

FUELNET® Refueling Automation System

Background

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



Model GR control system

Description

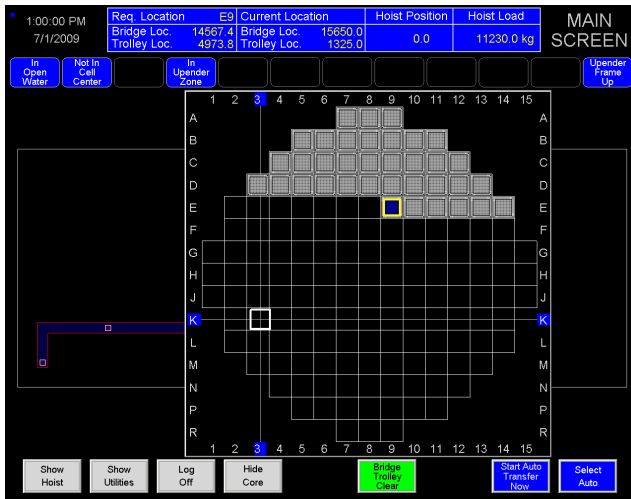
FUELNET®, Westinghouse's proprietary refueling automation system, is used in boiling water reactor and pressurized water reactor fuel-handling equipment around the world.

FUELNET facilitates automatic and semi-automatic operation through a fuel move database stored within an industrial computer supported by a graphical user interface touchscreen system.

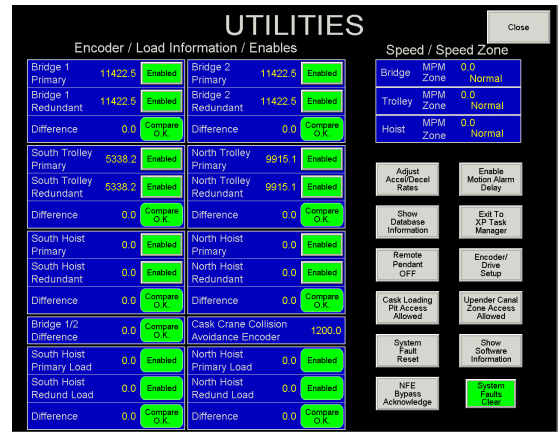
Machine operation is executed within the constraints of the machine programmable logic controller application software. Machine interlocks are based on site-specific boundaries, such as the core, upender, spent fuel locations and known obstacles, thereby eliminating potential collisions.

Benefits

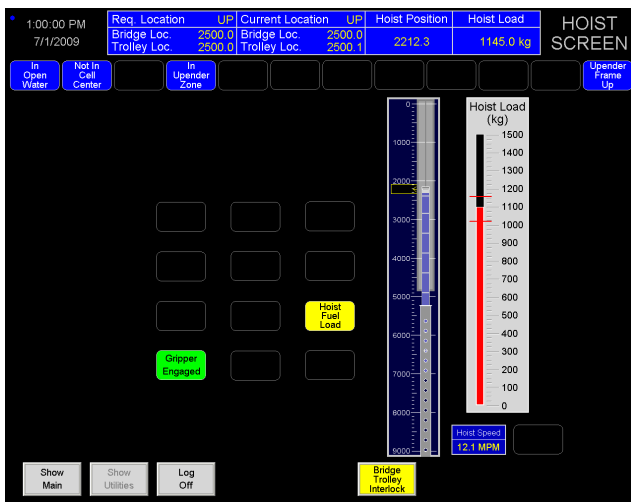
- Thirty years of lessons learned incorporated into the FUELNET control system enhance the operator's ability to move fuel safely.
- Automatic fuel moves create the most efficient travel path from one point to another, reducing refueling time and radiation exposure of operators.
- Touchscreen operation enhances useability.
- Remote control of transfer machine motion from either the refueling machine or spent fuel-handling machine reduces operator radiation exposure.
- Core and pool zone monitoring with speed and end-of-travel limiting provide for safe machine operation.
- Primary and redundant encoder/limit switch comparison provide sensor out-of-tolerance/failure detection.
- Continuous monitoring of fuel, gripper and mast loads for overload, underload and slack cable is all inclusive with machine-operating locations and in-water buoyancy factors.
- Dual bridge/trolley position encoders used for skew detection accurately determine travel motion positions.



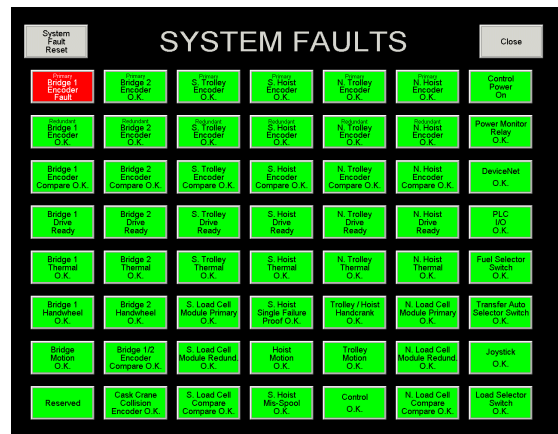
Main screen with close-up core view



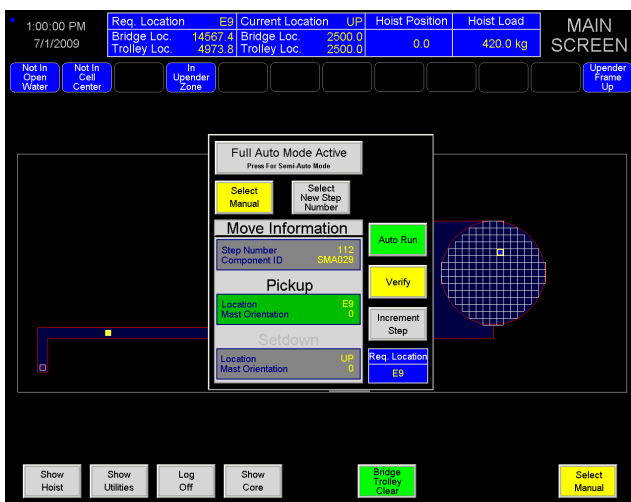
Utilities screen to view speeds, encoder positions, bypass redundant encoders; adjust acceleration/deceleration rates



Hoist screen showing fuel removal from upender



Screen showing status of potential system faults



Autorun screen on refueling machine

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