

NCC – A MODEL FOR CREATING A NEW EMERGING TECHNOLOGY CAMPUS

The National Composite Center (NCC) is working with a group of North Central Ohio businesses to establish the North Central Campus for Emerging Technology (NCC-ET). The new campus will be structured to draw on Ohio's unique expertise in aerospace technology and use it to create commercial products. NCC-ET will accomplish this by leading a team to collaborate with universities, government, industry and other key organizations.

As a technology pipeline, NCC-ET will promote economic development and help bridge the gap between research centers and the final commercialization stage of production level of goods. The new entity plans to tap the strength of Ohio's resources which include:

- Advanced material development (NCC and the University of Dayton Research Institute)
- Power and propulsion development (NASA Glenn Research Center)
- Space ready testing (NASA Plumbrook)
- Electrical engineering (Cleveland State University)
- Micro electrical mechanical systems (Case Western Reserve University)

- Materials Laboratory (Wright Patterson AFB)
- Advanced materials research (University of Toledo and University of Akron)

Development efforts will target lightweight structures, alternative energy, intelligent and autonomous systems, smart systems and modular power control. Each of these applications will be critically tied to the advanced materials and process development at NCC.

NCC SUBMITS 2005 WRIGHT PROJECT PROPOSALS

NCC will submit three 2005 Wright Project proposals. They include two requests of \$100,000 each to support ongoing work in two previous NCC winning proposals – Creating Affordable Large-Scale Complex Composite Products and Long Fiber Thermoplastics for Low Cost, Light Weight Transportation.

The third proposal announces the creation of an Advanced Materials Manufacturing Campus. Instead of requiring an investment in new brick and mortar, NCC proposes to renovate Building II in the Kettering Business Park to house the new Manufacturing Campus. In addition to becoming a powerful tool to help the region achieve its Third Frontier Project goals, the proposed capital improvements would allow the Manufacturing Campus to expand Dayton's tax base; create jobs; leverage technologies developed from local Third Frontier funded

projects at the University of Dayton Research Institute (UDRI), Wright State University and NCC and establish a model that could be duplicated in other regions throughout Ohio. The Campus co-located near NCC would focus on manufacturing products using advanced materials, polymer composites, nano materials, metal and ceramic matrices and engineered derivatives.

AFMC COMMANDER AND NEWLY APPOINTED COMMANDER FOR AFRL VISIT NCC – THE MODEL FOR TECHNOLOGY TRANSFER FOR MANUFACTURERS

Gen. Gregory S. Martin, Commander, Air Force Materiel Command (AFMC) and Brig. Gen. Perry L. Lamy, newly appointed commander of the Air Force Research Laboratory (AFRL), visited the National Composite Center (NCC) on July 13 to look at the Center's technology transfer capabilities.



(Front Row L to R) Carba VP Brian Carrier, Vector Pres. John Weidner, Gen. Martin, Dr. Chester Harris, Brig. Gen. Lamy and Lt. Col. Pete Hoene look at Carba unit. (Back Row L to R) are Steve Lake, Rep. of Gov. Taft; Rich Maresca, NCC; UDRI Dir. Mickey McCabe; Dave Richard, NCC; and Dave Dudon, Mutual Tool and Die Inc. & NCC Board Member



As an industry leader in promoting, developing and applying advanced composite technology to the aerospace and defense, automotive, commercial and infrastructure markets, NCC is recognized as the model for technology transfer for manufacturers.

AFMC is committed to promoting technology transfer from its scientists to commercial applications. NCC's unique capabilities make it a natural conduit to facilitate that process.

As the critical link in technology transfer, the Center is able to take projects that would normally require up to 10 years to move from the invention stage to industry application and dramatically shortens those steps to just two to four years. Some of the key tools and capabilities that give NCC the edge include its signature **Rapid Fiber Preforming**, automated preform technology and closed molding expertise - solutions being used to manufacture a broad range of composite products.

NCC is also a comprehensive resource for closed molding technology including Vacuum Infusion and Resin Transfer Molding (RTM) processes. The Center has eliminated the guesswork for companies through hands-on practice and application.

NCC's pilot production plant offers a specialized environment where companies are congregating to

develop large-scale manufacturing methods and establish industry standards. The Center's unique know how and specialized skills combine with a team of technical specialists experienced in multiple disciplines to take process development, process troubleshooting, product development, prototyping and pilot production from concept to factory ready products.

During the visit with Gen. Martin and Brig. Gen. Lamy, NCC highlighted the "spin-on" characteristics of its preforming technology which began with a project for the automotive industry as P4, led to an application with the Air Force as P4A and has since evolved into the Center's **Rapid Fiber Preforming** branching out into multiple commercial applications such as Lion Apparel's fire helmets product line. NCC showcased Vector Composites Inc., and its recent creation of Carba Fire Technologies of Dayton, Ohio Inc. as the key example of how effectively technology transfer works at NCC.

VECTOR COMPOSITES, INC. SECURES EXCLUSIVE LICENSE AND CREATES NEW DAYTON-BASED COMPANY

Vector Composites Inc. recently announced it has secured an exclusive license with Carba Fire Technologies, Inc. to produce and sell the company's line of new generation turnkey fire equipment and off-road tactical vehicles. To

support vehicle production, Vector has created a wholly-owned subsidiary called Carba Fire Technologies of Dayton, Ohio Inc.

The Carba product line has been specifically designed to respond to fires, chemical and biological attacks, terrorism, HAZMAT, and emergency medical operations. The equipment is capable of reaching remote sites, maintaining critical lines of communication, withstanding extreme weather conditions and navigating rough landscapes.

In addition to providing local communities and fire departments with the ability to enhance response time, the equipment also promises potential for military and domestic security agency applications.

Based in Titusville, Pa., Carba President and CEO Pamela Baughman and Vice President Brian Carrier, are temporarily relocating to Dayton to support the product line's technology transfer. Carba will be housed in the National Composite Center (NCC) with its new parent company Vector.

Vector hopes to further enhance the performance of Carba equipment by using composites to modify some of its components. "Composites offer several advantages," said John Weidner, President of Vector. "Lighter weight means enhanced maneuverability. The introduction of composites will also help reduce overall operating



costs and make the equipment more durable.”

“Our products meet an emerging need for fire equipment and off-road tactical vehicles able to meet the unique challenges facing our nation today,” said Pamela Baughman, President and CEO of Carba. “By combining our unique technology with Vector’s advanced capabilities we can provide flexible solutions to diverse markets.”

What sets Vector apart from other companies, is its ability to provide composite solutions at a savings of more than 40 percent when compared to conventional composite products. By tapping the National Composite Center’s (NCC) exclusive preforming technology and closed molding expertise, Vector is able to design, engineer, research, develop, test and deliver affordable composite components.

In addition to taking advantage of NCC’s incubation and support services, Vector plans to draw on the strengths of the region’s traditions.

“The Dayton area has a long heritage of automotive assembly expertise,” Weidner said.

“Establishing the new company here allows us to draw on a workforce that already possesses the special skill sets we need.” Vector will supply the fire market with future plans to target military and homeland defense customers.

CONTRACT HAS VECTOR DESIGNING AND BUILDING COMPOSITE WINGS FOR ARMY MISSILE

Vector has begun work to design and build composite wings for an Army Future Combat Systems missile. UDRI will perform the design work. NCC will handle development of manufacturing processes.

Using carbon fiber composite material, the wings will be constructed from unidirectional fabric and woven cloth with NCC’s Resin Transfer Molding (RTM) and **Rapid Fiber Preforming** processes. Delivery of the proof of the concept wings is slated for December 2004. Acceptance of the proof could lead to full qualification and a test contract in 2005 and 2006 with a production schedule of 500 units a year for 10 years projected to begin in 2007.

NCC TO HOST AIR FORCE NANO TECHNOLOGY WORKSHOP IN SEPTEMBER

NCC will host the Air Force sponsored Vapor Grown Nanofiber Materials and Applications Workshop on September 14 -15. Attendees will gain an in-depth understanding of Vapor Grown Nanofibers (VGCF) and their applications in military, civilian aviation, and commercial markets.

Cost effective and available in commercial quantities, nanomaterial is multifunctional. It

can be used to improve electrical, thermal, and mechanical properties in organic matrix composites. Industry, academic, government researchers and engineers will present their insights on nanomaterial real-world applications.

Tuesday evening (Sept. 14), Applied Sciences Inc. will host a tour of their VGCF manufacturing facility which is located in Cedarville, Ohio. On Wednesday, a panel discussion will highlight the day’s sessions. The panel will focus on future opportunities and barriers to the use of VGCF in military and commercial applications.

Pre-registration is due by August 27. The workshop fee is \$80 and can be paid by cash or check. For more information or to register, contact Barb Hager by email at AFRL.MLB.OfficeAccount@wpafb.af.mil or call at 937-255-5731. You’ll see added publicity about this event in CF Magazine’s August issue.