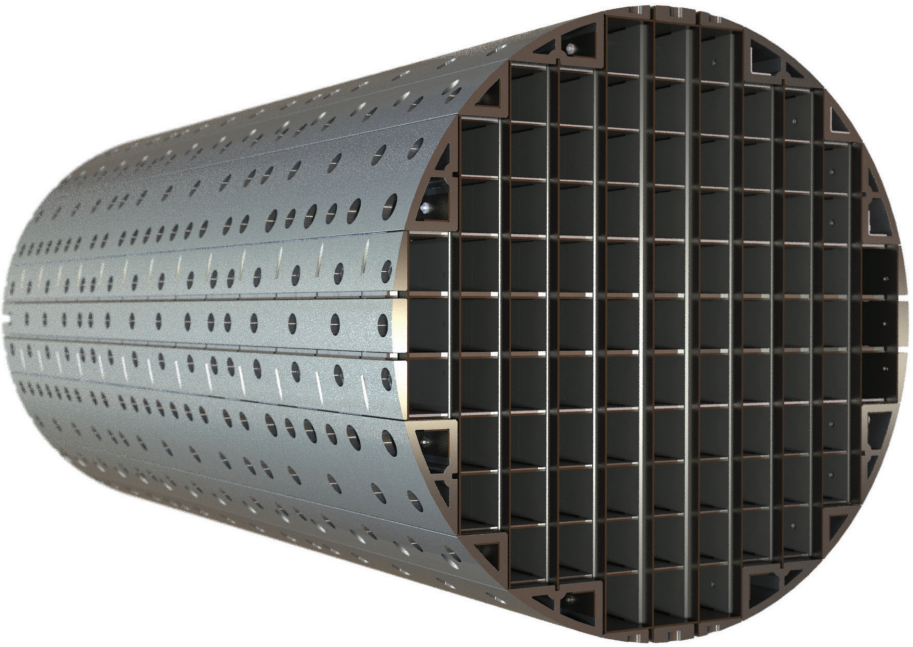
NUHOMS® EOS 89BTH DSC
Extended Optimized Storage

Orano TN's NUHOMS® Extended Optimized Storage (EOS) 89BTH Dry Shielded Canister (DSC) will provide customers with a high-capacity, high-burnup, and high-heat load system for Boiling Water Reactor (BWR) dry used fuel storage needs. The EOS 89BTH DSC is an improvement to the NUHOMS® 61BTH DSC, which is TN's most widely used BWR dry storage system. The 89BTH DSC is designed to store and transport 89 BWR fuel assemblies with or without channels.



The EOS 89BTH DSC is an optimized design for plants with minimum crane capacity of 125 tons and has a 108 ton option available. It will be transferred in the new NUHOMS® EOS TC series transfer cask to gain the benefit of being fully shielded. The EOS 89BTH DSC is designed to be transferred and stored in a horizontal configuration using the NUHOMS® EOS HSM concrete modules. The EOS HSM is a new and improved HSM-H, with redesigned vents for a higher capacity heat load while maintaining the same overall footprint.

The EOS 89BTH basket is constructed using steel, alloy, aluminum, and metal matrix composite (MMC) plates configured into an egg crate design, allowing for a more cost-efficient fabrication. The compartment assemblies are connected to perimeter aluminum transition rail assemblies. Geometric spacing and fixed neutron absorbers are used to maintain criticality control for enrichments up to 4.5 wt% U235. For enrichments above 4.5 wt%U235, limited burnup credit is used.

The EOS DSC shell can be fabricated of duplex stainless steel (Duplex SS). A recent analysis revealed that the use of Duplex SS in the fabrication of dry storage canisters will ensure the long-term safety of canister systems as the two-phase (austenite and ferrite) micro-structure of duplex stainless steel has a number of benefits. In addition, Duplex SS has a combination of alloying contents such as chromium, molybdenum, nitrogen, and nickel that offer several advantages including enhanced mechanical properties and greater resistance to chloride-induced stress corrosion cracking, pitting, and crevice corrosion.

Duplex SS has superior strength compared to austenitic stainless steels and offers better thermal performance. Duplex SS is used extensively in corrosive environments where there is exposure to high chloride content and high temperatures. It is a crucial component for the shipbuilding industry and is widely utilized in the mining industry and at nuclear plants.

Design Parameters

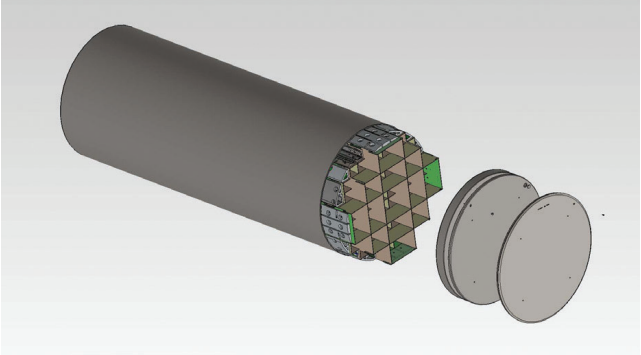
Maximum Payload: 89 BWR fuel assemblies

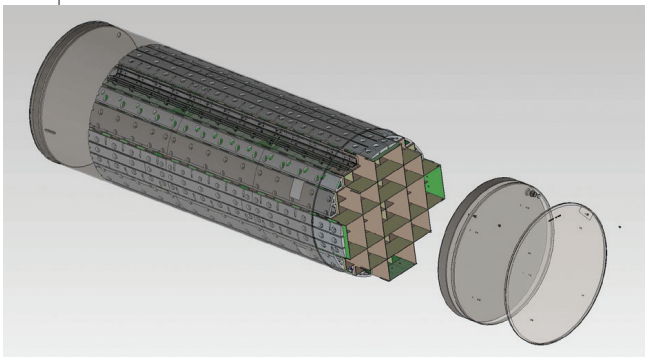
- Intact fuel with or without channels
- Reconstituted fuel assemblies

Technical Features

Materials of Construction:

- Stainless steel shell and cover plates
- Optional high corrosion-resistant steel shell
- Steel alloy/aluminum/MMC egg-crate basket
- Coated carbon steel shield plugs





Physical Data:

- Outside diameter: 75.5”
- Outside length: Variable
- Cavity length: customized to fit fuel weight, dry and loaded: 124,000 lbs

Intact fuel: Zirconium-based alloy cladding material

Max initial enrichment: 5.0 wt% U235

Min initial enrichment: 0.7 wt% U235

Min cooling time: 2 years

Max burnup: 62 GWd/MTU

Max decay heat: 700 W/assembly

Max heat load: 47 kW

Max uranium content: 198 kg/assembly

Max assembly weight: 705 lbs

Assembly length: Variable

Benefits

Designed to meet BWR dry used fuel storage and transport needs

Optimal design for plants with crane capacity of 125 tons or larger (108-ton option available)

Leverages proven closure weld design

Integrated hold-down ring reduces operation time

Customizable DSC length to fit any fuel assembly

Increased heat load capacity allows loading of shorter-cooled fuel

Highest BWR fuel assembly capacity reducing ISFSI footprint

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