

Environmental

Waste Handling & Processing

The Westinghouse Solution

Westinghouse has proven expertise in the field of active waste handling, transport and storage. We are committed to developing custom designs and equipment to address the unique and challenging needs of our customers.

We have a wealth of experience in the area of high-level waste vitrification, filtration, decontamination, , shielding, packaging and handling. Equipment operation in these radioactive environments demands extreme reliability and ease of maintenance.

For more than 40 years, Westinghouse has been involved with the design and manufacture of a broad array of waste handling and processing equipment. These projects have ranged in size and complexity from our Immobilized Tritium Containers (ITC's) measuring 28" x 6" to our active component transfer system which was 50' long and weighed 62,000 pounds, when fully assembled.

Expertise

In 2007, Westinghouse executed a multi-million dollar contract for waste retrieval at a nuclear laboratory. This project was divided into two major subsystems: one for the high-level waste retrieval and the other for repackaging and storage, requiring heavy-duty equipment. In particular, one system known as the Fuel Packaging System (FPS) Transfer System, weighs approximately 140,000 lbs, measures 28' high, 14' wide and 34 feet long.

The scope of this major project included:

- Mechanical and electrical system engineering and design
- Control and software development and supply
- Fabrication, inspection and commissioning
- Operation and maintenance documentation
- Site commissioning and operational support



FPS Fuel Packaging Transfer System

Process

Our robust design process begins with a set of functional and performance requirements prepared by the client. After developing the suitable concept, a detailed design is prepared using solid modelling techniques. Westinghouse performs all the required engineering analysis spanning structural, seismic, radiological shielding, performance, operability, reliability, and safety.

With extensive in-house mechanical and electrical capabilities – including the design and manufacture of instrumentation and control components and systems - the project transfers seamlessly from the design office to our fabrication facilities for machining, welding assembly, inspection and examination.

Mock-up testing of equipment is performed at one of our facilities to ensure the equipment operation is fully compliant with all performance requirements. Detailed documentation describes all aspects of operation and maintenance of the equipment.



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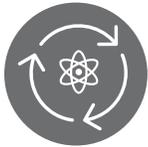
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Extensive Experience



Westinghouse has the necessary capabilities to cover every area of spent nuclear fuel handling, nuclear waste treatment and conditioning, engineering and project management. Our technologies have been applied to nuclear facilities for the entire nuclear life cycle including new plant construction, plant upgrade, life extension, and decommissioning.

Supporting Capabilities

Vacuum Drying Process Skid System

Westinghouse developed a vacuum drying system to dry used nuclear fuel as part of a large waste management system. The vacuum drying skid provides a mounting platform and houses most of the fuel drying process equipment and instrumentation including the Process Vacuum Pumps, the process and inert gas piping systems, electrical junction boxes, the Residual Gas Analyzers and other process control instrumentation.

FRS Transfer Vehicle

The transfer vehicle allows the attachment and alignment of a heavily shielded flask and lifting adaptor unit to be removed and maneuvered between storage facilities.

FRS Retrieval and Transfer System

The FRS Retrieval and Transfer System orients over existing tile holes to remove high level waste by means of a grapple. During the removal process, the waste is safely contained inside a shielded flask.

FPS Fuel Packaging Transfer System

The FPS Transfer System retrieves empty FPS Storage Containers from Storage Tubes within the Storage Block of the FPS Building. The empty containers are transported to empty Packaging Stations below the Reception Bay of the FPS Building.

The FPS Transfer System retrieves loaded FPS Storage Containers from the Packaging Stations and transports them to a specific empty Storage Location.

The FPS Transfer System removes and replaces the Storage Tube Shield Plug from the Storage Locations using a Storage Tube Shield Plug Hoist mounted to the FPS Trolley.

Immobilized Tritium Containers (ITC's)

The standard immobilized containers contain a titanium sponge type product for tritium storage in the form of titanium tritide. The ITC's are stainless steel vessels with embedded leak tight valving designed to withstand extreme pressures and elevated temperatures.

Active Component Transfer System

This mobile modular platform system is used for transferring high level radioactive waste between large custom shielded flasks. It is comprised of rugged modular segments that can be easily located and assembled in a temporary staging area. Flask interface carriages are positioned onto transfer frame rails and the flasks are lowered onto the system.

Waste Handling and Processing Equipment

- Vacuum Drying Process Skid System
- FRS Transfer Vehicle
- FRS Retrieval and Transfer System
- FPS Fuel Packaging Transfer System
- Immobilized Tritium Containers
- Active Component Transfer System



FRS Transfer Vehicle



Immobilized Tritium Containers

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