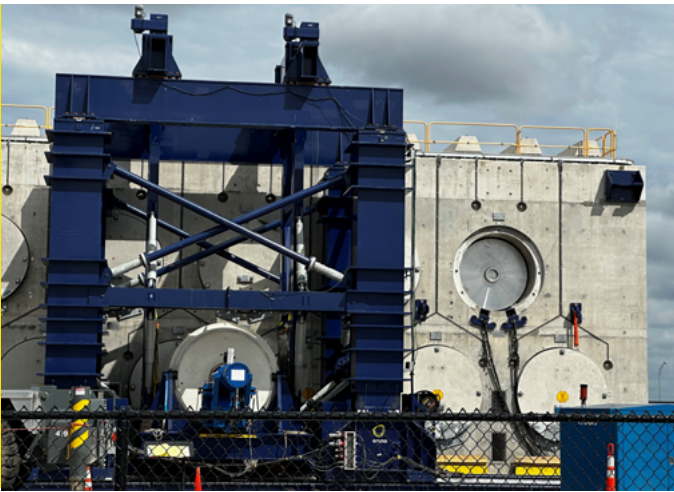




Orano TN

HSM MATRIX®

Orano TN's NUHOMS® Horizontal Storage Module MATRIX (HSM-MX) provides customers with an optimized dual-level horizontal storage system.



Loading of canister into HSM-MX

The development of the HSM-MX was based on industry needs that a used fuel storage system should address, such as:

- Space is at a premium
- Onsite and offsite dose rates at the site boundary are reaching their upper limits
- Aging management systems
- Reducing site excavation, engineered backfill, and pad costs
- Beyond Design Basis (BDB) events like floods, seismic, and extended storage times

The HSM-MX addresses these issues and provides a clear advantage to utilities:

- 45% reduction in Independent Spent Fuel Storage Installation (ISFSI) footprint

- Shielding advantage of HSM array:
 - Monolith structure has no gaps, offering additional significant shielding
 - Skyshine dose from HSM array roof is reduced by 50 percent
 - Significant reduction in dose from the bottom HSM roof vents due to long chimney
 - Dose reduction hardware for inlet and outlet vents

In addition to its compact design the HSM-MX accommodates Dry Shielded Canisters (DSC) designed to meet customer needs.

The transfer of a canister from the transfer cask is performed with a Retractable Roller Tray (RRT), which uses a set of rollers inserted in the concrete module to optimize the placement of the canister. The RRT eliminates the need for canister support rails.

The RRT's customizable rails inside the MATRIX cavity facilitate the MATRIX's unique aging management capabilities, as the insertion rollers can be easily exchanged with inspection tools. Since the canister is resting on concrete blocks, the RRT with the inspection tool can be inserted into the module underneath the canister. The turning roller rails lift and rotate the canister, while the inspection tool glides along the RRT's central track, slowly inspecting every inch of the canister. This mechanism allows for the inspection of 100% of the canister surface without ever removing it from the HSM-MX.

BENEFITS

Reduced ISFSI footprint up to 45 percent

No critical lifts at the ISFSI

Enhanced shielding performance

Superior seismic capabilities:
0.85 horizontal
0.85 vertical

Highest heat rejection capacity (up to 50 kW)

Enhanced ruggedness for resisting acts of sabotage, including BDB events

Highest storage density in the industry

Design Parameters

Maximum heat load: 50 kW

Maximum ambient temperature: 117°F

Minimum ambient temperature: -40°F

Seismic accelerations at site:

- Vertical: 0.85g
- Horizontal: 0.85g

Maximum flood: 50 feet at 15 fps

Tornado wind: 360 mph

Missile impact: 750 lbs @ 105 mph steel pipe;
275 lbs @ 125 mph armor piercing artillery shell,
4,000 lb @ 133 mph automobile, (equivalent to
full-size pickup truck)

Snow/Ice load: 61 lb/ft³ on roof (equivalent to 49
ft of fresh snow)

**Licensed under
NRC Certificate of Compliance #1042**



Scan the QR code, or click here to learn more about Orano's Fuel Storage options, including a video of the inspection process

Technical Features

Payload: EOS 37PTH, EOS 89BTH, 61BTH

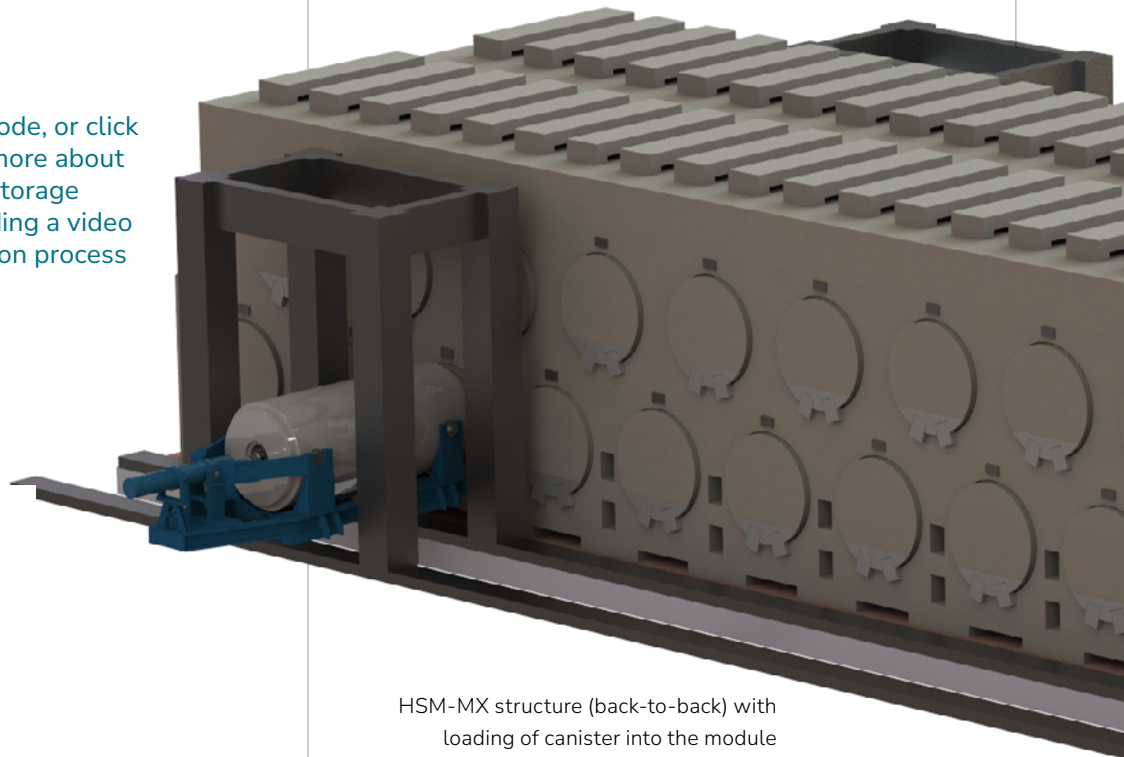
Materials of Construction:

- Reinforced concrete
- Carbon steel
- Corrosion resistant coatings
- Stainless steel wire mesh screens

Physical Data:

- Width: 10'8"
- Length: Variable
- Height: 26'8"
- Adjacent modules are in contact with each other

Maximum canister length: 198.5 inches



HSM-MX structure (back-to-back) with loading of canister into the module

Rocco Catanzarite
VP Sales & Marketing

Orano TN
7160 Riverwood Drive, Suite 200
Columbia, MD 21046 USA

+1 (410) 910 6915
rocco.catanzarite@orano.group

www.orano.group/usa