SPE® ACCE KEYNOTE TO DISCUSS JOINT CFRP DEVELOPMENTS BETWEEN AUTOMOBILI LAMBORGHINI & UNIV. OF WASHINGTON

Automaker, University Collaborate on Out-of-Autoclave Composites Technologies to Reduce Cycle Time, Costs to Produce Composites-Intensive Supercars

TROY (DETROIT), MICH. – The first confirmed keynote of the tenth-annual ***SPE Automotive Composites Conference & Exhibition*** (***ACCE***) will feature a joint presentation by Luciano DeOto, division chief for the Advanced Composites Development Center (ACDC), Automobili Lamborghini S.p.A. (Sant'Agata Bolognese, Italy), and Paolo Feraboli, assistant professor-Aerospace Structures & Materials, Department of Aeronautics & Astronautics at the the University of Washington (Seattle) on joint-development work for out-of-autoclave carbon fiber-reinforced plastics (CFRP) technologies for Lamborghini's supercars. This year's ***SPE ACCE*** will be held ***September 15-16, 2010*** at the MSU Management Education Center in Troy, Mich., U.S.A.

Lamborghini has used polymer composites on its iconic vehicles since 1983, and advanced (CFRP) composites for all body panels and several sections of the space-frame structure of its *Murciélago*® coupé since 2001. The company says it sees CFRP composites as the key technology for meeting its two-fold strategy of improving vehicle performance by increasing power-to-weight ratio via mass reduction, as well its need to reduce emissions to lower environmental impact and meet stricter emissions requirements. Since 2007, the automaker has been collaborating with the Department of Aeronautics & Astronautics at the University of Washington and with the Structures Technology group of Boeing Research & Technology (Seattle). The team is currently focused on composites-intensive primary structures that meet Lamborghini's weight, cost, and production-rate targets, which, in turn, necessitates both evaluations of non-conventional technologies as well as development of new ones.

The keynote address will have two main areas of focus. Traditional composites used in Lamborghini supercars have been aerospace-derived prepreg materials for autoclave cure. However, new out-of-autoclave processes are showing unparalleled efficiencies in terms of cost and production speed, while leaving performance and quality unaffected. During the talk, speakers will provide an overview of technologies the team is currently focused on in the area of liquid resin infusion (e.g. resin-transfer molding (RTM) and vacuum-assisted RTM (VARTM)) and pre-forming technologies (e.g. braiding, non-crimp fabrics, and thermoforming). The second portion of the presentation will focus on evaluating composite crashworthiness. Carbon composites perform extremely well in crash scenarios, and are therefore used to manufacture dedicated energy-absorbing components used in both in motorsports and aviation/aerospace. Their ability to dissipate more energy per unit mass than aluminum or steel is, however, obtained only through a complex and careful design effort – a process that traditionally involved experiments and crash-testing of full-scale vehicles, which are both costly and time-consuming. Borrowing from the aerospace industry, Lamborghini says it has adopted Boeing's *Building Block Approach* where margin-of-safety calculations are based on a complex mix of testing and analysis at various levels of structural complexity, often beginning with small coupons and progressing through sub-components up to full-scale components. Additional presentation detail will review this approach and discuss how Lamborghini is using it to design new structural concepts, which are subsequently being evaluated as technology demonstrators.

Luciano DeOto, one of the co-presenters, is division chief for the Advanced Composites Development Center (ACDC) at Automobili Lamborghini S.p.A. in Sant'Agata, where he oversees all composites-related activities across products, lineups, and departments at the automaker. In this position, he is aggressively pursuing the implementation of out-of-autoclave composites technologies to increase production rate and reduce cost for future vehicle systems. DeOto joined Lamborghini in 2001 as an engineer for body-in-white of both the *Gallardo*® coupé and roadster. In 2006, he became manager-Interiors & Exteriors Engineering & Development for all Lamborghini products. His next assignment was as project leader for the 2008MY *Gallardo* Superleggera model. Prior to joining Lamborghini, DeOto worked at Ferrari Formula 1™ in the Aerodynamics Department and was in charge of wind-tunnel testing from 1999 to 2001. From 1996 to 1999 he worked as engineer for Minardi Formula 1 focusing on vehicle dynamics. DeOto holds B.S. and M.S. degrees in Mechanical Engineering from the University of Bologna.

The other presenter, Paolo Feraboli, is assistant professor-Aerospace Structures & Materials, Department of Aeronautics & Astronautics at the University of Washington (Seattle), and also director of the Automobili Lamborghini Advanced Composite Structures Laboratory (ACSL) in at the University of Washington. The laboratory was inaugurated in October 2009 and provides short- and long-term support on Composites R&D to Lamborghini, as well as liaison between Lamborghini and Boeing for joint technology development efforts. Feraboli is particularly interested in composites aircraft safety and certification methodologies, including foreign-object impact damage resistance and tolerance, lightning-strike damage, and crashworthiness. Like DeOto, he holds B.S. and M.S. degrees in Mechanical Engineering from the University of Bologna. Feraboli also holds a Ph.D. in Mechanical Engineering from the University of California-Santa Barbara. In 2001-2002, Ferabolo worked at Automobili Lamborghini S.p.A. in Sant'Agata Bolognese, and in 2004-2005 at NASA Langley Research Center in Hampton, Va. In 2007, he was actively involved in development of analysis methods for the composite-intensive Boeing® 787 Dreamliner ® airplane and worked in the office of 787 Technology Integration.

The ACCE typically draws over 400 speakers, exhibitors, sponsors, and attendees from 14 countries on four continents with fully one-third indicating they work for a transportation OEM involved in automotive, heavy-truck, agricultural, off-road, or aerospace/aviation. Held annually in suburban Detroit, the SPE ACCE provides an environment dedicated solely to discussion and networking about advances in the automotive composites industry. Its global appeal is evident in the diversity of exhibitors, speakers, and attendees who come to the conference from Europe, the Middle East, Africa, and Asia / Pacific as well as North America and who represent transportation OEMs and tier suppliers; composite materials, processing equipment, additives and reinforcement suppliers; trade associations, consultants, university and government labs; media; and investment bankers. The show is sponsored jointly by the SPE Automotive and Composites Divisions.

The mission of SPE is to promote scientific and engineering knowledge relating to plastics. SPE's Automotive and Composites Divisions work to advance plastics and plastic-based composites technologies worldwide and to educate industry, academia, and the public about these advances. Both divisions are dedicated to educating, promoting, recognizing, and communicating technical accomplishments for all phases of plastics and plastic-based composite developments, including materials, processing, equipment, tooling, design and testing, and application development.

For more information about the SPE Automotive Composites Conference, visit the Automotive Division's website at **www.speautomotive.com/comp.htm**, or the Composites' Division website at **www.compositeshelp.com/**, or contact the group at +1.248.244.8993, or write SPE Automotive Division, 1800 Crooks Road, Suite A, Troy, MI 48084, USA. For more information on the Society of Plastics Engineers International or other SPE events, visit the SPE website at **www.4spe.org**, or call +1.203.775.0471.

# # # # #