

MAGNASTOR® – PROVEN ULTRA-HIGH CAPACITY SPENT FUEL MANAGEMENT

KEY FEATURES

- A developed-cell basket design that increases spent fuel capacities and simplifies fabrication, while providing high strength and excellent heat removal
- A unique canister closure design that improves welding time, reduces personnel dose, and enhances drying performance
- A low-profile vertical concrete cask design to improve on-site handling and site dose rates, with proven, simple construction and operations features; also maintains robustness against beyond-design-basis threats
- A simple, proven transfer system that facilitates transfer without excessive dose or handling
- A new, effective and efficient approach to water removal and canister drying

Leveraging 45 years of operations for safe, spent nuclear fuel transport and storage, NAC designed MAGNASTOR to be ideal for managing spent fuel at operating and shutdown sites.

- Safety: Higher capacity with optimized loading patterns reduces loading events and supports ALARA.
- Decommissioning cost savings: The optimized loading plan enables the spent fuel pool to be emptied quicker, equating to millions of dollars in savings.

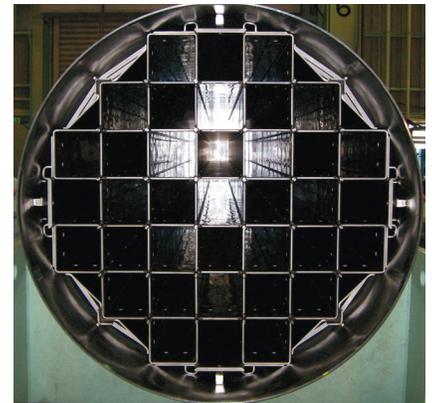
DESIGN SAFETY AND EFFICIENCY

MAGNASTOR accommodates the wide range of spent fuel heat loads, without pushing the limits to extremes that could be dose-intensive.

- MAGNASTOR's regional loading permits a mixture of older-colder fuel alongside newer-hotter fuel to optimize the spent fuel loading plan, providing pool emptying acceleration at shutdown sites.



MAGNASTOR incorporates economic, engineering, operations, shielding, and fabrication advantages. **Top photo:** BWR basket. **Middle photo:** Vertical concrete casks. **Bottom photo:** PWR canister and basket.



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- MAGNASTOR's capacity advantage lessens the number of TSC loadings, reducing heavy load lifts, and reducing entry of personnel into radiated environments.
- MAGNASTOR's capacity advantage requires less ISFSI space and minimizes construction activity, which reduces overall costs while promoting site safety.
- MAGNASTOR's loading and transfer operations, using a single closure lid, accelerate drying times and streamline welding, promoting processing efficiency and ALARA.

Over 100 MAGNASTOR Dry Storage/Transport Systems Loaded

SUPERIOR SYSTEM CAPACITY

Exceptional return on investment, with rapid recovery of start-up and transportation costs, is enabled through fewer spent fuel systems procured, canister shipments to the site, and fuel loading campaigns; as well as a shorter site construction schedule and minimal site debris.

COST SAVINGS

MAGNASTOR design enhancements drive the following dry storage cost savings:

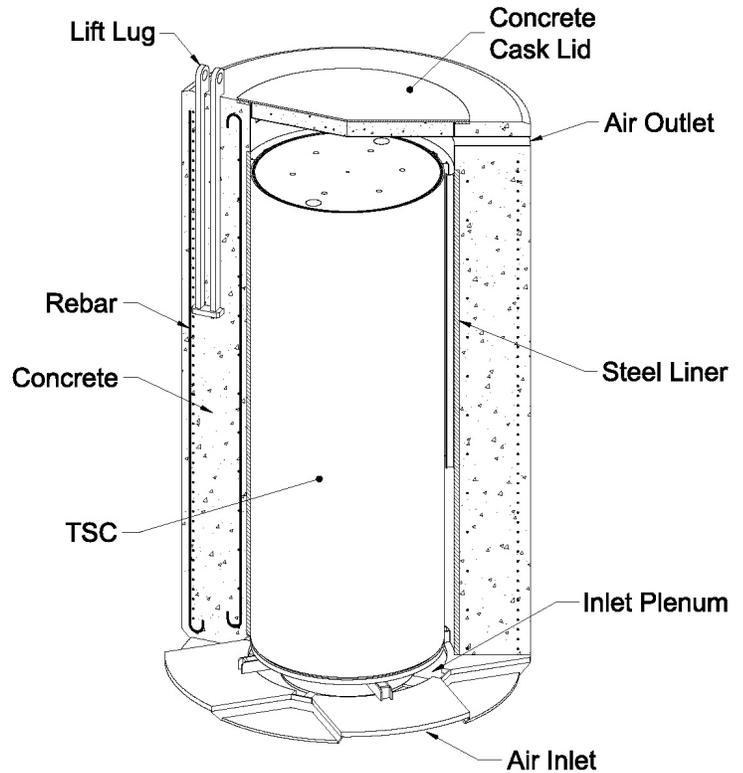
- Capital and operational costs per assembly substantially reduced for the long term
- Greater savings in life cycle costs for dry storage when considering turnkey fleet implementation program
- System fabricability and construction have been fine-tuned to reduce costs as compared to earlier designs
- Mechanical assembly assures low risk, high quality and predictable fabrication and construction

IMPROVED OPERATIONS

Other MAGNASTOR improved operational features include:

- Simple, easy-to-install lid system— final closure operations and personnel exposures can be greatly reduced
- The transfer cask has improved operations and maintenance features
- Concrete cask design increases ingress and egress capabilities, while simplifying site handling and operations

VERTICAL CONCRETE CASK COMPONENTS



MAGNASTOR SPECIFICATIONS

| Fuel-Specific Data | PWR / BWR |
|---------------------------------|---|
| Maximum Assembly Capacity: | 37 / 87 |
| Thermal Capacity: | Storage: 35.5 kW / 33 kW (design 40 kW) Transport: 24 kW initial license |
| Fuel Cool Time: | Storage: Three years minimum* Transport: To meet maximum heat loads |
| Fuel Initial Enrichment: | 5.0 wt % / 4.5% wt % U-235 maximum |
| Fuel Burnup (Assembly Average): | 60 GWD/MTU maximum |
| Key System Dimensions | PWR / BWR |
| VCC Length: | Standard: 225 inches Segmented Body: 204 inches |
| VCC Outer Diameter: | 136 inches |
| Canister Cavity Length: | Type 1/3—173 inches Type 2/4—180 inches |
| Internal Cavity Diameter: | 71 inches |
| Overall Canister Length: | Type 1/3—173 inches Type 2/4—180 inches |
| Canister Shell Thickness: | 0.5 inches |
| Maximum Weight on Crane Hook: | 114.25 tons / 114.75 tons |
| Maximum Weight on ISFSI Pad: | 160 tons / 161 tons |

*MAGNASTOR CoC Amendment 5 includes a unique regionalized loading zone for spent fuel with three years cool time.