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HORIBA OBS-2200
on the road



No. 7: the route under investigation

Next Stop: Cleaner City Center

Advanced research project collects emissions data of entire bus fleet

Just as organic structures, the flowing traffic system keeps the pulsating city alive. But rising exhaust gas pollutions and congested streets strain this system increasingly. In order to avoid a gridlock and to reduce urban emissions in a sustainable manner, a scientifically based research project of the Brighton & Hove Buses in cooperation with the global engineering and environmental consultancy Ricardo and the measurement experts from HORIBA just started in Brighton, United Kingdom. The joint project aims to investigate the real road emissions of an entire bus fleet.

Data collected on the real road proves much more significant than any results gained under optimized conditions in a laboratory based test. Brighton & Hove Buses, Ricardo and HORIBA set out to understand the actual real fuel consumption and emissions to process the real data in order to achieve real improvements culminating in future exhaust gas regulation systems. HORIBA's contribution to the project embraces the supply of Portable Emission Measurement System (OBS-2200) Analyser, installation, commissioning as well as intense on-site support and training of Ricardo engineers regarding operation and maintenance of HORIBA's analyser.

The heart of the project is HORIBA's on-board measurement system OBS-2200, which is capable of analyzing emissions of small to large buses, trucks, passenger cars and non-road mobile machinery. The system comprises two state-of-the-art technologies: a wet based measurement and an exhaust flow meter. The patented NDIR wet based measurement requires no correction for dry to wet measurement. Additionally, there is no need for a chiller to extract water content. In this way OBS-2200 avoids complicated correction calculations and reduces power consumption of the system. The second highlight – an exhaust flow meter – contains high speed response transducers that are also patented by HORIBA. Eight optional attachments cover exhaust flows ranging from 0-1 m³ to 0-65 m³ depending on the size of the engine and the diameter of the exhaust tailpipe.

The technology's proven reliability, robustness and stability allows exact measurements at ambient temperatures between 0°C and 40°C, humidity less than 80 % and altitudes up to 1500 m. Due to purpose built vibration absorbing base plate, the system is stable even on rough road conditions.

Equipped with the OBS-2200, the Euro IV, Euro V and Euro V Hybrid buses under investigation hit

the road. In order to simulate everyday usage as realistic as possible, the buses are loaded with ballast to replicate typical passenger occupancy of 25%. Currently, the route under investigation is No.7, leading through urban areas, passing schools, hospitals, markets as well as the town center and train station of the famous coastal resort in southern England. Continuously changing drivers account for different driving patterns such as aggressive, normal and particularly cautious. The approach allows evaluation of the specific fuel consumption and emissions resulting from variation in driving styles as well as determination of an average value. Like the nervous system, the sensors of the OBS-2200 transmit their information of altitude, longitude, latitude, vehicle speed using GPS (Global Positioning System) to a control centre where it is collated with the analyser's measured emissions concentration data. Ricardo and HORIBA then process this flood of information to mathematically establish emission values for the combined fleet and present the final results to local council in detail.

Brighton & Hove Buses use the data to understand the impact of public transportation on local communities and retrofit after treatment technologies that reduce the emissions. B&H Bus Company is

committed to reduce combined fleet carbon footprint and is willing to invest in future technologies such as after treatment systems to reduce combined fleet emissions. While this knowledge helps local authorities in planning and reorganizing bus routes to avoid high traffic areas or congested streets and as a result reduce emissions in busy areas of town. Brighton & Hove Buses can share its know-how to train bus drivers on the selected routes and demonstrate to them the benefits of adapting a fuel efficient driving manner.

It is expected that in the near future real road emission analysis will gain popularity and already a number of OEM's and Specialist Consultant companies have started showing interest in similar projects. In conjunction with the upcoming new WLTC test cycles, authorities are currently working towards finalising the Real Driving Emission (RDE) regulations to commit manufacturers in adapting real road tests.

In the long term, the current project contributes to the substantial reduction of emissions and the improvement of transportation efficiency to maintain the flow of the traffic network. The improvement will help preserve environment as well as improve human health.

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Case Study

MEXA-ONE Motor Exhaust Gas Analyzers expand testing capabilities at IAV

What is it that increases and secures business success? Every company is concerned with this key issue – just like IAV, one of the globally leading engineering partners of the automotive industry and long-time customer of HORIBA. Pursuing technology leadership requires both a fair bit of creativity and excellent tools. These need to accompany the development process reliably, failure-free and soundless while simultaneously covering all current and future quality standards and demands. Currently, the industry faces major challenges particularly in the emissions measurement segment.

The IAV GmbH with 5,700 employees worldwide uses more than 70 HORIBA emissions measurement systems with its engine and chassis dynamometers. IAV has purchased analyzing equipment from HORIBA for 24 years. The most recent milestone of this successful partnership are two MEXA-ONE motor exhaust gas analyzers. As one of the first customers in Europe, IAV has operated its engine test stands in its Berlin development center since the end of 2012.

“Changing parameters in emissions regulations actually require intensive test runs of new measurement equipment, which are then the basis of decisions for or against the product,” said Axel Seehaus, Team Manager Service. “As a satisfied client of HORIBA we received a MEXA-ONE for testing at an early stage. In a short period of time we were able to determine its high quality regarding manufacturing, responsive behavior and data display. Because of the positive experience we decided to order two MEXA-ONE analyzers.”

Both systems were put into operation in just ten days after delivery. “The connection to the test bed automation was trouble-free including an immediate response and high transfer rates

via LAN TCP/IP,” explained Seehaus. “Once connected, MEXA-ONE instantly provided comprehensive data with important measurement values.” Compared with its predecessors MEXA-ONE particularly convinces with quicker response times, shorter delays during calibration as well as savings in energy and calibration gas thanks to the reduction of volumes inside the system. Furthermore, MEXA-ONE outperforms the conventional MEXA types with respect to dynamics. Currently IAV has used MEXA-ONE for more than 1,800 operating hours per system – without any significant operational disruptions.

With the MEXA-ONE filter switchover concept HORIBA is on its way to completely eliminate any purge time losses. This step yields essential economic benefits for the user, resulting in additional time for testing to reach the customer’s goals; and such advantages lead to customer satisfaction. That is why MEXA-ONE is currently the most demanded standard exhaust gas analyzing system in IAV’s measurement technology for engine test stands.



*Axel Seehaus,
Team Manager Service,
IAV GmbH*

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Automotive Testing Expo
India 2014 in Chennai



SAE World Congress
2014 in Detroit



JSAE Congress 2014 in
Yokohama

gan, USA. In addition to a booth and a technical paper submission, HORIBA held a well-attended half-day seminar entitled “The Key to Development Efficiency”. More than 50 attendees from major OEMs, Tier 1s, and academia joined for topics ranging from engine optimization and the importance of early integration, to an update on global emissions regulations. Immediately following the seminar, HORIBA’s annual SAE Customer Appreciation Suite was held in the beautiful, historic Guardian Building in downtown Detroit. 110 guests enjoyed a pleasant evening with global HORIBA staff. That same night Dr. Masayuki Adachi, Senior Corporate Officer and General Manager of the Research & Development Division of HORIBA, Ltd., was honored as a 2014 SAE Fellow for his technical and managerial leadership in the field of advanced emissions analysis by the Society of Automotive Engineers. In a speech, Dr. Adachi expressed his thanks to SAE for their acknowledgement of both his personal contribution to analytical technology and HORIBA’s leadership position in the field of analytical science.

Combining laboratory and real road testing

The 2014 JSAE Congress brought global analytics specialists to Japan, where HORIBA’s headquarters are located. Offering an incredible view over the Japanese south coast the Convention Center Pacifico in Yokohama accommodated the world’s testing elite from May 21st to 23rd. The HORIBA booth showed the difference between in-laboratory testing conditions and real-world, on-road measurement. Visitors were given an overview of HORIBA’s expertise in both areas. On display were the emission measurement devices of the well-proven HORIBA ONE series, as well as the new OBS-ONE On-Board Emissions Measurement System, and other products and services.

HORIBA’s goal of providing innovative, technically unmatched measurement systems remains our focus. Efforts to continually improve existing products, and support new product development, is a means to this end. Despite marked improvement in global automotive emission levels, our technological progress will not stop. Reduced emissions, as well as enhanced measurement needs, will remain a much discussed topic on the world’s stage. Therefore, HORIBA will continue our participation in future conferences to both keep in touch with the broader industry, and further our contribution to research and development.

Around the world in (less than) 80 days

Stricter emission guidelines for combustion engines have made the measurement of exhaust gases a persistently hot topic for the worldwide automotive industry. Globally, HORIBA participates in nearly 40 annual conferences at which we exhibit and present our advanced technologies. In the time period between March 2014 and May 2014, we took part in the following events:

Presenting products and networking in India

From March 19th to 21st the city of Chennai hosted Automotive Testing Expo India 2014. HORIBA at-

tended this prestigious event held in an important industrial and commercial center in South India. Following the motto “Global Product - Local Solution” we presented our proven products and solutions in the areas of Emission Measurement Systems (EMS), Mechatronics (MCT) and Test Automation Systems (TAS), and local service options. In this context, HORIBA India recently started a workshop for MCT localization. During Automotive Testing Expo India more than 200 visitors joined live demonstrations of testing systems such as MEXA-ONE, the STARS Engine Test Automation System, the VETS-ONE Vehi-

cle Automation System and other significant products available for automotive applications. The presentations proved to be a great platform for establishing new customer contacts, maintaining partnerships, and providing the opportunity to discuss products with existing and potential customers.

Global demand for expertise in analytical technologies

HORIBA was once again both a primary sponsor and exhibitor for SAE’s World Congress event held April 8th to 10th at Cobo Hall in Detroit, Michi-

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From the laboratory onto the road

HORIBA presented new technologies at Automotive Testing Expo 2014

From June 24th to June 26th HORIBA participated in the 16th annual European Automotive Testing Expo in Stuttgart, Germany to demonstrate its expertise in automotive testing, evaluation and quality engineering. At booth 1512 HORIBA presented its latest developments and innovations, including the new On-board Emissions Measurement System OBS-ONE and the DYNAS3 High Performance class AC dynamometer for engine and driveline testing. With an open atmosphere and an impressive team spirit covering all segments of HORIBA Automotive Test Systems HORIBA's booth was yet again the stage of many expert discussions. "Interested customers from all around the world took the opportunity to learn more about our technologies in well attended special presentations of HORIBA's Product Managers," added Hiroshi Kawamura, Executive Vice President at HORIBA Europe.

Test Centre on display

For the first time HORIBA's booth featured a replicated test rig to offer insight into the company's various test systems and fields of application. The test setup included an OBS-ONE, the latest Portable Emissions Measurement System specifically designed for engine and vehicle certification under real-road conditions. The test stand replica also demonstrated a Wheel Hub Solution as well as a Free Spinning Wheel Solution, both specifically designed for steady state and dynamic behavior analysis on vehicle level. Another highlight at the booth was the DYNAS3 HP, the latest AC dyno for engine testing purposes. The latest member of the DYNAS family offers a stiffened body to reduce vibration speeds, a redesigned coupling flange for higher coupling masses, and an innovative cooling concept for a reduced sound level.

Ongoing success

HORIBA also showed the ongoing improvements of well-proven emissions products such as the MEXA-ONE-QL-NX N-compounds analyzer and the Ultrasonic Exhaust Flow Meter EXFM-ONE for highly accurate real-time measurement. The constant volume sampler CVS-ONE, HORIBA's latest advancement in the measurement of diluted mass emissions from vehicles and engines, is characterized by a compact and user-friendly design and significantly downsized hardware which allows a more flexible test cell layout. All technologies come with the integrated operating platform HORIBA ONE PLATFORM. Featuring an intuitive and ergonomic design, the new platform enables system control and a complete system view of other measurement devices from one single display.

HORIBA, the long-standing emissions measurement expert, also presented its test automation systems focusing on integration of test cell automation solutions and database systems in specific IT environments. Comprising a series of software tools such as VETS ONE and the STARS platform for reporting and analysis of test results, HORIBA's Test Automation Systems are the ideal solution for R&D, calibration, emission certification and quality assurance.

A long-established tradition

As in recent years HORIBA invited its business partners to the famous boat tour on the river Neckar. A special evening on board the "MS Wilhelma" provided an ideal atmosphere for entertainment and casual conversations. The event has become a tradition looked forward to all year by customers and HORIBARIANs alike.



Lively conversations between international experts



This year's motto of the HORIBA booth: from the test laboratory to the road



Ship ahoy! From this pier, our boat tour on the river Neckar started on board of the "MS Wilhelma"

Calendar

Dates and Events 2014

- 9-12 September**
International Conference on Thermo- and Fluid Dynamic processes in Direct Injection Engines
Valencia, Spain
- 15-17 September**
Automotive Testing Expo China 2014
Shanghai, China
- 30 September – 2 October**
SAE Brazil
São Paulo, Brazil
- 2-3 October**
Tech Days Austria (HORIBA customer event)
Tulln, Austria
- 5-8 October**
SAE Brake Colloquium and Exhibition
Berlingame, USA
- 7 October**
Tech Days France (HORIBA customer event)
Versailles, France
- 28-30 October**
Automotive Testing Expo North America 2014
Novi, USA
- 11-12 November**
Advanced Engineering Show
Birmingham, UK
- November**
Tech Days Germany (HORIBA customer event)
Cologne, Hanover, Munich, Oberursel and Stuttgart, Germany

Interview

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“Future Emission Standards – Mastering the Challenge”



Joachim Misgeld, Manager Test Centre, HORIBA Europe

For four years now, Joachim Misgeld has been in charge of the HORIBA Test Centre in Oberursel, Germany. In this period, Joachim Misgeld was the driving force behind the scenes, preparing this HORIBA facility for the future demands of global OEMs regarding alternative powertrains and more stringent emission standards. Now the Test Centre has been equipped with the latest measurement and testing technology. The inauguration was celebrated with HORIBA’s customers on June 10th, 2014, and we took the opportunity to ask the manager a few questions.

You have been in charge of a highly sophisticated Test Centre for four years now. Could you give us an idea of the milestones you have reached during this time?

I would like to mention two major milestones in terms of equipment. The first one was the introduction of our e-motor test bench in 2011 to assist our clients in developing their products and systems to meet the strictest emission standards imaginable. The second one is the completion of the extension to our new four-wheel drive emission chassis dynamometer with advanced emission measurement technology and a soak room for up to six vehicles in 2014. We also put a lot of effort into advancing business with external clients. This is mainly due to more stringent emission legislation and the different test procedures and special in-depth measurement options we are able to offer.

CO₂ reduction is an important factor for protecting our environment. What are the most important challenges for the OEMs in this regard?

For 2015, the European Union has reduced the limits for the CO₂ emissions of the car fleets of vehicle manufacturers to an average of 120 grams of CO₂ per kilometer. In fact, the long-term goal set for 2020 is an average of 95 grams per kilometer. This trend could permanently transform the industry. However, we already know for sure that the new demands will require rapidly growing test capacities and considerably larger development budgets.

HORIBA is an expert in emission testing. Are you renting out the Test Centre as well as running test cycles for your clients?

We are currently offering tests executed by our own engineers. We receive a customer order and run the tests ourselves using our well-trained and experienced personnel. Familiarity with the specifications of the test benches is a major requirement if we want to obtain resilient results. Nevertheless, the client is welcome to support the procedures on-site with know-how or tools of his own.

And now a word on the degree of utilization. Is your Test Centre utilized more for projects your engineers are running or for client projects?

When we started up our Test Centre, we planned to provide 50% of our capacity for clients’ projects and 50% for in-house testing. Examples of in-house projects are the development of a new fuel flow meter and other high-tech emission products. We currently perform more tests for external partners than internal jobs.

This new facility is really exciting. What are the main new capabilities here in Oberursel?

Our new four-wheel drive (4WD) VULCAN chassis dynamometer and the recently installed MEXA-ONE emission test system are definitely some of the highlights of the Test Centre. Our latest testing and measuring equipment enables us to provide our customers with emission measurement for passenger cars, hybrid cars and light-duty vehicles. Due to the international nature of our customers, we perform the tests according to European standards and all international standards. In addition, a newly built soak room provides space for conditioning up to six vehicles.

What about hybrid powertrains? Is it possible to test alternative powertrains too?

We offer testing opportunities for both conventional and alternative powertrains. As you can see, our Test Centre here in Oberursel is a state-of-the-art development tool. To test alternative powertrains, we installed the TITAN E-Drive test cell. Equipped with the DYNAS3 HS 180 asynchronous machine, this test facility meets perfectly, the requirements of e-motor testing.

How do you support customers in times of increasingly strict emission regulations?

As we are not a development service provider, we offer complete measurement solutions designed to help OEMs meet the growing demands of emission regulations. The mea-

Interview



surement expenditure is expected to increase considerably, and HORIBA provides tailor made equipment for testing under laboratory conditions using dynamometers and real road testing equipment.

Laboratory tests versus real road testing - what is your opinion on this subject?

To my mind, the WLTP upcoming in 2017 is a step in the right direction because it provides repeatable results and is more dynamic than NEDC test cycles were. Real Driving Emissions Testing is probably more realistic, but it is hard to gain repeatable data with it. For example, the CO₂ emissions differ depending on the ambient conditions. We now face extremely strict tolerances when measuring emissions on the chassis dynamometer. For real road testing, limits need to be adapted by legislation authorities. Again, modern test cycles running on chassis dynamometers such as the WLTP are closer to reality and offer a high level of comparability.

Mr. Misgeld, thank you for giving us your time.

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HORIBA team at EuroBrake - Gold Sponsor 2014



Inspiring Customers at EuroBrake 2014

From May 13th to 15th the French city of Lille hosted EuroBrake 2014. This brake conference and exhibition attracted more than 800 visitors from around the world with many technical presentations and a huge number of exhibitors. It proved to be a great chance to present the latest developments in brake testing, and for networking among other braking specialists. This year, HORIBA participated as a gold sponsor. The sponsorship allowed us to have a high profile.

Our Message at Euro Brake 2014

Our modern exhibition booth, featuring a clean-looking blue and white design, provided a great platform to present a variety of interesting topics. These included: Performance testing, NVH testing of brake systems, special test procedures, and brake fine-dust pollution. Also highlighted were application examples, the latest software developments, and standard evaluations for commonly used brake applications.

Our team of brake specialists had the great pleasure of preannouncing HORIBA's latest evolution in brake testing, the new inertia brake dynamometer concept. This concept assures reliable measurements with very high repeatability. The first prototype will be built during the summer period. The official product launch will be celebrated afterwards.

High-class event with a great audience

Another highlight was the common lecture by Mando Corporation and HORIBA on their joint technical paper in front of a great audience with experts from every corner of the industrial and research communities. The keenly anticipated presentation on brake and residual drag torques measured on inertia dynamometers was a worthy conclusion of this successful high-class event. Due to this success, HORIBA will join the next EuroBrake 2015 in Dresden, Germany, as a gold sponsor. HORIBA will also participate in the SAE brake colloquium and exhibition in San Francisco, 5-8 October 2014.

Next generation HORIBA OBS-ONE on-board emission measurement system

Real World vehicle emissions are recognized to often exceed the values determined under laboratory conditions. Therefore, new global legislations are now focusing on Real Driving Emissions (RDE) and their effect on the environment, by using Portable Emission Measurement Systems (PEMS) Test Methods. From EURO 6/VI onwards, both certification for light duty vehicles (LDV) and heavy duty engine (HDE) approval will require field surveys of vehicle emissions in the real world. Using the new OBS-ONE technology HORIBA continues the challenge.

HORIBA has developed on-board and PEMS products since 1980. Due to technical limitations the time was not right for on-board technology until the late 1990s, real world emission research has prospered ever since. In 2003, HORIBA introduced the innovative OBS-1000 series, marking the start of a successful product family, leading to the introduction of the OBS-2000 series in 2005. With a customer base comprising Japan, Europe and the USA, the OBS-2000 series complies with all EPA and EURO HDE regulations. Now, with the new OBS-ONE, HORIBA's next generation system is waiting in the wings.

OBS-ONE offers a particularly compact and flexible design. It consists of controller and analyzers, battery, exhaust flow meter / pitot tube. Compared to its predecessor, OBS-ONE for LDV has reduced system power consumption by 50%. The modular system features a removable flame ionization detector (FID) for THC, a gas analyzer unit for CO, CO₂, NO, NO_x and NO₂. As with all newly developed HORIBA systems, the new OBS technology uses the HORIBA ONE PLATFORM and also includes optional interfaces to ECU/OBD data connections with test data logging functions.



HORIBA OBS-ONE On-board system

Unique capabilities of OBS-ONE are its advanced wet-based measurement ensuring optimum performance, low power consumption, a battery hot swap function and safety data protection. A scalable post test data processing utility with generated test reports and comprehensive data analysis fulfills all emissions regulations and customer requirements. Finally, OBS-ONE can be integrated with a Test Automation System for vehicle research and development. In the future, as an additional benefit, the OBS-ONE will also be extendable with measurement of particulate matter (PM) and a particle number (PN) counting capabilities.

Mounting of the OBS-ONE is possible both inside and outside of the vehicle. Secure attachment of the system in several ways has been fully considered along with ease of operation at all times.

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PWS ONE^{plus}

The ultimate solution for particulate weighing

Without a doubt, at the moment the new EURO 6 emission standard proves to be the number one topic in the automotive industry. Many articles in this issue of ESPRIT therefore tackle the difficulties the new regulation and its future extensions entail and highlight the advanced technologies HORIBA provides to face these challenges. One of the solutions from the Test Automation System division is the Particulate Weighing System PWS ONE^{plus}, developed to satisfy the demands for more flexibility, high precision and reliability in particulate filter handling and weighing. The new automation system was specifically designed for emission testing in both automotive and environmental laboratories.

PWS ONE^{plus} consists of an automation software program running on a standard personal computer, an ultra-micro balance and a filter robot. A barcode scanner and printer ensure easy and fast operation. In order to meet the regulated climatic conditions, PWS ONE^{plus} is housed in a clean work bench or clean room. The system can be easily parameterized and is completely adjustable to the customer's requirements. Considering the variety of customer's needs, the system is available as an integrated module in any Test Automation System or Laboratory Information Management System (LIMS). PWS ONE^{plus} is also usable as a stand-alone version. All weighing results and cli-

matic data with their corresponding time-stamps are saved in XML documents. They can be automatically exported in different file formats or uploaded directly to a database. Additionally, the system's package includes several predefined MS Excel templates.

The system provides particulate matter weighing processes for the compliance control of various legal limits and time frames as well as the latest particulate filter handling to meet all international standards. By allowing the creation of customized weighing processes, PWS ONE^{plus} applies a flexible solution that reflects the workflow in the laboratory. Reduced incorrect handling resulting from fewer human interventions furthermore enables a high precision of the ultra-micro balance. This is possible due to the utilization of robotic assistance during the laborious and error-prone weighing process and can even be improved by drift-corrected and multiple weighing methods. Operational around the clock, the automated particulate filter weighing system processes the weighing steps smoothly and independently according to predefined profiles without user intervention. In addition, regular automatic reference filter weighing ensures and documents the quality of the results. To further increase security, a certified check-mass is used in the weighing process and guarantees a reliable weighing result.

Measurement with the flow

Two men meet at a river to settle a bet. Both men claim to be the fastest when it comes to swimming the stream. One decides to swim with the flow, while the other opts to swim against the current. Who is faster? Actually, it is simply a matter of physics. Of course, less time is needed to cross a river with the flow. What is more, the stronger the flow, the longer it takes to cross the river against the flow and you are faster with the flow. The difference between the travel times is thus dependent upon the flow rate of the river. However, what has this lesson in physics to do with HORIBA?

The effect described is used by the HORIBA's new Ultrasonic Exhaust Flow Meter EXFM-ONE for real-time measurement of engine exhaust flow by determination of flow velocity. Two transducers, positioned with a longitudinal offset on both sides of the measuring tube, send and receive electro-acoustic short ultrasonic pulses through the flow in the pipe to establish the transmission times. By employing the ultrasonic transit time method the EXFM-1000 can then calculate the exhaust gas flow rate. The method proves particularly suited to a wide measuring range from 0.07 m³/min to 10 m³/min and provides an instantaneous direct measurement. Furthermore, there is only a small intrusion inside the pipe minimises pressure loss and disturbance of the flow characteristics.

In combination with other HORIBA analyzers, the new ultrasonic exhaust flow meter can be used for various applications. Together with the optional HORIBA Air-to-Fuel analyzer (MEXA-730λ), for example, the EXFM-ONE enables easy and instantaneous real-time fuel consumption measurements. In combination with HORIBA's MEXA-ONE Exhaust Gas Analysis System and VETS Automation System the EXFM-1000 offers an alternative real-time mass emission measurement for light and medium duty vehicles, helping to accelerate engine R&D. This procedure is used for studies of en-

gine and after-treatment system performance during transient test cycles. (VETS ONE calculates transient mass by combining concentration from MEXA-ONE and exhaust flow rate from EXFM-ONE). A third application is the real-time flow control during particulate matter



HORIBA EXFM-ONE

measurement of light and medium duty vehicle testing. In this case, EXFM-ONE is integrated with a partial flow dilution system such as the Micro Dilution Tunnel (MDLT-1300) or a Bag Mini Diluter (BMD) in a vehicle test cell.

The EXFM-ONE Ultrasonic Exhaust Flow Meter made its European debut at Automotive Testing Expo 2014 in Stuttgart, Germany, where the full testing capabilities were showcased. Accessory items such as extended heated lines, HORIBA's DMC-PC with the newly developed integrated HORIBA ONE PLATFORM and the MEXA-730λ based fuel consumption measurement were also fully covered.

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HORIBA DYNAS3 HP

More performance featuring a new design

For many years, the DYNAS3 series has been a reliable part of HORIBA's product range. But from time to time demands change and the growing desire to develop further leads to fundamental modifications. All of a sudden, there is this new DYNAS3 HP with a modern look and great shape. But apart from the eye catching outside – don't forget: it's always the inner values that really count.

For the existing DYNAS3 series, the main qualities are continuity and flexibility ensuring durability and functional performances of a wide range of equipment under test. The DYNAS3 dynamometers are suited for use in engine test stands and due to their versatility have always covered a wide range of testing applications. Whether simple tests for steady state operations, transient processes or sophisticated dynamic test cycles – nearly every testing process can be performed. With more stringent emissions directives, the adaptability of dynamometers becomes increasingly important. A high performance envelope covers the torque characteristics of petrol and diesel engines.

Stagnation is regression

Following this principle HORIBA has taken the next step forward and enters new era with the DYNAS3 HP, featuring an innovative design that is accompanied by numerous technical improvements. Here, form follows function. The conception is not only the foundation for a fresh design of HORIBA's Mechatronic (MCT) components for engine testing, it is highly functional. Thanks to

the recent construction, the stiffer body reduces vibration and guarantees a safe and trouble free operational process. Achieving higher dynamics during these processes the new dynamometer has a more compact design with more power and torque compared than its predecessor. The current DYNAS3 LI 250 has a remarkable absorbing capability of 250 kW and 480 Nm while the DYNAS3 LI 265 HP exceeds this by reaching 265 kW with 525 Nm.

A different kind of cooling

Part of the advanced construction is an innovative coupling flange for higher coupling masses up to 30% greater than the LI 250, as well as a newly designed rotor. When considering a new concept, the cooling is always important. As part of a new cooling concept, the stator is water-cooled while the end windings of the dynamometer are air-cooled, resulting in reduced noise level. Two individual fans fed by a power supply unit installed in the converter cabinet, making them independent of mains voltage and frequency, ensure effective cooling of the end windings and the rotor. The air flows out through the base frame of the dynamometer.

The introduction of the DYNAS3 HP is not to be seen as a competitor, HORIBA remains committed to the complete DYNAS3 range. Appreciating the consistent reliability and great performance of the DYNAS3 series over the past years the novel DYNAS3 HP series is a complementing addition. It fits in and joins the existing DYNAS3 product family.



HORIBA DYNAS3 HP



Classic cars at the Heritage Motor Centre, Gaydon, UK

HORIBA - "So much more"

HORIBA UK Ltd, Technical Conference "a resounding success"

HORIBA invited its customers to its one day Technical Conference, which has proven to be a great success with a mix of seminars, cross segment exhibitions and off road driving experience. The conference took place on Tuesday 10th June, at the Heritage Motor Centre, Gaydon, UK, home to some of the world's greatest collection of classic, vintage and veteran cars and a mecca for car enthusiasts. The conference venue is in the heart of the country and is a spectacular piece of modern architecture with a hint of art deco and stands proudly in a beautifully landscaped setting of 65 acres.

A total of 56 participants, from more than 30 companies and universities across the UK attended the event. Although this conference was predominately for the Automotive clients, all HORIBA segments were represented in both the exhibition area as well as presentations, increasing the presence of the HORIBA brand and demonstrating the breadth of our product portfolio and service capabilities, thus contributing to our "One Company" mission and highlighting that HORIBA really does offer "So much more".

The day consisted of various events including; group discussions, seamless expert presentations from all segments and introductions to new products. The assessment of the feedback from the participants shows that good attendance was not only due to the venue selection but also due to the expert competence of the presenters and their

contribution; including the key note speech from Dr Masayuki Adachi, Director of HORIBA Ltd, which was warmly welcomed by our customers.

Additional topics also covered included, Emission Legislation, MEXA-ONE and CVS-ONE, PEMS, Fuel flow and Power Testing. Other segment presentations gave an overview of HORIBA capabilities. Medical discussed antibiotic testing and the battle for future health. Scientific gave insight into light source testing. Process and Environmental highlighted emissions to air and our air pollution monitoring and Semiconductor described the lighter side of our business with LED monitoring.

As part of the "so much more" experience, guests were able to sample an exhilarating Land Rover Experience in a 4x4 off road course throughout the day. Delegates' driving skills were put to the test over rock crawls, steep inclines, descents and surprise water drops in the very latest Land Rover vehicles, complete with HORIBA turn-key logos. This additional activity proved to be extremely popular and added "Joy and Fun" to the days' success.

Further upcoming technical conferences have been planned for the remainder of 2014 throughout Europe. Locations include Austria, 2nd – 3rd October and multiple one day seminars in various locations across Germany including; Hannover, Cologne, Stuttgart, Oberursel and Munich.

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HORIBA Team Russia

Russia's Key Role in HORIBA's International Competence Network



Russian Tech Days 2014

A great spot on the map

Ideally located between the fast growing Asian market and the high-tech European market, Russia offers plenty of industrial opportunities. To remain viable partners, Russian businesses require state-of-the-art technology. HORIBA Moscow's 350m² facility, established in 2001, currently employs a team

of 18 persons. Covering Russia, as

well as neighbouring countries of the Commonwealth of Independent States, the team is responsible for sales and service support for HORIBA's Automotive Test System, Scientific, and Process & Environment business segments. This office also services software solutions for the medical diagnostics specialists of HORIBA ABX, as well as for HORIBA Jobin Yvon, a manufacturer of high performance equipment for spectroscopy and part of the HORIBA group since 1997.

Wide variety of industries and applications

Markets in this region range from the production of marine ships, locomotives and lorries, to buses and tractors, to commercial and passenger cars. The main priority for the HORIBA Automotive Test Systems business segment is to partner with the organizations in Russia that help these manufacturers and developers with regulations, offer support, and help to maintain and expand quality standards. HORIBA is achieving this objective by providing comprehensive services such as on-site support for operations, instrument installation, and regular maintenance.

Long-term partnership leads to a global, turn-key solution

A key relationship for HORIBA Russia is with its long-term partner, AvtoVAZ. As one of the largest companies in Eastern Europe and the Russian automotive industry, it is well known as the manufacturer of LADA cars. AvtoVAZ is renowned for its reliability and longevity all over the world. HORIBA's proposal to create a completely new climatic test laboratory with turnkey capabilities for AvtoVAZ was recently chosen from a large pool of candidates.

Equipped with modern technology embracing all HORIBA Automotive Test Systems divisions - Mechatronics, Emission Measurement Systems as well as Test Automation Systems - the climatic laboratory allows AvtoVAZ engineers to run cold tests with temperatures of up to -40°C. To implement this project, HORIBA will rely on its international competence network to manage the development, logistics, and installation of the systems. Contributors will include HORIBA Europe, HORIBA France, and colleagues from HORIBA Japan. The new equipment will update proven HORIBA systems that were installed at the AvtoVAZ site years ago. These improvements will ensure that the new test laboratory meets the high standards of the upcoming automotive test cycle and open new prospects for the automaker.

Russian Tech Days

Discussions on topics such as future emission regulations, current testing issues, and equivalent solutions provided by HORIBA were the focus of the 2014 Russian Tech Days hosted in Moscow and Togliatti, Samara Region. On April 8th, a customer seminar was held in the capital city with 61 participants from eight

different companies. This successful event took place in the renowned Central Scientific Research Automobile and Automotive Engine Institute (NAMI) of the Russian Federation. HORIBA also welcomed young listeners from Moscow University in the audience. Two days later, on April 10th, the second Tech Day took place in the Park Hotel of Togliatti. For this gathering, all 14 attendees were employees of AvtoVAZ. Both events dealt with the same topics and benefited from an atmosphere of friendliness and co-operation. HORIBA experts from Germany presented key technologies and topics. These included the Motor Exhaust Gas Analyzer MEXA-ONE, the new OBS-ONE On-Board Measurement System, FTIR Systems, and the Fuel Flow Meter. All the presentations were well received, and the technical advice and ideas helped reinforce HORIBA as the best solution for every testing requirement. The Tech Days in Moscow ended with a relaxed dinner at a German restaurant, where both customers and organizers agreed to repeat this event soon. HORIBA's Russian site will further focus on communicating the importance of regular service support, while simultaneously preparing for upcoming projects.

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