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**Functional Nanomaterials in Industrial Applications**

**International Symposium**  
29th – 31st March 2016 Sponsored by 

**H**osokawa has agreed a three year partnership with the University of Central Lancashire in support of an International Symposium on Functional Nanomaterials in Industrial Applications. The symposium brings together academic research and industrial organisations to discuss a plan for the future exploitation of functional nanomaterials for the benefit of society as a whole. With three main themes, the symposium has attracted eminent speakers from Europe, USA and India as well as over 130 abstract submissions from across every continent:

- Energy and Environment
- Nanomedicine
- Green Technology

Iain Crosley, Hosokawa Micron Ltd, MD has been invited to make a plenary presentation on, "Creation and Application of Nanoparticles for Advanced Functional Materials".

**On-line registration** will be open until 28th March with further details of the speakers, venue and social events at Manchester United, Old Trafford, available at [www.nanosymposiumatuclan.net](http://www.nanosymposiumatuclan.net)

**H**osokawa Micron Ltd will be joining with European, sister companies in a massive display of their individual and combined capability at Powtech 2016, in Nuremberg in April. Featuring displays and presentations from Hosokawa Alpine, Hosokawa BV, Hosokawa Powder Systems and ourselves will demonstrate our unique, integrated system, multi-process, capability, covering size reduction, mixing and blending, drying, compaction, containment plus end of line filling, weighing and pack-off.

With over 15,000 visitors attending Powtech in 2014, Hosokawa Micron hopes that this year's exhibition will engage even more visitors interested in mechanical processing technologies for powder and bulk material, nanoparticle technologies, safety and environmental technologies.

Increasing H&S demand across powder processing and handling operations mean that more and more companies are seeking clean air working zones. To meet this escalating interest, Hosokawa Micron Ltd's Downflow Booth technology will feature strongly on the stand.

Our experienced engineers will be on hand to discuss visitors' current and future powder, granule and bulk solids processing requirements and the potential competitive advantages of utilising the seamless integration of Hosokawa engineered solutions.

EXPLORE THE DYNAMICS OF  
**POWTECH 2016**

19.-21.4.2016  
IN NÜRNBERG, GERMANY

**YOUR TOPICS  
YOUR EXPERTS  
YOUR EXHIBITION**

**Stand No. 233, Hall 4A**

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# Hosokawa Joins the Space Race



Engineers at Hosokawa Micron Ltd have literally taken their latest glovebox developments into another dimension as a result of the company's recent collaboration with the European Space Agency. Working closely with scientists and engineers at the Universitat Autònoma de Barcelona, Hosokawa has developed a pilot plant habitat (Pilot Plant Compartment V) in the form of a high containment glovebox and gas loop system.

Key components integrated into the gas loop include:

- 3 stage safe-change HEPA filtration
- Carbon filtration
- Gas stream heating
- Gas stream cooling & de-humidification with condensate collector
- Atmospheric variation pressure compensating system
- Gas tight recirculation blowers
- Gas sampling manifolds & gas analyser



The gas loop and glovebox are fitted with instrumentation for monitoring and control of environmental parameters such as pressure, flow, temperature, humidity etc.

As this is a closed loop system without external ventilation, the internal pressure would suffer large variations due to changes in atmospheric pressure and temperature without the innovative design of a pressurised buffer tank which can remove or add gas to the system to compensate for these variations and hence maintain a constant internal system pressure. It is important to maintain the internal pressure at a low positive pressure to minimise leakage into or out of the system and to allow easy use of the glove-ports.

The airlock transfer chamber has a dedicated HEPA filtered air recirculation system to avoid cross contamination and the mixing of internal and external atmospheres.

The inside of the isolator and airlock is designed for easy cleaning and decontamination and is periodically disinfected using a Vaporised Hydrogen Peroxide (VHP) system.

The design complies with strict requirements for the comfort and welfare of the animals, including control of the internal temperature, humidity and lighting (each cage has its own dedicated fan and dimmable, soft lighting) as well as removing potentially harmful contaminants from the recirculating gas flow.

'This has been a very exciting project with which to be involved,' said Hosokawa's Project Manager, Adam Harper. 'As engineers it has tested our design capability whilst highlighted the flexibility of our Gloveboxes and their uses and also given us a valuable and fascinating insight into the complexities of engineering for space exploration.'

The Compartment V glovebox has been designed, built and installed by Hosokawa as the final piece of the jigsaw in the MELiSSA Pilot Plant to provide a habitat for the development and demonstration of regenerative closed loop life support systems, paving the way for deep space travel. The project also offers potential solutions for today's global challenges such as waste recycling, water provision and food production in harsh environments.

The MELiSSA project (Micro-Ecological Life Support System Alternative) depends on biological processes and understanding of how these may be affected by reduced gravity and cosmic radiation. For cost and safety reasons the MELiSSA Pilot Plant is a ground based, closed loop support system with a 'crew' of rats. Later developments will involve humans, in preparation for future space missions.

The glovebox system represents the crew compartment and allows regeneration of the habitat atmosphere (loaded with carbon dioxide exhaled by the animal crew) and control of an oxygen fraction set-point. Part of the habitat atmosphere is circulated through a photo-bioreactor, where photosynthesis converts carbon dioxide into oxygen.

The experiments carried out rely on having a 'gas tight' environment and the entire system was designed to achieve a leak tightness of less than 0.03% volume per hour (equivalent to a pressure loss of 0.3mbar/hour).

One of the main design challenges was extending the stringent leak tightness requirement to the integrated recirculating gas loop system components whilst also satisfying the specified process performance.

## Smart Predictive Maintenance for IoT

Robert Smith, Editor of Process Engineering magazine got straight to the nub of the matter when he opened his recent article on maintenance and asset management with, 'Maintenance regimes are moving far beyond the world of run to failure.'

Seeking future solutions from within the processing industry, Robert asked Hosokawa Micron, MD, Iain Crosley about Hosokawa's latest predictive maintenance technologies and their potential in smart manufacturing.

With their own predictive maintenance solution and mobile app, Hosokawa is now developing monitoring systems to

meet the demands of a more science based response to predictive maintenance, one that involves monitoring software capable of coping with a wide range of process parameters rather than more simplistic pre-elective set points.

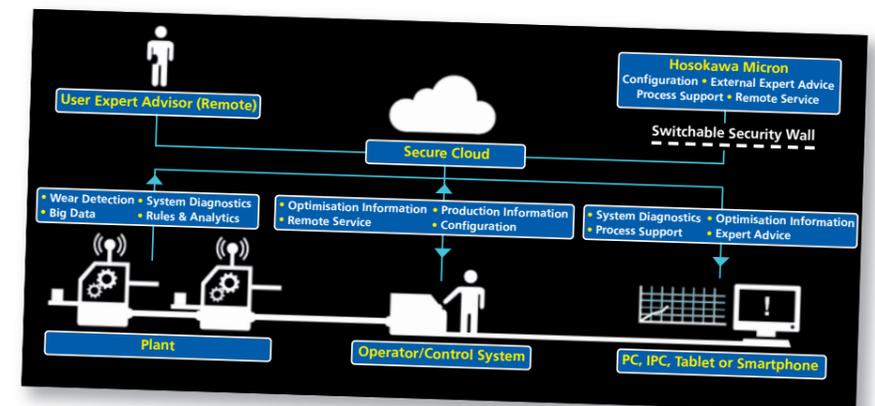
'Technologies need to be adaptive and ultimately, predictive with the capacity to be connected to other systems such as material requirements planning and enterprise resource planning systems.

With the Internet of Things, as companies move to integrate systems across their operations, internet-led production will also have to work seamlessly with their maintenance regimes.

The Internet of Things ultimately requires the integration of the total factory environment. This gives the maximum flexibility in being able to ramp up and down production to meet the needs of the order book. Predictive maintenance plays a vital role within an IoT strategy to help advance production capability. The adoption of the IoT strategy needs the systems to be dynamic not static. In future these systems will detect a machine fault, contact a supplier, check parts

See the full article at: <http://emag.processengineering.co.uk/november2015/index.html>

For more information on Remote Monitoring/ Predictive maintenance at: <http://hml.to/3qz2f>



availability and order the part/service – supported by on-line guide on IPC/PDA or smartphone.' explains Iain

# Meet the Team

Hosokawa Micron Ltd continue to invest in the future with new personnel bringing fresh skills with them and an appetite and passion for building the company.

**John Turnbull** *Technical Sales Manager.*

John joins us with an impressive level of expertise and knowledge in containment technology after working in the industry for many years. He brings with him extensive experience in design and installation, aftersales service support, containment testing and customers services to offer a fresh, technical perspective that will be valued by Hosokawa customers. A key point of contact for customers, John will be responsible for introducing a new initiative in downflow booth technology and spares and service.



We are proud to continue Hosokawa Micron's heritage of offering the very best training for their future. The new, flexible apprenticeship schemes offer real and relevant training opportunities that will equip staff and Hosokawa for the future.

**Erin Holman** *Laboratory Assistant.*



Erin joined Hosokawa from college and is now undertaking her Science Industry Partnership apprenticeship with the company. The 4 year SMART apprenticeship is being specifically tailored for Erin and based around Hosokawa's job needs.

Erin works closely with Hosokawa's Test Station and Toll Processing personnel, with responsibility for testing moisture levels in powders, particles size and characteristics etc. Erin has quickly familiarised and become a skilled operator of a range of analytical instrumentation available in the Test Station.

Erin plans to take a Degree in Chemistry and is keen to develop her skills further at Hosokawa Micron.

## Team Spirit

Regular supporters of Preston Grasshoppers RUFC, Hosokawa Micron, were pleased to sponsor the National League match against Tynedale RFC. The match sponsorship provided an excellent opportunity to meet customers, suppliers and friends in the relaxed atmosphere at the Preston club's facilities.

The weather provided a rare sunshine treat with very little sign of the awful rain that has beset the north of the country in recent months – and which resulted in the flooding devastation of Tynedale's facilities.

The final score (39 – 16) and resounding win for Hoppers pushes the club closer to their goal of top half finish, to set them up for next season. With a first class lunch, excellent refreshment, amiable company and a great win for the home team, the day was a resounding success.



Photo courtesy of Mike Craig

Iain Crosley, 'This regular fixture in the Hosokawa calendar has become one of our most popular corporate events. It is a great opportunity, for all concerned, to mix business and pleasure and resonates with our company philosophy of 'working in partnership'.

For further information on anything within this newsletter please visit  
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