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2, 3, 4 February 2010

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TECHNOLOGY WORKSHOP PROGRAMME

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HIGHLY FOCUSED TECHNOLOGY WORKSHOP PROGRAMME

Tuesday 2 February 2010

10.30 – 11.30 Hardware-in-the-loop system requirements

for hybrid powertrain control

ETAS Automotive India Private Ltd, Srikanthan Krishnan

Hybrid powertrains not only attract high component costs, but also elevated development costs, which are a result of the significant increase in system complexity. In order to successfully explore, implement and validate advanced control strategies, handle system complexity and avoid expensive iterations in the development process, the deployment of state-of-the-art development tools is mandatory.

Hardware-in-the-loop (HiL) systems have played an essential role in the development of ECUs (electronic control units) for conventional internal combustion engines. The presentation provides an overview of current trends and benefits of HiL systems for developing electric powertrains, with a specific focus on hybrid technology. Coverage is also given to real-time simulation of hybrid powertrain including e-motor and battery.

12.00 – 13.00 Microflown PU probes for both acoustic near field far and acoustic far field sound source localization

Adams Technologies Private Limited, Mr. Andrea Grosso – NVH application engineer

Any sound field is described by both its scalar value sound pressure and its 3 D vector value acoustic particle velocity. With the Microflown sensor, acoustic particle velocity has become a directly measurable quantity. The possibility to measure directly acoustic particle velocity enables major improvements in sound source localization techniques, both in the acoustic near field and in the acoustic far field. In the acoustic near field, the direct measurement of both sound pressure and acoustic particle velocity with so called PU probes offers an alternative to acoustic holography, where sheer sound pressure based measurements at a certain distance from the test object are used to compute the sound pressure and the particle velocity at the very surface itself. For sound source localization in the acoustic far field, the very same PU probes can be considered as acoustic vector sensors that offer an alternative to sheer sound pressure based beam forming. Whereas beam forming uses only the phase information of the sound field, acoustic vector sensors also capture amplitude information of the sound field. The theoretical concept of acoustic particle velocity enabled testing techniques will be discussed, and some examples of both near field and far field sound source localization testing results will be presented.

14.00 – 15.00 A strategic plan to meet the conflicting demands of high availability of test equipment and cost efficiency

Smart Electronic Development GmbH, Richard Bronold – sales manager

Advanced control units in modern vehicles require real signals from connected sensors and actuators to achieve their normal operating status. If a control unit does not receive any useful input signals it switches to emergency operation. For the development and testing of control units, this means that the necessary sensors either have to be available or simulated. However, real sensors only represent 'Go' situations and it is therefore not easy to conduct marginal checks or fault testing.

Sensor simulation makes it possible to perform marginal checks and fault testing on control units. Simulation can be implemented by employing standard techniques such as function generators. This standard simulation method is, however, not adequate for dealing with complex signals from the connected sensors, as is the case with wheel speed signals for example.

The advantage of using wheel speed sensor simulation for the development or testing of application software is that it permits the simulation of limit values and faults in addition to 'Go' situations. The purpose of this presentation is to outline the options available and the resultant user benefits. This includes a description of the standard sensors (of type DF11 and sensors with VDA standardised data protocol) and their various data protocols as well as the corresponding simulation. The presentation is rounded off by practical examples such as utilisation on an automobile manufacturer's vibration test bench or the use of wheel speed simulation in control unit testing (e.g. ABS, ESP).

15.30 – 16.30 Testing networked ECUs right at the developer's workbench

Vector Informatik India Private Ltd, Lokesh Madan – managing director

Electronics and software have become indispensable components in the automobile. Therefore, verification of development results not only covers the mechanical systems, but to a large extent the electronic ECUs and their software as well. The complexity of heavily networked systems places high requirements on the test process and the test tools used. Systematic and comprehensive tests are necessary in all development phases.

The presentation will give an overview of the challenges of testing during the ECU development process. Furthermore, the audience can participate in discussion of best-practice examples of functional testing of automotive ECUs during early development phases.

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10.30 – 11.30 Noise mapping and sound quantification using spherical array

LMS International, Filip Deblauwe – business development manager NVH Structures & Acoustics

Despite the reliability of the classical transfer path analysis (TPA), it has some disadvantages, the main one being the large measurement efforts. Due to this, a number of different alternative approaches have been proposed in recent years, which aim at reducing measurement time by relying more on operational data. But these often suffer from significant limitations. Therefore a new TPA method was proposed which overcomes these limitations but at the same time still requires less measurement time than TPA. It is a combined operational-experimental approach: besides the operational data, reciprocally measured noise transfer functions are also used. The main idea is to estimate a mount stiffness model instead of estimating the forces directly. The advantage of such an approach is that less data is needed to build up the TPA model, since only a few parameters are used to describe the mount in the whole frequency range as opposed to the traditional inverse force identification method, where the parameter estimation has to be done separately for each frequency line, requiring a much larger amount of data. This makes the new method more robust, faster and scalable, enabling the engineer to use a smaller amount of measurement data for quick troubleshooting.

In this paper, first the basics of the method will be introduced and the different mount models explained. Then a few validation cases will be presented showing the reliability of this new approach.

12.00 – 13.00 Improving quality and reducing cost

Signallink, Dr Choi

As a maker of general and specific turnkey testing analysers, Signallink-Romax's various quality testing methods and solutions for the gearbox systems such as transmissions, axles and transfers, etc. will be introduced, and a special gearbox end-of-line noise test system for gear machining or assembly quality test in the production lines will be demonstrated. It has powerful features of pinpointing the defect types and location, which help the customers to make repairs. Signallink-Romax's turnkey testing solutions can contribute to improving the quality and reducing the cost with a straightforward method.

14.00 – 15.00 Cost-effective method for gearbox whine noise improvement via full system NVH simulation

Romax Technology, Won Shin – engineering manager

Test-based whine noise improvement is usually time and money consuming and only provides a partial solution, rather than a globally optimised solution for overall operating conditions. Solutions using component-level simulation, such as an analysis of the gear in isolation, are often misleading because system influence is not considered. It is extremely challenging in time and skill to build and analyse a full transmission model in FEA, hence it is not a practical approach.

Romax Technology suggests an alternative method of designing quiet transmission in a cost-effective way using Romax NVH. A case study of the world-leading company's whine troubleshooting is also presented.

15.30 – 16.30 Accelerated vehicle development methods

MTS Systems, Steven Haeg – principal staff design engineer

Economic pressures in today's worldwide economy continue to emphasise the need for rapid vehicle development. This presentation will examine the vehicle development cycle from concept to final product, and discuss available tools for success in this process. Highlights and examples will be provided for the critical steps that combine analytical and physical test techniques.

Thursday 4 February 2010

10.30hrs – 11.30hrs Enhanced quality, reliability and efficiency of vehicles and components by laser vibrometer measurements

Polytec GmbH, Dr George Wirth

Laser vibrometers enable a wide range of applications in NVH, modal analysis and reliability enhancements for the automotive industry. In contrast with traditional transducers like accelerometers, Laser Vibrometers permit non-contact measurement at a large number of measurement locations within a short setup time, without the need for connecting, positioning and cabling transducers at each measurement location. Due to the non-contact and thus reactionless measurement principle by laser light, various measurement tasks can be solved that are not feasible by using traditional transducers. Within the presentation the measurement principle of laser vibrometers is introduced and the different measurement capabilities are described. At the example of some typical and enhanced automotive applications, the wide range of applications in the automotive industry is presented.

12.00hrs – 13.00hrs Low-cost experimentation with FlexRay

Intrepid Control Systems, Dave Robins – president

FlexRay is already making its presence felt in the automotive arena, and this is bound to grow. The presentation will focus on FlexRay technology and how developments in FlexRay can be done without large-scale investments in hardware and software. The presentation will discuss how such technology can be still be leveraged for cost-sensitive markets by providing a unique development environment and platform.

EXHIBITOR LIST (AS OF 9.12.2009)

A&D Technologies	4000	Kristl & Seibt GmbH	4000
ABS Instruments Pvt Ltd	2045	LEMO	5045
Accurate Technologies Inc	5025	LMS International	1000
Adams Technologies Pvt Limited	4030	Luminys	6010
Agilent Technologies India	6025	Magtrol India	2050
Aimil Ltd	1015	MAHA AIP GmbH & Co KG	3020
Alfautomazione SpA	5020	Matter Engineering	4000
Anthony Best Dynamics	4000	Mechanical Simulation Corporation	2025
AOS Technologies AG	3015	MICRO-EPSILON Messtechnik GmbH	3015
API Com SRL	2010	Micrologic Integrated Systems Pvt Ltd	3030
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Automotive Testing Expo	1045	Minitab Inc	2065
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BEDA Flow Systems Pvt. Ltd	3040	MTS Systems Corp	5005
BISS Research	2055	Mustang Dynamometer	3000
Blue Star India	2070	NI Systems India Pvt Ltd	5040
Burke E Porter Machinery Co Ltd	4000	OPAL - RT	3045
Cambustion Ltd	4000	Orion Test Systems & Engineering Inc	6015
CFM Schiller GmbH	5035	ORME	4060
Chart Chambers	4065	Oxford Technical Solutions	4000
Cincinnati Sub-Zero Inc	4065	Panatech Asia	6010
CM EnviroSystems Pvt Ltd	3010	PCB Piezotronics	4025
Cold Testing Lapland	4005	Petrochem Carless Ltd	1035
Corrsys Datron Sensorsysteme GmbH	4000	Pickering Interfaces	5020
Data Physica Corp	3070	Polytec GmbH	6027
Diversified Technical Systems	5000	PT Instruments Pvt Ltd	5045
Ducom Instruments Pvt Ltd	2040	Q-Lab Corporation	4040
DVS India	5020	Reckers Control India Pvt Ltd	6005
Dynamic Testing Systems	4025	Reich Kupplungen	2030
Dynaspede Integrated Systems Pvt Ltd	6030	Reilhofer KG	1015
EASi	2025	Renk Test System GmbH	5010
ECON Technologies Co Ltd	2020	Romax Solutions Pvt Ltd	6020
ETAS Automotive India Ltd	4010	RUMUL	2045
Fabreeka GmbH Deutschland	3050	S A M Technologies	4065
FAIST Anlagenbau GmbH	4020	SAJ Test Plant Private Ltd	5010
FEV India Pvt Ltd	2000	samtec automotive software & electronics GmbH	3075
Froude Hofmann Ltd	4045	Saraswati Dynamics Pvt Ltd	4070
Gebr. Liebisch GmbH	4065	Sciometric Instruments Inc	2035
Geo Informatics Consultants Pvt Ltd	1030	Seattle Safety	5000
Head Acoustics GmbH	1010	SERP Auto Testing Equipment	5060
Horiba India Pvt Ltd	6000	Simtec GmbH	2025
Hottinger Baldwin Messtechnik GmbH	3005	SITIA TEST BENCHES	5000
Imatek	2045	Smart Electronic Development GmbH	5050
imc Berlin GmbH	4000	Southern Hemisphere Proving Ground (SHPG)	1025
Integrated Process Systems	3015	Structural Solutions Private Limited	4025
Intertek India Private Ltd	1005	Tesscorn Systems India Pvt Ltd	5000
Intrepid Control Systems, Inc	4015	The Modal Shop	4025
IPETRONIK - Maxsoft India	4075	TmcSolution China	5015
Isaac Instruments	3065	Vector Informatik GmbH	3025
JA - Gastechology GmbH	5070	Vibrotech Instruments Pvt Ltd	6027
Kapolnek Gmb	3055	Walter+Bai	2045
KARA Industrial Services GmbH	5030	Weiss Umwelttechnik GmbH	4025
Kistler Instruments (PTE) Ltd	4050	Young Calibration Limited	5065
KMT - Kraus Messtechnik & Telemetrie	3015	Zen Microsystems	2060
KNR Systems Inc	3035		

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CONTACT DETAILS:

AUTOMOTIVE TESTING EXPO INDIA 2010,

Sumit Berry, head of marketing
& customer support - India

UKIP Media & Events (India)

2nd Floor, Elegance, Jasola District Centre,
Old Mathura Road, New Delhi

Tel: +91 991 0474 717

Email: s.berry@ukintpress.com

EXHIBITION OPENING TIMES

2 February 10.00hrs – 17.30hrs

3 February 10.00hrs – 17.30hrs

4 February 10.00hrs – 15.00hrs

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