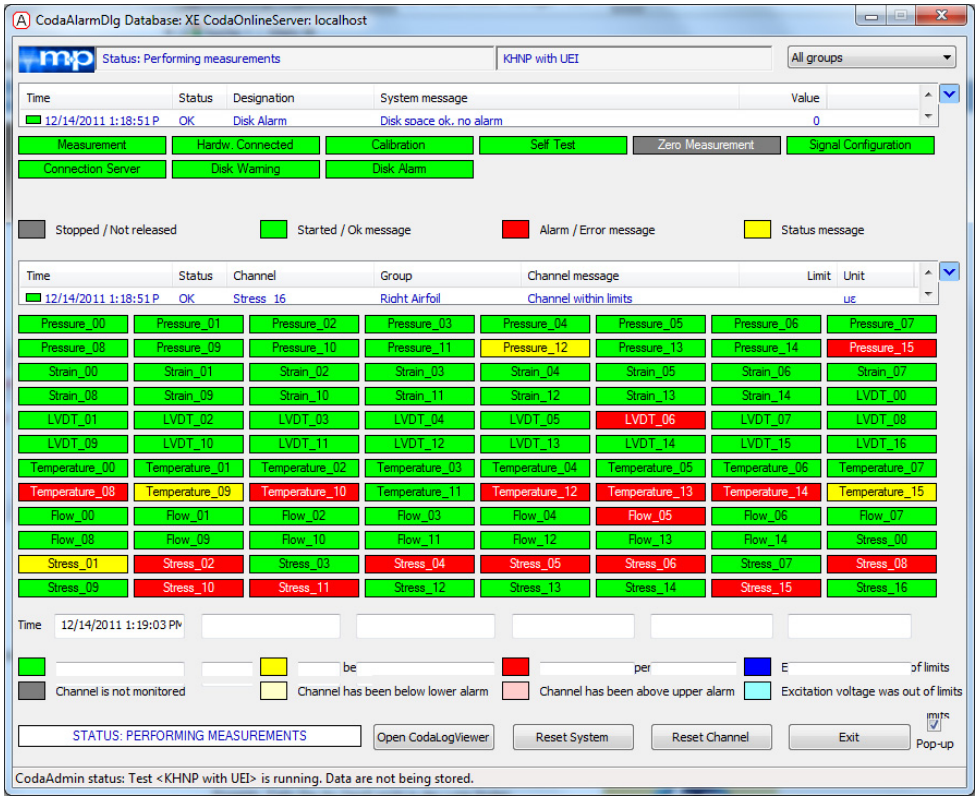
Application Note

Remote Monitoring of Piping Systems in Power Plant

Piping in nuclear power plants is exposed to severe environmental conditions. For safety rating it is mandatory to inspect the piping systems thoroughly. However, inspection of piping systems in nuclear power plants is not easy in practice because of their length and the radioactive environment.



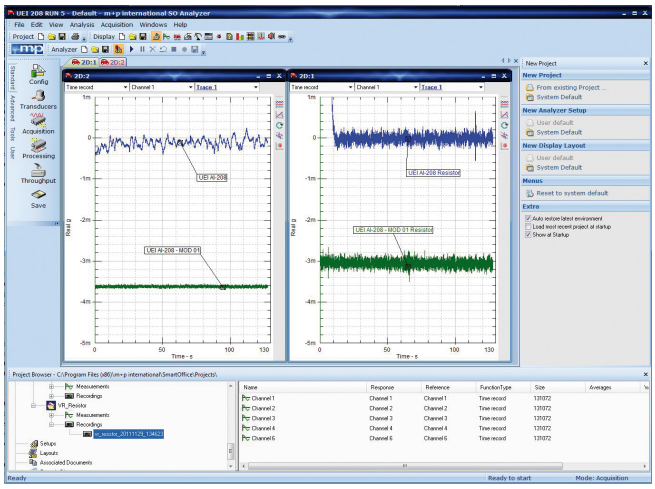
Korea Hydro & Nuclear Power selected m+p international's Coda data acquisition system for remote piping monitoring in real-time at their Wolsong Power Plant in Gyeongju, South Korea. The Coda system measures the static and dynamic data of all steel pipes throughout the plant: in the turbine room, in the reactor, etc. The networked monitoring system consists of the Coda acquisition software installed on a standard PC and DAQ instruments which are located directly at the pipes.

Coda supports more than 250 channels to measure the thermal expansion, temperature, pressure, vibration and weight of the pipes at Wolsong Power Plant. These measurements are taken by using thermocouples, LVDT (Linear Variable Differential Transformer) sensors, pressure transducers and strain gauge load cells.

Coda supports compact I/O chassis

The DAQ instruments at the pipes are Ethernet-based cube I/O chassis from United Electronic Industries. These very compact and rugged instruments are compatible with a wide variety of I/O boards for voltage input, current input, thermocouples, strain gauges, RVDT/LVDT, digital I/O, counter, etc. The boards can be installed in any combination. The seven DAQ instruments used at Wolsong Power Plant have slots for six I/O boards each. They support both ICP® signal conditioning and excitation voltage, thus being ideal for signal mixing.

The piping data monitored in real-time are exported to analysis packages such as the SO Analyzer e-Reporter from m+p international or Microsoft Excel for comprehensive analysis and reporting. The ultimate step is using the SO Analyzer e-Reporter. It provides test engineers with extensive capabilities for browsing, viewing, editing, analyzing and reporting data as well as with full ActiveX compliance.



Sophisticated analysis and reporting using m+p's SO Analyzer e-Reporter software

Coda is a full-featured turnkey software platform for data acquisition, signal analysis and process monitoring from tens to thousands of input channels. The intuitive graphical user interface facilitates set-up, operation and analysis, thus leading to precise, repeatable results quickly. The interface queries the DAQ instruments and preloads information regarding specific parameters such as channel count, gain ranges, filter selections and sample rates.

The extensive built-in features and tools offer a functionality that was previously available only in custom packages. These features include intuitive configuration tools, user-definable channel groups, automatic instrument identification, real-time alarm monitoring and limit checking, sophisticated data interpretation and display, online graphical data analysis and comprehensive visualization.

The client/server architecture allows shared use of the acquired data, enabling several test engineers to have concurrent online access for data display and analysis operations.

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