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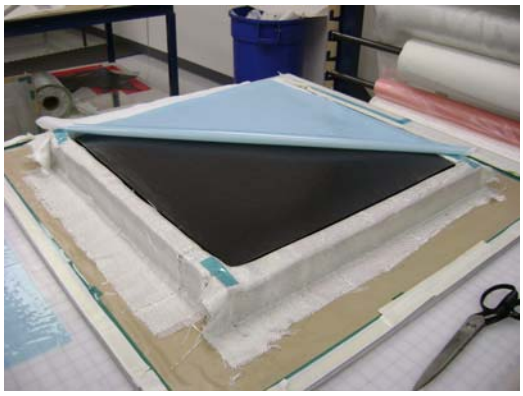
AUGUST 2008

QUICKSTEP MAKES NEW BREAKTHROUGHS IN PROCESSING OF STRUCTURAL COMPOSITES

The North American Quickstep Center of Excellence housed in the National Composite Center's (NCC) Dayton Campus for Advanced Materials Technologies (DC-AMT) recently completed trials to produce out-of-autoclave thick composite structures that demonstrated the ability to control heat (exotherm) and significantly reduce cycle times. Quickstep tested carbon epoxy prepregs for aerospace applications one to two inches thick, and glass fiber, vinyl ester and polyester resins for industrial applications 0.5 to 4 inches thick.

Curing thicker thermoset composite parts can be problematic for manufacturers due to the part's tendency to reach a temperature that internally generates excess heat (exotherm). A by-product of the chemical reaction taking place, more part mass (or thickness) means more heat energy generation. Another factor is the inability of a thicker part to shed its chemically generated heat. The Quickstep team, through repeated experimentation has discovered new processing advances when curing thick composite structures. The first series of tests targeted components with potential aerospace applications using epoxy based materials in the following configurations:



This part used 350 plies of 24 by 24 inch prepreg sheets and produced a finished part two inches thick. Excellent temperature control allowed successful curing of this part while aggressive processing input controlled peak exotherm and actually reduced it to a lower temperature than that achieved with testing of the demonstration trial's second part, a component with less mass.

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NCC WELCOMES NEW MEMBER COMPANIES REICHHOLD INC AND FRENCH OIL MILL MACHINERY CO.

NCC is continually adding vital businesses to its network of member companies. This month NCC welcomes Reichhold Inc and French Oil Mill Machinery Co. into a resource cluster that fosters growth through connection.

Reichhold is the world's largest supplier of unsaturated polyester and vinyl ester resins for composites and a leading supplier of coating resins for a wide variety of markets and applications. Headquartered in Research Triangle Park, North Carolina, Reichhold has 18 manufacturing sites in 11 countries including two toll production facilities throughout the Americas, the Middle East , Asia and Europe. Founded in 1927, Reichhold has the widest global reach of any resin supplier today.

With more than 1500 employees worldwide, Reichhold provides innovative solutions that meet the needs of composite fabricators and coatings formulators. The company manufactures resins, gel coats and bonding pastes for customers who fabricate composite products ranging from bathtubs to boat hulls in both reinforced and non-reinforced applications. Reichhold also serves a range of markets that include tub/shower, marine, transportation, infrastructure, wind energy and corrosion-resistance among others.

Reichhold helped pioneer coatings applications in 1927 when founder Henry Reichhold introduced a specialty resin that reduced the dry-time of

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- Part number 1 -- 6”x8”x1” (176 plies)
- Part number 2 -- 24”x24”x1.75” (310 plies)
- Part number 3 -- 24”x24”x2” with a taper (350 plies)

All three parts demonstrated the ability to achieve a void free thick, consolidated laminate while preventing uncontrolled exothermic reactions during production. In addition, the normal advantages associated with Quickstep’s faster cycle times were not sacrificed to achieve target dwell temperatures for these standard aerospace materials. Separate demonstration trials were held using vinyl ester systems. Laminates half inch up to four inches thick were successfully produced. This provides a production advantage for a wide range of industrial uses where thicker composite structures are required to meet design strength requirements.

Aside from exotherm control and lower cycle rates, the process also demonstrated the capability to reduce infusion time by preheating a dry preform. This capability allows vacuumed infused parts to achieve faster infusion by reducing the viscosity to the resin’s optimal flow level. This preheating technique allowed Quickstep to produce a four and a half inch thick panel. Infusion time was reduced by about 50 percent and exothermic reaction controlled despite the part’s thickness.

Total cure cycle time was also reduced. The full length article will be published in an upcoming issue of CM Magazine.

For more information contact Ben Luedtke at bluedtke@quickstep.com.au

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automotive paints from days to mere hours. Reichhold also produces a variety of resins and curing agents employed by a wide range of coatings formulators. The product line features powder coating resins, alkyds, acrylics, urethanes, epoxy resins, epoxy curing agents and radiation-cured solutions just to name a few. Reichhold resins are used to produce paints, stains, varnishes, inks and other coatings products.

In addition, Reichhold’s resins are used in traditional and digital printing for graphic arts, a sub-segment of Reichhold’s coatings business. The company’s strength in the graphic arts market is derived from a core competence in alkyds, rosins, latex emulsions, phenolics, polyesters, and water and solventborne acrylics, urethanes, and epoxies.

These competencies extend to products for offset, heatset, energy cure, specialty inks, overprint varnishes, and thermosetting resins for black and color toners. Reichhold products offer superior dry rate, gloss, chemical resistance, pigment dispersion, substrate adhesion, color projection and low fusing odor. For more information about Reichhold visit www.reichhold.com

French Oil Mill Machinery Co., based in Piqua, Ohio, was founded in 1900 by Alfred W. French Sr. to produce state-of-the-art equipment for the extraction of linseed oil from flax. French soon adapted his equipment to other oilseeds as well.

Today, French is a leading supplier and innovator of preparation equipment and mechanical screw presses for the worldwide oilseed industry. French has roller mill and mechanical screw press installations worldwide processing all major oilseeds with customers in more than 80 countries.

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French also builds mechanical screw presses for dewatering and drying all types of synthetic rubber and other polymers such as ABS plastic. An industry leader in mechanical dewatering presses, French equipment is used by synthetic rubber producers in more than 23 countries. In addition, French delivers custom-designed virgin and recycled pulp dewatering presses with technology that delivers precise control over discharge moisture.

In the hydraulic press arena, French provides custom-designed compression, transfer and vacuum molding solutions engineered to customer requirements. Options range from a stand-alone press to a complete turnkey system with power unit, controls and automated material and mold handling equipment. French has thousands of machines operating in the most demanding applications including automotive, medical, defense, aerospace, and sporting goods to name a few. As the industry leader, French presses are best known for producing superior part quality resulting in fewer post-molding processes and a lower scrap rate. This is accomplished through finite element analysis, precise hydraulic control, low press deflection, superior temperature uniformity, and other proprietary knowledge.

Dedicated to continuous improvement, French is ISO 9001 certified. The company continues to be an innovator working to improve internal processes, develop new patents, introduce new products and enhance quality and delivery performance. For more information visit www.frenchoil.com.

FIRST FINANCIAL KNOWLEDGE CENTER EXPANDS OPTIONS WHILE ATRIUM UNDERGOES FACELIFT

The First Financial Knowledge Center (FFBKC) announced it is offering more options and pricing packages with special discounts for Benefactor and Partner level members. FFBKC is specifically designed for classes, symposia, meetings, and conferences, all with a professional atmosphere. It has a large, comfortable 255-seat auditorium, two large classrooms holding 30-60, and two conference or break out rooms for 8-15, conference breakfast/lunch/dinner, trade show, display, business reception, or social gathering.

In addition, the NCC Atrium is undergoing a facelift. Many of our Benefactor and Partner level members have contributed financial support to this effort including Ticona which provided creative input to use a full panel display. Advertising space is still available for Benefactor and Partner level companies interested in participating. This activity is designed to add value to the NCC Network's membership while providing a clean new look to the FFBKC. Look for photos of the finished project in an upcoming newsletter. For more information contact Debi Talentino at 937-297-9465 or dtalentino@compositecenter.org

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