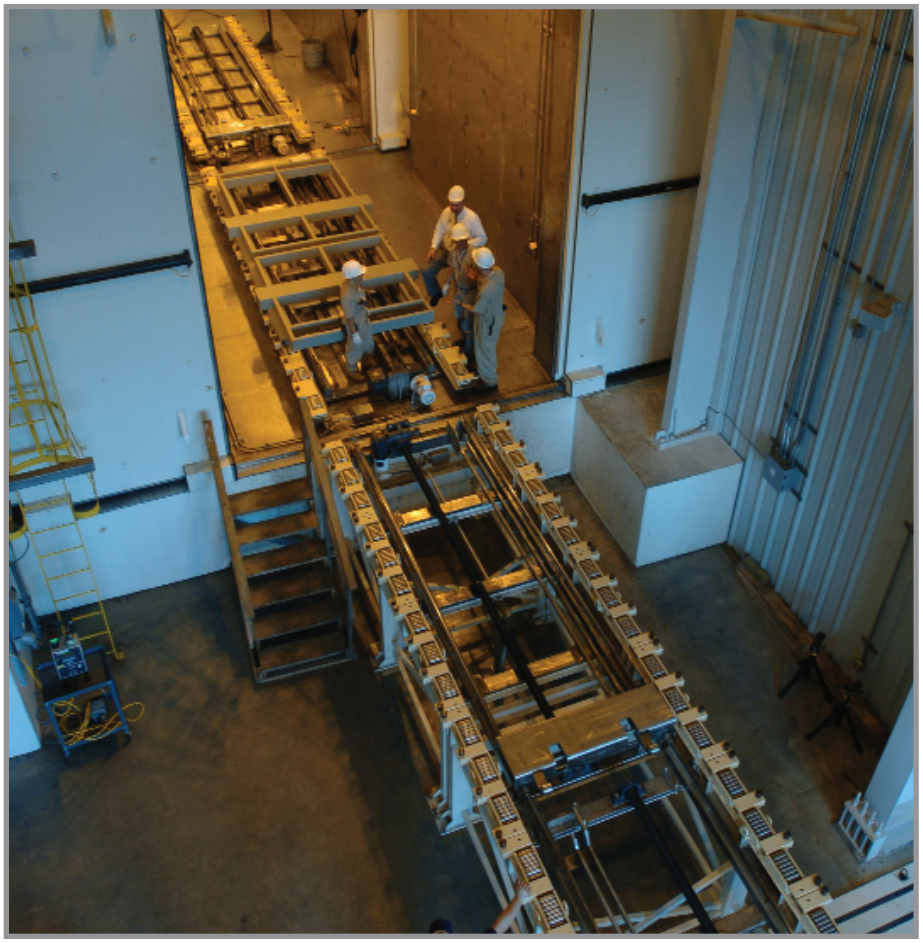
Application Solution: #113

NUCLEAR WASTE REMOTE HANDLING SYSTEM



"Joyce/Dayton Engineers worked with talented designers through the design process... the end result was a successful transfer system whose function is central to the success of the waste packaging process."

West Valley Nuclear Services Company: application story outline

West Valley Nuclear Services processes and packages obsolete nuclear process equipment and materials. Their contractors, Butler Construction, Quackenbush Company and West Metal Works, were challenged with building a remote handling system that could transport unprocessed nuclear waste down a long corridor and through a series of steel shield doors. Once in the inner chamber, processing would begin and the resulting material packaged for safe disposal.

The engineers came to Joyce/Dayton with two challenges:

- Provide a transfer system that could move a specific load a horizontal distance of 80 feet in 20-foot increments.
- Customize the jack and power system to meet the unique design challenges of the nuclear industry.

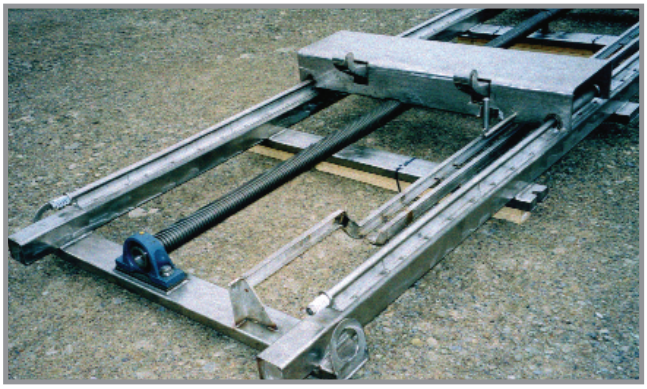
The equipment would have to be modified to allow a smooth transfer across the thresholds of the steel doors without compromising the integrity of the shielding. The equipment could not be prone to leaking fluids which pose cleanup and maintenance problems in the nuclear environment. And, the equipment would have to be rugged, reliable and capable of functioning throughout the 20 year life of the project.

UNIQUE FEATURES

- Encoder system
- Split nut for remote placement
- Recovery system with hex nut drive extension
- Variable frequency drive for over current protection (safety against self destruction)

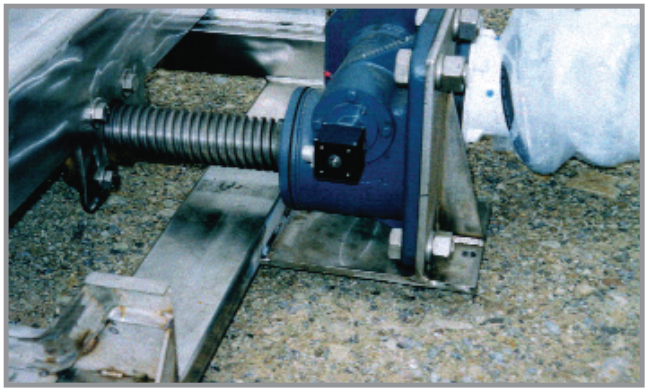
HOW THE SYSTEM WORKS

A series of 25-ton Joyce® ComDRIVE® systems transport the load over a horizontal distance of about 80 feet. The special rotating screw design allows the traveling nut to pass over a central support bushing in the screw with uninterrupted travel.



As the ComDRIVE powers the transfer system, nuclear waste is conveyed down a 80-foot long corridor. As the load traverses it is transferred across thresholds onto successive ComDRIVE systems until it travels the full distance. Stainless steel doors close as it passes each threshold sealing the nuclear waste in an inner chamber.

Joyce/Dayton Engineers worked with Project Engineers to provide the needed modifications to the 25-ton ComDRIVES. They include custom designed screws, jack sleeves, traveling nuts, and added features on the gear reducers.



Joyce/Dayton Engineers worked with talented designers through the design process, step by step, until the finished design was reached. The end result was a successful transfer system whose function is central to the success of the waste packaging process.

WHY JACKS?

- Reliable
- Proven ComDRIVE design.
- Screw Jack technology is not prone to the same failures as hydraulic systems.
- Screw jacks are mechanically able to move large loads over long distances (field tested to 75,000 lbs.).
- They can be modified for remote repair and replacement.
- Adaptable to customer's unique design concept.
- Material options are available to meet nuclear requirements.
- Cost effective solution.
- Engineering support available.

Since 1873, the Joyce/Dayton Corp., with headquarters based in Dayton, Ohio, has been one of the premier manufacturers of rugged, heavy-duty mechanical and hydraulic lifting and positioning equipment. From leveling log homes and ship dry-dock transfers to ergonomic lifts, Joyce/Dayton has handled the toughest applications imaginable. With unmatched design and manufacturing expertise, Joyce provides solutions that are productive, enduring and cost-effective. For more information about the Joyce/Dayton Corp., visit the company's web site at www.joycedayton.com.