

ExIS Newsletter, April 2014

Preamble

We have not sent a newsletter for quite some time, so now it is the right time to give you some update on our products, trends and general news in the field. Our breaking news in this newsletter is the very promising results from on-board measurements of particle number emissions carried out at the JRC laboratory of the European Union.

(Tips: Click on the headlines below to navigate to the section of interest in the document. If you are reading the newsletter in a smartphone, you may have to download the whole e-mail before the links in the document work properly.)

Headlines

[Promising results in on-board particle number measurements at JRC](#)

Matter Aerosol and Pegasor have participated in the on-board measurement campaign of particle number emissions (PEMS-PN) at EU's JRC laboratory. Preliminary results are very promising.

[Control Sistem's ammonia analyzer](#)

Control Sistem introduces an ammonia analyser. The NH₃ Analyzer is based on the LDS6 instrument from Siemens. The first deliveries have been completed.

[High-temperature ELPI+ from Dekati](#)

A new high-temperature version of ELPI+ has been launched by Dekati.

[New instruments from Grimm](#)

Several new instruments from Grimm have been launched. These are two versions of the new Laser Aerosol Spectrometer (Mini-LAS) and the Wide Range Aerosol Spectrometer (Mini-WRAS).

[Pegasor Mi3 launched](#)

The new integrated measurement unit Mi3 has been launched. Based on the previous Mi2, the new Mi3 provides numerous updates and improvements of both hardware and software.

[New products from Topas](#)

Topas has introduced an engine blow-by test rig, BBT 143 and a filter leak test rig, AFS 155, for the oil thread test according to ISO 1822-4 tests of HEPA filters.

[US EPA Tier 3](#)

The next step in emission regulations for light-duty vehicles in the USA, EPA Tier 3, was signed into law on March 3, 2014.

[Conferences, exhibitions and workshops](#)

An updated list of conferences, exhibitions and workshops where we will participate is provided.

Promising results in on-board particle number measurements at JRC

The first results from the EU on-board particle number measurement campaign (PEMS-PN) were reported to the participants for discussion in early February by EU's laboratory, JRC. Separate discussions about results were held later with all instrument suppliers. In total, 5 instrument manufacturers are represented in the study. Two of our partners, Matter Aerosol and Pegasor participate with PEMS-PN instruments. The aim of the study is to assess and validate the application and performance of portable PN instrumentation relative to each other and to a standard instrument (conventional PMP measurement system). A great number of tests have been made on light-duty vehicles operated on a chassis dynamometer and on the road. Cars representing a conventional gasoline car (MPI), three different gasoline direct injection (GDI) cars and a diesel car with DPF were included. No car with a gasoline particle filter (GPF) has (yet) been studied. There is still some data evaluation to be carried out and potential issues to be sorted out before the report will be published; presumably later in April. We will, of course, come back with more comprehensive information when this report is available. For the moment, JRC has asked the participating instrument suppliers of the study not to disclose any data before the official report is published, so we can at this point only make a very brief overview, which is limited to our partner's instruments.

NanoMet3 from **Matter Aerosol** comprise a PMP type dilution system for measuring solid particles and a particle instrument using particle charging and electrical detection (based on the DiSCmini instrument) for particle sizes ranging from 10 to 700 nm. The results were very promising for all types of cars and test cycles and thus, NanoMet3 was chosen the reference system by JRC. A contributing reason for this choice could be that the dilution and volatile particle removal is identical to a PMP measurement system. The other candidate instruments are based on other technologies.



Pegasor participated first with a **Mi2** and later (December 2013) with the new **Mi3** instrument. These instruments use heated sampling direct in the exhaust where the sample flow is driven by an ejector (small internal dilution) and particle measurement is carried out via charging and electrical detection. Two issues were first reported by JRC but both seem to have been sorted out now. The reasons were not attributed to the instrument itself but rather related to errors in data post-processing or data acquisition. In summary, the results are very promising with Pegasor's instrument regarding all the tests carried out.



[NanoMet3 brochure](#)

[Mi3 brochure](#)

Control Sistem's new ammonia analyser

Control Sistem's has launched a new product, the NH₃ Analyzer, for analyzing emissions of ammonia in engine exhaust. The product is based on LDS6 from Siemens; this is a world recognized leader in the supply of laser sensors, but common installation is extremely complicated in engine test cells (it was first developed for chimney application). Control Sistem integrated the sensor in a cabinet containing a specific sampling system and control unit that allows managing it as a common analysis cabinet. The product is fully compliant to EU and US actual regulations. The first installation of the NH₃ Analyzer has already been made for a customer.

High Temperature ELPI+™ launched

The High Temperature ELPI+™ was launched in 2013 and the first units were delivered in 2013. The impactor of the HT ELPI+™ can be heated up to 200°C thus avoiding condensation of volatiles. This is particularly advantageous if volatile concentrations are high but particle concentrations are low, making the use of thermodilution (heating+dilution) practically impossible. No other real-time instrument on the market can offer such an option! For existing ELPI+™ users there is a possibility for an upgrade. More information on the HT ELPI+™ will be provided later.

Please [contact us](#) for more information.



New instruments from Grimm

Our partner Grimm has introduced a number of new instruments for measurement of air quality.

Mini Laser Aerosol Spectrometer (Mini-LAS), EDM 11-E and 11-R

The new Mini Laser Aerosol Spectrometer (Mini-LAS) instruments from the new generation are based on the well-renowned optical measurement technology by Grimm, yet with a completely new design and electronics that offer numerous new possibilities for smooth operation and data handling. The new EDM 11-E instrument corresponds to the former EDM 107 and is intended as a hand-held instrument for ambient air quality measurements. The new 11-R corresponds to the old 1.109 instrument and is intended as a hand-held instrument for measurement of indoor air quality.

[11-E brochure](#)

[11-R brochure](#)



Mini-WRAS

The new Wide Range Aerosol Spectrometer, Mini-WRAS (model 1371), is a highly compact and portable instrument that combines optical detection and electrical mobility in one single spectrometer. The aerosol size range is from 10 nm to 25 µm divided into 40 size channels.

[Mini-WRAS brochure](#)



Pegasor Mi3 launched

Pegasor has launched the new Mi3 as a turnkey solution for automotive PM and PN emissions monitoring. Compared with the previous Mi2, Mi3 provides numerous updates and improvements of both hardware and software. Data output and test cell integration is carried out through a variety of output connection options. Read more in the news release from Pegasor and the Mi3 brochure.

[Pegasor Mi3 launched](#)

[Mi3 brochure](#)

New products from Topas

BBT 143 engine blow-by test stand by Topas

Topas' Blow-by Test rig BBT 143 is a compact measuring system for the determination of the oil droplet content of crankcase gases (blow-by) in engine test rigs. It combines the precision of a gravimetric measurement with the real-time capabilities of optical concentration measurements with aerosol photometers. BBT 143 is ideal for benchmarking of oil mist separators and provides a substantial reduction of the time needed for mapping of such devices.

Please [contact us](#) for more information and a possible demonstration.

[BBT 143 brochure](#)



AFS 155 filter leak testing by oil thread test

The oil thread test mentioned in **ISO 1822-4, appendix A** is used for visual proof of the absence of leakage of HEPA filters. This simple quality test procedure may be an alternative to the scan method.

The oil thread test (DOP Test) is also applicable if the scan method is not fully applicable because of the filter design (e.g. V-shaped arrangements).

For scanning of HEPA and ULPA filters, Topas offers the Filter Scanning Test Rigs AFS 150 and AFS 152 - well proven and reliable solutions.

[AFS 150 brochure](#)



US EPA Tier 3

The US EPA Tier 3 standard has now been finalized. The new standard introduces more stringent levels for several emission compounds, test methods and procedures. Tier 3 is very comprehensive but we have limited this overview to just a few comments.

Tier 3 emission standards for light-duty vehicles were signed into law on March 3, 2014. The Tier 3 standards are closely aligned with California LEV III standards. The phase-in period is from 2017 through 2025.

EPA will continue to use the old FTP-75 test procedure, i.e. not switch to the new Worldwide Harmonized Light Vehicles Test Procedure (WLTP), which most likely will be used in future EU emission regulations.

Regarding particulate emissions, EPA will rely on gravimetric methods but tighten the limits somewhat. The certification limit will be 3 mg/mile in the FTP-75 test procedure. In the US06 test cycle, the limit will initially 10 mg/mile and from 2019, 6 mg/mile. In use standards, however, will be 6 (FTP) and 10 mg/mile (US06) respectively. While the numerical level for particle mass (PM) is lower than the 4,5 mg/km level (according to the new PMP test method) introduced in Euro 5a in 2009 for diesel cars, it should be recognized that the actual PM level is often more than a factor of 10 lower for diesel cars with particulate filter (DPF). This is due to that the EU limit for particle number (PN) is comparatively stricter than the PM limit. Bearing in mind that the regulation for PN has been fully developed many years ago in the EU and has been in force since 2009, it is somewhat surprising to find that US EPA did not follow this route.

The Tier 3 regulation also tightens sulphur limits for gasoline to 10 ppm on annual basis in 2017, while small-volume refineries must comply by January 2020. The level is somewhat equivalent to the limit 10 ppm limit in the EU, which was introduced in 2005 and became mandatory in 2009.

<http://www.mondaq.com/unitedstates/x/300396/Clean+Air+Pollution/EPA+Finalizes+Rule+Tightening+Vehicle+Emissions+And+Fuel+Standards>

<http://www.dieselnet.com/news/2014/03epa.php>

<http://www.epa.gov/otaq/tier3.htm>

Conferences, exhibitions and workshops

Grimm seminar in Stockholm, May 15, 2014

The Grimm seminar about aerosol measurements will be held in Stockholm, May 15. The seminar is intended for those who have interest in measurement of aerosols in, e.g., working environment, ambient air, combustion gases and in aerosol research. The main focus of the Grimm seminar this year will be nanoparticles. Take the opportunity to meet a leading instrument manufacturer and exchange experiences with others representing a variety of different applications!

The main language for the seminar will be English but questions can of course be asked in Swedish.

Download the [preliminary programme](#) for this seminar (in Swedish).

For registration to the seminar, send an [e-mail](#) with your name and contact information. Note that our pre-registration ends on **April 14**.

18th ETH-Conference on Combustion Generated Nanoparticles

The 18th ETH-conference on Combustion Generated Nanoparticles will be held in Zurich, June 22-25, 2014. Participation is yet not fully clear but it is likely that our partners Matter Aerosol, Dekati and Pegasor will participate in the exhibition of the conference. We will update you with more information on our home page later.

More information is available on the Nanoparticle Conference home page:

[ETH Nanoparticle conference home page](#)

Testing Expo 2014

Meet us and our partners Control Sistem, Matter Aerosol and Topas at the Testing Expo in Stuttgart in June 24-26, 2014. We will update the information about this exhibition at a later stage.

Read more at the official web site of Testing Expo.

[Testing Expo](#)

Grimm webinars 2014

We would like to hint you to Grimm's Web Seminars, or "webinars". That is a very cost-effective way to collect information as no travel costs are involved. You can register on the Grimm home page to participate in such a seminar and then you will get a note about when the next possible slot for such a seminar will be.

You will need to install Skype on your computer to follow a webinar. Registration at the Grimm home page is also required. Participation in Grimm webinars is free of charge.

[Grimm webinars, schedule](#)

You are always welcome with questions and we are happy to send you our newsletter.

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Best regards,

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ExIS AB

ExIS represents the Finnish company PEGASOR, the German company TOPAS, the Swiss company MATTER ENGINEERING, the Italian company CONTROL SISTEM and the French company ECOMESURE in the Scandinavian and/or Nordic countries. We also represent the Finnish company DEKATI in Sweden and Norway and the German company GRIMM AEROSOL TECHNIK in Sweden. Detailed information about these companies and their products can be found at our [home page](#).

ExIS provide equipment and instruments for sampling, dilution and measurement of particles in air, exhaust and other gases. Our customers are at universities, research institutes, municipalities, hospitals, automotive industry, shipping companies, combustion applications, electronic industry, mechanical industry, metallurgical industry, process industry, pharmaceutical industry and filter manufacturers.

[More information](#)

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