APPLICATION NOTE

CAS DATALOGGERS

Shaker Table Vibration Testing With a DAQ System

Delphin Provides All Test Stand Functions Within a Single System

Vibration tests are often required during new product development. This involves securing the product to a shaker and then shaking according to set standards. Vibration measurements are taken both at the shaker itself as well as at the test sample. In this brief applications example, CAS DataLoggers shows how Delphin Expert Vibro Data Acquisition and Control systems are complete solutions which handle the necessary measurement acquisition and subsequent evaluation during shaker table vibration testing.

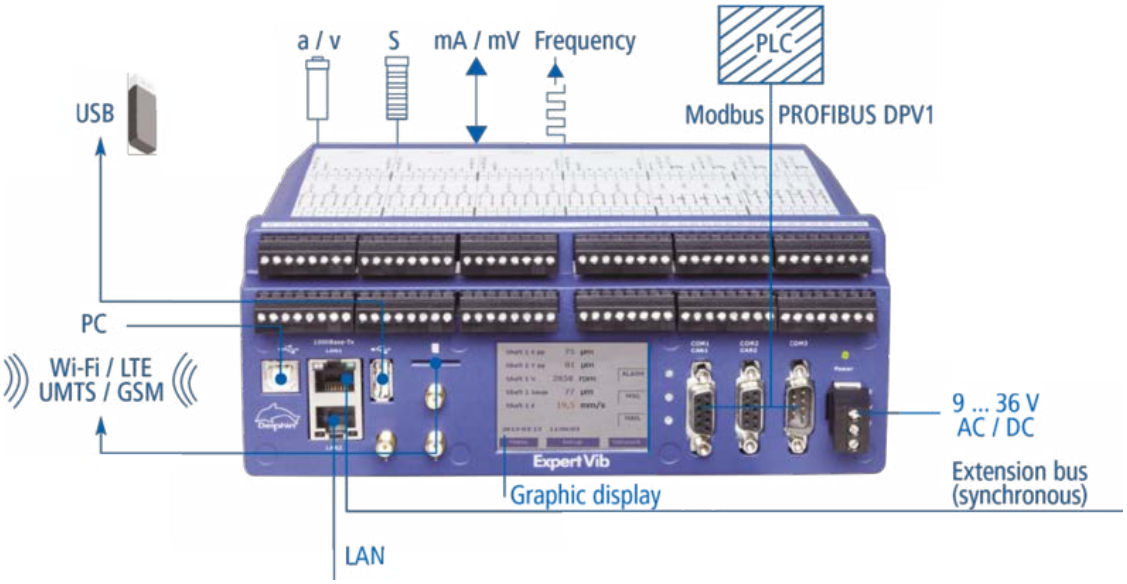
Vibration Monitoring

Vibration patterns in the test sample are evaluated by comparing them to the excitation signals generated by the shaker table. This requires the measurement of time domain signals, frequency domain signals, calculations of phase shifts and gains in amplitudes. In these applications, FFTs and other real-time processing calculation are required. All of these are realized within the hardware of the Expert Vibro.

Compact Single Solution

The Delphin Expert Vibro is especially suited to these shaker table vibration testing applications. The system's eight or sixteen synchronous inputs allow all the required measurements to be acquired. The device can also simultaneously control the shaker and provide the set-point values. The device's digital outputs monitor characteristic values and are also used for shutting down the test stand in the event of an unsafe or out of tolerance condition.

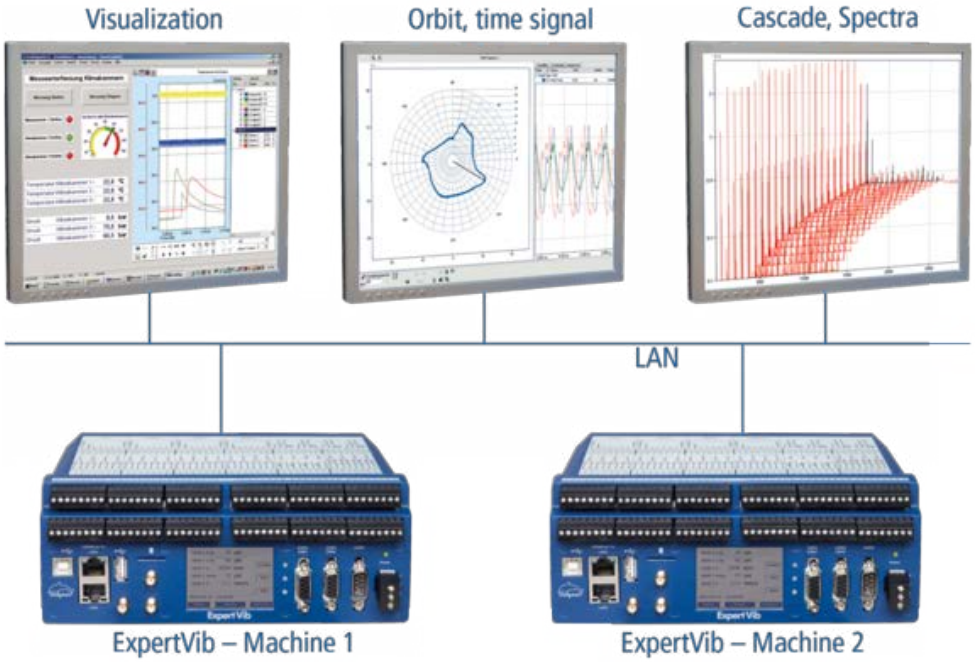
This system uses the latest processor technology, based on powerful FPGAs, enabling 16 synchronous channels to be processed at high sampling rates in a compact package. 24-Bit A/D converters ensure high-precision measurements. Each channel can be user configured to accept voltage or current measurements, direct input of IEPE vibration or acoustic sensors or shaft vibration sensors. Integrated comparators and digital inputs allow flexible triggering including keyphasors. Measurement data is monitored "on the fly" with digital outputs being switched within microsecondss in the event of limit value violations.



Application Example

A manufacturer of cooling and air-conditioning equipment currently uses an Expert Vibro device for shaker table vibration testing in their research and development work. Multiple synchronous velocity signals are recorded with the data then being evaluated using Delphin ProfiSignal software. There the information can be clearly portrayed in bode diagrams, FFT spectrums or time-signal trends. Raw data can be exported into other analysis programs for more detailed evaluation.

As a complete test solution, the Expert Vibro provides all the functions required for a test stand within a single system. Visualization and operation take place via different screens within Profisignal. Users can also opt for the ProfiSignal Klicks for automating procedures and for producing reports. Users can then create customized measurement procedures for product development and inspection tests for production.



Professional Measurement Technology

Delphin Expert Vibro systems can be used for local data acquisition and logging when connected to a PC; for remote unattended data collection connected to a LAN or the internet; or as stand-alone condition monitoring solutions.

For further information on Delphin Expert Vibro Systems, shaker table vibration testing, or to find the ideal solution for your application-specific needs, contact a CAS Data Logger Application Specialist at **(800) 956-4437** or www.DataLoggerInc.com.