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March 2004

DELPHI SUBMITS SUCCESS STORY ON COMPOSITE TIE ROD TUBE FOR CLASS 8 TRUCKS

The National Transportation Research Center (NTRC) and the U.S. Department of Energy's (DOE) Office of FreedomCAR and Vehicle Technologies, Oak Ridge National Laboratory (ORNL) recently published a success story on a composite tie rod tube for Class 8 trucks. Funded by DOE as a 50 percent cost share initiative, monies for the project are funneled through ORNL.

The Delphi Corporation, under contract to ORNL, is developing structural chassis components for Class 8 trucks using carbon fiber-reinforced composites. One of the components – a composite tie rod for passively steerable lift axles, is being developed as part of Delphi's Advanced Composite Axle Systems program. The carbon fiber tie rod is expected to weigh 60 percent less than the conventional steel tie rod tube and exceed its performance at a modest cost premium.

Commercialized on a limited basis, Delphi's first customer has accepted delivery of more than 1,100 production pieces as part of its low-mass lift axle product line. Fleet test vehicle samples have been in the field for more than 20 months with no reported problems. In addition to the 60 percent mass savings, the composite tie rod offers the industry the ability to carry higher buckling loads than current steel designs. The component also provides increased natural frequency (decreased vibration), improved durability and an inherent resistance to corrosion.

"This success story is a good example of how funds are being used to create improvements that benefit society," said Chuck Worner, Business Line Manager for Delphi's Advanced Structural Composites business and a member of the National Composite Center's (NCC) Board of Directors.

Early prototypes of the composite tie rod tube were fabricated at NCC on Delphi's pultrusion equipment. One of NCC's new staff additions, Brian Knouff, PhD, worked on the composite tie rod project while at Delphi. Knouff now brings his considerable experience on cutting edge projects like the composite tie rod to NCC to further develop its Litecast® technology and focus on new technology research and design, optimization, and analysis of composite structures. NCC is also currently working as a subcontractor to Delphi for the transportation industry.

NCC'S MEMBER DAY KICKS OFF IN APRIL WITH SPECIAL PRE-EVENT

NCC's fourth annual Member Day is Tuesday, April 27, 2004. After attracting more than 65 participants to its Member Day in 2003, NCC plans to raise the energy level a notch this year with something new.

A special "pre-events" day has been scheduled for Monday, April 26th. The day will showcase NCC project meetings with member companies and NCC technology presentations to the general membership. These activities will be followed by a reception.

The following day will highlight new member companies and their stories of invention and innovation. As always, attendance is free. Member companies can participate by simply attending, displaying their expertise by setting up an exhibit or giving a presentation on a new activity or recent advances.

NCC currently has 12 time slots available for speakers. These are filled on a first come, first served basis. If interest is stronger, the Center will consider expanding the agenda. To make your reservation, arrange for a tabletop display or secure a speaker's slot contact Marilyn Evans at 937-297-9549 or email her at mevans@compositecenter.org.

You won't want to miss this year's Member Day and a chance to promote the exciting things your company is doing!

DOW SPINS OFF FULCRUM TECHNOLOGY - FORMS A NEW COMPANY, FULCRUM COMPOSITES INC.

The Dow Chemical Company announced the divestiture of its technology and business relating to FULCRUM* thermoplastic

composite technology for the production of continuous fiber composites using a thermoplastic matrix to newly formed Fulcrum Composites Inc.

The initial FULCRUM technology was developed at The Dow Chemical Company and is a revolutionary pultrusion process using resins manufactured by Dow. The new company, Fulcrum Composites Inc, acquired all physical and intellectual assets of the FULCRUM technology including the manufacturing facilities at the National Composite Center; a broad portfolio of patents, trademarks and commercial agreements.

Chris Edwards, formerly the Dow Business Manager for FULCRUM technology resigned from Dow to become the new CEO of Fulcrum Composites Inc. Edwards stated, "This is a great opportunity for the Fulcrum business.

The development of FULCRUM technology was based both in chemistry and polymer science. This made Dow, with its world-class material science expertise, the ideal place for the development. The challenge of the new company is to adjust to the scale and speed of the industries we serve.

Fulcrum Composites Inc will continue the evolution of the process and technology and bring additional focus on design and structural analysis to accelerate development of new applications."

FULCRUM's objective is to deliver innovative solutions and value to the plastics market. The Dow Chemical Company selected NCC in 2003 as an incubation site for development of the company's breakthrough FULCRUM thermoplastic composite technology.

The new company will continue to be housed at NCC and use of the Center's incubation services is planned.

NCC TO SHOWCASE KEY TECHNOLOGIES AND INTRODUCE VECTOR COMPOSITES INC AT SAMPE TRADE SHOW

NCC will showcase key technologies and introduce Vector Composites Inc. at Booth #647 at SAMPE 2004. Booth visitors will be able to access first hand details about NCC's breakthrough Rapid Fiber Preform processes, comprehensive closed molding expertise, patented Litecast® technology and new initiatives in Long Fiber Thermoplastics (LFT). Trade show attendees will also have the unique opportunity to meet Vector.

SAMPE's lineup of activities includes a presentation by Jennifer Chase Fielding and Lt. Allison Jacques, Air Force Research Laboratory (AFRL) Materials and Manufacturing Directorate, Wright-Patterson Air Force Base; Chenggang Chen, University of Dayton Research Institute (UDRI); and Juan Borges, National Composite Center. The team's paper, titled Vacuum Infusion Processes For Nano-Modified Aerospace Resins, is scheduled for Session 2C May 17 at 2 p.m. A second paper will be presented by Dave Sabol of Vector. Called Cost Effective, Flexible Preforming For Defense Applications, the presentation is scheduled for Session 3E May 18 at 9:30 a.m.

NCC PRESENTS PAPER AT THE POLYMER COMPOSITES CONFERENCE III

NCC staff Scott Reeve, Vice President Technical Operations and Engineer Ela Kos attended the Polymer Composites Conference III in Morgantown, West Virginia March 30 to April 1, 2004. The team presented a paper titled FRP Composite Bridge Decks – NCC Experiences which showcased NCC's hands on experience, lessons learned and the body of knowledge that has been built to help further the market.

In addition to NCC's presentation, other topics covered the State Department of Transportation's (DOT) experience with FRP decks, FRP composite applications, composite hybrid materials and pedestrian bridges.

The NCC team will be featuring additional up to date perspectives and progress on FRP composites in upcoming columns for CF Magazine.

VECTOR DELIVERS PAPER AT 2004 CTMA SYMPOSIUM

Dave Sabol, Vice President of Vector Composites Inc., presented a paper titled Low Cost Composite For Aerospace And Defense Applications at the 2004 CTMA Symposium held in Atlanta, Georgia March 29 – April 1.

The event was sponsored by the National Center for Manufacturing Sciences (NCMS) along with co-sponsors the Joint Technology Exchange Group (JTEG), Joint Council On Aging Aircraft (JCAA) and the Department of Defense (DoD) Sustainment and Readiness Subpanel (Navy MANTECH/REPTECH, AF MANTECH, Army MANTECH).

NCMS is a not-for-profit technology, information and education consortium providing value-added products and services that enable collaboration and learning among manufacturers. NCMS is the only consortial effort in the United States devoted exclusively to manufacturing technologies, process, and practices. The Vector paper was well received by attendees.

Positive feedback included comments on the advantage Vector offers with an RFP process that integrates Z direction fibers to enhance material toughness.