Global Instrumentation and Control

Current Trace System

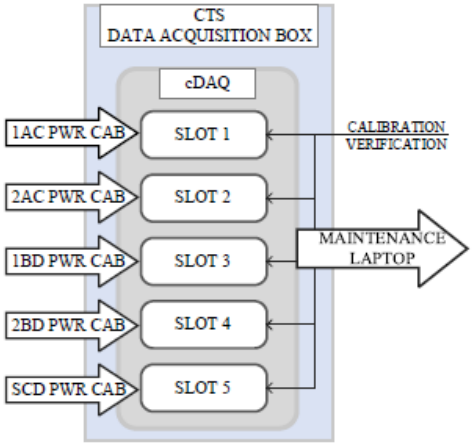
Background

All nuclear power plants with a Westinghouse designed Solid State Rod Control System (SSRCS) are required to capture current orders and coil current traces each outage in order to satisfy the requirements of TB-94-05. Westinghouse has developed a portable Current Trace System (CTS) which can capture the coil current traces taken as part of this testing. This system reduces critical path time during outages by allowing the simultaneous connection and recording of all banks in the system and by automatically analyzing the captured coil current traces for correct transition timing constants.

Description

Westinghouse now offers a portable CTS acquisition test box. The CTS reduces critical path time by automatically analyzing current trace data for all rods and displaying the results. The CTS utilizes NI data acquisition hardware and custom analysis/user interface software. The technology used in the CTS provides for:

- Easy transport of CTS data acquisition hardware
- Integrated field cables with cable storage space
- Connection to all rods at once which allows for one-time outage setup
- Automatic rod movement detection and evaluation
- Engagement glitch detection
- Realtime results and one click report generation
- Customers get the raw and calculated data in an open format for further data analysis if they prefer



Current Trace System Architecture

Benefits

Compact Design

The CTS hardware is fixed inside a compact, light-weight and durable Pelican case. The interface panel mounts the data acquisition hardware and takes up half the internal space in the box. The rest of the box space is reserved for cable storage when not in use or in transport. Trolley handle and wheels allow for easy movement of the CTS case.

Connection to all rods

CTS uses single ended cDAQ modules to connect to each SSRCS Power Cabinet in the plant. Each module maintains signal isolation from the other Power Cabinets and allows all rod test points to be acquired at the same time. If any rod group moves after initial hookup, the CTS is able to identify and log the rod movement. This eliminates the need to move test equipment between SSRCS Power Cabinets during Current Trace Testing.

Calibration Verification

In order to satisfy accurate Current Trace timing and amplitude measurements, the cDAQ and analog input modules must be within calibration. Calbration verification is built into the CTS. The interface panel is fitted with a BNC connection that can be connected to a function generator.

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The CTS passes a calibration signal to each cDAQ module and registers the signal for each module when timing or amplitude calibration verification is selected in the CTS Application and displays a pass or fail evaluation.

CTS is available as a standalone product or as a service utilizing Westinghouse equipment and personnel during an outage. As optional scope the CTS can be installed permanently in the plant allowing it to always be connected and minimizing setup time each outage.

Custom Cabling Included to Interface with A70 Test Panels in Power Cabinets

Current Trace System

Automatic Current Trace Analysis and Manual Review Capability

Current Trace System Case

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December 2021 / NA-0172