

## DUF<sub>6</sub> Cylinder Cart

MCE provided the design, fabrication, testing, and delivery of two DUF<sub>6</sub> Cylinder Evacuation Room carts for the Depleted Uranium Hexafluoride Conversion Projects in Paducah, Kentucky, and Portsmouth, Ohio.

The carts were designed with a cradle support to handle four different DUF<sub>6</sub> cylinders ranging from 30 to 74.5 in. in diameter and a maximum of 155 in. in length, with a maximum cylinder weight of 45,000 lb.

The carts were configured with four load cells with a weight accuracy of 0.1% of the maximum load. The cart is driven at 10 ft per minute by two gearmotors, one on each rail.

A cart-mounted end-of-travel limit switch stops the cart at each end of the desired travel distance. Energy-absorbing bump stops are provided, which safely stop the cart in the event of a limit switch failure.



The carts are structurally designed in accordance with CMAA-70 (Crane Manufacturers Association of America specification for top-running cranes). The cart is also designed for seismic load in accordance with IBC-2000. Seismic restraints are incorporated into the structure, which interface with the running rail to prevent uplift.

MCE's panel shop, MCE Controls, designed, fabricated, and tested the electrification, instrumentation, and control systems of the carts. The control system incorporated detachable control pendant, thermocouple, and weigh system connections that allow the operator to walk with the cart at a safe distance while in operation. The cables may be removed and stored out of harm's way during idle periods.

Electrification is achieved via a cart-mounted cable reel that pays the power cable out as the cart moves. The 480 vac, three-phase power is used to power the drive motors through a "soft-start" control and is also transformed to 24 vac to be used as the control power. The cart-mounted control panel was built and labeled per UL-508A standards.

**Client: AREVA/Framatome NP  
Charlotte, North Carolina**