

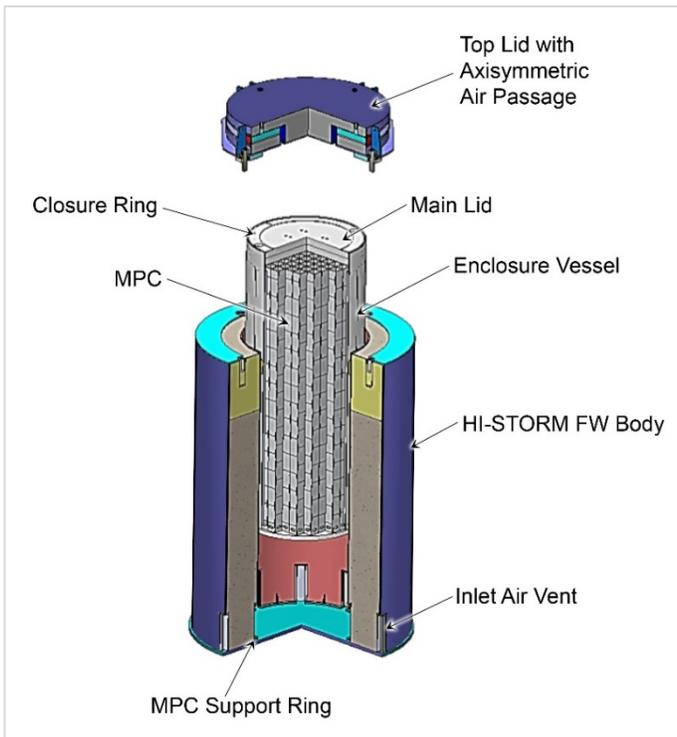
HI-STORM FW[®] Vertical Ventilated Storage System



The **Holtec International Storage Module Flood and Wind (HI-STORM FW)** system is Holtec International's USNRC-licensed, highest capacity canister-based system for storage of spent nuclear fuel (NRC Docket No. 72-1032). The design details of the HI-STORM FW System have been guided by two decades of research and technology development by Holtec International. The canister, known as the multi-purpose canister (MPC), is licensed by the USNRC for transportation in the HI-STAR 190 transportation overpack (NRC Docket No. 71-9373). Holtec's dry cask storage technology is predicated on providing our clients with an integrated solution for all stages of spent fuel management in a safe and secure manner that limits the dose to the public and employees. In use at over 60% of the operating nuclear units in the United States, there are more than 1,200 Holtec dry storage systems loaded.



HI-STORM FW on VCT at a U.S. Nuclear Plant



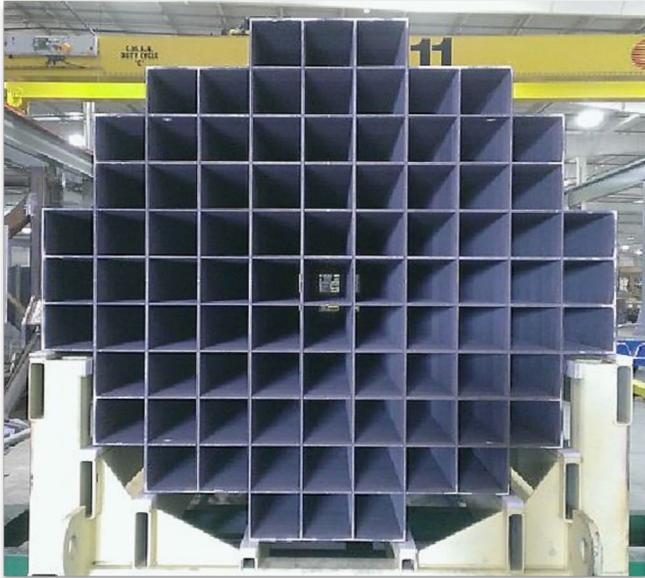
**HI-STORM FW Overpack and MPC
Shown in Partial Cutaway View**

The HI-STORM FW system consists of interchangeable sealed MPCs, which contain the fuel, a vertically ventilated storage overpack constructed from a combination of steel and concrete which protects the MPC during storage, and a variable weight transfer cask (HI-TRAC VW) which contains the MPC during loading, unloading, and transfer operations. The variable weight allows for maximum shielding for any given crane lifting capacity (up to 130 tons). The surveillance and maintenance required by the plant's staff is minimized since the system is completely passive and is composed of proven materials.

The HI-STORM FW system can safely store up to 37 PWR or 89 BWR fuel assemblies in the MPC-37 or MPC-89, respectively, including damaged fuel, fuel debris, BWR fuel with and without channels, and other non-fuel hardware. The MPC external diameters are identical to allow the use of a single overpack, transfer, and transportation cask design.

The steel exterior of the HI-STORM FW overpack protects the stored contents from natural and manmade projectiles including an F-16 plane impact. The steel exterior of the overpack ensures no spalling of concrete is possible as there is with dry storage systems employing exposed concrete. No rebar is used in the plain concrete; this feature eliminates the development of cracks which cause radiation streaming paths and also makes on-site assembly a simple process.

The entire basket is manufactured from the neutron absorber material, Metamic®-HT, that serves the dual function of structural integrity and criticality control. Manufactured by laser-cut slotted plates of extruded Metamic-HT panels, there are no bends or radii at the cell corners, no internal welds, and large cell openings to ensure ease of fuel assembly insertion, even severely deformed fuel. Since Metamic-HT is the sole material of the basket, concerns regarding interaction of coated carbon steel materials and various MPC operating environments are not applicable; there is no risk of corrosion or hydrogen generation from the fuel basket material.



Metamic®-HT Basket (MPC-89)

The use of Metamic®-HT and its vertical orientation allow HI-STORM FW to accommodate total high heat load, high heat load per assembly, and short cooling time, making it ideal for the defueling of Part 50 facilities as promptly as possible and assisting with long term spent fuel management. "One MPC fits all," meaning that there is one basket design regardless of fuel type, initial enrichment, or burnup. All locations of the MPC basket are usable regardless of fuel type, initial enrichment, or burnup.

The height of the MPC cavity can be customized for each fuel type to be stored in it. Accordingly, the height of the HI-STORM FW overpack and the height and weight of the HI-TRAC VW transfer cask are optimized for the fuel length. The weight savings afforded by the reduced equipment height is directly translated into additional shielding in the HI-TRAC VW. Benefits include minimized dose to loading personnel and the prevention of expensive plant modifications.

HI-STORM FW System – General Information

	MPC-37	MPC-89
Number of Assemblies	37	89
Maximum Heat-Load (System)	45 kW	46.36 kW
Maximum Heat-Load Per Assembly	3.20 kW (pending approval)	1.45 kW (pending approval)
Maximum Initial Enrichment	5 w% U-235	4.8 w% U-235 (Planar-Avg.)
Maximum Acceptable Fuel Burnup	68,200 MWd/MTU	65,000 MWd/MTU
Minimum Fuel Cooling Time	1 year (pending approval)	1 year (pending approval)
Non-Fuel Hardware Approved Contents	Burnable Poison Rod Assemblies (BPRAs), Thimble Plug Devices (TPD), Control Rod Assemblies (CRAs), Axial Power Shaping Rods (APSRs), Wet Annular Burnable Absorbers (WABAs), Rod Cluster Control Assemblies (RCCAs), Control Element Assemblies (CEAs), Instrument Tube Tie Rods (ITTRs), Water Displacement Guide Tube Plugs, and Orifice Rod Assemblies.	With or Without Fuel Channels
No. of Damaged Fuel Assemblies	Up to 12 damaged fuel assemblies per system	Up to 16 damaged fuel assemblies per system