

Application Note

Mobile Data Acquisition System for Turbomachinery Testing

Siemens AG is a global powerhouse in electronics and electrical engineering, operating in the industry, energy and healthcare sectors. Siemens Energy Sector offers a unique range of turbomachines to meet the needs of different industries such as power plants, oil and gas, chemicals, air separation, metals or water and waste water treatment.



Turbomachinery test facility at Siemens, Duisburg/Germany

At its turbomachinery test facility in Duisburg/Germany, Siemens has been successfully utilizing a range of m+p international's Coda systems for continuous data acquisition, data processing and real-time monitoring for several years.

Sometimes Siemens engineers have to maintain the turbomachines at customers' sites throughout the world. For this purpose, Siemens commissioned m+p international to design a mobile data acquisition unit for on-site testing. This mobile Coda system supports 96 channels to measure temperatures, pressures, flows and strains. It consists of a 19" rackmount case, a VXIbus mainframe and the signal conditioning units. Operation is done via an external laptop which will be connected via CAT-5 and fiber optics cables.

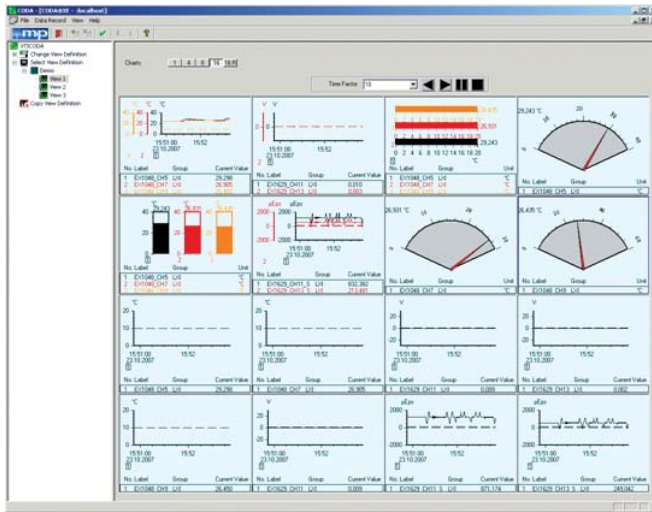


96-channel Coda system in a 19" rackmount case

The stationary Coda data acquisition units are used at Siemens' test facilities including the mega test center in Duisburg. They acquire and verify not only the performance data and thermodynamic parameters but also the vibration data of turbocompressors. Several compressors are tested in parallel for acceptance tests. A single stationary data acquisition unit acquires up to 168 process signals and 48 vibration signals.

Coda is a flexible and easy-to-use turnkey software that delivers precise, repeatable results. Complete turnkey operation provides quicker time to test by eliminating costly application programming and long learning curves. The intuitive GUI provides easy and fast set-up, operation

and analysis, leading to high-quality results quickly. The interface queries the data acquisition hardware and preloads information regarding specific parameters such as channel count, gain ranges, filter selections and sample rates.



Coda channel display

The Coda software has extensive built-in features and tools, thus offering 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 graphical interface can be freely designed for real-time measurement and visualization. As with the online data analysis, the measured values can be graphically displayed in a y/t- or y/x-diagram, as bar chart, tachometer, waterfall, FFT, PSD or digital numbers by a simple mouse click.

The client/server architecture allows shared use of acquired data, enabling several test engineers to have concurrent online access for data display and analysis operations under Microsoft Windows XP. All configuration data is stored in a central SQL database enabling the user to easily change the complete set-up.

Coda supports a variety of real-time mathematical functions. The resultant channels can be treated like other measured channels for analysis and reporting purposes. The easy-to-use data replay function with adjustable forward and reverse allows to review events without affecting the live acquisition process. For post-test analysis, data can also be exported into applications such as Microsoft Excel and MATLAB.