

m+p international Newsletter 4/2009

4 September 2009

Welcome to our latest Newsletter about the Vibration & Environmental test world in addition to the latest information from m+p international.

The m+p international Newsletter is circulated exclusively to test engineers and managers involved in vibration test, data acquisition and signal analysis and hopes to bring you some useful technical snippets gleaned from around the world and from around the test and measurement industry. We always look forward to your inputs, send us your views to newsletter@mpihome.com.

A rectangular logo with a blue background and white text that reads 'ISO 9001 CERTIFIED'.

In this Issue:

1. [Continuous Data Acquisition and Real-Time Monitoring of Turbo Compressors](#)
2. [Using the ODS Wizard to Animate Vibration Test Results](#)
3. [Road Load Simulation](#)
4. [m+p international Certified to ISO 9001:2008](#)
5. [Happy Birthday m+p international Ltd.!](#)
6. [Dates for Your Diary](#)
7. [Thought for the Day](#)

1. Continuous Data Acquisition and Real-Time Monitoring of Turbo Compressors

Siemens, Germany, utilizes m+p international's [Coda](#) solution for continuous data acquisition, data processing and real-time monitoring at their turbo compressor test facility. Coda acquires and verifies the performance data as mechanical and thermodynamical parameters of several compressors tested in parallel for acceptance tests. In addition, vibration data is acquired and analyzed.



Measurement and analysis of process data, thermodynamical parameters and vibrations

Parts of the existing data acquisition and processing system formerly used at the Siemens test facility were integrated into the Coda solution. Third-party measurement equipment such as multi-channel pressure scanning systems, mass spectrometers or FFT analyzers can be connected via a communication interface for integration with the Coda data acquisition system. All these instruments are configured within the Coda user interface and all data is analyzed and visualized in the same way – irrespective of the source.

Any combination of up to 24 different sensors can be connected to the signal conditioning devices to measure temperature, pressure, flow, strain, rotation and vibration signals. A single Coda unit acquires up to 168 process signals and 48 vibration signals.

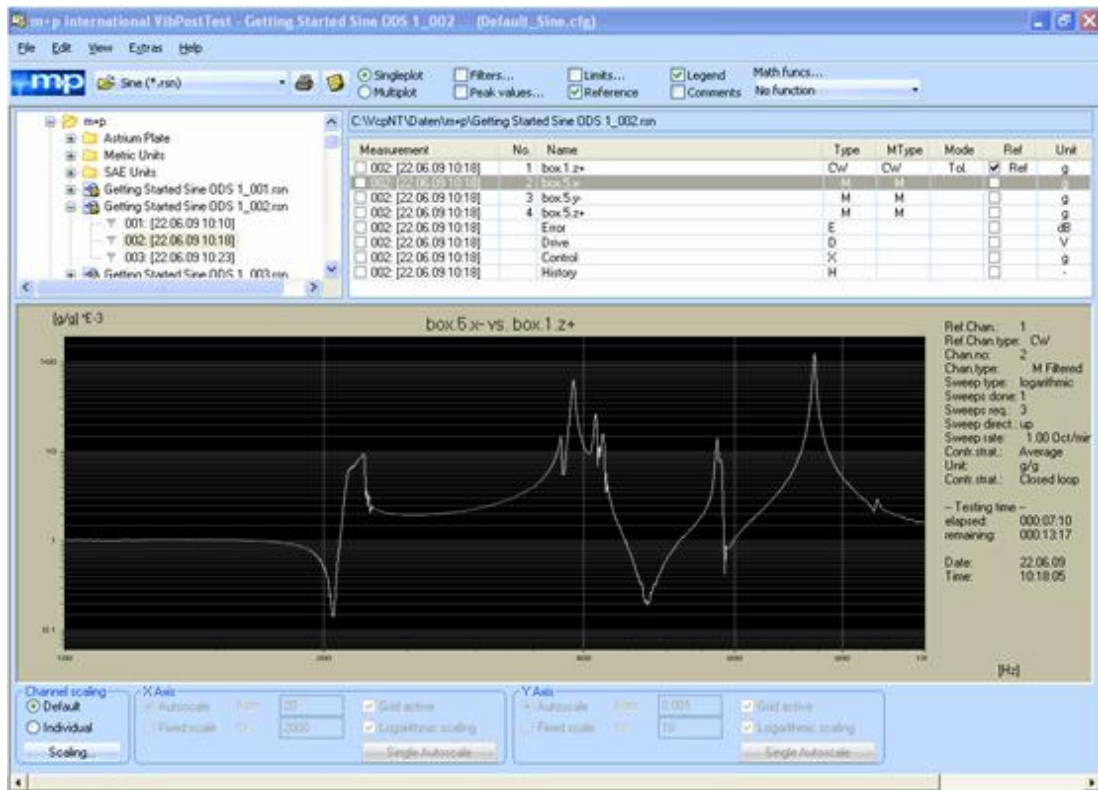
Please read more in our [2-page application note](#).



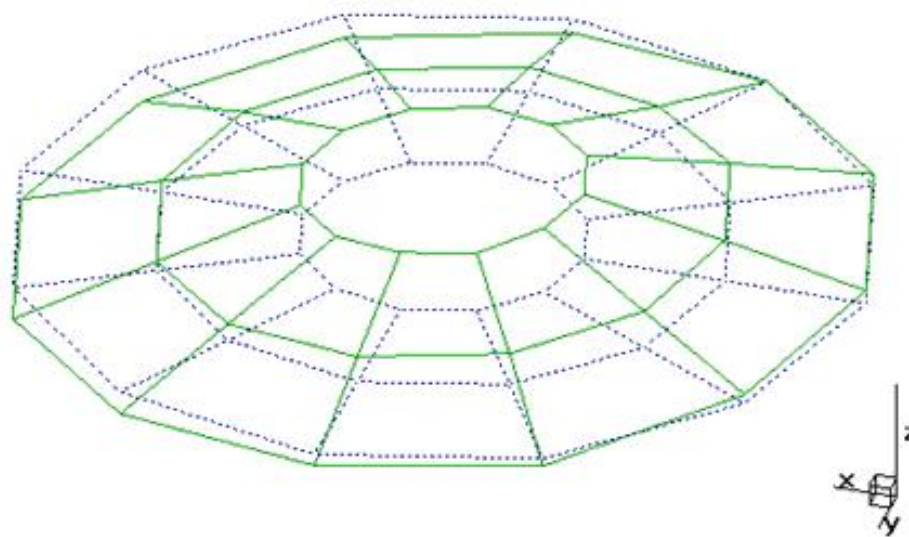
2. Using the ODS Wizard to Animate Vibration Test Results

Are you making best use of your shaker test data to show the structure's overall motion to your customer? See below for how to replace the once common place strobe but without the limitations.

m+p's vibration controllers produce frequency response plots which can be used to identify the response at accelerometer locations.



Did you know that the response data can be used to animate the structures overall motion? Here's an example showing how a circular plate exhibits a 'dishing' mode at 557Hz:



This example is displayed statically whereas, on the screen, we see a moving image which can be panned, zoomed and rotated.

Why are animations useful? They help the engineer understand the structural dynamics which give rise to a vibration problem and guide the development of efficient engineering solutions. In this example, if we wanted to 'tune' the frequency using mass, stiffening or damping it would be most efficient to apply it towards the centre where the higher motion occurs.

This data could also be used for qualification and correlation of finite element models.

Animating the response from a shaker is referred to as an ODS (Operating Deflection Shape),

not to be confused with a modal test which not only produces animations but also generates a mathematical test model by least-squares curve fitting of the inertance (acceleration/force) data. The ODS is the modern equivalent of testing with a strobe light. It takes a bit longer to set up but the information produced is more comprehensive and more suitable for both reporting and archiving.

We collect the data using the vibration controller and then use SO Analyzer to generate the frequency response functions, create the geometry and animate the shapes. These are the 5 basic steps:

1. Measure data during a controlled vibration test
2. Import the data into SO Analyzer
3. Convert the data into frequency response functions
4. Create the geometry
5. Run the ODS Wizard to generate animations

For a complete "How to" guide download the following document: <http://www.mpihome.com/TECHNOTE/ODS.pdf>. To learn more about this and other techniques available in [SO Analyzer](#) or any of our products please call us on (+1) 973 239 3005 or email sales.na@mpihome.com.



3. Road Load Simulation

A technique which allows to reproduce any arbitrary waveform recorded from the test track on the shaker table. Applications include durability testing of car radios, ECU, light unit, seatbelt, truck brake, radiator, and F1 racing.

m+p international's VibControl road load simulation software provides unlimited time data replication with real-time control. It has two important steps. First is the ultra-flexible editor which enables the import of almost any raw data signal, including RPC3, WAV and ASCII, that can then be viewed in acceleration, velocity, displacement or spectra graphs. VibControl is able to deal with very large sample files and any sample frequency. The second step is the test phase: Using highly advanced, continuous update control loops and the intuitive user interface, control is set up simply and applied with speed and finesse.

Where many road surfaces are combined in complex sequences for long-term durability testing, VibControl can easily combine individual tests in any complexity of nested loops.

The road load simulation software is fully compatible with VibControl's other vibration test modes, such as random, sine, shock, SRS and mixed mode

Please read more in the [1-page article](#) published in the June issue of the Automotive Testing Technology International magazine.



4. m+p international Certified to ISO 9001:2008

m+p international has been certified to ISO 9001:2008 that replaces the former ISO 9001:2000 standard to which our company had been certified since 2003. The certification is applicable to development, production and sales of systems and test stands for vibration control, signal

analysis, process monitoring and emission testing.

ISO 9001:2008 is the standard that provides a set of standardized requirements for a quality management system, thus ensuring the basic conditions to make high-quality products and services possible. This quality process is essential for us to keep you, our customer, satisfied.



5. Happy Birthday m+p international Ltd.!

Ten years ago m+p international Ltd. in Farnham, England, was started to market our test and measurement systems for vibration control, dynamical signal analysis and data acquisition in the United Kingdom. In the last ten years the m+p international staff is proud of their reputation in the world of vibration and environmental testing thanks to the quality of their solutions, the close co-operation with the customers, strong technical relationships with their vendors and most of all reliable customer support. Many companies in aerospace, automotive, electronics and numerous other technology industries are satisfied customers and many with multiple systems.

The employees of m+p international Ltd. extend a special thank you to all their customers for the opportunity and trust they bestowed on them and are looking forward to working with them in the future.



6. Dates for Your Diary

Do you need to do more with less, need combined vibration controller and analyzer solution, cost-effective, turnkey data acquisition? Then visit us at the following exhibitions:

- **AERO & DEFENSE TEST 2009**
Sept. 29, 30 & Oct. 1
Baltimore Convention Center,
Inner Harbor, Baltimore, MD
Booth # 555
- **Aerospace Testing Seminar Vendors**
Oct. 13-15, 2009
Manhattan Beach, CA
- **80th Shock and Vibration Symposium**
October 25-29, 2009
San Diego, California

We would be pleased to see you there.

For more information please contact: sales.na@mpihome.com



7. Thought for the Day

"Not everything that counts can be counted, and not everything that can be counted counts."
– Albert Einstein

Well, that brings to a close this edition of the m+p international Newsletter. If there are items of info you would like to see here or if you have useful tips for the rest of the environmental test world, then please [send us your pointers](#) and we'll include them in the next edition.

Please forward this Newsletter to your colleagues if you have found it of interest, spread the word...

With regards,
m+p international Marketing Team

www.mpihome.com

m+p international listens to customers...