



NCC CAPTURES \$1.2 MILLION NASA CONTRACT

The National Composite Center (NCC) has captured a \$1.2 million contract with NASA Glenn for its Litecast™ technology. Litecast™ permits metal to be die cast directly to the composite insert. This causes controlled vaporization of the outer resin layer, leaving metal interlocked with the fibers to create a mechanical bond. NCC's patented process is currently being used to produce lighter weight suspension link assemblies for the medium to heavy-duty truck industries.

Under the NASA Glenn contract, NCC will work to develop parts for power and propulsion systems using its proven technology. This contract will also be a significant match for an Ohio Wright Capital Project Fund proposal that NCC has submitted. Read more about this proposal in the next section of this newsletter edition.

NCC SUBMITS TWO PROPOSALS TO THE WRIGHT CAPITAL PROJECT FOR 2004

NCC is the lead organization for two proposals the Center is

submitting to the Wright Capital Project Fund for 2004. Under the first proposal – Long Fiber Thermoplastics for Low Cost, Light Weight Transportation – NCC is leading a collaboration to scale up a unique material production process and promote breakthrough low cost and light weight applications for commercial industries, particularly transportation vehicles. Commercialization of this technology will help to create a major economic impact for Ohio businesses from polymer suppliers to part fabricators and transportation manufacturers.

The economic benefit is expected to exceed \$225 million over the next five years. The polymer industry is aggressively pursuing Long Fiber Thermoplastic technologies because of the volume of applications that can be enabled by this low cost, low weight and recyclable material. The recent growth rate is 30% per year. When commercialized, the lower cost of the NCC team's technology will accelerate this growth rate even further.

The \$1 million proposal funds would be used to purchase capital equipment critical to taking these technologies from the laboratory development stage to high volume

production capability. This includes material production equipment, a part fabrication system and computer modeling software. The collaboration also leverages over \$1.2 million in matching funds and resources to scale up the technology and commercialize products for transportation applications in both automotive and defense markets.

Ohio is well positioned to take the lead in this rapidly expanding technology due to its unique combination of key technology developers, polymer suppliers, part manufacturers and OEMs. The leadership position will enable Ohio to reap the economic benefits of high growth, high volume industries.

In the second proposal - Litecast™ – Metal-to-Composite Joining for Automotive, Aerospace, and Industrial Parts Applications - NCC is leading a collaboration to advance its patented process Litecast™. The unique process allows molten metal to be cast directly on composite material enabling the use of integral metal attachments on composite structures.

Litecast™ was developed by the Delphi Corporation in 1993 and introduced as a suspension



member on the General Motors EV1 Electric Vehicle and 1996 Corvette. By the late 1990's, the technology no longer fit Delphi's corporate profile. The intellectual property portfolio was donated to NCC in 2001.

With a renewed emphasis on high mileage, light-weight vehicles, Litecast™ is re-entering both the light duty and heavy-duty transportation markets. Further interest has been shown both at Boeing and NASA to develop lightweight, cost competitive composite structures for aircraft and airships.

The \$835,000 funding from this project would be used to purchase capital equipment, tooling, and laboratory analysis equipment critical to developing further applications of Litecast™ for the aerospace, medical, and other industrial markets.

Volume manufacturing would be transferred to the project's industrial partners once these applications have been validated. The collaboration would also leverage over \$1.2 million in matching funds and resources to restart the technology. Ohio would be primed to take a leadership role in advanced material development with this

combination of proven casting technologies married to new material forms such as pultruded composite shapes.

NCC WORKING WITH SRI TO DEVELOP REINFORCED THERMOPLASTIC TECHNOLOGY FOR THE MASS TRANSIT INDUSTRY

NCC is working with the Southern Research Institute (SRI) and the University of Alabama in Birmingham to help develop composite structural bus components for the mass transit market. As the project unfolds, NCC's expertise will make it possible to provide composite material that produces an impregnated glass fiber roving for \$1 a pound, allowing the mass transit industry to convert a number of its metal applications and manufacture lighter weight buses.

Long Fiber Reinforced Thermoplastic technology is expected to provide a match with NCC's signature Rapid Fiber Preforming capability and the Center's expertise in other molding techniques.

NCC INSTALLS SECOND FRP BRIDGE DECK FOR 2003

Under its C4I initiative, NCC installed its second Fiber Reinforced Polymer (FRP) bridge deck of the year on July 15 and 16. Located in Defiance County, the 182-foot long bridge, three spans wide, required 23 FRP deck panels eight inches deep.

The FRP deck panels were installed on four galvanized steel girders. The challenge the NCC team faced was to complete bridge installation before the school year started.

Despite the galvanizer placing masking in the wrong locations, installation remained on schedule and was completed in 14 hours. In contrast to the small bridge installation completed in June, the two projects illustrate the range and versatility of FRP composite deck material.

The large bridge deck installation in Defiance County also points to pre-engineered, pre-fabricated FRP deck panels as an effective solution for use on sets of bridges such as turnpikes. By reworking a number of bridges at the same time, NCC feels the technology



could lend itself to more efficient economies of scale.

NCC TO HOLD CLOSED MOLDING CLASS

NCC will hold a Commercial Infusion Training class October 22-23, 2003. The two-day class features vacuum infusion of commercial grade materials with a special emphasis on production cost, part quality and part reproducibility. Vacuum infusion is an environmentally friendly closed molding process able to manufacture high quality composite parts with minimum tooling costs. Students will be taken step by step through proven vacuum infusion techniques that include hands on demonstrations. Production and conversion costs will be discussed as they apply to open molding. Class time will also be used to discuss a variety of patented technologies and how they can be applied to attendees' products. Space is limited to 15 students. For more details or to sign up for a class, interested individuals can contact Andrew Loff at 937-297-9436 or email aloff@compositecenter.org.