

# Model GR Boiling Water Reactor Refueling Equipment

## Background

Westinghouse has provided equipment to support all aspects of nuclear fuel handling since 1970.

## Description

The Model GR system is offered in two basic configurations:

1. A complete replacement boiling water reactor refueling bridge
2. A control system or controls upgrade for an existing PaR or Stearns-Roger refueling bridge

The Model GR systems include:

- The low maintenance, FUELMASTER® mast
- New left- and right-hand controllers
- Industrial touchscreen controls and status displays showing position and load
- Control upgrades including FUELNET®, Westinghouse's proprietary software system that facilitates safe, automatic and manual control of fuel movement
- New servo motor drive systems
- Camera system options – above water and in-mast cameras, controllers and displays
- Cable management solutions, including cable reels, cable tracks and festoons
- Load-weighing systems and displays for fuel
- Auxiliary hoists with load weighing and integral displays independent of the fuel-handling system
- Pneumatic system upgrade

## Benefits

- Increase bridge, trolley and hoist speeds to 60, 40, and 50 feet per minute, respectively
- Increase 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, which can compensate for poor rail conditions
- Provides integral maintenance receptacles on the equipment
- Improve component tolerance to a broader range of environmental conditions, such as radiation, temperature and humidity
- Reduce maintenance with brushless servo motors
- Absolute encoder positioning system retains position information upon loss of power and updates position when moved without power

## Key elements of the Westinghouse solution include:

- Programmable logic controller and human-machine interface software customized to the site
- Engineering drawings
- Documentation for factory testing, site testing and installation
- Training performed on customer machines
- Cyber security addressed to enhance safety



Model GR control system

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