New material testing system optimises material research and teaching at Cologne UAS

- ✓ *Hegewald & Peschke GmbH delivers complex material testing system*
- ✓ *Design according to the needs of the Institut für Werkstoffanwendung (Institute for material employment)*
- ✓ *Material research in the range of -70 °C to +1200 °C*
- ✓ *Non-contacting and precise strain measurement on a laser speckle-basis*

Nossen / Cologne, June 1st, 2010 – The Hegewald & Peschke Meß- und Prüftechnik GmbH has developed a new material testing system for Cologne University of Applied Sciences. The complex system has been designed according to the individual needs of the Institut für Werkstoffanwendung (IWA – Institute for material employment) and was commissioned at the end of April 2010. Now, scientist and students can carry out complex tests on different materials at temperatures between -70 °C and +1200 °C. The focus is set on industry-oriented research projects on metallic and partly polymer materials of different dimensions.

The acquisition was made possible with the programme "Großgeräte der Länder" and financial aid from the state of North Rhine-Westphalia.

New possibilities for research and teaching

The IWA in Cologne is generally well equipped for the testing and characterisation of metallic materials. However, until now it was only possible to carry out tensile tests with older devices. High-precision tests at high or low temperatures, or high-precision bending tests could not be carried out. Moreover, the existing testing machines are not very precise in the lower load range.

Thus, the IWA decided to purchase a new system, which could carry out different high-precision tests on different kinds of materials. The system would also have to be easily operable and expandable, and work quickly, flexibly and cost-efficiently. Based on those requirements, the IWA chose a compact universal testing machine from the Hegewald & Peschke GmbH. Questions concerning operational safety did influence this decision as well as the technological know-how of the producer.

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Press photos:

The new material testing system at Cologne UAS:

This photo has been approved for press releases concerning the Hegewald & Peschke GmbH.

You can download this press release with the photos from:

www.hegewald-peschke.de/aktuell/presse-publikationen/publikationen.html

www.daylight-medienserver.com

“Many other manufacturers do only offer standard solutions, which do not enable the substitution of all our old aggregats and the testing of different materials,” says **Prof. Dr. Martin Bonnet, director of the IWA at Cologne UAS**. “Instead of buying a multitude of individual devices, Hegewald & Peschke gave us the possibility to develop a customised complex universal testing system.“

The new material testing system in detail

The new system is based on a universal testing machine, type Inspekt 300 kN. It has been customised for the specific demands of IWA and expanded. It now includes:

- the central testing machine with
- a lateral test room,
- hydraulic grips,
- a temperature chamber, and
- a high-temperature kiln.

While the lateral test room is mainly used for bending tests up to a load of 150 kN, the temperature application can either be realised with a temperature chamber in a range between -70°C and 280°C, or with the help of a high temperature kiln at up to 1200°C. The load measuring range and the sensitivity of the load sensor are chosen so that many different materials of different dimensions can be tested.

Based on this technology, strain measurements can be carried out at different temperatures in order to draw conclusions about the quality and durability of the materials.

Furthermore, the system is equipped with a fully-automatic long range extensometer and a non-contacting laser speckle extensometer, which consists of two cameras with LSE processor and FFT software for the correlation analysis. It can realise a measuring accuracy of up to 3µm. Both devices are suitable for the reliable determination of longitudinal and lateral strain. Furthermore, non-contacting laser speckle measurements detect local strain gradients easily.

All additional components of the new material testing system at IWA, such as the temperature chamber and the high-temperature kiln, are connected to the machine via special pivoting and linear guidings. Thus, measurements can be carried out while other specimens are pre-tempered in order to save time. This reduces changeover times between individual test designs significantly because the testing tools do not have to be remodeled.

The tests are controlled and evaluated with the help of the universal material testing software LabMaster. It is responsible for the test parameterisation, automatic detection of all measuring sensors and the generation of a user-defined test log.

About Hegewald & Peschke Meß- und Prueftechnik GmbH

The measuring and testing technology specialists are based in Nossen, near Dresden. Since 1990, the company has been developing, manufacturing and selling high-quality machines, components and software solutions for testing raw materials, constructional elements and components. These include universal testing machines, hardness testing machines, test stands for furniture and constructional elements, as well as various length measurement devices for industry and research. The company, with 50 employees and various sales offices throughout Germany, also provides various measuring and testing services and retrofitting for universal testing machines. The design and software development divisions at Hegewald & Peschke maintain close cooperation with universities and research institutes (such as Fraunhofer) in order to ensure that the company's products remain at the cutting-edge of technology. Hegewald & Peschke is certified according to ISO 9001 and has its own DKD calibration laboratory. **For further information about Hegewald & Peschke Meß- und Prueftechnik GmbH, please refer to the company's website: www.hegewald-peschke.com**

About Cologne University of Applied Sciences and the Institut für Werkstoffanwendung

Cologne UAS is the largest university of applied sciences in Germany. The eleven faculties with more than 400 professors offer more than 70 programmes of study from the fields of engineering sciences, the humanities and social sciences. Cologne UAS is a full member of the European University Association (EUA); it belongs to the Associaton of universities of applied sciences UAS 7 and it is certified for its environmental orientation (EMAS and ISO 14001).

As a central scientific institution at the university, the Institut für Werkstoffanwendung (IWA – Institute for material employment) is working interdisciplinary. More than 600 students of different Bachelor and Master programmes complete 18 different laboratory experiments for their practical training. The students are mentored by seven professors. Prof. Dr.-Ing. Martin Bonnet is the director of the Insitute, which focuses not only on teaching, but also on the support of research projects, Bachelor and Master theses and engineering and scientific projects with material-related questions. **For further information about Cologne UAS and the Institut für Werkstoffanwendung, please refer to their websites http://www.fh-koeln.de and http://www.f09.fh-koeln.de/institute/iwa/**

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