

DEM&MELT

Innovative in-can vitrification process

Orano has over 40 years of commercial high-level waste vitrification experience, producing up to 1,100 glass canisters per year with significant waste loading—approximately 1 curie per gram of glass.

Our DEM&MELT process is a robust, simple, and versatile in situ vitrification process for decontamination and decommissioning (D&D) and remediation waste. The in-can vitrification process is an innovative solution for treating intermediate and high level waste arising from remediation and D&D. DEM&MELT operates within a compact unit, ensuring significant volume reduction, safe radionuclide containment, and waste stabilization.

The modular design is fully adaptable to nuclear operators' requirements and features:

- Compact size that can be implemented in a decommissioned cell or close to the waste to be treated
- Low investment and operating costs
- Canister is used as the melter—no pouring device, therefore no corrosion issue
- Heated by a simple and robust resistance furnace



Full-scale pilot fully commissioned in 2020

- Optimum homogeneity in the melted mixture
- Efficient temperature control and volatility management
- Highly efficient off-gas treatment system
- Suitable for solid or liquid waste, including
 - Zeolites
 - Liquids
 - Deposits
 - Solids
 - Sludge



DEM&MELT is a full and integrated solution

- Flexible enough to accommodate uncertainties in waste composition
- Designed to produce a small amount of secondary waste

The DEM&MELT process offers a full and integrated solution, ranging from scenario studies and matrix design definition to industrial implementation.

The DEM&MELT design benefits from mature and proven technologies, from upstream functions to downstream functions, and has been used

successfully for over 40 years of HA operation at La Hague and Marcoule.

Most of the process functions are already qualified and can be rated TRL9:

- Off-gas treatment system
- Can and final package management functions including handling, supply, evacuation, contamination control, and welding
- Remote-controlled operation and maintenance functions
- Glass formers feeding
- Auxiliary functions

