FRANK HENNING-FRAUNHOFER INSTITUTE FOR CHEMICAL TECHNOLOGY

VEHICLE LIGHT-WEIGHTING

M3 - A SUSTAINABLE APPROACH TO VEHICLE LIGHT-WEIGHTING

April 6, 2023 at 11:00 AM US Eastern Daylight Time

ABSTRACT

The presentation will introduce our house of competence, KIT and Fraunhofer ICT and introduce our MMM approach to engineered lightweight solutions for specific industries. This comprises of the development of virtual process chains, material and manufacturing solutions for relevant technologies focusing on automated high volume manufacturing. The presentation will highlight automotive examples (thermoplastic and thermoset composites) and our approaches and specifically will focus on the wet compression molding process as utilized by BMW in the I series with carbon fiber body in white. To describe this process virtually in order to accelerate part development and consider manufacturability in an early stage of the product development the investigated process variants will be showcased and every step of the manufacturing process will be demonstrated.

The presentation will end with a few words about circularity and recycling technologies and will give an outlook.

FRANK HENNING, PHD

Director, Fraunhofer Institute for Chemical Technology

B I O

Prof. Dr. Frank Henning is the director of the Fraunhofer ICT and has been a Fellow of the Society for the Advancement of Materials and Process Engineering SAMPE since 2020 and Fellow of the Society of Plastics Engineers since 2013 and is acting President of SAMPE Germany. Since 2016, he has been Managing Director of the Fraunhofer Project Centre for Composites Manufacturing in Ulsan, Korea and since 2011 of the Fraunhofer Project Center for Research in London, Ontario, Canada. In 2017 he received the Minister of Trade, Industry and Energy Award by MOTIE, Korea for international collaboration on leading edge technology development. Since 2010, Henning has been an Adjunct Research Professor in the Department of Mechanical & Materials Engineering, Faculty of Engineering at the University of Western Ontario in Canada. Between 2009 and 2021, he has been Deputy Director of the Fraunhofer Institute for Chemical Technology (ICT) in Pfinztal, Germany, as well as Founder and Director of Fraunhofer FIL in Augsburg, Germany until 2016, which is the Fraunhofer IGCV today. In 2008, Henning was appointed Professor for Light-Weight Technologies at Karlsruhe Institute of Technology in Germany; and that same year, he was appointed CEO of the Fraunhofer Innovation Cluster KITe hyLITE - Karlsruhe Innovation Cluster for Hybrid Light-Weight Solutions. In 2005, Henning became Director of the Competence Centre for Automotive Light-Weight Solutions. In 2002 he was named Director of Polymer Engineering at Fraunhofer ICT.

In the years 1997 to 2001, he was Group Leader for the composites team at Fraunhofer ICT. Henning studied Mechanical Engineering and holds a Ph.D. degree in Composites Engineering from the Universität Stuttgart in Germany earned in 2001. He earned his Diploma in Mechanical Engineering from the same university in 1996. He published numerous articles in refereed journals and owns patents in the field of polymer manufacturing. He was awarded multiple times for his achievements and introduced materials and technologies in industrial applications. He has more than 25 years of experience in polymer engineering with a special focus on composite processing.