



NUCLEAR APPLICATIONS

Hazardous materials processing & containment solutions.



HOSOKAWA MICRON GROUP

Process technologies for tomorrow.

NUCLEAR MATERIALS PROCESSING AND CONTAINMENT SOLUTIONS

Meeting today's challenges in powder and hazardous materials processing and handling.

The Hosokawa Group is a trusted and reliable partner for your challenging materials processing and systems engineering requirements with a proven track record across a range of industries.

With many years of experience within the nuclear and associated industries, the Hosokawa project teams work closely with all client stakeholders to effect the most appropriate engineered solutions and to substantiate designs to ensure full operational compliance.

The combination of containment expertise and materials processing knowledge makes us a unique, single source designer and manufacturer of stand-alone machines as well as complex process plant.

We offer equipment and technologies from large scale bespoke system solutions to individual modular concept units. Our principle is to deliver high performance yet affordable solutions that meet our customers' demands and long term challenges.

Many Hosokawa equipment solutions can be integrated into Hosokawa containment systems using through-wall technology which ensures that contamination of drive systems is avoided, thus improving cleanability/reliability and ease of maintenance.

OUR AREAS OF EXPERTISE INCLUDE:

- › Fuel preparation (including MOX)
- › Waste processing/materials recovery and reprocessing
- › Wet and dry processing
- › High accuracy size reduction/shredding/classification for volume
- › Contained environments
- › Class 1 gloveboxes
- › Accurate mixing/coating/agglomeration
- › Drying of difficult to handle materials
- › Safe powder transfer, filling and weighing, dispensing, pack-off
- › Integrated equipment and systems
- › Research and development



» INNOVATIVE DESIGNS & COLLABORATIVE DEVELOPMENT



MIXING

Hosokawa's Vrieco-Nauta® conical screw mixer has proven its usefulness in the production of nuclear fuel. It can be used for mixing uranium oxides, for mixing plutonium (recovered from used reactor fuel) with depleted uranium in the manufacturing of mixed oxide (MOX) fuel and also for the reprocessing of weapons-grade plutonium (from military sources) to fabricate nuclear fuel rods for the production of electricity.



> Vrieco-Nauta® conical screw mixer, nuclear execution

SIZE REDUCTION & COMPACTION/ GRANULATION

For pre-grinding uranium dioxide or crushing of MOX tablets in a re-processing step the Hosokawa Mikro Pulverizer type MP1 or MP2 is the suitable technology.

For compaction and granulation the Alpine Roller Compactor ARC L200/50 in combination with the Alpine Flake Crusher AFC 300 or the Alpine Compactor ARC C250/30 with integral Alpine Flake Crusher are proven processes.



> Kompaktor®

The design of the latest version has been optimised for glovebox integration. Hosokawa Alpine can offer the compaction system as a stand-alone unit and as a complete, compact installation.



> Flake Crusher

MIXING & COATING

The Nobilta is a small batch reactor designed to give a functional design to dry particles using a mechano-chemical process to produce compound materials. In the nuclear industry it can be used for the coating of mixed oxides (MOX). The system is then installed in a glovebox where fully contained operation is possible.



> Nobilta

DRYING & IMMOBILISATION

The Vrieco-Nauta® vacuum dryer can be used to increase the dry mass content of wash liquids. It is also suitable for drying (low level) contaminated materials prior to immobilisation for long term waste storage. The immobilisation process can be performed using a Flexomix mixer/agglomerator. It mixes a solidifying mixture with contaminated wet nuclear material and water.



> Flexomix mixer/agglomerator

CONTAINED PROCESSING

Hosokawa Micron offer a wide range of off the shelf and bespoke containment systems including shielded and non-shielded gloveboxes, fume cupboards, downflow booths and laminar flow booths, Class 1 gloveboxes, designed to a leak tightness of <math><0.05\% \text{ vol/hr}</math>, safe change HEPA filtration systems, integrated processing and handling systems, powder transfer, bulk filling & weighing, dispensing, packoff and metal detection equipment.



> Class 1, lead shielded, crusher glovebox

PLENTY OF REASONS TO GIVE US A CALL



Combined advantage

The Hosokawa Group has several technology centres, each expert in one or more specific powder processing technologies. Combining this knowledge gives you the benefit of having just one supplier and contact.



Vast experience

Hosokawa has decades of experience in providing solutions for hazardous materials processing and containment. We have references all over the world, including the biggest names in the industry.



R&D/test facilities

Hosokawa has extensive research and test facilities in Germany, the Netherlands and the UK to perfectly assist clients determining what the best system solution is for their specific process.



Worldwide service

Hosokawa has a very responsive and smoothly operating service department. Our Service Team carries out repair and maintenance services onsite or in one of our fully-equipped workshops.

More information

For detailed information and equipment and system specifications, please contact one of our offices below or visit us online.



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Milling, crushing, compaction

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Containment

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