

Fuel-handling Equipment

Model WR PWR Refueling Machine Controls Modification

Background

The Model WR Control System product is designed to be a direct replacement for the PaR or Stearns-Roger type manipulator cranes in Westinghouse-designed PWRs.

Description

The Model WR Control System upgrade replaces the control console, motor control center, load weighing system and motors. In addition, it adds a three-axis positioning system and safety interlocks to improve nuclear safety.



Model WR Control Console & HMI

The Model WR Systems include:

- FUELNET® - Westinghouse's proprietary software system that integrates 30 plus years of fuel handling experience into a control system to facilitate safe, automatic and manual control of fuel movement
- Industrial touchscreen controls and status displays instantly give operators critical information necessary in moving nuclear fuel safely
- Optional Camera Systems – Above water and in-mast cameras give the operator extended vision around the machine and at the fuel gripper for proper fuel engagement
- Cable management solutions - cable reels, cable tracks, and festoons
- Electromagnetic Interference (EMI) resistant load weighing systems for accurate and stable main hoist load indication
- Auxiliary hoists with load weighing system and integral displays, independent from the main fuel hoist
- Improved Pneumatic System upgrade

The Model WR is available in two options:

1. The control system upgrade includes main controls and peripheral components.
2. The control system upgrade plus a new trolley, mast and gripper. This is the ideal option to reduce installation risk.

Benefits

- Increased bridge, trolley, and hoist speeds to 60, 40, and 40 feet per minute, respectively
- Increased machine performance and reliability using a proven design
- Brushless Servo drives provide maintenance-free, smooth operation and high torque as required to maintain commanded speed, and can compensate for poor rail conditions
- Absolute encoder positioning system retains position information upon loss of power and updates position when moved without power
- Integral maintenance receptacles on the equipment
- Improved component tolerance to a broader range of environmental conditions, such as radiation, temperature, and humidity

Deliverables

The following items will be part of your delivery package:

- Control cabinet, including PLC, HMI screen, servo drives and software customized to your site
- Peripheral components, including motors, encoders, cable handling system, pneumatics and load weighing
- Engineering drawings and documentation for use in implementing the design changes
- Documentation for factory testing, site installation and testing
- Training performed on your machine
- Cyber security assessment in accordance to NEI 08-09

Experience

Westinghouse refueling machine upgrades are currently installed in 34 PWRs in the United States, as well as in many units in Europe and Asia. The Westinghouse Model WR Control System product is specifically designed and standardized for use in Westinghouse-designed PWR units.



Model WR Controls System with optional trolley installed in U.S. nuclear plant

Contact

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