

m+p international Newsletter 3/2010

16 June 2010

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.



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1. Safe Vibration Testing with m+p VibControl Software

Vibration testing, when performed correctly, is a valuable tool in any test laboratory or production line. The key to successful testing is in understanding how the whole system is working and one key element of this is how the VibControl software creates a safer vibration test environment. We have all been there as test engineers, ready to push the 'go' button; however, there are always the doubts in the back of our minds like:

- Are the accelerometer sensitivities correct?
- Are the cables OK?
- Is the test specification correct?
- Is the payload attached to the shaker correctly?
- Is my fixture fit for purpose?
- Do I have enough force in my shaker?

The list goes on and the panic increases, however the VibControl self-check will help catch many of these potential problems before proceeding with the full test.

Many customers ask 'Why do we have to perform a self-check every time?' Well, the simple answer is safety!

To learn more about the self-check feature, please read the article [“Safe Vibration Testing with m+p VibControl Software”](#).

For more information about this article, our products or to arrange a demonstration please contact us at (+1) 973 239 3005 or sales.na@mpihome.com.

2. New Advanced Control Methods for Vibration Control

Always striving to be a leader in the aerospace and defence testing m+p international recently added a number of new control capabilities to its industry accepted [VibControl software](#). These new features are supported on both VXI hardware and m+p’s VibPilot measurement system.

- **Predictive Advanced Sine Notching:**

New notching utilizes existing data to predefine an adjusted notch profile to reduce or eliminate overshoot.

- **RSS Vector Notching:**

By calculating the non-axial vector amplitude the damage to critical parts can be reduced.

- **Summed Force Notching:**

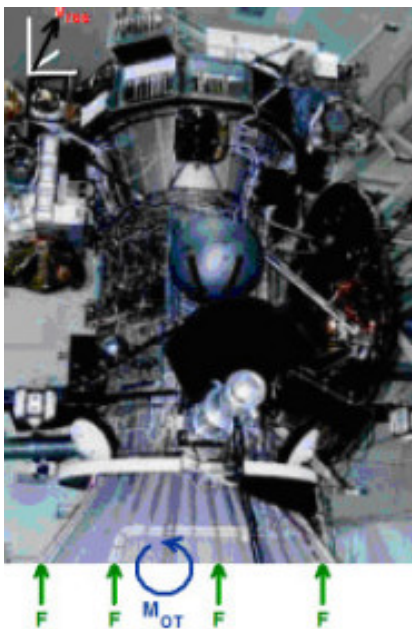
Force transducers can be summed digitally to eliminate the need for an external summing junctions as well as to ensure all transducers are within limits.

- **Overtuning Moment Control:**

Utilizing force transducers and the X, Y coordinates the total overturning moment vector is calculated and notched on.

- **Time Domain Storage:**

With the new VibExec hardware and software time domain data can be streamed to a SCSI disc while retaining full control of the vibration test. Streaming data is taken at sampling rate independent of control requirements.



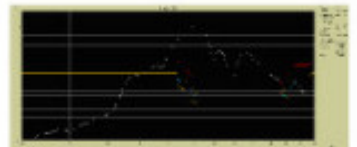
RSS Vector Notching

$$g_{RSS} = \sqrt{g_x^2 + g_y^2 + g_z^2}$$



Summed Force Notching

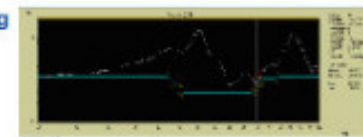
$$F_{sum} = F_1 + F_2 + F_3 + \dots + F_{20}$$



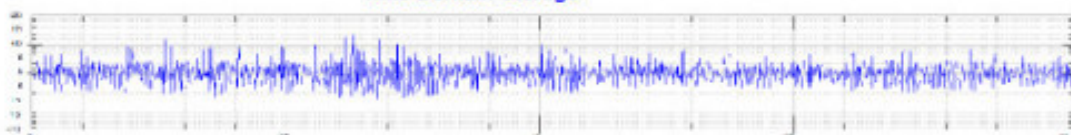
Overtuning Moment Notching

$$M_x = \sum Fz_i dy_i, \quad M_y = \sum Fz_i dx_i$$

$$M_{OT} = \sqrt{M_x^2 + M_y^2}$$



Time Domain Storage



3. Full Vehicle NVH Simulator

Subjective evaluations of cars can be inconsistent, time consuming and labor intensive, even when the most experienced NVH and Ride & Handling engineers participate.

Please read the Application Note "[Closing the NVH Loop](#)" which demonstrates the feasibility of replacing the engineers' traditional subjective evaluations with an "intelligent" system that automates the data acquisition, numerical processing, reporting and management of data. The end result is a rigorous, repeatable and reproducible process which can be operated by non-experts.

The application described uses a full vehicle NVH simulator and m+p international's innovative software with the latest acquisition hardware to acquire, analyse and report comprehensive NVH data including structural and acoustic analysis.

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...

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