes are available to handle batch quantities of:

- 1 and 3 litres for development scale, the optimal choice for the first steps in recipe and process development using very small quantities of active material
- 5, 10, and 15 litres, an intermediate scale for continuation of product development
- 30 and 60 litre for pilot scale production

However, the modular format of PharmaConnect® allows special modules to be used for customer's specific needs. For example non-standard capacities, different shapes, or even different materials such as glass.

In addition to the typical high shear granulation process, Aeromatic-Fielder is also offering PharmaConnect® modules for its NICA™ Extrusion and Spheronization pelletizing system and for its TRV high speed blender. Further modules for other GEA Pharma products will be available in the future.



One Control Module

CONNECT Multiple Process Options

'plug and play'

Process Modules for Granulating,
Blending & Pelletizing

Granulator Module

A process module suitable for high speed dispersion of dry powders, aqueous or solvent granulations and effervescent production.

The design of the high shear granulation module incorporates a direct driven impeller with an independent motor for each bowl size. This means the drive is ideally suited to the specific process bowl, providing the maximum resolution for end point control.

The chopper drive provides the connection from the Process Module to the Control Module, clamping the bowl tightly while still allowing easy connection and disconnection, a single chopper motor operates across the range of bowl sizes.



NICA™ Pelletizing Modules

The NICA™ Extruder module is based on unique low-shear technology designed to minimise 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.

The NICA™ Spheronizer module 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.

High Speed Blender Module

The TRV is a high speed blending unit, featuring a single, bottom driven impeller drive. It is particularly suitable for the rapid batch blending of small quantities of pharmaceutical active ingredients with base excipients, typical of inhalable products. By combining the high surface area of the main impeller blade with the directional effects of the feeder blade, rapid, homogeneous and stable blends can be produced in a reproducible manner.





PharmaConnect® 'plug and play' module approach for Granulating, Blending and Pelletizing.

Control Module

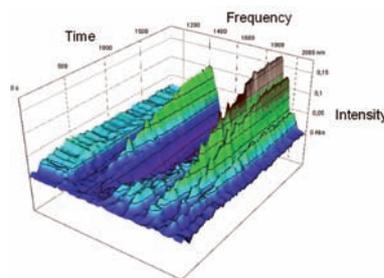
The Control Module is designed to be mounted Through-The-Wall (TTW) which allows other process systems to be located in the technical area – such as jacket recirculation systems. Also, more complex process control tools can also be added. The Lighthouse Probe™ for example, used to determine blend homogeneity and moisture content requiring a significant quantity of peripheral equipment, such as the spectrometer and wash skid. These items are better positioned in the technical area, to allow for easy maintenance and cleaning, rather than in the process area. The TTW system allows for remote mounting of the vent filters making full CIP possible for the first time at this range of sizes.

For those who prefer, a mobile control module is also an option.

Key Features:

- A single control module running a variety of different process modules
- Process modules for Granulating, Blending and Pelletizing
- Standard process module sizes 1, 3, 5, 10, 15, 30 & 60 litre

- Possibility of bespoke process modules
- Process modules based on established technology of Aeromatic-Fielder's PMA™ and NICA™ System
- Through-the-wall installation OR mobile control module
- Possible to incorporate online (PAT) analysers into its process modules in a way which can provide real insight into the operation of the process development.



Blend homogeneity in PMA™ Granulator using GPS Lighthouse Probe™

- CIP possible for larger process modules
- Bespoke solutions for containment technology
- The Aeromatic-Fielder Global Service Network provides rapid availability of original manufacturers' spare parts worldwide with comprehensive service and repair to minimise downtime and keep costs under control.
- Comprehensive documentation explaining both the operation and maintenance of your process plant.

Bowl working volumes / batch size

Equipment Type	Equipment Size	Typical Minimum Batch @ 0.6sg	Typical Maximum Batch @ 0.6sg
Development	1	240g	450g
	3	720g	1.35kg
Intermediate	5	1.2kg	2.25kg
	10	2.4kg	4.5kg
	15	3.6kg	6.75kg
Pilot	30	7.2kg	13.5kg
	60	14.4kg	27kg





Central Know-How on a Global Scale

Based on a strong commitment to research and development, pharmaceutical technology centres in Belgium, Denmark, Switzerland, the UK, Singapore, and USA provide global technical support and know-how to the pharmaceutical industry. These centres

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 optimise processes and evaluate their products, enabling them to achieve their process and production goals.

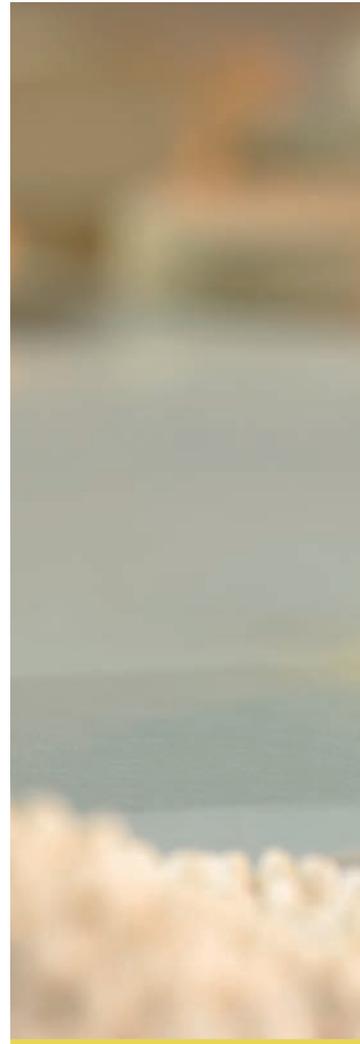


Contracting Profitable Experience

A world leader in supplying pharmaceutical equipment, GEA Pharma Systems offers manufacturers all over the world the opportunity to enter into a profitable partnership for development and contract. GPS combine advanced in-house technology with a thorough

understanding of the pharmaceutical industry to help customers maximize their development results.

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