Press release

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22nd SPE Automotive Award Night

Plastics engineering masterpieces that reflect the signs of the times

The excitement of the guests is palpable on June 28, 2024: the winners and runners-up of the SPE AutomotiveAward 2024 are about to be honored. The event is being held for the first time at the Kameha Grand Bonn. The 43 components admitted to the competition are staged in the dome of the hotel, which is located directly on the Rhine promenade.

In his welcoming address, the President of SPE Central Europe, Bernard Rzepka, emphasized the enormous importance of plastics for the technology and design of tomorrow's vehicles. Many of the components that took part in the competition are characterized by the fact that they can be recycled after use. Innovative materials and technologies not only improve the driving experience, safety and sustainability, but also boost competitiveness and thus strengthen society.

Then the time has come: the components are presented category by category and the winners are chosen. Department coordinator Thilo Stier and jury members Joachim Melzig (BMW), Dr. Matthias Theunissen (Envalior) and Dr. Thomas Wolff (SPE Central Europe) repeatedly draw the guests' attention to details that would usually go unnoticed without an explanation. With some parts, everyone is surprised by the ultimately simple, logical solution - only the way to get there is often anything but simple.

New materials, new technological solutions

In the ***Body Interior*** category, sponsored by Akro-Plastic, the winner is an instrument panel base support. It is manufactured using a gas injection process with cold gas, with the gas channel running across the entire width and installation depth of the part on both sides. This enables outstanding dimensional accuracy and mechanical strength to be achieved. It was developed by Volkswagen and Forvia in collaboration with Stieler Kunststoff-Service, with Müller Modell und Formenbau providing the mold. Second place went to an A-pillar cladding from Eurostyle Systems, which looks and feels like textile cladding, but is made exclusively from a glass fiber-reinforced polypropylene from LyondellBasell. The secret is a special laser graining in the mold. Third place went to a washer for door damping and sealing developed by Woco Industrietechnik and Mercedes-Benz. It is made from a material from Tyre Recycling Solutions that contains 15 percent closed-loop used tire recyclate.

The award in the ***Body Exterior*** category, which is sponsored by Syensqo, goes to Weidplas Germany for a 3K wheel widening coated with a polyurea paint system. The switch to a one-piece concept reduces the weight by 30 percent, saves installation space and makes both the assembly and the painting process with its many process steps obsolete. A roof rail

carpet pad came in second place. It is made from a TPE with microscopically small hollow glass beads and is extremely dimensionally stable. Third place in this category goes to a decorative part for the front door trim, which is manufactured using a polypropylene compound with a 20 percent recycled content. The design features a special mold-in-color effect with particles that highlights the use of recycled material.

Dr. Oliver Neuss presents the award in the ***Electronical / Optical Part*** category for a unique rear light blade developed by Lucid Motors together with Hella and Reichle Technologiezentrum. Its surface is absolutely scratch-resistant, meaning that the light sabre does not require any protective glass. A diamond laser texture ensures precise optical paths and therefore an even distribution of light. Second place went to a flatlight, a 5 mm flat light element with a variety of signal functions. It is 20 times more efficient than comparable modules. This development also comes from Hella. Third place went to a high-voltage plug for batteries, motors and inverters in electric vehicles. It is made of highly flow-improved Grilon from EMS-Chemie and has a unique locking mechanism that secures the plug connection fourfold.

In the ***Power Train*** category, Woco Industrietechnik received the award from Alen Ibrahimovic, representing almaak international, for a motor cover. The special feature of this part is that the motor cover is not made of PPA, but of polyamide. And it is made using the MuCell® process. Nevertheless, it has a 1A surface! Second place goes to a highly interesting cooling system for fuel cell-powered trucks. The glass fibre-reinforced polypropylene compound from LyondellBasell, combined with excellent toolmaking and optimized processing, ensures an extremely low-distortion component. The third is a diesel return line, which has a maintenance-free service life of 20 years. The pivotal point is the duct, which is produced with a 322 mm long core pull. The core tapers from 7.3 mm to 4 mm with a draft angle of just 0.29 degrees. Fourth place in this very crowded category goes to a unique Flex5 cable with 2K connections from aft automotive. It is highly flexible, can be bent and flexed and returns to its original shape. Fifth place went to Radici and Marelli, who developed an air intake manifold that uses mechanically recycled material and still meets the strict requirements regarding noise emissions.

Honor for Dietrich Taubert

After more than 35 years with our society, Dietrich Taubert ended his active involvement with SPE Central Europe a few weeks ago. For more than 30 years, he was a member of the association's board as press spokesman. During this time, he ensured that SPE Central Europe and its activities became known in the professional world - from the Plastics Forum in Salzburg to the Delphi study and our most important activity, the Automotive Award. He has also repeatedly provided impetus within the association and worked hard to implement new ideas quickly. On the occasion of the Award Night, SPE Central Europe awarded him honorary membership.

The second part of the award ceremony begins with the ***New Mobility*** category. As a representative of sponsor Kuraray, Andreas Weinmann presents the award to the developers of the Axial Jet Ring. This combines high-voltage insulation with a cooling system, allowing a smaller distance between the rotor end windings and the motor housing. The micro-nozzles, which inject fresh oil deep into the dewinding package, must be precisely mapped. Second place in the category went to a cooler module with independent cooling circuits from the Sogefi Group, which enables selective heating or cooling of certain components depending

on weather conditions and operating requirements. An aliphatic polyketone was used here, which is joined using a specially developed laser welding technique. Third is a battery management module for EVs from Intercable, which is characterized by a high dielectric strength. A precisely formulated material from EMS-Chemie is responsible for this. The improved flame protection ensures a longer evacuation time.

Marco Prigandt from sponsor EMS-Chemie presented ElringKlinger and Lucid Motors with the award in the ***Chassis Unit / Structural Component*** category for their instrument panel crossmember. It takes over the functionalities of a total of 26 components, such as the glove box, and makes a significant contribution to occupant safety thanks to its crash performance. It is made from a carbon fiber-reinforced polyamide 6 from Akro-Plastic with metal inserts. Second place went to a Corona Shield holder from Faurecia Autositze and Yizumi. It is a prime example of economical and fast production of structural components in medium batch sizes using additive processes. An important point here is that the components can withstand a front crash and a rear crash at 50 kilometers per hour! Third in the group is a plastic outboard housing from ZF Automotive. It is the first plastic housing that can be used in a steering system! This is because the long glass fiber material used by Syensqo, in combination with the design, achieves the same rigidity and dimensional stability as metal materials.

So many parts were submitted in the ***Enabler Technology*** category that two sub-categories had to be formed. The winner in the ***part & component design*** sub-category was Pocket Profile Cooling from Erwin Quarder Systemtechnik. With the MPDB® technology developed, plastic end pieces can be attached radially around aluminum profiles, helium-tight and with long-term stability. The polyketone used has another advantage: in the event of a thermal runaway, it cross-links to form a thermoset which forms a protective barrier. Second place also goes to Erwin Quarder Systemtechnik for the MPDB® power box. It ensures 30% less loss in the DC-AC conversion and therefore a higher driving performance per battery charge. The third award in this category goes to a bumper trim from Magna Exteriors, for which Christian Karl Siebenwurst contributed the mold. The new technology combines injection molding with stamping.

Most of the parts are in the ***materials & technologies*** subcategory, which is why there are five awards here too. The sponsor of this category is EMS-Chemie. KTM Technologies won the award for its seat base using Geminus technology. In this process, tapes are automatically inserted into the mold for cold-shot injection molding. The long-fiber-reinforced polypropylene is injected using a chemical blowing agent and a precision opening stroke and shows no notch sensitivity in the composite. Second place goes to a polyamide particle foam impact absorber, which absorbs and distributes the forces that occur in the event of a crash. It consists of an Ultramid Expand, which is resistant to painting processes and temperatures and can therefore be installed in the body shell. Third in this sub-category is a Battery Pack Housing. This is the first battery pack in which all important plastic parts are made of non-halogenated, flame-retardant PP GF30. Fourth place went to an integrated form panel with an innovative, 0.3 mm thick PUR in-mold coating that protects against UV rays, is chemically resistant and self-repairing. In fifth place is an innovation that has the potential to revolutionize the production of complex plastic structural components with closed thin-walled channel geometries and constant internal cross-sections: a technology that combines fluid and projectile injection technology.

At the end of this block, sponsor representative Sebastian Grafe honors all the submissions that did not make it into the top three or five places in their category with a Nomination Award. All of these parts are also characterized by an above-average level, with the evaluation results often only differing by a few points. And some of the parts would have come top in the previous competition with the score they have now achieved!

Young Professionals Award

The highlight of every Award Night are the Special Awards. The Young Professionals Award is presented for the first time as part of the Award Night. Three master's theses dealing with plastics applications and lightweight construction in the automobile will be honored. First place went to Maximilian Lang from Ilmenau University of Technology: his thesis is entitled "Production and characterization of bio-based organic sheets". The thesis impresses with its wide-ranging literature research, a very efficient and methodical approach and - last but not least - extensive illustrations and excellent comprehensibility. Johanna Beckmann's Master's thesis from the University of Paderborn came in second place. Her topic is "Investigation of fracture mechanics with regard to the crushing of CFRP for a crash longitudinal member in an automobile". She perfectly combines the very demanding theory and practice, verifies the results with the simulation and derives very good explanatory approaches from them. Third in the round is Marcel Piechnik from the IKT at the University of Stuttgart. His work deals with the "Investigation of plastic-metal connections in electric motors". He succeeds in identifying the key influencing factors and characterizing them accurately, making the results highly useful for practical applications.

Sustainability Award

The sustainability awards are being presented for the third time, once again supported by LyondellBasell. The clear winner is the Econeer seat cover from BMW and Magna Seating. It is made from mono-material with a maximum content of recycled material: the outer fabric is made from 100 percent recycled polyester, while the fleece underneath contains 85 percent recycled material. The bonding process is also highly innovative: for the first time, a PET adhesive is used, which is applied by means of rollers in an adhesive laminating system. Second place in terms of sustainability goes to an airbag device housing from Robert Bosch, which is made from PCR material from the Yellow Bag and for which a new method of odor reduction has been developed. Third place went to a resource-neutral side panel holder from ABAS Werkzeug- und Formenbau and EDAG Engineering. The component consists of 80% polypropylene, which was obtained from end-of-life vehicles, and 20% carbon fibers, which come from discarded wind rotors.

Finally, the most innovative submissions are traditionally honored. Sponsor Alen Ibrahimovic congratulates Novem Car Interior Design on the Innovation Award for the development of the Inlight. The 2K trim piece is both a surface-mountable support and a full-surface light guide. The light is fed in at the front and reflected back and forth between two foils. This effect is achieved by printing layers with different refractive indices, between which the light-conducting material is sandwiched by injection molding.

Kautex Textron is delighted with the Grand Innovation Award. Sponsor Sebastian Grafe presented it for an integrated cell holder for high-performance battery cooling. An electrically non-conductive fluid is vaporized through integrated semi-open channels in the battery housing and cell holder in direct contact with the cell. This so-called two-phase immersion

cooling places the highest demands on component leak tightness, which is ensured by a one-shot process. The highlight: direct contact with the cell means that around 15 times the amount of heat can be removed or introduced with the same amount of fluid compared to conventional cooling systems!

The overall winner of the AutomotiveAward 2024 and winner of the Grand Award is a component from the Chassis Unit / Structural Component category: The component is being produced for the first time by an additive 3D printing process using a fully automated and robot based serial large-scale printing. The major advantage of this process is that highly filled fiber-reinforced injection molding granulate can also be processed. At the same time, an intelligent component design enabled the number of parts to be reduced from seven to one and additional functions to be integrated into the center console carrier. The acromide used, with 40 percent recycled carbon fiber, is based on renewable raw materials and reduces the CO_2 footprint by 70 kg per component

SPE AutomotiveAward – a success story

The AutomotiveAward, which the Internationale Gesellschaft für Kunststofftechnik / SPE Central Europe has been presenting every 18 months since 1992, is renowned in the industry for the high quality of the entries and the objective evaluation criteria. The AutomotiveAward was and is supported by well-known companies in the plastics industry, this year by Akro-Plastic GmbH, almaak international GmbH, EMS-Chemie AG, Grafe Polymer Solutions GmbH, Kuraray Co. Ltd, LyondellBasell Industries and Syensqo. The Radici Group sponsored the drinks for networking after the awards ceremony. The competition is also supported by the trade journal K-Zeitung.

(Translated with DeepL.com (free version)

Kontakt:
Ursula Mellema
Fachjournalistin
Referentin Automotive Award
Tel.: +49 341 3339916
ursula.mellema@spe-ce.de