

# ExIS Newsletter, December 2011

## Preamble

*The breaking news in this issue of ExIS newsletter is the release of the IONER high-resolution ion mobility spectrometer (HRMS). We have also summarized a couple of recent, new and updated standards and legislation and what ExIS has to offer in those fields. We also want to take the opportunity to wish you a Merry Christmas and a Happy New Year.*

*(Tip: click on the headlines below to navigate to the section of interest in the document)*

## Headlines

### **[IONER high-resolution ion mobility spectrometer launched](#)**

IONER has now released the innovative high-resolution ion mobility spectrometer (HRMS) instrument for measurement of Volatile Organic Compounds (VOCs).

### **[Update of ISO/EN standardization](#)**

An update on a couple of ISO and EN filter standards is provided. An overview of ExIS supply in these fields is provided.

### **[Update of automotive legislation](#)**

Particle number emission limits for petrol cars is proposed by the EU and a couple of issues with current Euro 5/6 and VI regulations are addressed. An overview of ExIS supply in these fields is provided.

### **[Great interest in Control Sistem's Micro-PSS for large marine engines](#)**

An increasing interest from manufacturers of large marine engines in the Micro-PSS micro-dilution system from Control Sistem has been noted.

### **[Grimm's EDM 365 SVC has been launched](#)**

The Grimm EDM 365-SVC instrument for measurement of semivolatile compounds (SVC) in ambient air has been launched. This instrument enables continuous measurement of SVCs in 31 size fractions between 0,25 and 32 µm.

### **[Grimm's new FAPES has been launched](#)**

Grimm's FAPES (Fast Aerosol Particle Emission Spectrometer) instrument has now been significantly updated in a new version. FAPES measures particles in a size range from 6.3 to 474 nm.

### **[DiSCmini from Matter Aerosol is now available for demonstration](#)**

We now have a DiSCmini instrument from Matter Aerosol available for demonstration. DiSCmini is a handheld instrument for real-time measurement of nanoparticles.

### **[Product news from Pegasor](#)**

The Pegasor PPS-M sensor has been further developed with the addition of a new extremely fast version that will be available in 2012. A number of useful accessories have also been added.

### Conferences, exhibitions and workshops

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

### Merry Christmas and a Happy New Year

ExIS office will be partly closed during the coming holidays. We wish you all a Merry Christmas and a Happy New Year.

## **IONER high-resolution ion mobility spectrometer launched**

The Spanish company IONER (ION Explorer by Ramem) officially released the high-resolution ion mobility spectrometer (HRMS) instrument at the NOSA (Nordic Society for Aerosol Research) Symposium in Tampere, Finland, November 9-11.

The HRMS instrument is ideal for detecting various chemical compounds, such as, e.g. explosives (Nitro-glycerine, PETN, RDX, TNT, TATP, HMTD), TICs and volatile organic compounds (acetone, diethyl ether, formaldehyde, BTX, etc.).

Early 2012, we will be able to conduct demonstrations of this innovative instrument. Please contact us on [e-mail](#) or phone (+46-8 647 45 99) for more information.

Dekati and ExIS jointly distribute IONER instruments in the Nordic countries. The product portfolio of IONER includes optic instruments, electrometers, control equipment, chargers and aerosol generators.



[IONER HRMS brochure](#)

[IONER home page](#)

## **Update of ISO/EN standardization**

### **ISO 11057 standard for testing of cleanable filters**

The ISO 11057:2011 standard specifies a reference test method for the comparative characterization of pulse-jet cleanable filter media, to be used in filter elements (e.g. bag filters, pocket filters, cartridge filters) applied in dry gas cleaning under standardized test conditions. The main purpose of testing according to this standard is to gain information about both the operational performance and the particle emission of cleanable filter media.

Topas has developed a new version of the AFC test rig, i.e. AFC 133, for testing according to the ISO 1157:2011 standard. The first unit of this test rig is currently being built. We do not yet have a brochure available for the new AFC 133 test rig but a hint about the layout and capabilities can be found in the brochure for the AFC 131 version.

[AFC 131 brochure](#)

### **New EN 779:2011 for indoor air filters**

A new version of the EN 779 standard for indoor air filters (EN 779:2011) will come into force in

2012. The new version of the standard will address some important issues, such as e.g. the problem that many synthetic fibre filters are electrostatically charged and can initially show a high cleaning efficiency. Since this charge is lost rapidly, the cleaning efficiency deteriorates significantly with time. The new version of the EN 779 standard addresses this issue.

Naturally, the completely automated Topas filter test rig ALF 114 respects the new EN 779 standard. Also the ASHRAE 52.2 standard is met by ALF 114. Several of these test rigs have been delivered to leading filter makers around the world and, among them, one to a laboratory Sweden.



[ALF 114 brochure](#)

## Automotive legislation update

### The EU Commission proposes Euro 6 particle number limit for direct injection petrol vehicles

At a meeting held on October 25, 2011, the European Commission proposed a particle number (PN) limit for Euro 6 petrol vehicles equipped with direct injection engines. The PN limit would be phased-in by two steps:

- A limit of  $6 \times 10^{12}$  #/km (10 times higher than the Euro 5b PN limit for diesel vehicles) would become effective at the Euro 6 effective date (2014.09/2015.09 for new types/all models)
- A limit of  $6 \times 10^{11}$  #/km (equal to diesel) would become effective three years later (2017.09/2018.09 for new types/all models)

Member states may be able to use the more stringent limit as basis for incentives or for access to low emission zones. As always with proposals for new emission limits, there is a considerable debate about the levels. For example, a couple of non-governmental organizations (NGOs) are lobbying to get a “technology-neutral” PN limit, i.e. similar level as for diesel cars already in the first step.

The Commission also intend to include particle number measurement in the requirements on “real driving emissions” (RDE) currently being developed as an additional requirement for Euro 6.

In order to meet the proposed more stringent PN limit (2017/2018), petrol engines may have to be fitted with particle filters (GPF, Gasoline Particle Filter); somewhat similar to the DPFs used on contemporary diesel vehicles.

Threshold limits for on-board diagnosis (OTL) would come into force at the same time as the particle number limits for DI petrol engines. The PM limit would be 12 mg/km according to the current proposal.

### The EU Commission consult on several Euro 5/6 and VI issues

In addition to the Euro 6 particle number limit proposal, the EU commission also issued a consultation on September 1 about several issues in Euro 5/6 light-duty and Euro VI heavy-duty regulations. This consultation concern changes regarding, e.g. NO<sub>2</sub> limits, accounting for methane as CO<sub>2</sub>-equivalent instead of pollutant and tightening of cold start emissions (NO/NO<sub>2</sub>) at -7°C.

Read more: [EU consultation](#)

## What can ExIS offer with respect to Euro 5/6/VI?



For a couple of years, the contribution to PM and PN from engine lubrication oil has been an issue for diesel engines and will be of increasing importance for Euro 6 direct injection petrol engines. Ash loading from lubrication oil of the DPF/GPF is an issue or direct contribution from crank-case ventilation if an “open” ventilation system is used, as on some heavy-duty engines. From Topas, we have a complete supply for measurement of crankcase PM emissions comprising both fully-equipped test rigs and stand-alone instruments.

The separator performance tester (SPT 140) is a complete test rig for testing of oil mist separators for crankcase gases. The blow-by gas



filter test rig comprises, e.g. an aerosol generator, a large droplet genera-

tor, filter holders for gravimetric measurement and various options for using particle spectrometers with proper sampling and dilution devices.

The PAP 612 is an optical on-line instrument, which can operate in over- or under-pressure. Due to its compact design, PAP 612 can even be used for on-board measurements. GMS 141 is a gravimetric measurement system for measuring oil content in blow-by gases. The filter box can be heated to avoid condensation. The measuring device combines a simple and rugged assembly with an economic low-cost manual application and handling. Control is made via a web browser.



[SPT 140 brochure](#)

[PAP 612 brochure](#)

[GMS 141 brochure](#)

For measurement of particle number, we can refer to a document (PMP overview, see below) that provides an overview of what we can supply in this field. ExIS offers a complete set of PMP-compliant measuring systems and instruments. Two complete measurement systems are offered, ViPR and RS-PMP. ViPR from Matter Aerosol is based on a rotating disk diluter and a CPC. RS-PMP from Ecomesure comprises a DEED dilution system from Dekati and a CPC from Grimm. Both the DEED and the Grimm CPCs can also be offered as stand-alone instruments.

[PMP overview](#)

[ViPR](#)

[RS-PMP](#)

[DEED-100](#)

[Grimm #5.430](#)

For fast (10 Hz) real-time particle size distribution, we can offer the ELPI+ from Dekati and the just recently launched 3<sup>rd</sup> generation of the FAPES instrument from Grimm. For ELPI+, we can offer various dilution systems such as the PMP-compliant DEED-100 for measurement in CVS tunnels and “PMP-like” dilution systems for measurement in raw exhaust. FAPES comes with a built-in dilution system for measurement in raw exhaust.

[FAPES brochure](#)

[Grimm's Newsletter, September](#)

[ELPI+ brochure](#)

[Dekati newsletter about ELPI+](#)

The DMM-230a instrument from Dekati can measure particle mass and number but can also provide information about the size distribution, i.e. mass media diameter (MMD) and geometric standard deviation (GSD). DMM-230a has recently received significantly increased interest from the auto industry that has manifested itself in large orders. The DMM will be used in conjunction with the PMP-compliant DEED-100 by one of the mentioned customers for measurements before DPF but also other dilution systems are available (please refer to the PMP overview).

[DMM-230a brochure](#)

[PMP overview](#)

Last but not least, we offer the PPS-M sensor from Pegasor. This sensor can measure particle mass (PM) in raw exhaust with a very high time resolution (100 Hz sampling frequency). A particle number (PN) calibration will follow. The PPS-M sensor is also a part of the PEMS measurement system based on Micro-PSS from Control Sistem. An OBD version of the Pegasor sensor that substantially exceeds the requirements in OTL applications is currently under development by Pegasor together with a Tier 1 automotive supplier. Read more about [PPS-M](#) and [Micro-PSS](#) below.

## Great interest in Control Sistem's Micro-PSS for measurements on large marine engines

The new version of Control Sistem's Micro-PSS for engine PM measurement that was launched early 2011 fulfils the requirements of practically all emission regulations worldwide. This has been validated by German TÜV, who has issued a certificate for the requirements fulfilled. Micro-PSS is also a candidate instrument that is evaluated for future on-board (Portable Emission Measurement Systems, PEMS) PM measurements. Control Sistem can also supply a conditioning box (temperature and humidity control) and a microbalance with weighing table and neutralisation for weighing filters as accessories. The advantage of the small size of Micro-PSS enables the option for on-site measurements. These advantages combined have spurred a considerable interest in Micro-PSS from manufacturers of large marine engines.



More information about Micro-PSS is available via the links below:

[Micro-PSS brochure](#)

[Micro-PSS description](#)

[Micro-PSS certificate](#)

## Grimm EDM 365-SVC instrument for measurement of semi-volatile compounds has been launched

The EDM 365-SVC instrument is technically based on the proven and robust GRIMM Environmental Dust Monitor EDM365 and has been designed to specifically determine the Semi Volatile Compounds (SVC) in the environment.

The new approach of GRIMM is based on measuring particles via two different probe inlet paths; one is the proven Nafion dryer without the loss of particles and semi-volatile particles; the other one uses in addition a heated sampling probe head prior to the optical measurement. This sampling probe

head can be heated, depending on the application, up to an arbitrary temperature of 300°C. A mechanical valve switches automatically in adjustable intervals between the two sample air inlet paths. Calculating the difference between the two measurements allows not only the determination of the SVC for TSP, PM<sub>10</sub>, PM<sub>2,5</sub>, PM<sub>1</sub>, and for the total counts but also – and this is unique – for the size resolution in 31 channels starting at 0,25 µm up to > 32 µm. Due to the relatively short switching time between the two flow paths, a continuous measurement of the SVC fraction is enabled.

The EDM 365 is based on the same technology as the EDM 180 instrument and, therefore, it is approved as an equivalent instrument by the Swedish EPA for measurement of PM<sub>10</sub> and PM<sub>2,5</sub> in ambient air.

For more detailed information about the EDM 365-SVC instrument, please refer to the latest Grimm newsletter, available via the link below. Further information about the EDM family of instrument is found in the EDM catalogue and the documentation from Swedish EPA and the reference laboratory.

[Grimm's newsletter 4, 2011](#)

[EDM Catalogue](#)

[Recommended instruments \(in Swedish\)](#)

[Recommendation from Swedish EPA \(in Swedish\)](#)



## Grimm's new FAPES has been launched

Grimm's FAPES (Fast Aerosol Particle Emission Spectrometer) instrument has now been significantly updated in a new version. FAPES measures particles in a size range from 6.3 to 474 nm. FAPES is a true real-time instrument with a sampling rate of 10 Hz (internally, 100 Hz). FAPES provide data on particle size distribution in 25 difference size classes.

FAPES comes with a built-in sampling, dilution and conditioning system, where temperature and dilution ratio can be varied. No pressurized air is needed since the dilution air is instead filtered, dried and purified from organic gases with active carbon.

Please [contact us](#) for more information and/or a demo. More information is also available in the documents below.

[FAPES brochure](#)

[Grimm's Newsletter, September](#)

## DiSCmini instrument is now available for demonstration

The "Diffusion Size Classifier" or DiSCmini from Matter Aerosol is now available for demonstration. This unique hand-held size classifier provides real-time measurement of nanoparticles and has gained a lot of interest. DiSCmini can be used in many applications where, until now, full-size instruments have been the only option. Since some time, ExIS has this interesting instrument readily available for demonstration and we have now also gained own extensive experience of using the instrument.

For those of you who are interested in looking at data from the DiSCmini, we have prepared an MS Excel sheet with post-processed data from the DiSCmini.

[Example data.](#)

Contact us for a [demonstration](#). More information is available via the links below:

[DiSCmini brochure website](#)

[DiSCmini flyer](#)

[Matter Aerosol](#)



## Product news from Pegasor

### Fast PPS-M

Pegasor is working on a special version of the PPS-M sensor to further improve the response time. This version will be launched early 2012 and it is now being tested by selected customers. The PPS-M sensors delivered after the summer 2011 already incorporate a number of improvements of the electronics (in addition to less noise and drift) for enhancing response time compared to the standard version of the sensor. The special "fast" version has some additional features in the electronics and its firmware and it also has a modified flow path to enable increased sampling rate.

PPS-M sensor calibration for particle number (PN) is on its way as a complement to particle mass (PM). At customer sites, an excellent repeatability and reproducibility showing 99 % (or better) correlation compared to a PMP-compliant particle number measuring systems have been achieved. After collecting more data, a calibration for particle number will be released in 2012.



### New accessories

New accessories for PPS-M are a "Chinese hat" type of sampling probe and an inlet flow restrictor. The inlet flow restrictor enhances the measurement range to higher concentrations and it is particularly suited for sampling before DPF, where concentrations can be high. In combination with the improved electronic unit, the upper range can be extended so that maximum concentration is no longer an issue and no additional dilution will be needed for this purpose. The flow restrictor is incorporated in a pipe fitting and can be used with any type of sampling probe.

We now have the latest version of the PPS-M sensor available for demonstration (contact us via [e-mail](#) or phone: +46-73 944 34 01).

[PPS brochure](#)

## Conferences, exhibitions and workshops

### SAE HDDEC Symposium, September 11-12

ExIS will participate in the exhibition at the SAE Heavy-Duty Diesel Emissions Control Symposium held in November 11-12 in Gothenburg, Sweden. ExIS has participated in SAE HDDEC a couple of times in the past.

The two-day HDDEC symposium provides upcoming regulatory actions, state-of-the-art technical information and first hand experiences relating to heavy duty diesel emission control strategies, engine and aftertreatment systems and integration and the future direction of the industry.

Attendees will hear and interact with the most knowledgeable leaders from the global, heavy duty diesel powertrain industry who best understand the complicated science of the pollutants emitted during engine combustion and how to treat them. This symposium is held every other year in Gothenburg, Sweden with Corning, Johnson Matthey and Volvo as the host companies.

More information about the SAE HDDEC can be found via the link below:

[SAE HDDEC](#)

### SAE Emission Control from Large Ships Symposium, September 13-14

A two-day Diesel Emissions Control of Large Ships Symposium will follow the SAE HDDEC Symposium and be co-located in Gothenburg as well. We will come back with more information about this event later.

### Grimm webinars in 2011

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](#)

## Merry Christmas and a Happy New Year!

During Christmas and New Year holidays (21/12 to 1/1), we will be partly out of office. You can still reach us from time to time on mobile phones or via e-mail but it may happen that we not always will be able to respond as quickly as you would like.

We at ExIS wish you a Merry Christmas and a Happy New Year!





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

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Best regards,

Peter Ahlvik and Staffan Larsson

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## ExIS AB

ExIS represents the Finnish companies DEKATI and 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 German company GRIMM AEROSOL TECHNIK in Sweden and the Spanish company IONER in Denmark and Norway. 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](#)

If you do not want to receive our newsletter in the future, just send an e-mail with the heading “unsubscribe” to the e-mail address you find [here](#).

Do you have questions or comments? Send an e-mail to: [info@exisab.com](mailto:info@exisab.com) or phone +46-8-647 45 99