Natural & Wood Fiber Composites

EXCLUSIVE MONTHLY COVERAGE OF THE WPC INDUSTRY

PrincipiaPartners

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Reclaim and Resin Prices Skyrocket

Higher Virgin Prices and Strong Asian Demand Driving Reclaim Market

Reclaimed HDPE and LDPE prices have increased dramatically, by as much as 100%, due to higher virgin resin prices and strong market demand. The recent run up in oil prices has pushed virgin PE, PP, and wide-spec resin prices up by as much as 20%. One plastics recycling company mentioned that wide-spec prices are now starting to pass the $0.50 per pound barrier.

Competition for plastics reclaim from both domestic and foreign companies is as hot as ever. The Asian countries, especially China, are the most influential in the market. The Chinese are offering up to four or five cents per pound more than many U.S. companies are willing to pay for PE. One recycling company mentioned that he receives "three or four" cold calls a day from Chinese companies looking for waste plastics. Transportation costs from domestic ports to Asia are even less expensive than shipping within the continental United States, further adding leverage to the export market.

Post-consumer and post-industrial recycling rates also play an important role in the market. Flat to declining post-consumer recycling rates exist, and consumer recycling rates have simply not kept pace with the growth in the demand for these materials. The good news is that plastics reclaim supply has steadily increased primarily due to the stepped up recycling efforts by industrial waste generators.

Growing awareness of the value of waste plastics has increased the number of companies willing to capture their waste streams. One example is the ongoing collection of PE film and grocery bags from distribution centers and grocery store chains. Another more recent example of a relatively new source of reclaim is from the import furniture business. Imported furniture is wrapped in film, which is then removed and captured for recycling.

Increased competition for reclaimed resin and higher prices will push composite producers to invest more time, energy and expense to procure resins. It is likely that the industry will also start to work with material recycling facilities (MRFs) to collect and process post-consumer plastics collected from curbside programs. Waste Management, Allied Waste and cities and municipalities are

Continued on next page

Resin	Source	Cents/lb (delivered)	
		Q3 2003	Q3 2004
HDPE - colored	Consumer & Industrial	15 to 17	19 to 22
HDPE - natural	Consumer & Industrial	21	24 to 27
HDPE - return bag	Consumer	6 to 8	12 to 14
LDPE - stretch film	Industrial	12 to 13	15 to 18

Company News

Trex Agrees to Settle Class-Action Lawsuit

Covers Consumers Who Bought Products Since 1992

Trex Company Inc. (Winchester, VA) agreed to settle a product-defects lawsuit that was certified as a class action in May. The company decided to settler rather than incur the cost to defend it.

On May 28, 2004, the Superior Court of New Jersey certified a nationwide class of consumers spanning the twelve-year period from 1992 through 2004 on a claim that the warranty issued by Trex and ExxonMobil in conjunction with the sale and distribution of composite lumber products is unconscionable and must be reformed.

Mr. Robert Matheny, Chairman and CEO for Trex, talked about the lawsuit during an investor conference call last July. He said, "Basically, what the court did, and we think in error, is allow a small group - as far as we know it is four individuals - to be represented by one counsel and bring their claims together rather than individually."

Court documents contained the settlement terms. Trex agreed to stop all advertising claims that its products do not require sealant and are maintenance-free. The company also agreed to replace any class member's product that suffers from defects.

Trex: Robert Matheny, 540-542-6300

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CertainTeed's Decking and Siding Plant Reaches Safety Milestone

Two Million Hours Without Lost-Time Accident

Employees at CertainTeed Corporation's (Valley Forge, PA) vinyl siding and composite decking manufacturing facility in Jackson, MI have reached a major safety milestone by working two-million hours without a lost-time accident. "This is a tremendous accomplishment for us," says Rick Holt, Plant Manager. Holt attributes the safety achievement to employee focus and dedication. "The employees' commitment to safety is the number one reason we have reached this safety milestone."

CertainTeed; Michael Reisman, 610-341-6957

USPL Closes Ocala Plant

Chicago Location is Last Operating Extrusion Plant

United States Plastic Lumber, Inc. (USPL; Boca Raton, FL) closed its Ocala, FL extrusion plant late last month. The closure is not surprising, especially since the company filed for reorganization under Chapter 11 last July. Since 2001, USPL closed plants in California, Maryland, and Tennessee, and relocated extrusion equipment to its Chicago, IL facility.

USPL: Michael Schmidt, 561-394-3511

AERT Reports Gross Sales for August

50% Increase from August 2003

Advanced Environmental Recycling Technologies Inc. (AERT; Springdale, AR) announced that unaudited gross sales for August were $6.6 million, a 50% increase from the $4.4 million gross sales reported for August 2003.

Continued from page one

Reclaim and Resin Prices Skyrocket

the main organizations that manage these facilities.

Another likely development will be WPC companies using a higher percentage of virgin resin in formulations. Prices have increased significantly over the past two years but supply is available. A good sourcing strategy appears to be a necessary part of the business management efforts among composite producers to combat feedstock supply and price volatility.

Product News

UL Establishes WPC Classification

Elk Composites Receives First Approval

Underwriters Laboratories Inc. (UL; Northbrook, IL), a well recognized name across the country, is an independent, not-for-profit product-safety testing and certification organization that has been testing products for public safety since 1894. The organization is a leader in product-safety testing and certification within the United States. In 2003, 19 billion UL marks appeared on products produced by 68,713 manufacturers.

UL approved its first wood-plastic composite decking and guardrail classification in April, 2004. The UL classification is based on ICC Evaluation Service's AC174 acceptance criteria. According to Daniel Steppan, Senior Project Engineer at UL, "We have been working with roofing manufacturers for a long time and they were the catalyst to help us to develop this new category." Elk Composite Building Products is the roofing company that initiated the work, and is the first WPC company to receive the UL mark for its decking and railing products. UL anticipates more composite manufacturers to follow in Elk's footsteps.

For composite products marketed through the big-box retailers and other distributors, the UL brand mark goes hand in hand with these companies and the products they sell to consumers. The UL approval or 'mark' provides confidence to the consumers regarding a product's performance and safety.

The UL classification is significant because companies must demonstrate that their products meet the AC174 testing requirements, and the product must continue to meet certain performance requirements on a periodic basis. The company is also required to set up certain raw material and end product quality control procedures at the manufacturing facility. To ensure continued compliance, UL inspectors will arrive unannounced at a manufacturer's plant site to pick up samples, retest, and confirm that the products continue to meet UL's quality requirements.

The cost and amount of time to receive a UL mark varies depending on the number of products to be tested and approved. The testing process timeline is driven by the longer duration tests such as UV exposure and resistance to decay

UL provides a 'one-stop' shop for manufacturers. Not only does UL have the resources and expertise to complete all the quality control functions and testing required for AC174, they also have the capabilities to assist companies in product development. For example, UL has finite element analysis modeling capabilities to assist in deck board design optimization. This modeling can help companies finalize product design prior to producing the tooling necessary for production. In addition, this modeling can be used to define worst case loading conditions for full railing system assemblies, to minimize the required testing.

UL: Dan Steppan, 847-664-3574

Univ. of Illinois Develops Cornboard

Claimed to be Stronger and Harder than OSB

(Courtesy: U of IL)

Researchers at the Office of Technology Management, University of Illinois (Urbana, IL) have developed a laminated polymer composite board that is claimed to be stronger and harder than traditional oriented strand board (OSB). The board is made from corn husks and thermoset plastic resins. The corn husk fiber is used as the primary means of fiber reinforcement.

Corn husks currently are valueless waste products of the food industry. The husks require minimal processing prior to use in the composite process and are significantly less expensive than wood products. The researchers also claim that the technology can be used in existing OSB manufacturing facilities and requires no additional equipment.

The desired use of the final product dictates the type of polymer resin that is used. For example, composites that are formed with epoxy resins are suitable for decorative structural elements such as countertops, while composites that are formed with polyesters or phenol-formaldehyde (the polymer matrix typically used in oriented strand board) are suitable for mechanical structural uses because of their high strength.

The corn husks are cleaned and dried prior to layering them into a mold that has been pretreated with a releasing agent for easy removal. The fiber can be either aligned to form a quasi-unidirectional laminate or randomly positioned to form a quasi-isotropic laminate. A liquid or powdered polymer matrix is added throughout the layering process. Alternately, the fiber can be mixed in a blender with the polymer and then put into the mold.

Once the composite has been compressed and cooled, it is removed from the mold and can be cut or shaped as needed. Composites of any thickness can be prepared by first forming thinner composites and then compressing them together. The process can be easily implemented in existing wood-based particle board production facilities, making it economically feasible for manufacturers.

Univ. of IL: Roger Vanhoy, 217-244-1275

Product News

Standridge Expands Merchant Compounding Business

WPC Compounds for Extrusion and Injection Molding

Standridge Color (Social Circle, GA) has been in the custom compounding business for over twenty-four years and has been making color concentrates for the WPC industry for over six years. The company entered the WPC merchant compounding business earlier this year and has since installed a couple of lines solely dedicated to WPC compounds.

Terry Rosenboom, Midwest Salesman for Standridge, said, "We now have a couple of small production lines that have been running for the past three months, and the company recently started a new machine with output of 15,000 pounds per hour. All of these lines are dedicated to making wood plastic compounds for decking, custom molding parts and sheets, to name a few."

Standridge Color: Terry Rosenboom, 770-464-3362 x1468

ICC to Hold Meeting for Revised Composite Acceptance Criteria

Big Changes Proposed to AC109 and AC174

The International Code Council Evaluation Service is conducting a public hearing on October 6, 2004 at the Radisson Hotel Birmingham (Birmingham, AL) to review and discuss the proposed revisions to AC109 and AC174.

The ICC-ES Evaluation Committee hearing "AC109 - Thermoplastic and Thermoplastic Composite Lumber Products Revisions" will discuss a number of proposed changes, including proposals to align AC109 procedures more closely with AC174, to include additional cross-sectional configurations, and to clarify how design properties are determined.

The meeting that will undoubtedly receive the most attention is the hearing on the proposed changes to the AC174 guidelines. The "AC174 - Thermoplastic and Thermoplastic Composite Deck Boards, Span Rating and Guardrail Systems (Guards and Handrails)" hearing will review 15 proposed changes.

For a complete listing of the changes, please visit the ICC web site: www.icc-es.org

ICC: Jeffery Seegert, P.E., 708-799-2300 x319

New Web Site For PE Film Recovery

Launched in July 2004

The American Plastics Council (Arlington, VA) and Moore Recycling Associates (Sonoma, CA) have teamed to develop a web site to facilitate the recovery of clean dry grocery and retail bags, and polyethylene film. www.plasticbagrecycling.org

Moore Recycling: Nina Bell, 888-753-7485

Equipment News

ENTEK Having a Record Year

Strong Growth in WPCs

ENTEK Extruders (Lebanon, OR), a division of ENTEK Manufacturing Inc., is a manufacturer of co-rotating twin-screw extruders for the wood-plastic composites industry. The company entered the WPC business in 1999, and has since sold twelve extrusion systems in the U.S. and four in Europe. This year will be a record for the company.

Growth in demand for ENTEK's machines has been strong in 2004. They already sold five machines in the U.S. since the beginning of the year, and they expect to sell a few more by year end. According to Kirk Hanawalt, ENTEK's Vice President of Sales and Marketing, "We expect to sell at least seven extruders in the U.S. for WPC extrusion this year. Given that we already sold five, seven isn't a stretch, and I am being conservative. We actually hope to sell at least ten. We expect to take additional orders for 103mm or larger extruders before the year is out."

The company's equipment is running fractional melt HDPE with fiber content up to 60% at rates of up to 4,000 pounds per hour for the 103mm extruder, which is the most popular size machine in the U.S. ENTEK is now designing a larger extruder designed for rates of up to 8,000 pounds per hour using these materials. The 103 mm extruder can handle moisture content of up to 2% when making solid profiles at its maximum speed, and up to 8% moisture when making pellets.

ENTEK provides complete turnkey installations, everything from rail car receiving, feeding, extruding, cooling, surface finishing, and stacking to installation and start-up. The company makes the extruder screws and barrels in-house and their design, assembly, and support departments are all based in the United States.

ENTEK: Kirk Hanawalt, 541-259-1068

Equipment News

Novatec Finding Success in WPCs

Growing Demand for Pellet Drying Systems

NovaDrier™
(Courtesy Novatec)

Novatec, Inc. (Baltimore, MD), a supplier of resin drying, blending, and pneumatic conveying systems to plastics processors throughout the world, is finding success in the WPC industry. The company manufactures a wide range of standard equipment but specializes in providing custom systems designed to meet processors' specific requirements. Novatec utilizes "LEAN Manufacturing" and is ISO 9001 – 2000 certified.

Several WPC companies are now using Novatec's drying equipment. John Kraft, Marketing Consultant for Novatec, mentioned that the company has dryers in the WPC industry that have been running 24/7 for the past six months with no problems and that the WPC customers are very happy with the dryer operations.

The company builds a number of different twin-tower desiccant bed dryers including the NPD/MPC Series Dryers, the custom-designed CD/CDM Series Drying Systems, and the company's patented NovaDrier™. Novatec dryers are successfully used to dry composite pellets made from a wide range of resins, fibers, minerals, and additives.

Novatec custom-designed Central Drying Systems utilizing a single central twin desiccant bed dryer and heater blowers at multiple hoppers can be used to dry several different grades of pellets, with grade-specific drying parameters, at the same time. This means that a processor can use a single dryer to custom-dry several different types of pellets simultaneously. These dryers have capacities of 40 to 3,500 lb/hr.

The company's patented NovaDrier™ uses advanced compressed air/membrane technology to dry composite pellets. WPC companies especially like this system because of it requires minimal maintenance. This dryer does not have desiccants, moving parts, a regeneration motor, a process motor, and any grease or oil. It operates on ordinary plant compressed air and attains a -40° dew point in less than four minutes after start-up. NovaDrier™'s process capacity varies from seven to over 150 lb/hr.

Novatec has also developed a wood flour dryer that is in the final stages of testing. It is designed to dry batches of 70 to 80 lb/hour for use in lab conditions. Mr. Kraft said, "This dryer will be ideal for start-up companies that can not afford a big Flash Dryer, or for large companies with testing labs where they might be experimenting with new fillers and thus have a need for a small capacity powder dryer."

Novatec is also known for its pellet conveying systems and for building some of the largest pellet conveying systems in the U.S. The company has helped many smaller processors, including some WPC extruders and injection molders to increase productivity by improving existing systems or installing new ones.

"We provide complete design services, railcar unloading systems, silos, surge bins, vacuum pumps, cyclone dust collectors, vacuum loaders and chambers for pellets or powders, tubing, bends, couplers and expert mechanical installation," said Mr. Kraft. He adds, "Our standard dryer and conveying system designs work well with either plastic pellets, regrind or composite pellets but we pride ourselves in developing custom systems for special applications and unusual processing requirements."

Novatec: John R. Kraft, 410-789-4811 x316

Raw Materials

Crompton's Next Generation of Coupling Agents

Polybond™ Coupling Agents for PE- and PP-Based WPCs

Crompton Corporation (Middlebury, CT) is a $2.2 billion producer and marketer of specialty chemicals, polymer products, and extrusion equipment to customers in over 120 countries. The company recently launched two new maleic anhydride grafted PE and PP coupling agents for use with wood flour and/or natural fibers.

Polybond™ 3029 was introduced last spring and is a commercial success in the wood composites industry. The product is designed for use with HDPE, LDPE or LLDPE, and it yields higher strength and better water absorption resistance compared to Polybond 3009. In addition, Polybond 3029 comes in either pellet or micro-pellet form. The micro-pellets, which are similar in size to sand, enhance mixing with other raw materials in pre-mixes, and improve dispersion in the extruder.

Crompton also has a new, higher efficiency Polybond product, which is in the final developmental stage. This product is designed to work with wood flour and/or natural fibers and PP, and improves composite flexural, tensile and impact strengths, and water absorption resistance. Field tests of wood composites made with 2% of this new Polybond product showed about 50% higher flexural strength and about 60% higher water absorption resistance than products made with similar amounts of traditional maleic anhydride functionalized PP coupling agents.

Crompton: Paul Hinckley, 203-573-2088

Equipment News

Cincinnati Milacron Introduces New Twin Screw Extruder

TimberEx™ TC96 Boosts Output Rates

Cincinnati Milacron (Batavia, OH) recently introduced its newest conical twin-screw extruder, TimberEx™ TC96. This 96 mm machine has an output rate of about 2,200 to 2,600 pounds per hour, which is about 15% to 20% greater that the TimberEx™ TC92. The company already shipped a few machines to customers this summer and is now preparing for a full product launch this fall.

The TC96 conical twin-screw extruder has a 96 mm discharge zone with a 30:1 length to diameter ratio (L/D) compared to the TC92 with a 92 mm discharge zone and a 27:1 L/D. According to Tom Brown, General Sales Manager for Cincinnati Milacron, "The main advantages of this machine include the longer length for a wider processing window, and the higher output rates. With the longer length of the screws, the extruder can more effectively de-volatilize moisture from wood flour. There are dual vents on the machine, with the first vent being atmospheric and the downstream vent under vacuum. This venting arrangement helps pull more of the residual moisture out of the product."

"Another advantage to the TC96 is the large feed zone. The machine has a 202 mm diameter feed zone, compared to the TC92's 184 mm feed zone, which is a big help when feeding relatively light weight, low density wood flour and/or natural fibers. As the material works its way through the extruder, the conical shape of the extruder barrel provides a natural compression. This natural compression, in conjunction with the rotation of the screws, provides more effective wetting out of the wood fiber," said Mr. Brown.

Cincinnati Milacron also introduced four new redesigned parallel twin screw extruders for the wood composite industry. The company's 93 mm, 115 mm, 140 mm and 172 mm machines, originally introduced in 1996 for rigid vinyl applications, have been modified for use in the WPC industry. The constant screw diameter allows for longer L/D ratios and a wider processing window, which helps increase moisture removal and processing rates. For example, the 140 mm machine, configured for WPCs, is 33:1 L/D, and has an output of about 2,500 pounds per hour.

Cincinnati Milacron: Tom Brown, 513-536-3303

Raw Materials

Ferro's New Lubricants Enhance WPC Properties

SXT 3100 Lubricants Used in Various WPC Products

The Polymer Additives Division of Ferro Corporation (Independence, OH) offers two lubricants from its metallic stearate-free SXT 3100 product family. Ferro's new products are designed to help next-generation WPC products including handrails, windows, doors, and fencing, that require greater flexural strength and modulus, improved durability, and resistance to mold.

Ferro's introduced SXT 3100-3 lubricant in 2002 and has shown good performance. The product is used in polyolefin-based wood composites in various applications include fencing, handrails, and decking applications.

Ferro claims that WPC products made with SXT 3100-3 have better water absorption, flexural strength, and flexural modulus compared to other lubricants in WPC products. SXT 3100-3 can be used as a stand-alone additive or it can be used with coupling agents.

SXT 3100-4 is Ferro's newest lubricant. The product is currently undergoing field trials by more than six wood composite producers. Initial test results show that composites made with SXT 3100-4 have a significant decrease in water absorption, improved durability, and less problems with surface mold growth.

The improved performance has been achieved with loading levels of as low as 2.3%, compared to a 4% or 4.5% loading level typical for many lubricants.

Both SXT 3100-3 and 3100-4 perform well with maleated PE or PP coupling agents. Wood composites that combine Ferro's lubricants and coupling agents show good surface quality at normal or reduced extruder amperage, greater flexural strength, modulus and water repellency than if the lubricant was used without coupling agents.

Ferro: Michelle Fromholzer, 216-875-1428

Research & Development

Ahlstrom Awarded Patent

Nonwoven Natural Fibers to Replace Fiberglass

Ahlstrom Windsor Locks LLC (Windsor Locks, CT) was assigned a patent for wet-laid nonwoven webs made from unpulped long natural fiber (NF) bundles, and their use as a substitute to fibreglass mats in vehicle headliners or other vehicle interior trim products. A summary of the invention is shown below.

United States Patent # 6,762,138
Issued July 13, 2004
Wet-laid Nonwoven Web from Unpulped Natural Fibers and Composite Containing Same

The present invention relates generally to wet-laid nonwoven webs made from unpulped long natural fiber bundles and to hydroentangled composite sheet material containing such nonwoven webs. Desirable mechanical reinforcement properties can be incorporated into nonwoven web materials without using fiberglass or bulky, heavy-weight materials. This is achieved by using wet-laid nonwoven webs made with long vegetable fiber bundles. Such nonwoven webs may be used individually or as part of composite structures as the reinforcing or stiffening component.

Fiberglass mats can be replaced entirely by wet-laid sheets composed predominantly of natural long fibers having an equivalent or greater modulus of elasticity. A nonwoven web of natural long fiber bundles may be used to replace both the fiberglass layer and the barrier film that prevents resin bleed-through. This new composite provides multiple layers of thermoplastic fibers, natural reinforcing fibers and wood pulp and can withstand the thermo-forming processes required where contoured reinforcement of the finished product is used. This sheet material completely replaces the inorganic reinforcing fibers and employs select unpulped natural long fiber bundles in a water-laid web. The long fiber web material may be used alone or as a composite to replace the prior three layered structure of fiberglass substrate, thermoplastic film and nonwoven backing. The resultant product combines lightweight, reduced bulk and high stiffness in molded form with good moldability and mold release as well as high elongation and barrier properties against resin flow.

Kadant Composites Issued Patent

Raw Material for WPCs

Kadant Composites Inc. (Bedford, MA) was issued a patent for their WPC manufacturing process that combines granulated papermaking sludge with plastic to form composite materials.

United States Patent # 6,758,996
Issued July 6, 2004
Cellulose-Reinforced Thermoplastic Composite and Methods of Making Same

The invention relates to a composite formulation useful as a feedstock in the manufacture of composite end products, such as structural and non-structural construction materials, roofing tiles, fences, door panels, sound barriers, decking materials, decorative wall coverings and the like, and methods of formulating the composite.

The formulation includes high levels of granulated papermaking sludge (up to 70%-75%) and/or cellulose fiber mixed with plastic. An advantage of the invention is the ecological benefit of utilizing papermaking sludge that would otherwise be disposed of as industrial waste; indeed, further ecological benefit can be realized by combining the granulated sludge with recycled plastic in formulating the composite. Compared to composites made with loose cellulose fiber, this formulation greatly improves the properties of fiber-plastic composites.

Technology News

Crane Develops New Technology for WPC Profiles

Targeting New Indoor and Outdoor Products

Courtesy Crane

Crane Plastics Manufacturing, Ltd. (CPM; Columbus, OH) has been a leading manufacturer of custom plastic extrusions and an innovative research company for the past 55 years. The company holds many patents on processes as well as products, and offers companies profile design, tooling, fabrication, packaging, and warehousing.

CPM's latest patented technology includes unique formulations, tooling and die designs, and process techniques to make complex, multi-hollow wood composite extrusions in many different colors. The technology also includes the capability to emboss or brush to create unique surface finishes. CPM believes that the proprietary olefin and wood flour composite profiles will open entire new markets outside of decking and railing. Examples include products for both indoor and outdoor applications in the office furniture, building products, and fenestration industries.

Crane Plastics Manufacturing: Joe Ewing, 614-542-1155

Technology News

Rutland Introduces New Technology

Applications for Reinforcing WPCs

Rutland Plastic Technologies (Pineville, NC), founded in 1962, is a manufacturer of PVC plastisol compounds and polyurethanes used in many commercial applications, including screen printing inks, automotive and industrial filtration compounds, coatings, moldings, and adhesives to name a few. The company operates an 80,000 square foot plant in Pineville, NC, and is QS-9000/ISO 9001:1994 and ISO 14001 certified.

The company's new technology can thoroughly impregnate and coat fibers using a Structural Engineered Plastisol (SEP) resin. Any fiber that can be processed at a temperature of 350ºF can be used with this technology. The SEP resin allows complete wetting out of the fibers, and the technology allows control of the fiber placement in the extrusion profile.

Products made with this technology will have enhanced physical properties including reduced thermal expansion, increased strength, and reduced deflection. The technology also gives engineers flexibility in designing new products. For example, new products can be designed with reduced cross-sectional area, which can yield thinner profiles and reduced raw material and process costs.

The primary process for this technology is a hybrid extrusion and pultrusion/extrusion technique, which combines the introduction of continuous fibers into an extrusion cross-head die. Rutland's technology is most effective with PVC because of the 100% compatibility with the SEP resin, but it can also be used with olefin-based WPC compounds because of the excellent adhesive bond between the SEP resin and the wood or cellulosic portion of the matrix.

"The ability to incorporate continuous fibers into a wood composite is expected to enable companies to enhance their existing products in decking and railing, and open up an entire new frontier of products for use in structural applications," said Mr. Gary Davis, Vice President of Sales for Rutland.

Mr. Davis adds, "The strategic placement of the continuous fibers within the cross-sectional area of WPC products is expected to result in higher performance decking and railing products. The superior ability of the SEP resin to be processed into thin profiles is expected to enable window lineals to benefit as well from this new technology. This all can contribute to making a WPC product with greater performance features that will lead to new uses over and above current applications."

Rutland: Gary Davis, 704-553-0046

Events Calendar

October 11-12, 2004, WOOD-PLASTIC COMPOSITES 2004: Realizing the Full Potential, Baltimore, MD. Organized by Principia Partners, this conference will address the needs of R&D and manufacturing people, as well as such commercial aspects as business and market developments and the 'voice of the customer.' For info: Lou Rossi, 484-459-2238, LRossi@PrincipiaConsulting.com.

October 20-27, 2004, K 2004, Dusseldorf, Germany. Organized by Messe Düsseldorf, this tri-annual plastics fair is the largest in the world bringing together material suppliers, equipment manufacturers, and processors at the famous fairgrounds in Dusseldorf.

November 10-12, 2004, International Green Building Conference & Expo 2004, Portland, OR. Sponsored by the U.S. Green Building Council, this conference highlights 'green' products. For info: 215-428-9655 or expo@usgbc.org.

December 8-10, 2004, The Global Outlook for Natural Fiber and Wood Composites 2004, New Orleans, LA. Sponsored by Intertech. This international business conference is the 3rd in the series and is designed for suppliers, producers and end-users of reinforced materials to discuss the diverse opportunities and challenges that lie ahead in the booming wood and natural fiber reinforced composite market. For info: 207-781-9608 or email: scotts@intertechusa.com.

January 13-16, 2005, The International Builders' Show, Orlando, FL. The largest annual construction industry show in the world will be held at the Orange County Convention Center. For more info: www.buildersshow.com

January 19-21, 2005, FENCETECH 2005, New Orleans, LA. Organized by the American Fence Association, this annual show highlights new systems for dealers. For info: 630-942-6598

February 2-4, 2005, DeckExpo, Tampa, FL. The Tradeshow for Professionals in the Deck, Dock, and Railing Industry. For info: Terry Dempsey, 678-344-6283

March 24-25, 2005, Wood Fiber Polymer Composites European Symposium, Bordeaux, France. Organized by the Centre Technique du Bois et de l'Ameublement. For more info: woodpolymer@ctba.fr or http://www.ctba.fr

July 11-15, 2005, Advanced Engineered Wood Composites, Bar Harbor, ME. The third international conference is organized by the University of Maine's Advanced Engineered Wood Composites (AEWC) Center. This annual conference will provide a focused venue for the commercial, scientific, and engineering aspects of AEWCs. For info: 207-581-2123.