

# 25 Years Palas® GmbH

## From aerosol-technology-pioneer to world-wide recognised technology-company

► The idea to launch and mass-produce products for the generation and measurement of aerosols required at the beginning of the 80's genuine pioneering spirit. „Aerosol generators could be found only as individual units at the universities“ remembers Palas® managing director Dipl.-Ing. Leander Mölter. „Only one company world-wide manufactured aerosol measuring instruments. At that time, we recognised this market gap in time“. The establishment of the Palas® GmbH in the year 1983 by Mölter, his brother Wolfgang and Friedrich Munzinger, up to now Mölter's partner, was the beginning of a success story.

Today, well-known companies from almost all over the world appreciate the technology,



**Dear Readers,**

► This year, Palas® celebrates its 25th anniversary. We can look back on a good quarter century. In 2008 exactly the same applies to us as in 1983: We are not satisfied with standard solutions, but we are always working to improve our products. This has distinguished our products over the past 25 years. Not least for this reason the name Palas® stands today world-wide for precision and quality, for service and flexibility. We owe this success above all to our customers, who backed us all the way and have had again and again confidence in us. Many thanks to them!

As you can see on this newsletter, we used our anniversary as an opportunity to revise our corporate design. There will be a new edition of our brochures as well. And you can of course count also in future on innovative solutions from our company.

Leander Mölter  
 Managing Director Palas® GmbH

the know-how and the service of the company situated in Karlsruhe, Germany. At the beginning of the anniversary year, the export portion amounts to approximately 60 per cent. Palas® is market leader regarding the development and production of filter test systems and particle measuring instruments. This fact is documented also by approximately fifty patents. In numerous applications in the automotive, chemistry and filter industry, in medicine and environmental research, in clean room technology as well as in research institutes Palas® devices are first choice.

### Commencements in the Technology Factory Karlsruhe

The ambitious firm founders, whose company concept was honoured with a prize of the magazine Capital, moved 1984 as one of the first tenants into the founder centre Technology Factory Karlsruhe. In 1992 the growth of the company finally made the removal to today's location in Karlsruhe-Hagsfeld necessary. In the starting time products for aerosol generation took centre stage. However, over the years one concentrated increasingly on the particle measurement.

A milestone in the company's history was the development of the „T-aperture-technology“ - a measuring procedure which excludes border zone errors as a frequent cause of inaccurate measurement results. A consequence of the further optimisation of this fully developed technology was the white light aerosol spectrometer welas® system. This system was finally launched in 2003 as best-selling product. In the same year, Palas® received for this development an award in the context of the Dr.-Rudolf-Eberle-Prize of the federal state Baden-Württemberg.

Today, the close contact to universities and research establishments is just as important as in 1983. „We cooperate world-wide with research establishments and network intensively particularly with universities, the university of cooperative education in Mosbach, the university of applied sciences and the research centre here in Karlsruhe“, reports Mölter. „This proximity to research represents in addition to the close co-operation with our customers from



**Palas® managing director Leander Mölter and his associate Friedrich Munzinger**

industry the basis for many Palas® products. With the development of our products we always have the practical application in view.“

With training courses and seminars Palas® offers well-founded information and further training. The annual Palas® Aerosol-Technology-Seminar (ATS) has been an important expert forum for over 20 years. Palas® participates world-wide in exhibitions and congresses. With their cooperation in VDI, DIN and ISO committees Mölter and his employees contribute to representing the point of view of the German particle technology industry at the development of standards. Today, Palas® has 18 employees whereby this number tends to increase. „We are going to celebrate our 25th birthday with a large anniversary event on September 11 and 12“, announces Mölter.

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# Palas® technology assures reliability of fire detectors

► Wrong alarm or failure in case of emergency: with a fire detector both must be excluded, so that the instrument protects humans and real values effectively against fires. The reliability of fire detector systems is decisive for an early alerting and the mobilisation of fire fighters. Therefore, the correct adjustment and the quality assurance have top priority at the production of fire detector technology.

**„We use the nebulizers primarily in order to adjust the values at which the fire detectors are activated“**

The company Hekatron Vertriebs GmbH, manufacturer of solutions within the range of plant-specific fire protection, has been using for over ten years Palas® technology for the manufacturing of fire detectors. In the company's location Sulzburg approximately 20 Palas® aerosol generators series AGF and UGF are used to generate liquid particles. „We use the nebulizers primarily in order to adjust the values at which the fire detectors are activated“, explains Dipl.-Ing. Gerd Gerweck, responsible at Hekatron for the automation of test equipment in production. „Therefore we need a constant and defined aerosol concentration. In order to regulate the concentration, the aerosol is mixed with compressed air. Thus, we simulate in principle the smoke during a fire.“

## Challenge: Constant generation of low aerosol concentrations

Some fire detectors developed by Hekatron are characterised by extremely low response values - thus fires can be detected already in their earliest developing phase and further damage can be avoided. The reliable adjustment of these sensitive devices is - according to Gerweck - a measurement-technological challenge: „Compared to our standard system detectors we need for the adjustment of our suction fire detectors, which suck in actively the



AGF 2.0 in use

room air and respond to smoke even in smallest concentrations, a thousand-fold lower aerosol concentration - which however must be kept just as constant. It is of great advantage for us that the Palas® devices work stably and reliably.“

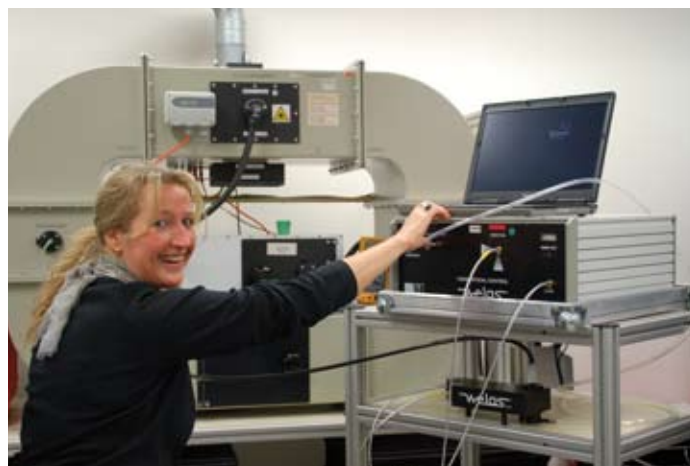
The adjustment of the fire detectors is done by means of a mixing device and of the Palas® dilution systems VKL 10 and/or VKL 100. These are controlled from a PC: the concentration can be changed over the inlet of the generator, the dilution over a control valve. The systems are linked in a control loop in order to generate a constant value. Gerweck

describes how the sensor „memory“ of the fire detector is being shaped: „As soon as the concentration is constant, one gives the detector the signal ‚Go!‘ - now it is to make its message. That is the marginal value which is written into the memory.“

According to Gerweck, the integration of the generator into a control loop does not make the procedure regulation-technically completely simply. In this connection he testifies well the Palas® generators. Good results have been always supplied - a case of damage has never happened before. Apart from the adjustment of the fire detectors, the Palas® aerosol generators are used also for sampling inspections. There, one examines if the fixed response threshold is observed. „During the tests we begin with a low value being far inferior to the response value and raise the aerosol concentration into the alarm range“, reports Gerweck. „Thus we can store the alarm value and compare it with the reference value.“

## Reliable measurements possible also at inaccessible points

Beside the generators, also the Palas® aerosol spectrometer system welas® 2000 has been used for over a year as further stage of the quality assurance. With this system the Hekatron engineers examine on the one hand the particle size spectrum of the generators. On the other hand - just regarding the low concentrations at the adjustment of the highly-sensitive detectors - the calibration of the whole system is tested with the welas® system. The welas® sensor is attached in the flow channel where the aerosol is generated. Here, the technical advantage is the connection of the sensor with the control and evaluation unit over an optical fibre cable. Thus a measurement is possi-



Calibration of fire detectors at HEKATRON

ble also in places difficult to access.

„The measurements with welas® serve us as a second reference in relation to our procedure with scattered light photometers and the transmitted light procedure, which is described in the DIN standard EN 54-7 for the calibration of fire detector systems“, explains Gerweck. „Thus we have the possibility of comparing two methods with one another. Shouldn't we be sure that the generator is okay, we can check additionally the size spectrum - and also the concentration within this size spectrum.“

## ► PALAS® CUSTOMERS

**HEKATRON**  
Ihr Partner für Brandschutz

► The company Hekatron Vertriebs GmbH with its registered seat in Sulzburg, Baden-Württemberg is specialised in the development, production and distribution of systems of plant-specific fire protection. The company was founded in 1963 and has altogether 400 employees. Among its product range rank fire detectors, fire detector centres, smoke switchboard plants, smoke alarm systems and safety control systems. In own research and development, Hekatron develops continuously new solutions for the fire detector technology. Hekatron belongs to the Swiss Securitas group and has over 22 locations in Germany.

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## Large dilution spectrum with only one device

With the cascaded Palas® dilution system dilutions with the factor 10 to 10,000 and without compressed air are possible

▶ The Palas® product range was extended within the range of aerosol dilution by a cascaded dilution system offering clear advantages in practical application. This instrument corresponds to four VKL 10 dilution systems switched one behind the other for the unaltered aerosol dilution with the factor 10. The dilution range can be increased accordingly by a connection in series. The particularity of the new cascaded dilution system is the integration of the dilution systems in only one instrument. For the user, this means that he can regulate the desired dilution simply over the choice of one of the four instrument outlets. The cascaded dilution system makes dilutions with the factor 10, 100, 1000 and 10,000 possible. In contrast to the normal dilution system this one works with a pump instead of compressed air. The particle size range in the aerosol volume flow can be between 0.01 to approx. 5 µm.

The use of dilution systems is necessary to be able to measure reliably also highly concentrated aerosols concerning their particle size and concentration with counting aerosol measuring devices (e.g. optical particle coun-

ters which measure practically without coincidence errors). All Palas® dilution systems fulfil the strict requirements fixed in the VDI guide lines 2083, 3491 and in the FDA guidelines. The application area of a particle counter can be extended only with exactly defined dilution systems.

The cascaded dilution system can be combined with all current aerosol measuring instruments and particle counters. With its broad concentration spectrum the system is optimally suitable for many ranges of application. For example for the measurement of diesel exhaust gases, swarfs, welding smoke and test dusts, in quality control or for separation degree measurements as well as for acceptance measurements of clean rooms and laminar flow boxes. The instrument is both simply manageable and solid. It supplies reliably a temporally constant, representative dilution and a constant mixing ratio at a constant system pressure. The dilution takes place independently of the particle size in a reproducible and defined way.



Cascaded dilution system with ventilator connection

## Practical filter testing with Palas® ageing chamber

Time and cost saving due to accelerated procedure

▶ With the separate ageing chamber of Palas® the user disposes of a simple, compact and extremely low-priced solution in order to accelerate the testing of filters effectively and



Palas® ageing chamber

to save costs that way.

Fast feasible and reproducible filter tests and the exact characterisation of filter media are indispensable for the development of filter technologies and the improvement of filter performances. In order to adapt the cyclic behaviour of a filter medium, the VDI guide line 3926, part 1, dated 1994 stipulates two procedures for standard tests in the laboratory. However, practice-relevant tests, in particular regarding the life time, can not be accomplished with the described procedures.

For this reason, in the revised VDI guide line 3926 dated October 2004 it is recommended to cause an artificial ageing at the test procedure by cleaning intervals in order to characterise also the long-term behaviour. Therefore, the respective filter material is to go through 10,000 cycles with a cleaning interval of 10 seconds in order to accelerate the ageing process. Nevertheless this proceeding is time-consuming, explains Palas® managing director Leander Mölter: „For the ageing of a filter medium and/or of a complete mini filter 100 hours and more must be taken into ac-

count. A test series with ageing and repetition measurements can therefore take several weeks. In order to be able to clearly accelerate the procedure, we developed a separate ageing chamber which corresponds also to the requirements from practice (e.g. curved clamping of the test medium, garland effect).“ Beside the time and cost saving during the filter testing according to VDI 3926, the ageing chamber from Palas® offers several further advantages. Thus, different types of dust can be used whose composition corresponds to materials from practice. The ageing chamber can be equipped also with a humidity and temperature control. It is possible to use different, particularly adapted filter holders. Thus, the garland effect can be simulated and its effects on the cleaning behaviour, the filtration characteristics and the life time of a medium can be clearly proven. The filter can be dusted also vertically. Beyond that it is possible to use the separate ageing chamber in-situ at the original test rig. Due to the simple set-up the ageing chamber is cost-saving, the test dusts are reusable.

# Palas® training courses enjoy great popularity

► Since the commencements of the company, practical information has belonged to the service the Palas® GmbH offers its customers, partners and prospective customers. The offered training courses have proved of value not only for the practical work with Palas® devices. The year 2007 showed in particular, that Palas® training courses are also a firmly established information platform for the exchange between users and for the imparting of latest technical knowledge. These courses enjoy great popularity in the industry.

**„The demand for the first training date in February was so great that we offered a supplementary date one week later“**

Last year, the Palas® training course "Particle Measurement Technology" was twice booked up. „The demand for the first training date



*In the lunchroom, the participants have the opportunity to exchange views and experiences with colleagues.*

in February was so great that we offered a supplementary date one week later", reports Palas® managing director Leander Mölter. „With 16 participants the second training date was fully booked like the first date". Furthermore, due to many demands, an additional training course "Clean Room Technology" took place in June. In 2007, sales manager Dipl.-Ing. Martin Schmidt, managing director Dipl.-Ing. Leander Mölter and sales engineer Dipl.-Ing. Sven Schütz, who manage together the training courses, could welcome altogether 105 training participants.

## Basic knowledge and practical exercises

Since 2006 the Palas® training courses "Particle Measurement Technology" have been offered in German and English language - international customers and partners have gladly made use of this offer. In 2007 altogether 20 participants from all over the world travelled to Palas® to attend the English training course "Particle Measurement Technology". The program of the Palas® training courses contains fundamental information on aerosol technology like the definition of the fractional efficiency and of the total separation degree or the prin-



*The training classroom on the premises of Palas®. Right in the picture Prof. Dr.-Ing. Ulrich Teipel, his colleague Herbert Winter and students from the university of applied sciences Nuremberg.*

ciples and technical possibilities of the aerosol generation and dilution for the calibration of measuring devices, as well as the practical handling of Palas® products.

## Training program created according to the interests of the participants

The Palas® training courses „Clean Room Technology" and „Particle Measurement Technology with Regard to Filter Testing" in German and English language take place regularly (2 to 3 times per year) as a one-day course in an air-conditioned class room on the company's premises in Karlsruhe. The training contents consider the special interests of the participants. These ones can indicate already on the registration form which topics are of particular interest for them. In order to impart the theoretical knowledge lastingly, practical exercises top the training courses off and deepen the learned things. You can find the dates for the Palas® training courses on our homepage [www.palas.de](http://www.palas.de). By the way, those registering in time can benefit from our early bird rebate.

## ► PALAS® AGENDA

**Palas® will participate in the following exhibitions and conferences (excerpt). We are looking forward to meeting you there!**

- **9th Symposium „Textile Filters"**  
04.03. - 05.03.2008  
Chemnitz, Germany
- **Clean Rooms Europe**  
11.03. - 13.03.2008  
Stuttgart, Germany
- **10th World Filtration Congress**  
14.04. - 18.04.2008  
Leipzig, Germany
- **Automotive Testing Expo 2008 Europe**  
06.05. - 08.05.2008  
Stuttgart, Germany
- **Filtration & Separation Asia 2008 + 5th China International Filtration Exhibition & Conference**  
28.05. - 30.05.2008  
Shanghai, China
- **12th ETH Conference „Combustion Generated Nanoparticles"**  
23.06. - 25.06.2008  
Zurich, Switzerland
- **EAC 2008**  
24.08. - 29.08.08  
Salonika, Greece
- **Gala 2008**  
09.09. - 11.09.2008  
Karlsruhe, Germany
- **Palas® Anniversary Seminar and Open Day**  
11.09. - 12.09.2008  
Karlsruhe, Germany

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