

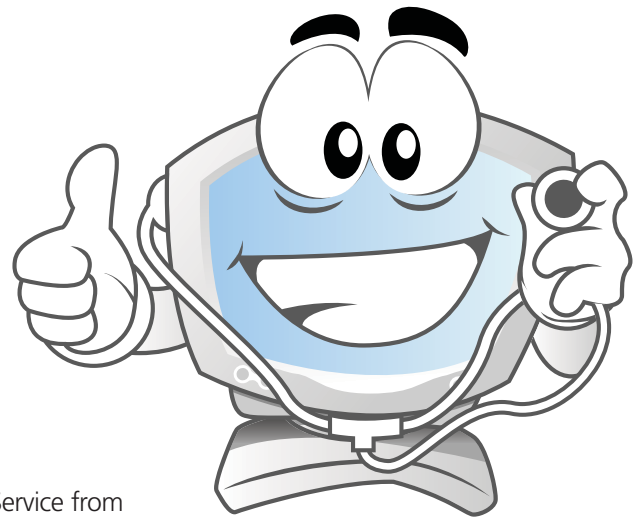
## NEW Performance Improvement Service

Pressures to cut operating costs increase, legislation on emissions and profit margins are under attack, forcing companies to examine how they operate to determine opportunities to make savings and improve plant performance. With modern automated plants the solutions are right there in the data produced by their control and monitoring systems – if you know where to look and are able to analyse the data!



A new Performance Improvement Service from Hosokawa Micron and intelligent software supplier Knowledge Process Solutions Ltd. can analyse information already generated, such as flows, pressures, temperatures etc. to detect performance improvement opportunities, isolate individual changes to process operations and identify individual actions that an operator/engineer must do in order to achieve better performance from the system.

Our advanced analysis technology is even able to quantify the potential improvements in operation providing a robust justification to take action. These actions can then be applied continuously by integrating them into the process monitoring and control system.



## NEW Universal Mikro-Pulveriser®

### Pharma - Food - Chemical

### Multi-purpose mill

Unlimited flexibility of final particle size and distribution achieved using interchangeable grinding mechanisms including:

- Knife type rotor, operated at low to mid range speeds for milling granular products
- Mikro impact hammer and screen assembly for production of materials >50 micron
- Pin disc design for production of materials >25 micron

Proven mill design in three model sizes for throughputs up to 900kg/hr.

Quick and easy access for cleaning or changing internals plus easy clean design. Multiple feed and collection options further enhance the mill's flexibility. PSR units available for hazardous applications. All mills can be incorporated into bunker style, once through, closed loop or inert system designs.



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# Nitrogen Purged Milling System Meets AstraZeneca Demands

A new nitrogen purged milling system for delumping an active pharmaceutical ingredient prior to packaging has been supplied to AstraZeneca by Hosokawa Micron Ltd. Designed in conjunction with AstraZeneca engineers to provide integrated and additional safety features and superior cleaning procedures, the milling system demonstrates best operating practices for handling potentially explosive fine powder APIs.

pharmaceuticals where a significant temperature rise would be detrimental.

The AstraZeneca material is transferred from a pressure filter dryer into a receiving vessel and then metered into a Hosokawa pharmaceutical design of easy clean Bexmill via a rotary valve. The Bexmill is a slow speed comminution device which is very effective in delumping without product damage. After milling the product falls into a receiving hopper and is then

green light been activated the system cannot start. Once the system has passed the leak test then the milling sequence can commence.

Designed to be easily cleaned by hand the whole system can be readily stripped down before a final sterilisation in place with compressed air and peracetic acid at 0.1 bar takes place.

AstraZeneca is one of the world's leading pharmaceutical companies manufacturing a powerful range of products designed to fight disease in important areas of medical need; cancer, cardiovascular, central nervous system, gastrointestinal, infection, pain control and respiratory. Their commitment to the well being of their employees is of paramount importance to the company. 'We are always looking at the opportunities for product, process and environmental improvement with our personnel a key factor in the determination of technology, both in terms of technical input and health and safety. AstraZeneca has total commitment to meet or exceed legal requirements and international agreements in respect of Health and Safety and Environment and



The milling process has been introduced to the production line to deliver an homogenous free flowing, lump free product of consistent particle size. The system incorporates a classic homogenisation mill, the Bepex Bexmill. With its low energy, gentle action the Bexmill is ideally suited to handling sensitive products such as

transferred to the packaging drums using a pharmaceutical design of inclined screw conveyor.

The whole system is operated under a positive pressure of nitrogen and has an integrated self leak test facility. The system is pressurised to 0.1 bar and until the leak integrity test has proved that no leak has been detected and a



to provide a safe and healthy work environment for all our employees.' said Mr. John Sherwood, Associate Principal Scientist, Product Development PR & D at AstraZeneca Macclesfield.

# Safe Reactor Charging

A new, twin chamber, reactor charging isolator from Hosokawa Micron has been installed at one of Europe's largest chemical plants. The isolator is used to charge a catalyst powder into a reactor vessel and incorporates an integral pneumatic drum tipper.

With personal protection of paramount importance the isolator offers OELs of  $<0.01\mu\text{g}/\text{m}^3$  (when third party tested using micronised lactose).

In operation the drum is loaded onto the tipper, de-lidded and the safety gate closed. The pneumatic circuit is interlocked and will not allow the tipper to operate unless the gate is closed. The drum is raised, tipped and docked with the isolator; the drum rim and outer liner are sealed to the isolator using the Hosokawa drum dock system which uses both compression seal and inflatable seal technology.

The bagged powder is then removed from the drum into the transfer chamber and then moved into the charging chamber via the transfer door. The bag is opened using a Hosokawa safety knife and charged into the reactor below. Waste materials are removed via the continuous liner bag out port system.

The system is certified for use in an ATEX II 3G (Zone 2) area. The main electrical cabinet is air purged which prevents exposure of live electrical equipment to flammable



gases. All electrical field equipment including pressure transmitters and proximity switches are connected via galvanic barriers to give intrinsically safe operation.

The isolator operates with a nitrogen inerted, negative pressure internal atmosphere and the system controls a variable speed extract fan and incorporates interlocks to allow the safest possible operation.

HEPA filtration is used for the nitrogen inlet and the isolator extract and a HEPA filter is also installed between the transfer chamber and charging chamber to give a pressure cascade through the isolator to reduce the risk of the transfer chamber becoming contaminated.

# The Vitomix - Multi Purpose Mixer

Recent customer trials ably demonstrated the flexibility of the Vrieco Nauta Vitomix when three individual trials were carried out to test a single machine.

## 1. Mixing Cohesive Powders

Mixing bakery flour and egg powder. Because of the cohesive properties of the egg powder the two ingredients were mixed using medium shear mixing, resulting in a homogenous mixture after only three minutes.

## 2. Injection of Fluids into Flour

Separate tests injecting sunflower oil (up to 20% w/w oil content) into flour and injecting melted butter into the flour/egg powder mixture resulted in the production of a powdery mixture that showed no sign of dough creation. The fluids were completely incorporated within the mixture after only eight minutes.



## 3. Lump Free Paste Production

The Vrieco Nauta Vitomix successfully mixed water with guar gum and Na-CMC which is known for being difficult to mix without the formation of lumps.

The Vrieco Nauta Vitomix is a rapid mix, mid shear mixer in a compact design that still offers the same mixing volume as the full conical shape mixer. Higher speed, double ribbon screws create a faster mixing process which is extremely efficient even at low linear screw speeds.

Two large, high speed lumpbreakers within the vessel wall enable liquids to be injected into the batch without undesirable lump formation.

The Vrieco Nauta Vitomix can be utilised where structural height is restricted, with no loss of mixing volume. Machines range from 500 to 13,000 litres.

The Vrieco Nauta Vitomix is also suitable for homogenisation of sensitive products like brittle granules or freeze dried products.

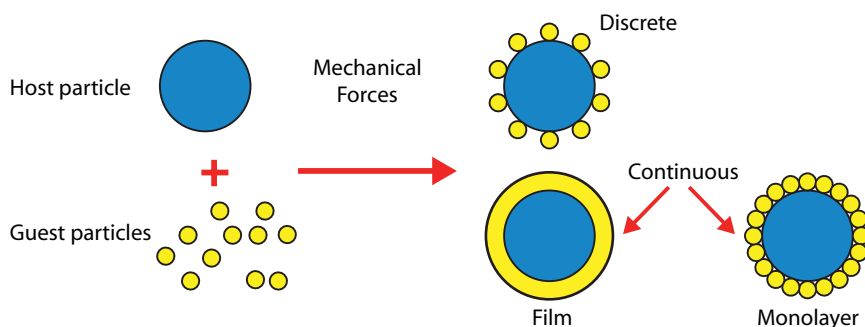
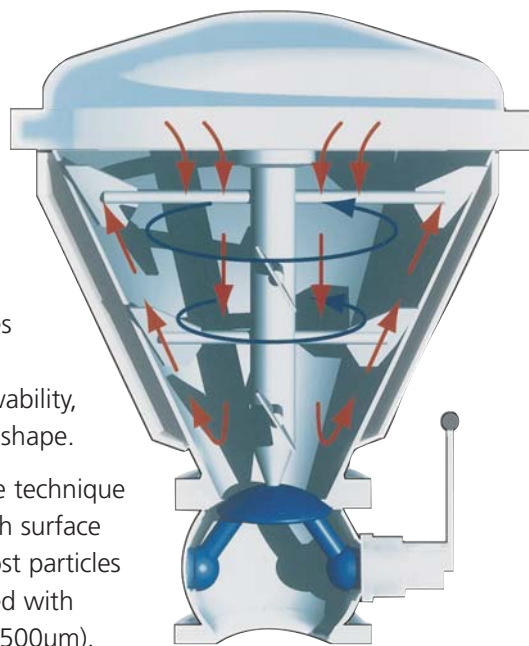
# Dry Powder Coating

Recent trials carried out on silica gel and starch particles confirm the effectiveness of the high shear Cyclomix, for use as a dry coating device. The Cyclomix offers controllable product functionality improvement or surface property modification applications.

Changes in the surface properties can affect important powder properties such as wettability, flowability, solubility, dispersibility, flavour or shape.

Dry powder surface coating is one technique which can be used to achieve such surface modifications where the larger host particles (1-500µm) are mechanically coated with much smaller guest particles (0.1-500µm).

This treatment creates a continuous or discrete coating and allows, under certain conditions, the design of multiple layering with different species of guest particles.



Hosokawa's Cyclomix is a conical high impact mixer granulator which uses a specially designed high speed mixing paddle which, when combined with the conical vessel shape, forces the material from the bottom to the top of the mixing vessel thus achieving very efficient mixing.

The design of the Cyclomix ensures a gentle action on materials with no product degradation as a result of mechanical or thermal stress, thus preserving the product characteristics essential for new product development.

The study, carried out on the coating of starch particles with fumed silica (Aerosil), both hydrophilic and hydrophobic, showed that the bulk density of the starch was increased significantly, thus improving packing properties of the starch. The Cyclomix did not damage the starch particles and the coating of fumed silica was seen to be individual particles set in the starch surface.

# Toll Processing

**Flexible, efficient and cost effective processing without investment in capital equipment.**

- Meet peaks in demand
- Extend your production capacity/capability
- R&D projects
- Fixed costs

With two separate, modular design processing suites Hosokawa Micron offer flexible, multi-stage toll processing options. From single stage production to integrated milling, mixing, classification, agglomeration, and drying process lines Hosokawa Micron's toll processing service is supported by an in-house test centre for product analysis, process evaluation, full product traceability and adherence to ISO9000/2000 standards.



## Food Processing Dedicated Suite

BRC Global Standard-Food 2005 registered for the receipt, milling/size reduction and packing of dry powders for the food industry.

Modular, interchangeability of equipment for flexible processing.

For further information on anything within this newsletter please visit [www.hosokawa.co.uk](http://www.hosokawa.co.uk)  
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