

Fidas® Frog proves it worth at #MucOhneMief

Green City e.V. used the particle measurement system to collect well-founded data



Photo: Green City e.V./Christian Grundmann

Fidas® Frog in fine dust measurements in Munich

■ The new Fidas® Frog has made an important contribution to #MucOhneMief (meaning “Hashtag Munich without pong”), a campaign of the Munich-based environmental organization Green City e.V. The compact monitoring system weighing only two kilograms simultaneously measures the particulate fractions $PM_{1'}$, $PM_{2,5'}$

PM_4 and $PM_{10'}$, as well as the particle size distributions, and is equipped with the TÜV-certified measurement technology of the Fidas® 200. This enabled Green City e.V. to quickly and easily measure and evaluate particulate pollution at four different locations in Munich for several weeks. ■ Page 2

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Dear Readers,

■ The health hazards from respirable fine dust particles are increasingly claiming attention. By now, there are even apps for smartphones that allegedly permit detection of fine dust pollution. However, only well-founded measurements of particle sizes and particle concentrations can be relied on, and these require mature and high-quality measurement technology.

With the new particle monitoring system Fidas® Frog, Palas® thus treads new ground once more. Our goal was to develop an inexpensive and handy measurement instrument that is easy to use and does not compromise on reliability. Therefore, we use the TÜV-certified technology of our Fidas® 200 for our new handheld device. Users can rely on their results always being well-founded.

In marketing and production, too, we break new ground. The Fidas® Frog has a “stylish” design; we are planning high volumes and use modern 3D printing technology. With its intuitive operation via a detachable tablet computer, our “Frog” is an instrument that anyone working in the field of environmental measurements and safety at work can operate. The battery life is sufficient to monitor an entire working day. The integrated camera allows easy documentation of the measurement setup.

The Fidas® Frog is suitable for fine dust measurements in indoor spaces such as offices, factories, schools and vehicles. We believe that fine dust measurement cannot be easier than this, and that users should not settle for less.

Yours truly, the

Palas® Management
Leander Mölter and Dr.-Ing. Maximilian Weiss

Fidas® Frog proves it worth at #MucOhneMief

Green City e.V. used the particle measurement system to collect well-founded data

■ In Munich, this year the environmental organization Green City e.V. launched the campaign #MucOhneMief (meaning “Hashtag Munich without pong”), intended to draw attention to the fine dust pollution in the city. The central element of the first phase of the campaign was the Fidas® Frog of Palas®, weighing only two kilograms. The fine dust monitoring system simultaneously measures the particulate fractions PM₁, PM_{2.5}, PM₄ and PM₁₀, as well as the particle size distributions and particle number concentrations. The handheld device is equipped with the sensors and evaluation routines of the Fidas® 200, which is TÜV-certified and approved by the Federal Environment Agency for measurements of the particle sizes PM_{2.5} and PM₁₀. The environmental organization restricted the evaluation of the measurement results that it had collected for two months to these two particle sizes. Palas® provided the test device free of charge for this period.

Decisive advantages for the campaign were the lightweight, compact design of the Fidas® Frog and its ease of operation. Thus, with a device Green City e.V. was able to collect well-founded data quickly and reliably at four different points in Munich’s Haidhausen quarter. Measurements were taken twice a day, in the morning and evening, for 20 minutes each per point. For this purpose, the measurement system was attached to a specially fitted bicycle at a height of approximately one meter. Stationary fine dust monitoring systems are often installed at heights of 3 to 4 meters, where the burden is significantly lower. “We would deliberately take the measurements at a level where children’s noses are, and at times when children go to school. It was particularly important to us to see the burden during this period”, explains Andreas Schuster, who is managing the campaign for Green City e.V.

On the occasion of the campaign start, Karsten Pletscher, Division Manager Environmental Monitoring at Palas®, was on site and explained the intuitive operation of the Fidas® Frog. The device is controlled via a detachable tablet. This enables users to actuate the controls even far off the measurement site. “Operation is child’s play. There are few parameters to be used during the measuring process. They are mastered after a single briefing and short personal use”, said Schuster. The functions for documentation and further processing of the measurement data did not present an obstacle to technical laypersons either.

High fine dust pollution in the matutinal hours

The data were evaluated by Dr. Werner Zittel, Chairman of Ludwig-Bölkow-Stiftung, for Green City e.V. His analysis showed that fine



Photo: Green City e.V./Simone Amtmann

Palas® Division Manager Karsten Pletscher explains operation of the Fidas® Frog on site

dust pollution was very high especially in the morning. Here the annual average value for fine dust particles recommended by the WHO in Munich was exceeded at all four measurement points. Limits as those of the WHO relate to long-term and regular examinations. The measurement results obtained with the Fidas® Frog represent only a snapshot. Nevertheless, the data collected with the portable fine dust monitoring device are important arguments to

support the #MucOhneMief campaign. They drew the desired media attention to the work of the environmental organization and sensitized many citizens to the problem of fine dust. “Our conclusion is that the public measurement stations in Munich are not sufficient to record the actual hazard to the citizens on a precise daily basis”, Schuster summarizes the measurement campaign with the Fidas® Frog.

About Green City e.V.

■ Green City e.V. was founded in 1990 as a non-profit association, and today it is one of the largest environmental organizations in Munich. The objective of the association is to reduce motorized individual traffic and emissions of climate-damaging gases, and to make the city greener and more livable. The association is financed by donations, grants and contract work, and each year it organizes about 160 events and activities.



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The Fidas® Frog fine dust monitoring system

■ With the Fidas® Frog, Palas® breaks new ground. This fine dust aerosol spectrometer is small, light-weight and precise. The battery life is sufficient for an entire working day, e.g. for measurement of the fine dust pollution at the office workplace, in the workshop or in the laboratory. Operation via the wireless touch panel is easy. The Fidas® Frog communicates by WLAN via its control panel with its operator. This allows the user to perform measurements over long distances from the particle source. On the user interface of the Fidas® Frog, all measurement series are displayed and compared. Fast printouts of reports are effortlessly possible.



Fidas® Frog

The Fidas® Frog is based on sensor and measurement algorithms of the proven Fidas® 200 certified by TÜV Rheinland. Thus, precise measurements for the fine dust fractions PM₁, PM_{2.5}, PM₄ and PM₁₀ are ensured. All the usual particle size distributions are shown.

Palas® to expand product range for discharge systems for aerosol conditioning

X-ray neutralizer XRC 049

■ Electrically charged aerosols can seriously distort measurement results, e.g. in filter testing. Discharge systems produce a balanced and reproducible charge distribution in the aerosol and thus enable reliable measurement data. With the new XRC 049, Palas® offers a discharge system that is particularly suitable for mobile measurements. The X-ray neutralizer is the only one on the market to operate with a tube voltage of 4.9 keV, i.e. soft X-rays, thus not subject to the X-ray Ordinance. This avoids imposition of official transport restrictions on the user.

The XRC 049, compatible with the U-SMPS systems, utilizes the bipolar neutralization prescribed by ISO / CD 27891, which enables reproducible charge distribution. The discharge system has full capacity immediately after switching on. After switching off, no further ionization occurs.



X-ray neutralizer XRC 049

Discharge system CD 2000

■ The discharge system CD 2000 has been successfully used in filter testing for decades. It works based on bipolar corona discharge, which is required in some standards such as ISO 11155-1 and EN 779. This allows liquid and solid aerosols to be provided with a positive, negative or neutral charge. This offers the advantage of investigating the removal efficiencies of filters selectively. With the CD 2000, ionization is performed electrically; thus, no operating license for radioactive devices is necessary. The discharge system is available for mixed volume flows of 2 – 18 m³/h and 3 – 36 m³/h.



Discharge system CD 2000

Aerosol neutralizer Kr-85

■ A very reliable solution for measurement with U-SMPS systems and calibration of nanoparticle counters is the Kr-85 system. This aerosol neutralizer uses the radioactive noble gas krypton-85. The krypton is contained in a hermetically sealed stainless steel reservoir. Even in case of release, it is virtually not absorbed into the body, but exhaled again. Nevertheless, increased demands in terms of radiation protection are needed, on which Palas® will be happy to advise. Upon request, the neutralizer Kr-85, available in two versions differing in activity (57 MBq and 370 MBq, respectively), is supplied with additional lead sheathing.



Aerosol neutralizer Kr-85

Filter media test rig MMTC 11057 according to ISO

■ To complement the well-established MMTC 2000 system, Palas® has now developed the MMTC 11057. This new filter media test rig corresponds to the structure of the ISO 11057 reference test channel and offers several technical advantages.

The special features of the channel design are the vertical raw gas channel with separate airflow control and the dust generator BEG 1000 that guarantees **extremely stable dust supply**. To ensure ease of use and simple filter exchange, the clean-gas section can be pushed back for filter exchange and turned to the side by up to 90°. Thus, **easy access for channel cleaning and maintenance** are possible.

In addition to the gravimetric analysis of the total emissions after the measurement, the MMTC 11057 comprises a specially designed sampling unit in the clean gas for online particle detection with the Promo® system.

The development and verification of the excellent function of this test rig was funded by the AIF as part of the ZIM research project KF2748501HGO and carried out in cooperation with the Saxon Textile Research Institute STFI in Chemnitz. At this point, Palas® wishes to thank the two partners for the excellent cooperation.

Special advantages:

- Representative sampling without disturbing the compressed air filter cleaning effect.
- The aerosol spectrometer Promo® 2000 allows detailed analysis of the filter cleaning and loading process at a high temporal resolution, at single-second intervals, with respect to the particle number and particle size.

Ultra-precise and reproducible test systems

Palas® solutions are known in the filter media industry to provide clear customer benefits in terms of performance and operating costs. The MMTC system provides ultra-precise, reproducible test systems for the development and quality control of cleanable filter media.



Filter media test rig MMTC 11057 according to ISO

MSS 08 Multi Sampling System Connects a central measurement device to up to eight measuring points



MSS 08 Multi Sampling System

■ The new multi-sampling system MSS 08 connects a central measurement device, e.g. from the nanoparticle measurement systems UF-CPC or ENVI-CPC, to up to eight sampling points. In this way, a measuring device detects, for example, the nanoparticle concentrations in several rooms. The individual measuring points can be directly selected or changed through an automated sequence. Interval and measuring time can be individually selected by the user. Operation is possible both via the user interface on the measurement device and via a panel on the MSS 08 itself. Included software allows the measurement data to be displayed over a network on multiple monitors. The system is already being used in a renowned research laboratory in France.

30 years of Palas® ATS



■ This year, there was the 30th annual meeting of many experts of aerosol technology at the Aerosol Technology Seminar (ATS) in Karlsruhe. The anniversary was the farewell event of Prof. Christoph Helsper as the moderator and Managing Partner Leander Mölter as the organizer of the seminar. As a mark of gratitude, Prof. Helsper was presented with a classy electric guitar, and Mr. Mölter was honored with a glass-cast 3D printing of the Fidas® Frog.

What distinguishes the ATS? We asked long-time attendees:

Dr.-Ing. Stefan Haep, who has been attending the ATS for more than 15 years, appreciates above all the familial setting with seasoned researchers and junior staff from aerosol measurement technology: "Here I can discuss the performance and range of applications of Palas® measurement devices with independent third parties." The managing director of the Institute of Energy and Environmental Technology e.V. (IUTA) also appreciates that "in inspiring conversations with the experts from the fields of aerosol measurement technology and filtration often the foundations for new ideas and projects are laid."

"At the ATS, I get insight into issues of particle metrology in process engineering", said **Dr. Harald Creutzmacher**, Head of the State Institute for Environment, Measurements and Nature Conservation of Baden-Württemberg (LUBW). The traditional gala dinner on Monday



evening is also an important part of the ATS to him: "Palas® has a knack for creating, by a well-chosen supporting program in a suitable ambiance, the conditions for lively exchange of ideas in a relaxed atmosphere."

For many years, editor **Dr.-Ing. Hildegard Lyko** has likewise been accompanying the ATS. She writes for the trade journal F&S Filtrieren und Separieren and confesses having "acquired roughly at least 80 % of my knowledge of aerosol technology and filter testing at the various ATS meetings." Neither does she know of any other event "that is so up-to-date regarding the development of standards and guidelines for air filter testing and air quality measurement as the Palas® ATS is".



■ This year, too, the on-site testing of filter media was an attraction at the Palas® booth at **Filtech in Cologne** once more. Again, Palas® was the only company to present fully functional test rigs.

New team members

■ The workforce at Palas® has grown further during the current year, too. Here we present our reinforcements briefly:



New to Palas® in the finance sector is **Ulrike Müller** (l.), while **Birgit Köhler** (r.) has taken over management of the secretariat.

We also welcome to the Palas® team:

Giovanni Di Leo: Production / Electronics
Antje Hauser: Technical Writing
Stefan Lauinger: Development
Selvina Önder: Production / Electronics
Kevin Schäfer: Technical Product Design
Serkan Tekbas: Production / Optics

PhD thesis on optimization of gas-borne nanoparticles

■ In April this year, **Dr.-Ing. Frederik Weis** completed his doctorate at Karlsruhe Institute of Technology (KIT) with honors. His doctoral thesis at the Department of Mechanical Process Engineering deals with the production and coating of gas-borne nanoparticles to optimize them for catalytic and medical procedures.



Moreover, in 2016 Palas® did plenty for the development of young talents as well: Mara Pfeffinger, who had already written her bachelor's thesis at Palas®, did her master's thesis at the company, too. In addition, once more three internships for university students were awarded.

Palas® supports culture and sports in the region



Photo: Radsportgemeinschaft Karlsruhe 1898 e.V

■ As one of the main sponsors, this year Palas® made a concert at the "Festhalle" in Wörth come true. Ten young conductors from the State College of Music in Karlsruhe organized the event with 240 singers and musicians of the choir and orchestra of the University of Stuttgart, soprano Marie-Pierre Roy, tenor Christian Wilms, baritone Daniel Raschinsky and a school choir.

In the field of sports, Palas® supports "Radsportgemeinschaft Karlsruhe e.V.". In 2016, the club hosted the "2nd Radkriterium Karlsruhe-Neureut" with 300 participants, and, among other things, it actively promotes integration of refugees.

■ PALAS® DATES

You will find up-to-date details of fair and exhibition dates at which Palas® is represented on the internet at: www.palas.de/en/exhibition.

This is a brief snapshot of our current fairs:

- **Filtration & Separation, Shanghai, China**
07.12. - 09.12.2016
- **INDEX 2017, Geneva, Switzerland**
04.04. - 07.04.2017
- **AQE, Telford, UK**
24.05. - 25.05.2017
- **Airmon 2017, Dresden, Germany**
11.06. - 15.06.2017
- **Powtech 2017, Nuremberg, Germany**
26.09. - 28.09.2017

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 Palas® **Particular** is issued annually. We are pleased to receive any ideas and criticism. If you require further copies or want to recommend the newsletter, please email us with contact details.