



Report

25th IKV International Plastics Technology Colloquium

Aachen. The 25th International Plastics Technology Colloquium was held on 3 and 4 March 2010 in the Eurogress Aachen. With some 500 experts attending, the number of participants remained constant compared with 2008, despite the economic crisis. Participants represented the entire spectrum of the plastics industry and included raw materials manufacturers, machine and mould manufacturers and plastics processors plus their customers. Those taking part in Aachen came from 15 countries and more than 250 companies and institutions.



500 participants attended the IKV Colloquium 2010 (Photo: Brixius for the IKV)

At its Jubilee Colloquium, the IKV once again presented the latest research results, covering all the different facets of plastics processing. Participants praised the good organisation of the event, with an accompanying exhibition, and the quality of the papers presented. The outstanding experts from industry, whom the IKV was able to acquire as moderators for the papers and speakers for the workshops, made a key contribution to this positive outcome.

At this central event for the plastics industry, the IKV highlighted the future prospects for plastics processing, under the motto "Plastics technology – looking ahead". Professor Michaeli stressed in this respect that science and research constitute the basis for knowledge, growth and prosperity. One of the key concerns of the Colloquium was to transfer scientific findings to industry and to ensure that these findings were clearly visible for industrial application. The Colloquium provided an excellent platform for this once again, permitting critical discussions of the latest innovations in a joint dialogue.



Prof. Dr.-Ing. Dr.-Ing. E.h. Walter Michaeli opening the IKV Colloquium 2010 (Photo: Brixius for the IKV)

Georg Menges Prize 2010

In the context of the Colloquium opening ceremony, the Georg Menges Prize 2010 was awarded in the Europasaal on 3 March 2010. This year's prize went to Professor em. Dr. Dr. h.c. Hartwig Höcker. The prize, which has now been presented for the seventh time running, is awarded jointly by the VDMA German Plastics and Rubber Machinery Association, PlasticsEurope Deutschland e.V., and the IKV's Association of Sponsors.

Up until his retirement, Professor Höcker held the Chair of Textile Chemistry and Macromolecular Chemistry and was Director of the German Wool Research Institute (DWI) at RWTH Aachen University. He successfully instigated special research projects and was committed to interdisciplinary research at RWTH Aachen University. He is active on a large number of committees. In all these functions, he works towards the development of a climate conducive to communication and cooperation and thus makes an active contribution to shaping the research landscape. Through research and consistent implementation of the results, he has thus also helped to achieve innovative processes and products in the plastics industry too. It was for this reason that he was awarded the Georg Menges Prize 2010.



Georg Menges Prize 2010 went to Prof. em. Hartwig Höcker (in the middle), on the left: Prof. Franz Brandstetter, Chairman of the IKV Association of Sponsors, on the right: Prof. Walter Michaeli, Institute Director

Young Researcher Award for 2009 and the Fibre-Reinforced-Plastics Study Prize 2010

In recognition of outstanding integrative cooperation between scientists, the Young Researcher Award was presented for the first time in 2009 to researcher groups involved in the excellence cluster on “Integrative production technology for high-wage countries”. The recipients of the prize included IKV scientists Dipl.-Ing. Tim Arping, Dipl.-Ing. Thomas Baranowski, Dipl.-Ing. Barbara Heesel and Dipl.-Ing. Christian Windeck.



Prize Winner of the Young Researcher Award 2009

The “Fibre-Reinforced-Plastics Study Prize” was donated and presented by Dr.-Ing. Peter Ehrentraut for the second time. The award went to Dipl.-Ing. Robert Bastian from the IKV for his outstanding degree thesis entitled “Optimising the production of CRP bicycle frames by the prepreg process”. With his work, Bastian created the basis for a racing cycle frame in CRP which responds to racing cyclists’ demands for greater stiffness with a low weight.



Dipl.-Ing. Robert Bastian was awarded the Fibre-Reinforced-Plastics Study Prize 2009

Highlights 2010

Professor Walter Michaeli opened the technical part of the Colloquium with his plenary lecture entitled “Research in a university environment – the IKV, RWTH Aachen University and the Excellence Initiative”. In his lecture, Michaeli spoke about university research, its

significance for society and the contribution made by the IKV as an integrative component of RWTH Aachen University, and also about the excellence initiative. In his contribution, Michaeli made an urgent appeal for sufficient notice to be taken of scientific findings and emphasised that the dialogue between science and industry, and the consideration of specific wishes regarding research contents could only be achieved through joint discourse. In his plenary lecture, he called for the dialogue between science and industry to be extended still further, so that the transfer of scientific findings into industry could take place without any major delay. He pointed out, in particular, that sustainability had to be a motto for research and those sponsoring it. Short-term trends in research frequently failed to fulfil the intended desire for social relevance.

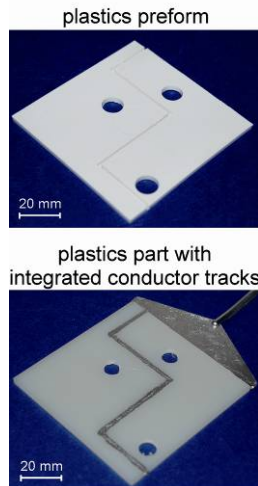
Professor Ullrich Masberg opened the second day of lectures with a plenary lecture on “Rubber engineering and simulation” in which he looked into the increasing importance of numerical simulation processes in the work of engineers in the plastics industry. Since elastomers have highly complex material behaviour, it is necessary to compile theoretical models. In a bid to achieve realistic model calibrations, a critical look was taken at the “reverse engineering” model, with all its advantages and drawbacks, which has already been successfully used in crash simulations.



Professor Masberg at his plenary lecture on the second day of the Colloquium

Research highlights

The highlights from the Institute’s specialist departments included, in the case of Injection Moulding, the large number of new developments achieved in the field of special injection moulding processes. The chief attraction for participants was the demonstration of a new hybrid multi-component process. This involved the combination of plastics injection moulding and the diecasting of metals for the first time for purposes of injecting metal conductive tracks directly onto a plastic substrate. Employing this different type of hybrid multi-component process, which is suitable for high-volume production, it is possible to produce innovative, high-grade electronics components with a new property profile while simultaneously shortening the process chain. This holds enormous potential for a large number of future applications, including in the automotive and electronics industry.



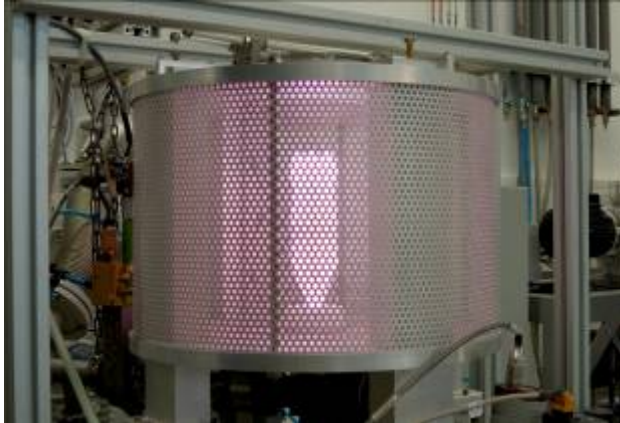
(Photo: IKV)

The Extrusion Department presented an innovative melt degassing concept, among other things, which constitutes a low-cost alternative to conventional pre-drying. This met with a great deal of interest on the part of the specialist audience. Precisely when processing hydrolysis-sensitive polycondensates, a fluctuating level of moisture in the raw material can lead to quality problems. The quantity of moisture in the material depends inter alia on the share of recyclate and the storage conditions and thus has a key influence on the hydrolytic degradation of the material in the extruder. These fluctuations cannot be completely offset through constant degassing, and hence it has not so far been possible to guarantee a homogeneous product quality. With the innovative control system, it is now possible to compensate for fluctuations in the moisture content of the raw material, permitting a homogeneous product quality to be achieved.



Innovative melt degassing concept shown at the IKV extrusion pilot plant (Photo: IKV/Winandy)

In the Part Design and Materials Technology Department, the latest development in the field of plasma-based refinement processes met with particular interest on the part of those present. In addition to the barrier coating of alternative materials such as polypropylene (PP) or polylactide (PLA), a new process variant was presented for the combined inner and outer coating of beverage bottles by the low-pressure process. The demonstrator developed at the IKV to this end makes it possible to apply a barrier layer system in a single process that has so far required the combination of two separate processes. This then permits greater cost efficiency.



Plasma unit at the IKV pilot plant (Photo: IKV/Winandy)

In the Composites Department, the series production processes for thermoset FRP constituted a particular highlight. The gap impregnation process met with a great deal of interest here – this was awarded the AVK's innovation prize for the university sector in 2009 (see IKV Communications 3/2009 and 4/2009) – as did new simulation tools and the fibre spraying of thermoplastic hybrid yarns.



Gap impregnation unit installed in the FRP pilot plant at IKV (Photo: IKV/Winandy)

Four workshops

The four workshops were also particularly popular. With more than 100 participants, the “medical technology” workshop registered a high attendance, showing just how much interest there is in this topic. A large number of companies are attempting to make the move into medical technology as a growth market during the crisis. The challenges posed by this market and the opportunities and obstacles to getting into medical technology were discussed in this workshop.

The workshop on “Advantage Failure Analysis” gave an overview of the full range of typical failure modes and mechanisms. Failure analysis on plastics products has now developed into an established field from which it is possible to derive key findings for design, material selection and service life predictions for existing products and also for the successful development of new products.

In the “Management Methods” workshop, the structural realignment of a mould and machine-building company was presented, based on the trend towards reduced product development times and a short time-to-market for series production. This strategic realignment permits the



efficient and effective development of production solutions, thanks to interdisciplinary cooperation. It thus secures the innovativeness of companies and brings competitive advantages through a high level of technical competence.

“Tyres for the Future” was the subject of a further workshop. The general requirements on a vehicle tyre and the future statutory framework conditions are necessitating a reduction in noise emission and braking distances. The participants engaged in intense discussions on the six “vectors” that depict the fundamental properties of a tyre. With the introduction of silica compounds, the challenge in the production of tyre compounds now lies in mastering the time and temperature behaviour and ethanol emissions.

Successful accompanying programme

In addition to the lecture sessions, a specialist exhibition was once again held in the foyer of the Eurogress. Forty companies took the opportunity to present the full range of their products and services at the IKV's 25th

Colloquium. To mark the 60th anniversary of the IKV and its Colloquium, products and services from the fields of systems technology, peripherals technology and process technology were presented, together with innovative engineering services, quality control systems, and laboratory and analysis units for the plastics and rubber industry. Participants rated the contacts, the interest shown in their exhibits and the contents of the talks they conducted as good and promising, and similarly praised the outstanding organisation. The current exhibitor catalogue and a list of the participating companies will be available on the Colloquium website at www.ikv-kolloquium.de for some time still.



Specialist exhibition with 40 exhibitors

The show programme for the evening event was staged, as always, by IKV employees, who put on a range of delightful acts. Under the motto “Circo Plastico”, clowns, magicians, singers and artists provided excellent entertainment in the circus ring. The audience was particularly impressed by the ingenious sound and video art of the mysterious green men in the Green Man Group as well as by the daredevil trampoline acrobatics of a troupe of clowns. After a member of the IKV's scientific staff had been cut into pieces, making for a number of magic moments, leave was taken of Prof. Michaeli at his last Beer Colloquium as Head of the Institute through a quartet of illusionists successfully magicking him from the stage into his well-earned retirement.

During the “open afternoon” on the second day, participants were able to look round the IKV's development plants. Just short of 60 test stands and systems were available to be viewed by the international participants in the IKV's machine halls and laboratories. Visitors were able to acquire on-the-spot information about the latest processing technologies and experience the practical side of research and development work on a “live” basis. Precisely

these live demonstrations helped to answer any questions that still remained unresolved, thereby rounding off the Colloquium.



Visiting the development plants at IKV location Campus Melaten



Visiting the Injection Moulding development plant at IKV's Pontstraße building

The IKV would like to thank all those who were actively involved in the 25th IKV International Plastics Technology Colloquium, and all those who attended, for their commitment and the many ideas they came up with in individual talks and in discussion contributions. In the same way, the IKV would like to thank the companies of its Association of Sponsors and the agencies distributing funds from the public purse for their support of the research work that has been presented.

For all those who were unable to attend the Colloquium but would like to have detailed information on the contents, the IKV has a number of residual copies of the Conference Proceedings which can be obtained via the IKV library. (bibliothek@ikv.rwth-aachen.de)

We will be glad to send the photos in imprint quality.

(Photos, if not indicated otherwise: Brixius for IKV)



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