Case Study: Rod Drop Monitoring
EDF Energy - Hinkley Point B

Introduction
The recording of control rod drop times is a regulatory requirement of the nuclear site license. To overcome the spares issues with obsolete equipment, Servelec Controls developed a new Rod Drop Monitoring system using commercially off-the-shelf hardware and software. The following solution can be easily adapted to the requirements of any nuclear power station, and has a proven install base.

EDF Energy Requirements

• Real-time rod height display & slack switch status.
• Automatic collection of ‘reactor trip’ data. Data window requirements:
  • Data window to start at 2 sec. pre trip condition.
  • Data window to extend for 28 sec. post trip condition
  • Data collection to include all 121 rods.
  • Data resolution: 20 msec.
  • Data to be visualised through chart display & printouts: rod height versus time.
• System to calculate intermediate values.
• Alarm system to include: reactor trip, power supply failure & system health status.

System to support the following

Rod Drop Monitoring System Overview

PC Workstation

Workstation

Data Acquisition Unit

Alarm Signals

Plant Interface Processor

Logger Mode Signals

Mode Selection Signals

Rod Height Signals

Slack Chain Signals

Reactor Trip Signals

System Benefits

• Automatic data processing: The previous system involved laborious manual intervention to process & print the data charts. All data processing & chart printing is fully automated in the new system.
• Calibration facility: The system includes a calibration spreadsheet HMI to allow operators to calibrate the rod height data against actual rod height (conversion of pulse inputs into analogue rod height).
• Resolution: The system provides increased resolution & extended windows for the data charts. This enhances the data quality for ‘post trip’ analysis work.
• Chart Display: multi-line detailed charts showing 2secs before trip and 28secs afterwards.
• Security: User access is based on an ‘administrator controlled’ user privileges set-up.
• File management and archiving facility: offering user-friendly off-line storage of trip & calibration data).

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