Palas® Particular

Nr. 2 | 2006 Information for customers and partners of Palas® GmbH

Dear Readers,

▶ in this edition of our newsletter we are going to report on interesting developments at Palas®. Together with ZIG – Centre for Integral Building Services Engineering at HTA Lucerne – we developed a procedure for the qualification of room air testing in operating rooms. This procedure can contribute substantially to the protection of patients.
We expect an important impulse for the further development of our company from the promotion of AiF for the development of a test particle monitor. This monitor is going to be developed in co-operation with IUTA.
These projects financed through promotion funds do not pay off only for the science, the taxpayer benefits from them, too. Thus, Palas® paid back long ago only via income taxes for example the promotion funds received 1984 for a research project.
We wish you an interesting reading.
Leander Mölter
Managing Director
Palas® GmbH

In this edition:

Seminar with tradition 20 years Palas®-ATS

„Discussing practical problems and finding solutions"

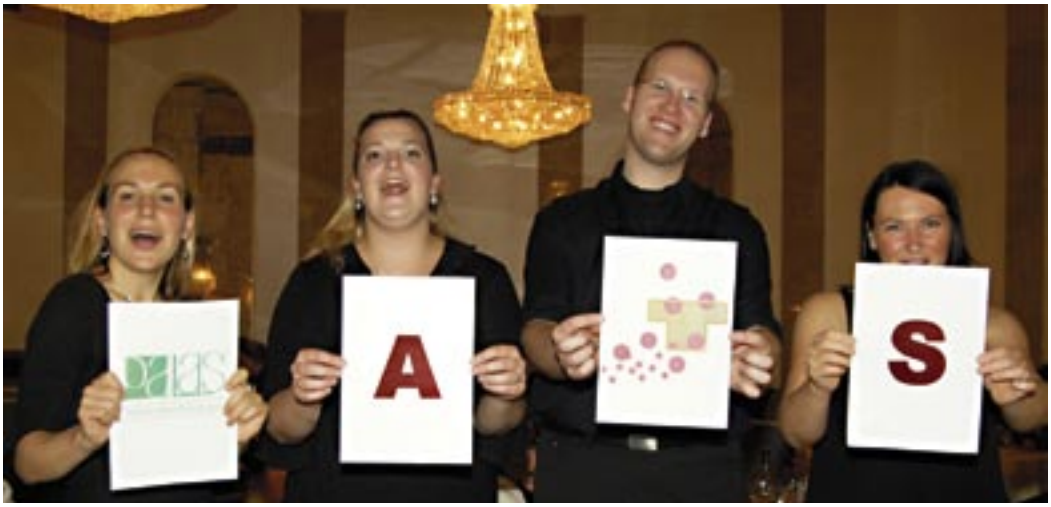
▶ The list of participants of the anniversary seminar showed: Palas® offers year by year a central forum to the industry. 51 participants, about two thirds of them from the industry and a third from science and research, attended on the 16th and 17th of October 2006 in Karlsruhe the Aerosol-Technology-Seminar (ATS) „Testing of filters and separators - according to standard and in practice" and celebrated with Palas® the 20th anniversary of this seminar.

Professor Christoph Helsper from the University of Applied Sciences Aachen/Jülich celebrated an anniversary, too: He has been moderating the ATS since its first time: „The fact that such a small company organises its own aerosol technology seminars, was at that time somewhat completely new. With the ATS we accompany also 20 years of development in the particle measurement technology." Helsper also gave a lecture at the anniversary seminar. His lecture „Aerosol physics in clear experiments" showed that science can also make fun. With balls of different sizes as well as with milk and ink he showed how aerosol particles step into reciprocal effect with light. For his „science-show" Helsper had transported 15 kilos of extra luggage to Karlsruhe „by train", as he pointed out.

The ATS was and will always be also a mirror of current topics. The graduate engineer Peter Lohse from the company F.O.S. Umwelt- und Filtertechnik Deutschland GmbH reported on „Selection of filter media on the basis of measurements according to VDI 3926 type 2" – the report of a user from the industry. The paper of the graduate engineer Roland Sommer „Selective on-line characterisation of fine dust" also raised positive resonance. A topic with very current reference.

It was understood that on occasion of the 20th ATS anniversary Palas® was going to present something special to the guests of the ceremonial gala dinner. Particularly with the „ATS song" the singing quartet consisting of the two pairs of siblings Patricia and Simone Kessler and Alexander and Patricia Voss brought down the house.

This successful prelude created a special framework for this specialised seminar which was complimented by the participants on the competent papers and lively discussions.



Siblings in action: Palas® marketing director Patricia Kessler (l.) and her sister Simone (r.) created together with Alexander and Patricia Voss the musical programme at the gala dinner of the 20th Palas® ATS on 15th of October in Karlsruhe

„We have always attached importance to the discussion of problems from practice and to finding solutions", says Palas® managing director Leander Mölter. „I am really proud to say that, since 1986, we have remained true to this claim."

„People dealing with particle measuring technology could learn over the years very much at this seminar", says Albrecht Klimmek from the company FiberMark Gessner, since many years a regular participant at the ATS.

Test measurements at the operating table

Palas® measurement technology protects the patient

▶ The highest requirement in hospitals is the security of patients and employees – this applies particularly to sensitive areas such as operating rooms. In Switzerland it had been realised that, in many cases, the testing of protective systems does not function effectively enough. The air, with which patients came into contact in operating rooms, was frequently polluted. As a consequence, guidelines were formulated in the new Swiss SWKI guideline 99-3 for the qualification of particle measuring systems.

Test measurements at the operation table

These are to be transferred into the German VDI guideline 2167 part 1 for technical building equipment of hospitals. Central point is the reliable testing of these systems.

Thus, not only the measuring components of the different manufacturers are to be examined, but also their coaction. For corresponding test measurements high technical challenges arise as a result of the guidelines. For the determination of the protective effect the particle concentration must be determined during the pollution of the operating room with a particle reference load (Qref), which shows the same source strength with all measurements as comparable base factor. This reference load consists of an aerosol, which flows in fixed places into the room.

Test in practice at ZIG

Presently, at ZIG – Zentrum für Integrale Gebäudetechnik (Centre for Integral Building Services Engineering) of HTA Lucerne – a concept for the concrete qualification of this testing method is being prepared in the context of the research project „Building Services Engineering in the Health System" (co-financed by KTI). Under the direction of Professor Kurt Hildebrand an appropriate test in practice was accomplished there for the first time. ZIG has been Palas® customer since the beginning of 2005, this test in practice is the first common project. The challenging measurements were also an endurance test for Palas® devices: The aerosol generator AGF 2.0, the aerosol spectrometer welas® 3000 with the welas® sensors 2200 LC1 and LC2 as well as the dilution systems VKL-10 and VKL-100 were used for this test.

Successful measuring programme

The measurements were a complete success. Contrary to earlier assumptions the reference source strength could be characterised clearly. Professor Hildebrand and his colleagues showed that the particle concentration and the particle distribution can be measured reliably around an operating table.

In the experimental setup – arranged around the model of an operating table – a defined particle reference load had been generated with the aerosol generator AGF 2.0 and distributed with an aerosol distributor. Thus, the aerosol concentration and the particle size distribution could be measured at different outlets.

Cascaded Palas® dilution systems VKL

The graduate engineer Dominique Helfenfinger, assistant project manager, praises the good cooperation with Palas® and is particularly impressed by the characteristics of the aerosol generator AGF 2.0. „The Palas® devices are optimally suitable for this kind of test measurements", says Helfenfinger. The results of the practice test in Lucerne show clearly: The aerosol distributor supplied at the outlets an almost identical particle concentration which could be clearly characterised with the welas® 3000 system. Not to mention the fact that one succeeded to determine the reference source strength directly and without dilution. A calculative indication of the reference source strength – as suggested in the guideline – is not meaningful, particularly since depending upon use of a clean room counter different concentrations are measured. The welas® system convinced particularly by the fact that due to its T-aperture technology the particle concentration can be determined practically without coincidence errors.

With commercial clean room counters in connection with the Palas® dilution systems, the reference source strength can be likewise determined clearly. During the measurements it could be shown that by cascading the dilution systems (see figure), a dilution factor of 100,000 can be adjusted reliably and reproducibly.

After successful measurement, ZIG will recommend to orient the qualification of the room air testing towards the tested procedure. Thus, Palas® can make now also a contribution to the effective protection of patients.

▶ Palas® Customers

ZIG – Centre for Integral Building Services Engineering

FACHHOCHSCHULE ZENTRALSCHWEIZ
HTA
HOCHSCHULE FÜR TECHNIK+ARCHITEKTUR LUZERN
ZIG
ZENTRUM FÜR INTEGRALE GEBÄUDETECHNIK

▶ ZIG is a multidisciplinary institute of HTA, the University for Technology and Architecture in Lucerne. Under the direction of Professor Miro George Trawnika, ZIG offers with approximately 20 employees applied research and development as well as services in the building services engineering.

For customers from economy and for public centres measurements are accomplished and studies and expert opinions are furnished. Core competences are the measuring, testing and simulating of whole buildings or of individual subsystems and energy-efficient building. An important radius of action is the cooperation in different standard commissions at home and abroad, as for example the development of the Swiss SIA standards of the building industry.

ZIG posses as one of the few European universities a HLKS laboratory with one „HLK" and „Calibration place air flow" laboratory accredited according to the international standard ISO/ IEC 17025.

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welas® system – more flexible, versatile and powerful

Newly developed sensors extend the application range

▶A strong point of the welas® system is the versatility of the modular concept. Thus, the optimal system can be arranged for the respective application with different sensors for different measuring ranges. The possibility of combination with different sensor types, control units (e.g. welas® 3000 for quasi-simultaneous measurements) and different lengths of optical fibres as well as the possibility of supplementing the system with the new welas® CNC module offers to the user the possibility to use the welas® system for very different applications.

Now Palas® supplemented the system by several new welas® sensors which highly extend the application range:

- **NEW**: welas® sensor 2100S for the coincidence-free measurement in very high mass concentrations (150,000 P/cm³); (A2, SAE-Fine: up to 1,000 mg/m³)
- **NEW**: welas® sensor 2300 for measurements in low raw gas concentrations down to the clean room class of 100,000
- **NEW:** welas® sensor for measurement in liquids!

New sensors for dust measurements in very high and very low concentrations

Of all sensors, the new sensor 2100S measures with the smallest three-dimensional T-shaped measuring volume. Therefore, it can measure also in very high concentrations without coincidence errors. (Coincidence means: more than 1 particle at the same time in the measuring volume. The smaller the measuring volume, the higher the probability that, also with high particle concentration, there are not several particles at the same time in the measuring volume.) Application ranges are e.g. measurements according to ISO 5011 (engine air filters) in mass concentrations of 1 g/m³ (ISO-Fine).

The new sensor 2300 with the largest three-dimensional T-shaped measuring volume measures also in very low concentrations up to 5 P/cm³ (clean room class 100,000).

The advantage is the reduction of the measuring time through a higher counting rate (i.e. the sensor counts more particles per second) in small concentrations. The new sensor is used e.g. for outside air measurements and measurements according to EN779/Ashrae (room air filters).

With the new welas® sensors a reliable particle size and particle number determination is now possible within the range of approx. 5 P/cm³ up to over 150,000 P/cm³ – due to the patented T-aperture technology without coincidence errors and without border zone errors.

welas® measures now also in liquids!

Many customers and prospective customers are waiting for it – the interest in a welas® system for liquids is enormously high. The Palas® engineers agreed long ago that this is very well possible with the welas® measuring principle.

Still this year, the first welas® sensor for liquids will come in series on the market. With this system particles can be measured within the size range of 0.5 µm up to 30 µm – in concentrations of up to 10^5 P/cm³.

The large number of prospective customers lets us look positively into the future: Palas® is sure that this new development will find very fast many customers. The new device is used e.g. for particle measurements in the liquid filtration or for hydraulic oil.

AiF promotion for Palas® and IUTA project

▶ With promotion of AiF – Arbeitsgemeinschaft industrieller Forschungsvereinigungen (Working Committee of Industrial Research Associations) – Palas® develops and builds in cooperation with IUTA – Institut für Energie- und Umwelttechnik e. V. Duisburg (Institute for Energy and Environmental Technology e.V. Duisburg) – a test particle monitor unique so far for the reliable number determination of exclusively fluorescent test aerosols in ambient air. With this innovative procedure there is no cross sensitivity in relation to particles in ambient air. Thus, different applications are possible, for example a clear and fast determination of the retention of safety work benches and of ceilings over operating tables during simulated operation. Furthermore, with this test particle monitor a fast leak test determination of filters and air outlets can be accomplished in pharmaceutical production plants.

The promotion of this project in the context of PRO INNO II (PROgramme for the promotion of increase of the INNovation competence of medium-sized companies) will contribute to a further positive development of Palas®. Thus, not only the existing jobs are to be secured, but beyond that two new jobs are to be created in 2007. A turnover increase by 10 per cent is aimed for starting from 2008.

The economic meaning of such a promotion becomes clear when reviewing the year 1984: At that time, the Federal Ministry for Research and Technology had promoted the company Palas® in the context of the TOU project. At that time, the successful development of our company would not have been possible in comparable measure without these subsidies.

Left to right: Dr. Opiolka, IUTA, Mr. Adamowitsch, State Secretary of Ministry of Economics Berlin, and Palas® Managing Director Leander Mölter. Left in the background: AiF Chairman, Mr. Dipl.-Ing. Johann Wilhelm Arntz.

„The industry is on the upswing – we perceive that, too“
Palas® at Achema 2006

▶As one of the most important industrial exhibitions for the process industries, Achema – with its great international importance and its innovation strength – is naturally an absolute must for Palas®, too. The presence at Achema 2006 – the largest exhibition for Palas® in this year – was therefore linked with high expectations and clearly put aims.

„We must of course be present“, says Palas® marketing manager Patricia Kessler, „the public relations on international exhibitions are very important. Our aim is to socialise and to acquire new customers.“

In order to address these potential customers, one focused on a broad advertising in the run-up to the exhibition and on a particularly attractive exhibition stand. Thus, several complete test stands were set up, which could be also operated if necessary. „The visitors can bring a filter medium to our stand and we test it directly on-site. Such a thing doesn't exist anywhere else“, explains Palas® managing director Leander Moelter.

Some generators as well as different welas® models had been presented, too. Particle measurement in the exhibition hall did not represent a problem for the Palas® particle measuring device – despite an environment with high particle concentration, in which so-called clean room counters would be hopelessly overstrained. Short time later the interested visitor could read off the seized measuring curves on the PC screen.

At the end, Achema 2006 was a success for Palas®, even if the numbers of visitors were easily declining. In return, Palas® was pleased by the particularly qualified visitors and by many interesting contacts. The proportion of the international visitors was particularly high. If, in the past, the filter testing took centre stage, this year many visitors were remarkably interested in the measuring technology. Despite the joy over the successful exhibition, Palas® concludes the following: At the next Achema in three years visitors will find the Palas® stand in the hall with main focus on measuring technology.

Palas® Presentation at ACHEMA 2006

New office space and modification of Palas® building: size for further growth

▶ The year 2006 has been the most successful in the history of Palas® so far. By renting new office space the conditions for further growth have been created. Thus, Palas® occupies now the complete building in the Greschbach Street 3B. In the production and technics department the workshop was enlarged and the ceiling was heightened. In the future, also very large test stands can be built here. An enlargement of the doors in the production department and the installation of a ramp and a roll gate in the workshop make a simpler evacuation of the test stands possible.

After the modification, the employees are particularly proud of the new large demonstration room – here the devices are going to be presented adequately to the Palas® visitors. The new space is important, because the staff grew since 2004 by 20 per cent. Now there is also sufficient space for new colleagues. Palas® wants to create two further jobs until 2007.

This year, the next step will be the new and more amply structuring and designing of our training and seminar room. This step is really necessary since, at the end of this year, the half-yearly Palas® particle measuring technology training will take place for the first time also in English.

Due to the modification and extension of the Palas® building, process flows are optimised and costs are saved. This means for our customers: No price increases are planned for next year. Quite the contrary will happen: The prices for international customers from non EU-countries can be even cut. And the Palas® employees are glad, too: They can now use the new air conditioning system on hot summer days.

▶ Palas® Agenda

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

▶ **Nanofair**
21.11 – 22.11.2006
Karlsruhe, Germany

▶ **Filtech 2007**
27.02. – 01.03.2007
Wiesbaden, Germany

▶ **ToxExpo 2007**
26.03. – 28.03.2007
Charlotte, USA

▶ **Powtech 2007 / Partec 2007**
27.03 – 29.03.2007
Nürnberg, Germany

▶ **AFS 2007**
27.03 – 31.03.2007
Orlando, USA

▶ **IDEA 2007**
24.04. – 26.04.2007
Miami, USA

▶ **VDI-Fachausschuss „Gasreinigung“**
25.06. – 26.06.2007
Karlsruhe, Germany

▶ **Gala**
04.09. – 06.09.2007
Rostock, Germany

▶ **EAC 2007**
09.09. – 14.09.2007
Salzburg, Austria

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