

Issue 01/2012

Highlights:

**Interview with Hiroshi Kawamura,
Executive Vice President,
HORIBA Europe**

**A Convincing Solution:
The MEXA-1400QL-NX**



Dear readers,
HORIBA has many reasons to celebrate: At this year's Automotive Testing Expo Europe, Mr. Atsushi Horiba, President and CEO of HORIBA Ltd., will be in Stuttgart for the European premiere of our latest product innovation in emissions testing technology. Also exhibited at the booth will be the latest QCL based MEXA analyzer which the editors of Automotive Engineering International (AEI) recently awarded the 2012 SAE World Congress Tech Award.

Look inside this issue to find out more about these state-of-the-art analyzers. You can also discover the latest international trends in emissions legislation and how HORIBA is well prepared to meet these challenges.

We will support OEMs in their efforts for achieving better fuel economy and for creating environmentally friendly vehicles. Looking forward to 2013, HORIBA has yet another reason to celebrate – its 60th anniversary.

Enjoy reading our latest issue.

Yours
Jonathan Eaton
Vice President Sales & Marketing
HORIBA Automotive Test Systems



Interview

“Follow-up orders are the products and services are

HORIBA is committed to constantly offering its customers the reality of a sustainable system



Hiroshi Kawamura, Executive Vice President of HORIBA Europe

Hiroshi Kawamura was born in Japan in 1965 and joined HORIBA in 1992. After participating in the development of the MEXA-7000 engine emission measurement system, Hiroshi Kawamura worked on various overseas assignments in the US and the UK. He worked as General Manager of the Automotive Business Development Department and was appointed General Manager of the Automotive Test Systems Division in 2006. In 2008, he also became the concurrent Segment Leader of the Automotive Test Systems Segment. Today, he holds the position of Executive Vice President of HORIBA Europe and works mainly from Oberursel, Germany.

best proof that our convincing”

Mr. Kawamura, as Executive Vice President of HORIBA Europe, you are responsible for the Automotive Test Segment. Which company values are most important for you?

Our company bases all its efforts with regard to technologies and services on a few important key features. Firstly, we focus on usability in order to give our customers intuitive operation of our test systems and devices as well as permanent ease of use. Secondly, we aim at diversity, and our global specifications meet the changes in regulation requirements made in each country. We try to design fully compatible systems which allow the sharing and managing of data as well as statistical data analysis and report preparation in conjunction with customer-owned systems around the world. Thirdly, sustainability is a vital issue for HORIBA. We emphasize the continuous development of new technologies tailored to the customer's needs. Combining these key features allows us to achieve a high degree of reliability. HORIBA is committed to constantly offering its customers the reality of a sustainable system.

What business strategy will you follow to strengthen and extend HORIBA's market leading position in the future?

Of course, it is vital for HORIBA to win new customers. Nevertheless, in my opinion it is at least equally important to support our existing customers. We want to convince them of the high quality of our products and of our strategy of constant improvement. This concept is the essential basis for long-term relationships which strengthen our market position in the field of automotive test systems and which we value highly. Follow-up orders are the best proof that our products and services are convincing for our customers and are meeting their demands.

How will you implement these goals and what arguments will you use to convince your customers?

As mentioned before, HORIBA strongly focuses on new technologies in order to go ahead with the constant improvement of its products and services and fulfil the customers' requirements in an optimum way. With our efforts to develop reliable complete solutions, we provide our customers with a wide range of test systems for exhaust gas analysis as well as powertrain research.

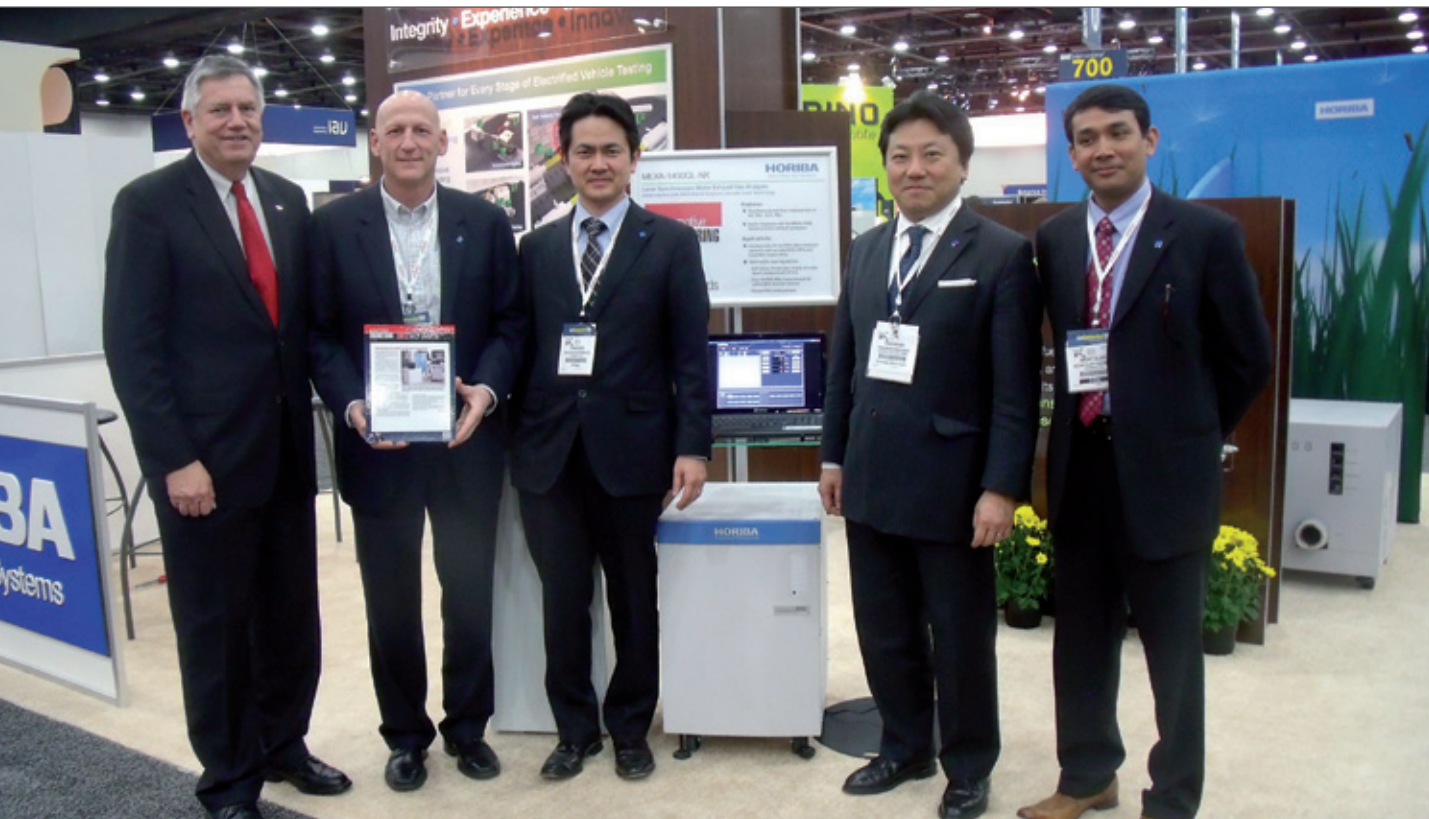
To achieve the targeted high reliability of our products, we also need to improve our internal flows. This is why we aim to quantify quality in our production processes. By increasing the existing high quality there, we simultaneously improve the quality of the finished product or service.

Where do you see challenges for HORIBA?

Due to the increasingly stringent emission standards and the resulting efforts to reduce emissions as well as the trend towards hybrid and electrical vehicles, test systems have to constantly become more precise and efficient. Factors such as expanding regulations and stricter ones, which require extra-low exhaust emissions, will require more advanced technology for emission measurement. These issues are challenges for HORIBA. However, our product portfolio makes us well prepared to meet the demands. For example, our solid particle counting systems (SPCS) and the award-winning, innovative QCL-based MEXA analyzers are devices which already support the Euro 6 legislation due to start in 2014.

By investing in new and enhanced systems while maintaining the high quality for which our products are known, these challenges provide additional business opportunities for HORIBA.

A convincing solution: The MEXA-1400QL-NX



*From left to right:
Frank Klegon, President
of SAE International and
the HORIBA repre-
sentatives Ken Mitera,
General Manager NA;
Dr. Hiroshi Nakamura,
Global Manager R&D,
ATS; Takashi Nagano,
Senior Corporate Officer;
Dr. Montajir Rahman,
QCL Specialist*

Since it has been introduced to the market in the last year, the MEXA-1400QL-NX has turned out to be an award-winning product. The state-of-the-art emission test system based on quantum cascade laser (QCL) technology exceeds expectations – measuring even more precisely than requested by legislation. After a demonstration period at different customers, some major European OEMs and a number of suppliers already put the first analyzers into operation in 2011. But what exactly makes the new analyzers that convincing and how does the QCL technology work?

The principle behind

Quantum Cascade Laser technology based analyzers utilize the principles of optical spectroscopy – just as conventional gas analyzers. A simplified explanation of that principle: A laser beam is passed through a cell with sample gas. The laser pulse is reflected by mirrors and hits a detector. As exhaust components absorb energy in the form of electromagnetic waves, this influences the pulse shape of the laser beam. However, conventional methods face difficulties in measuring components such as NO and NO₂, NH₃ and N₂O. Proposed legislation as well as new after-

treatment devices that comply with recent regulations lead to the need for further analysis capabilities especially in terms of these nitrogen exhaust components. QCLs are able to produce light in the whole mid-infrared and potentially in the far-infrared spectrum. They can therefore emit high resolution beams in regions in which the relevant nitrogen compounds exhibit high extinction coefficients, whereas the absorption tendency of coexisting gases is low in these regions.

Features of the MEXA analyzer

Within HORIBA's MEXA-1400QL-NX, four lasers work in parallel. This makes the analyzer capable of simultaneously measuring the four most relevant nitrogen compounds NO, NO₂, N₂O (nitrous oxide) and NH₃ (ammonia). A short optical path length allows the use of small optical cells and leads to rapid responses and a very long path length enables very low detection limits. To resolve this conflict, HORIBA developed an advanced design of the cell and the mirrors in particular. By creating two different path lengths within one compact gas cell, the MEXA-1400QL-NX gives way to the wide dynamic range measurement in one system configuration.

Thanks to the combination of a high-intensity, high-resolution light source and a sophisticated interference correction method, the MEXA-1400QL-NX is free of troublesome interference from CO, CO₂, CH₄, H₂O and hydrocarbons. The speed of NH₃ measurement has also significantly accelerated.

Meeting the demands

Increasingly strict emission standards lead to decreasing pollutant concentrations in exhaust gas and thus demand highly sensitive analyzers. The MEXA system is effective for certification or reporting U.S. EPA-regulated greenhouse gas (GHG) emissions as part of CFR 1065 regulations. It is applicable for R&D-related testing as well as for direct NH₃ measurement from heavy-duty engines or direct N₂O measurement from heavy-duty or non-road engines. Therefore, HORIBA expects widespread use of the MEXA-1400QL-NX.

Awarded by the SAE

During the SAE World Congress 2012 in Detroit, Michigan, HORIBA received the 2012 SAE World Congress Tech Award for its MEXA-1400QL-NX emission measurement system. The award winners were selected from all SAE World Congress exhibitors and judged by Automotive Engineering International (AEI) editors to be the most important technologies on display at this year's show. Recognized around the world, the SAE World Congress Tech Awards identify and honour innovations the jury feels will drive

significant advancements in the automotive industry of tomorrow. HORIBA feels honoured to be awarded as an innovation leader. "Our QCL analyzers allow us to offer our customers measurement technologies on the highest possible level," commented Jean-Pierre Surin, European Segment Leader at HORIBA. "Thus, we help automotive manufacturers and developers of after-treatment systems to meet upcoming emission standards."

Convincing solution

Due to its excellent measurement results, the QCL analyzer poses a convincing proposition with regards to emission testing. "Characterized especially by the wide dynamic range of measurement and the low detection limits, the analyzer delivers extremely precise and reproducible results," explained Jean-Pierre Surin. "The QCL method is able to test both, gasoline and diesel fuelled powertrains. Moreover, it has potential for testing some alternative fuelled powertrains. The high number of orders proves that our QCL-based device is a forward-looking technology meeting our customers' demands."



HORIBA anniversary celebrations

In 2013, HORIBA celebrates the 60th anniversary of the company's foundation.

Having laid the cornerstone of success in 1953, HORIBA expanded onto the European market and founded its first subsidiary in Europe – HORIBA Europe – in 1972. In the 40 years which have passed since then, we have not only secured a permanent position for ourselves here but expanded it even more.

This was possible because our employees work with "Joy and Fun". It is only thanks to the know-how and

the high motivation of the "Horibians" that we are in a position to offer our customers the usual product and service quality. This is precisely why we would like to say a hearty "thank you" to all our colleagues here.

We are equally grateful to all our customers for their loyalty to HORIBA and hope to continue the excellent cooperation with them in future too.

Yours sincerely
Your HORIBA Europe Team







“One step ahead of evolution” Customer seminars become a tradition

Under the motto “One step ahead of evolution – system solutions from HORIBA set new standards,” HORIBA invited its customers to a seminar in Germany again last year – and to one held in Italy for the first time too.

The one-day seminar took place in Aachen, Magdeburg, Munich and Stuttgart, in Italy’s car city of Turin and in Bologna on a total of six dates in November 2011. In Germany, 83 participants from more than 40 companies and universities came, while over 50 people attended the seminar in Italy. After a number of very successful and well-attended seminars held during the previous year, the events were given an overwhelming reception by the German business and research community. In Italy, attendance was very good from the start, demonstrating that HORIBA

and its customer seminars have laid the foundation for a good tradition worth continuing.

Positive feedback from the participants

The assessment of the feedback from the participants shows that the good attendance was not only due to the pleasant atmosphere and the good catering. HORIBA was given top marks all round, not just for organization and accommodation, but in particular for the expert competence of the presenters and the lucidity of their contributions.

Focus on up-to-date topics

Two main subjects were among those focused on in the seminar, which was very demanding in terms of content: current emissions legislation in the USA and

*Volker P. Werner
talking about
emissions legislation*



the EU on the one hand and innovative QCL technology on the other. HORIBA was proud to inform its customers that the MEXA-1100QL-N₂O is the only system solution developed up to now which is able to meet the legal requirements of the American Environmental Protection Agency EPA with regard to greenhouse gases, even exceeding the strict specifications laid down there.

A short summary of the portfolio was followed by in-depth presentations on topics such as the testing of e-motors and hybrids and the new fuel flow meter system.

The customer seminars on the slate for 2012 are already being looked forward to with much anticipation. As a result of the extremely positive feedback from the participants, HORIBA intends to offer them in Sweden and perhaps also in India and Russia this year.



No. 1 topic: emissions legislation

The presentation on emissions legislation was especially well received. It dealt with the minutiae of the various basic legal conditions in the US and the European Union and the aims they pursue. One thing in particular became very clear: politicians are listening to people's expectations concerning more environmentally compatible vehicles and implementing them in the form of increasingly stricter limits. As a consequence, measurements have to become more and more precise. At the same time, there are new components to be measured and regulated as the measuring techniques used are also affected by the change towards cleaner and more fuel-economical drives in vehicle construction as well as new exhaust gas after-treatment systems.

As a result, the demands for the development of even more sensitive measuring units and suitable test procedures are increasing constantly.

Internationally harmonized testing method

In connection with the aspects mentioned above, the national authorities involved are jointly elaborating an internationally harmonized test procedure, the Worldwide Harmonized Light-duty Test Procedure (WLTP). It is to be based on a standard driving cycle which covers various driving speed phases (slow, medium, fast – and very fast too for the EU, where driving speeds of over 120 km/h are permitted in places). The globally harmonized procedure is also to test for more toxic exhaust substances than the national testing procedures used up to now did – discussions are still going on as to precisely which substances these will be.

Aims of legislation in the US (EPA and CARB)

- Standardized measuring technique (CFR 1065/1066)
- Monitoring of greenhouse gas emissions (CO₂, CH₄, N₂O)
- Minimization of toxic emissions, fuel consumption and mass of particles emitted
- Introduction of the particle count

EU regulations and global directives

- Regulation of particle number emissions in Euro 6
- Definition of globally harmonized testing standards for passenger cars (in accordance with WLTP) in the Euro 7 standard which is currently under discussion
- Guidelines on CO₂ reduction, not only for passenger cars but also for light commercial vehicles in future
- The relevant expansion of the global test regulations (GTR) for motor cycles and lorries

Consequences

The analysis of the toxic emissions of alternative fuels such as low-carbon fuels and bio-fuels will take centre stage in future. It is also expected that the number of analysis systems available will have to grow. As the legal requirements increase, it becomes more and more complicated to calibrate a new vehicle – and more time-consuming too. The result is a lower productivity of the test benches. As a consequence, laboratory management and test planning will play a vital role in future.

On the road to success – locally and globally



*Atsushi Horiba,
President and CEO*

In the past few months, HORIBA experienced an extremely positive order situation. HORIBA Darmstadt finished the fiscal year 2011 with a sales growth of 38 percent and an all-time high in terms of incoming orders. A total order volume of more than 35 million euros for the last two months of 2011 emphasises HORIBA's high acceptance level in the international automotive industry.

Strong order situation on the German market

"We are especially happy that nearly 50 percent of our orders come from local European car companies. This stresses our prominent market position in the transmission and vehicle test cells segment," says Jörg Brunke, Managing Director at HORIBA Europe.

"The record sales we achieved in December and November 2011 were caused by bulk orders of transmission test cells from leading German car companies. "We were also able to contract a major OEM from Germany as a new client."

Globally positioned

At the same time, HORIBA scored some orders of strategic importance in Asia. The system supplier can thus further enhance its mechatronics sector and was recently given a major order by Caterpillar in China. HORIBA is to assist Caterpillar in Tianjin, China, in producing engines and generators and is to supply them with three engine test cells for heavy duty vehicles and a special generator test system before production starts in January 2013.

Additionally, HORIBA was able to consolidate its position in India. One of the reasons for this success was an order from Denso to build an engine and vehicle testing laboratory at the Denso facility in Manesar, Gurgaon. According to Atsushi Horiba, Chairman, President and CEO, HORIBA Limited, this is HORIBA's first full turnkey project in India. Also, the renowned Indian National Automotive Testing and R&D Infrastructure Project NATRiP chose HORIBA as its system supplier.

The company will supply NATRiP with an emission testing laboratory installation as well as equipment for heavy-duty vehicle, engine and powertrain tests.

Think globally, act locally

In order to make the company a success in the long run too, HORIBA is committed to the principle of thinking globally and acting locally. Its global network and local focus allow HORIBA to be on hand for its clients whenever support is needed. This is an essential requirement for the company's further success.

HORIBA team masters Ironman with a good result



“Ready, steady, go!” – that was the motto for 11 employees of HORIBA Darmstadt late last summer when the popular company triathlon “Pfungstädter Firmen-Ultra” took place in and around the open-air swimming pool in Pfungstadt. HORIBA took part with a team of its own for the fifth time around and was able to achieve a respectable 46th place. The HORIBA team has always been a good sport in the last few years, and it was now able to reach above-average positions. A flat tyre on the bicycle of one of the competitors caused the team to drop down to place 86 in 2010, however. 2011 saw the addition of four newcomers to the team who experienced the competition for the first time, and the HORIBA team can be very satisfied with its overall performance.

Minimal target: no breakdowns

“All we wanted was to get all members of the team over the finishing line safe and sound with no technical hitches,” says Thomas Fritsch, one of those taking part. “Of course, every one of us also had the personal ambition to go below the times of the previous year. And 46th place is really a remarkable result.”

A total of 296 teams entered the triathlon, but only 134 of these reached the finish together and were included in the final assessment.

The “Pfungstädter Firmen-Ultra” divides up the Ironman distance among a team of ten. An 11th athlete is on hand to jump in if a bicycle has a breakdown or a participant suffers an injury. In other words, each sportsman “only” has to swim 380 m, do 18 km by bicycle and run 4.2 km. Distances of this kind are quite feasible for individuals if they do a bit of training after work – and by working together, the team is able to manage the impressive Ironman distance.

Involved again this year

HORIBA will be taking part again this year and would like to revive the after-work training sessions together. However, the main thing for the runners is the group experience during the competition and the cosy get-together afterwards, when you can relive what you have experienced.

HORIBA congratulates the company team on its success!

The sportsmanlike HORIBA team at the Pfungstadt company triathlon 2011

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