

# Rubber & Plastics News<sup>®</sup>

March 24, 2008

The Rubber Industry's International Newspaper

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## NR price hikes continue to plague industry

### Expert says no reprieve expected for next 18 months

**By Miles Moore**  
Rubber & Plastics News Staff

HILTON HEAD, S.C.—Rubber manufacturers feeling the pinch of skyrocketing natural rubber prices have one alternative—grin and bear it.

The equally sharp rise in the cost of petroleum, from which feedstock for synthetic rubbers is derived, fuels the increase in the price of NR, according to NR industry sources. Last anyone looked, oil was going for a record \$110 a barrel.

While the U.S. and world economies are staggering under unprecedented oil prices, the rubber industry's personal crisis is over NR that has averaged \$1.16 a pound so far this year. That's 19 cents a pound over the 2007 average and far beyond the historic low of 23 cents in 2001.

When will NR prices relent? No time soon, said Whitney H. Luckett, vice president of sales and marketing for rubber trader RCMA Americas Inc.

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## Plants that love plants

### Rubber firms help the earth—as well as the bottom line



A special report on the ways the rubber industry is becoming more earth-conscious begins on page 10.

**By Bruce Meyer**  
Rubber & Plastics News Staff

"Going green" in a rubber factory can take many forms.

It can be as simple as collecting newspapers and pop cans for donation to charity, or as complicated as following a full-scale environmental program throughout a facility.

More often than not, it's an initiative that comes from management. But in some cases employees can drive the process.

A company can push its environmental strategies from programs or technologies developed in-house, or it can utilize know-how from others.

And while some may see the positive environmental impact as an end in and of itself, it's not surprising that most firms don't mind if they see financial benefits as well.

What follows is a snapshot of how four firms involved in the rubber industry are, in their own way, going green.

**Park-Ohio: From the ground up**  
At Park-Ohio Products Inc., many of the green initiatives put in place



Mark King, Park-Ohio Products Inc. North American marketing and sales director, shows off some of the 57,000 pounds of scrap rubber the molded goods maker recycles each month.

since the beginning of 2007 actually were initiated by some of the more than 200 employees at the Cleveland-based firm.

It started simply, with one employee recycling pop cans and newspapers to benefit a local church and fire department. Some of the other staff members thought it was a good idea and the effort expanded.

Eventually management got behind it and gave its support as one part of its burgeoning environmental effort, said Mark King, North American marketing and sales director for the molded goods maker.

A similar push by a worker led to an initiative to start recycling Park-Ohio's scrap EPDM rubber. The worker found a recycler that would take

the rubber, and from there the firm's materials management unit took care of the logistics.

"I think it works better the way it happened with us," King said, "because if the employees are the ones initiating the ideas, then they're much more apt to embrace it."

From its modest start, Park-Ohio now:

- recycles an average of 57,000 pounds of scrap rubber and 7,000 pounds of corrugated cardboard per month;
- uses only recycled or refurbished pallets, with broken pallets donated for community use rather than being thrown away; and
- has all of its raw materials

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## Veyance ponders unit sale

### Fate of Belt Concepts subsidiary in the air

**By Mike McNulty**  
Rubber & Plastics News Staff

FAIRLAWN, Ohio—Veyance Technologies Inc. is considering selling its lightweight conveyor belting business, veering slightly from the aggressive growth path it has been on since it became a stand-alone company in August 2007.

The manufacturer said it is exploring the sale of its Belt Concepts of America subsidiary because it wants to focus on its heavy-duty belt operation.

Belt Concepts employs about 60 at its factory and offices in Spring Hope, N.C. It has annual sales of more than \$22 million and serves the food harvesting and processing, package and retail grocery handling, and exercise equipment industries, a spokesman said.

The subsidiary is healthy and has a strong work force, good products and a solid customer base, according to Tim Toppen, CEO and president of Veyance.

However, he cited the fact that Veyance has been building its heavy-duty belt business by acquiring a conveyor belt fabric plant in Georgis and a central Appalachian belt service operation.

It also created a joint venture in China that Toppen said is the country's largest, and the firm is spending between \$15 million and \$20 million to upgrade its North American heavy-duty belt operation.

The company will continue to

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### A growing family

Fenner Precision expands in U.S., Asia and Europe through its acquisition of Winfield Industries..... Page 3

### Rubber vet retiring

Bruce Bowers is selling interests in his Ohio-based companies, but plans to stay active within the industry..... Page 6



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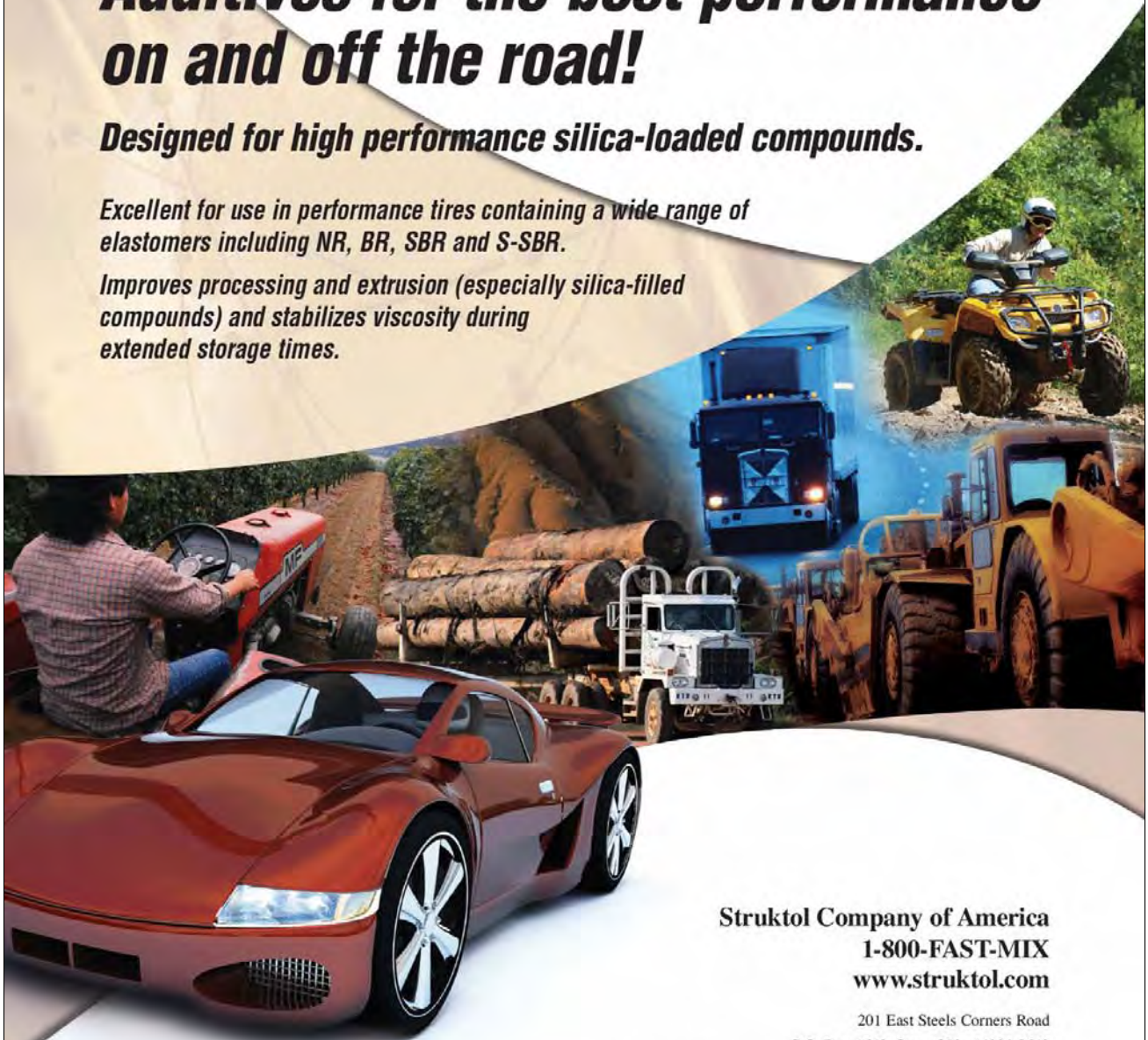
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### Sweet

For the ATV rider who is looking for attention, Sweet-skinZ is offering this little gem. The tire features full-color graphics and patterns that are reflective at night. The company started using its SkinZ technology with bicycles, has moved onto motor vehicles, and is aiming for car and truck tires, too.



## Amerityre buys PU firm's assets

BOULDER CITY, Nev.—Amerityre Corp. has acquired a significant portion of the manufacturing assets of Kik Technology Inc., an Oceanside, Calif.-based maker of polyurethane foam tires that is going out of business.

Amerityre purchased tire models and molds used by Kik to produce low-duty-cycle polyurethane foam tires. The tires are used in many medical, industrial and recreational applications, such as on wheelchairs and power scooters, hand dollies, factory carts, luggage handling equipment, bicycles, mopeds, golf carts, lawn mowers, wheelbarrows, snow blowers and farm carts.

The acquired assets will help Amerityre produce a wider range of products for this market, according to President and CEO Gary Benninger. Terms of the transaction weren't disclosed.

Kik Technologies reported foam tire sales of \$937,465 for the nine-month period ended Oct. 31, and \$1.86 million for fiscal 2006, Amerityre said. Kik marketed its products under the tradenames Kik Tire and Carefree Tire.

William Knooihuizen, Kik's former president, has joined Amerityre in a senior account management position.

"I am looking forward to working with the Amerityre management team to integrate the Kik line of tires into the Amerityre product lineup," Knooihuizen said.

For its most recent quarter, Amerityre reported a net loss of \$1.03 million on revenues of \$534,020. For the half-year ended Dec. 31, the net loss was \$2.12 million on revenues of \$1.2 million.

### DEADLINE NEWS

#### Trelleborg to buy U.S. firm

TRELLEBORG, Sweden—Trelleborg A.B. is buying MacDermid Inc.'s offset printing blankets operations for about \$66.5 million in cash.

The Swedish company's Trelleborg Engineered Systems division will acquire Denver-based MacDermid Offset Printing Blankets, a maker of printing blankets for the graphics industry. The firm employs about 400 and reported sales of about \$89.8 million in 2007, according to Trelleborg.

Trelleborg said the deal strengthens its base in the market for printing blankets—polymer-coated composite fabrics designed in several layers.

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Vol. 37, No. 17, March 24, 2008—Rubber & Plastics News (ISSN 0300-6123) is published every other Monday by Crain Communications Inc. Periodical postage paid at Akron and at additional mailing offices. Address all subscription correspondence to: Circulation Department, Rubber & Plastics News, 1155 Graftiot Ave., Detroit, Mich. 48207-2912. Postmaster: Send address changes to: Rubber & Plastics News, Circulation Dept., 1155 Graftiot Ave., Detroit, Mich. 48207-2912.

# Adding another piece

## Fenner Precision grows by acquiring Winfield

By Mike McNulty  
Rubber & Plastics News Staff

MANHEIM, Pa.—Fenner Precision has purchased Winfield Industries Inc. to expand significantly its operation in the U.S., Asia and Europe.

The subsidiary of England-based Fenner P.L.C. will enhance its technology base, production capabilities and product offerings by adding Winfield Industries' 40 years of expertise in the manufacture of polyurethane and silicone rollers for digital imaging, medical and diagnostic imaging applications, a Fenner Precision spokeswoman said.

Fenner Precision—which makes PU mini-pitch timing belts, rubber flat belts, and urethane and silicone tires for office automation and paper propulsion applications—plans to retain Winfield's management team and 130 employees. That will give Manheim-based Fenner Precision a combined work force of about 375, the spokeswoman said. Financial terms were not disclosed.

Winfield will continue operating out of its 90,000-sq.-ft. Buffalo, N.Y., facility, but the Winfield name will be changed to Fenner Precision, she said. Products originally made by the acquired business will carry the Winfield brand.

Bringing together the two operations will enable Fenner Precision to offer a comprehensive range of products to the paper propulsion industry and the companies' customers in the U.S., Asia and Europe, according to Fenner Precision President Mike Thompson.

The acquisition will improve Winfield's global reach, according to Jeffrey Oak, president of the firm. He said the combination of Winfield's liquid custom formulated cast



Fenner Precision's plant in Manheim, Pa.

urethane and silicone-molded offerings and Fenner Precision's polymer-reinforced fabric technology will result in more products being available to its customers and, through a jointly formed global sales and marketing organization, a boost in sales worldwide.

Because of that, "this is a win-win for both companies," the spokeswoman said. "The melding of the two companies strengthens their position in the marketplace and provides more convenience and solution options for their customers."

Fenner Precision has experienced solid growth in the last several years. In early 2007, it was separated from industrial belt maker Fenner Drives and became a stand-alone subsidiary of Fenner P.L.C. It also completed a two-year expansion of its Manheim plant, added machinery and enlarged its work force.

## Duties cut on neoprene for adhesives

By Miles Moore  
Rubber & Plastics News Staff

WASHINGTON—The U.S. Department of Commerce is discontinuing the 55-percent antidumping duty it currently charges on Neoprene AF, a grade of neoprene used mostly in the adhesives industry.

Commerce decided to drop the tariff after a Jan. 23 petition from DuPont Performance Elastomers L.L.C., the only remaining U.S. manufacturer of neoprene. No change was made on duties of other polychloroprene grades, which had sparked a dispute with some rubber product companies a few years ago.

DuPont Performance Elastomers decided to seek removal of the duties after the Adhesive and Sealant Council approached the Wilmington, Del.-based manufacturer. Neoprene AF was, in fact, the latest of three neoprene grades for which DuPont Performance Elastomers requested a reprieve.

"We found out that DuPont planned to close its Louisville plant, and they alerted us there were certain grades that would no longer be manufactured," said ASC President Larry Sloan.

Polling its members, the association found that three grades important to the adhesives industry—Neoprene AQS 1120, Neoprene AQS 2540, and Neoprene AF—would be lost to U.S. production after DuPont Performance Elastomers closed Louisville and moved neoprene production to its Pontchartrain facility near LaPlace, La.

Working with the ASC, DuPont Performance Elastomers petitioned Commerce for tariff removal on Japanese Neoprene 1120 and 2540 in August 2006.

Removal was granted shortly thereafter, Sloan said.

DuPont Performance Elastomers manufactured the last batch of neoprene at Louisville March 2, more

than five years after announcing its intention to close the plant.

In 2005, Gates Corp. petitioned the International Trade Commission to remove duties on Japanese neoprene. Gates was joined in this effort by companies and groups, including Goodyear and the Motor & Equipment Manufacturers Association. DuPont Performance Elastomers and Lanxess Corp. fought the petition, and the ITC decided in 2006 to retain the tariffs.

A number of companies complained about shortages of neoprene in 2005, especially after the Sept. 30, 2005, closure of the Polimeri Europa S.p.A. operation in France.

Standard Rubber Products Inc. of Hanover, Mass., one of the companies concerned at the time about neoprene supplies, said that it now receives all the neoprene it needs from Lanxess.

"We're very happy with them," John Davis, president of Standard Rubber, said about Lanxess.



## Potenza power

Eddie George, retired Tennessee Titans football star and Bridgestone/Firestone spokesman, lifts a jersey off the new Potenza RE760 Sport tire as Tim Dunn, BFS executive director of brand and supply chain marketing, describes the tire's attributes at the 2008 Chicago Auto Show Feb. 7.

Tire Business photo by Sigmund Mikolajczyk

## Cooper considers India as tire source

NEW YORK—Cooper Tire & Rubber Co. might be sourcing tires from India, as a result of its decision to increase the number of tires it obtains from low-cost countries.

The disclosure came in the firm's 2007 10-K filing with the Securities and Exchange Commission. A Cooper spokesman said there is no off-take agreement as yet with an Indian producer, but the company is evaluating possible manufacturing partners in a number of countries, including joint ventures and green-field startups.

Cooper recently said it will raise the amount of tires sourced in low-cost countries to 35-45 percent from 18 percent during the next five years.



# Moving on up

## Rubber roofer moves into 2 new facilities

By Brad Dawson  
Rubber & Plastics News Staff

INDIANAPOLIS—Rubber roofing manufacturer Firestone Building Products Co. L.L.C. has moved into two new buildings—a headquarters site and its latest thermoplastic olefin membrane plant—to handle its growing business.

Firestone began moving into the new headquarters in Indianapolis in January and expects to relocate all employees there by April 1, said Kelly Barrett, the company's director of marketing. The building will house all companies under the umbrella of Bridgestone Firestone Diversified Products, including GenFlex Roofing Systems, Firestone Industrial Products, Firestone Specialty Products, Firestone Natural Rubber & Latex and BFDP Share Services.

The building spans about 130,000 square feet—up from 100,000 square feet at the previous Indianapolis site the company moved into three years ago—and has room to grow, Barrett said. Combined employment at the site is more than 450 people, she said.

Revenue growth within all the Diversified Products businesses prompted the



Firestone Building Products Co. L.L.C. has moved into a new headquarters building in Indianapolis and a manufacturing plant in Las Vegas to handle new growth within the commercial roofing industry. The new facilities will give the company the space it needs for future expansion and development.

move, Barrett said. The company decided it needed to find a new location about a year ago, she said.

The new TPO plant in Las Vegas began producing membranes in January, said Dwayne Wacenske, Firestone TPO product manager. The facility covers about 253,000 square feet and employs about 40.

The company now has the most capacity for manufacturing the TPO membranes—made with a proprietary blend of polypropylene and ethylene propylene rubber—in the commercial roofing industry, Firestone said.

Five production lines are dedicated to TPO roofing materials.

Firestone makes TPO under the UltraPly and GenFlex brand names, but initially the Las Vegas plant will produce only UltraPly membranes, Wacenske said. The company acquired the GenFlex

Building Products roofing unit of Omnova Solutions Inc. in September 2006.

The opening of the Las Vegas facility culminates several years of searching for a manufacturing site to serve the Western U.S.

The capacity expansion helps meet growing regional demand for the heat-reflective UltraPly lines and enables the firm to continue to provide timely job-site delivery, said Bob Delaney, Firestone chief operating officer.

Firestone has seen steady double-digit growth overall in the TPO roofing market over the past several years. The company operates two other TPO roofing facilities in North America, in Muscle Shoals, Ala., and Wellford, S.C.

The firm's EPDM roofing membrane plants are located in Kingtree, S.C., and Prescott, Ark.

# Cooper is out; Kumho begins investor search

By Gary Anglebrandt  
Tire Business

SEOUL, South Korea—Kumho Tire Co. Inc. is looking for investors to buy a 10.7-percent stake in the South Korean tire company that Cooper Tire & Rubber Co. purchased in February 2005.

Cooper, which bought the stake two years ago for \$107 million, exercised its option last month to have Kumho repurchase the 7.5 million shares, Kumho President Sae Chul Oh said at an investment seminar March 4 in Seoul.

Kumho has asked Cooper to hang onto the stake until new investors can be found.

"The tentative deadline for our search is May of this year," a Kumho spokesman said, without commenting on which investors have shown an interest.

Brandes Investment Partners is another major investor, with a 7.2-percent stake. Kumho Asian Group owns 38.5 percent.

Cooper bought its stake in 2005 at 14,650 won (\$15 at current exchange rates) a share, Kumho said.

The stock was trading at about 10,000 won March 11.

At the time, Cooper said it was buying the shares as part of its global positioning strategy.

Findlay, Ohio-based Cooper recorded dividend income of \$6.3 million during the time it has owned a piece of Kumho, according to Cooper's 10-K filing with the Securities and Exchange Commission.

It valued the investment at \$112.7 million at year-end 2007.

Kumho reported a 2007 loss of \$25.7 million on sales of \$2.14 billion in 2007.

The company expects sales to increase 22 percent to \$2.7 billion in 2008, with earnings of about \$35 million.

In a filing with the Korea Exchange, Kumho attributed the loss to interest costs, foreign currency fluctuations and overseas plant expansion.

# Acquisition expands Gates' base in Asia

By Mike McNulty  
Rubber & Plastics News Staff

SINGAPORE—Gates Corp. has acquired A.E. Hydraulic (Pte.) Ltd. to expand its growing base in Singapore.

A.E. Hydraulic—founded in 1999 and headquartered in Jurong, Singapore's largest industrial area—is a major fabricator and distributor of hydraulic and industrial hose and allows Gates to accelerate its expansion into the high-growth oil and gas exploration market, a spokeswoman said.

Gates has been producing hose materials for A.E. Hydraulics for a number of years, said Tom Snyder, director of business development within Gates' fluid power segment. That will continue, he said. Financial details of the deal weren't disclosed.

The acquired company's name is being changed to Gates A.E. Hydraulics (Pte.) Ltd. and its work force of 35 will remain as will the operation's management team, Snyder said.

The purchase is a natural addition to Gates' presence in the Southeast Asia region, according to President John Bohenic, pointing out that it creates new opportunities for the Denver-headquartered company to expand further with hydraulic and industrial hose and fittings as well as assembly services.

Gates will accelerate its expansion into the high-growth market for oil and gas exploration with the additional business, giving it access to the largest drilling rig manufacturers in the world, Snyder said.

Gates has a strong presence in the oil

and gas exploration industry throughout the world, he said. In 1972, the company came out with its first drilling hose and it's been building that segment since then.

"Now we're active in all markets globally," the spokeswoman said.

Singapore makes 60 percent of the world's offshore drilling rigs, according to the spokeswoman. Gates set up its Singapore unit in 1978 and built a distribution center there in 1996, "so this is not new for us," she said.

A.E. Hydraulic will make some big gains because of the alignment, including the chance to accelerate its growth and enhance customer service, according to the purchased unit's chairman, B.E. Chua, who will continue to head up the operation.

## NEWS DIGEST

### Carlisle merges units

Carlisle Companies Inc. has reorganized its business into seven entities and combined its tire, wheel and trailer businesses to create the Transportation Products Group.

Fred Sutter, formerly a vice president with Graco Inc., is the new president of the group.

### Lewis-Goetz buys Ja-Mar

Lewis-Goetz and Co. Inc. has acquired the assets of Ja-Mar Conveyor and Components, a conveyor system insulation and service company.

Jeff Crane, president and CEO of Lewis-Goetz, said the purchase will help his firm further its goal of being a total conveyor system service provider. Mark Allen, who owned Bellaire, Ohio-based Ja-Mar, will remain on as a general manager.

### Tire maker redeems notes

Goodyear has completed the redemption of its

outstanding \$650 million debt in senior secured notes, which will result in annualized interest expense savings of between \$75 million to \$80 million. The notes were due to mature in 2011.

### Chemtura buys out partner

Chemtura Corp. has acquired the remaining 46.5-percent of Baxenden Chemicals Ltd.'s stock it didn't already own.

The company said it bought the interest in the polyurethane supplier from Croda International P.L.C. for \$26.2 million.

Baxenden posted sales of \$70 million last year, Chemtura said.

### Magnum plans plant

Magnum D'Or Resources Inc. said it will open a \$51 million cryogenic rubber crumbing facility in Magog, Quebec.

The company said the facility will produce nuggets, buffings, rubber powders, EPDM powders, EPDM compounds, thermoplastics and thermoplastic elastomers at the plant.

Magnum said it has been granted 400,000 square

feet of land, with the option of immediate expansion for the production of rubber and rubber powders.

### Performance Fibers acquires unit

Performance Fibers has completed the purchase of the North American tire cord and polyester industrial filament businesses of Invista S.A.R.L.

The deal includes four plants in the U.S. and Mexico that produce industrial polyester, Nylon-6 and tire cord fabric. Terms of the purchase weren't disclosed.

### In brief

Elkem Materials Inc. has named H.M. Royal Inc. its exclusive distributor of Elkem's Sidistar amorphous silicon dioxide to the non-tire rubber industry in the U.S. Goodyear has been named one of the "100 Best Corporate Citizens" in the current issue of "Corporate Responsibility Officer" magazine. Firestone Building Products Co. awarded 262 commercial roofers its Master Contractor Award for their commitment to quality roof installations. Goodyear has signed a deal with Pacific Gas & Electric Co. to supply the firm with truck tires, services and controls for the next three years.



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# Taking OTR market by storm

## Taylor says Titan to make designs obsolete

By Dave Zielasko  
Rubber & Plastics News Staff

KAMUELA, Hawaii—Titan International Inc. has produced only one prototype 63-inch radial off-the-road tire and already Chairman and CEO Maurice Taylor Jr. is putting the world's OTR tire industry on notice.

"In the next 18 months, we not only are going to make the current designs, we are going to build something that will make them all obsolete," Taylor said bluntly in his keynote address at the Tire Industry Association's annual Off-the-Road Tire Conference in Hawaii. "I figure that way it'll keep everybody on their toes. We're also going to turn around and we're going to make them so they are not a commodity but they're an engineered system."

Titan, he said, is the only company in the world that makes both tires and wheels for the farm and OTR tire markets.

While Taylor provided few details about how Titan's OTR products will be different, the CEO made it perfectly clear that the company will be a big player in the market.

He's so confident, in fact, that even with the first prototype 63-inch tire still warm out of the press at the firm's Bryan, Ohio, plant, Taylor's expanding his production plans.

Originally, he envisioned making 6,000 of the ultra-large tires annually, but, as he put it, "I missed the mark. We'll have capacity to produce 15,000

63-inch tires," he said.

Since the market likely can't use that many tires, Titan will fill every other size, he added.

Coinciding with Titan's entry into giant 57-inch and 63-inch radial OTR tire production, Taylor sees an end to the OTR tire shortage that's plagued the industry the past few years. "I think you can say the current OTR shortage will diminish in the first quarter of '09," he said.

But that doesn't mean demand will slip, he added. "Things are going to be pretty damn good. But I do believe this shortage is going to go away."

In discussing Titan's plans, Taylor said the OTR tire business is ripe for change. "What we're going to do is going to affect all of you in the aftermarket. Because, you see, to make money you have to change. Otherwise you're just selling a commodity."

The way to do this is to be innovative, come up with something new. "And that's what we're planning to do, and I think we proved it by doing the 63-inch," he said.

Taylor said one reason Titan will succeed in the estimated \$2.5 billion OTR tire market is that the company is focused on farm and OTR tires and wheels while he claimed larger competitors Goodyear, Bridgestone/Firestone and Michelin North America Inc. are driven more by car and truck tires.

Taylor cited the speed and entrepreneurial spirit in which Titan was able to

develop its 63-inch OTR tire. It took only seven months to erect a building in Bryan and to produce the first prototype tire, he said.

To help accomplish this, the company hired a number of retired engineers from the big tire companies. "The problem you have in a business like ours is...you've got to get them out of the mold of a big company," Taylor said. "You've got to get them to where they make decisions themselves. You take a risk and you go."

The company also hired 14 new young engineers and brought Titan wheel engineers into the mix. "Why do you bring the wheel boys in? Because they don't think like the rubber boys. And the tire doesn't work without a wheel," he explained.

Along with the new giant radial OTR tires, Taylor said the company's new design also will replace current bias tires, and the firm is developing new under-ground tires and wheels.

Taylor predicted the farm tire segment is "ready to rocket, too," and Titan is preparing for this as well.

The company just announced it will add 38 agricultural tire curing presses, ranging in press sizes from 85 to 100 inches, at its tire facilities to increase capacity for larger-size farm tires.

Titan makes agricultural tires at all three of its U.S. plants, in Des Moines, Iowa; Freeport, Ill.; and Bryan, but the tire maker has threatened to move some farm tire capacity out of Freeport unless work-



RPN photo by Dave Zielasko

Maurice Taylor Jr., chairman and CEO of Titan International Inc., gives the keynote address at the Tire Industry Association's Off-the-Road Tire Conference in Hawaii.

ers there agree to some workplace changes to make the plant more profitable.

The new presses should be installed by August to ease shortages in the large agricultural tire segment, the company said.

Taylor did not disclose what investment the company will make in the new farm tire presses. The company has budgeted at least \$30 million to fund the installation at Bryan for the large OTR tires.

In ending his presentation, Taylor hinted that his retirement is on the horizon. "Like fireworks, I am in the grand finale of my career in wheels and tires. So hopefully I will leave with a real bang."

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People

# Stepping down, but not out

## Retiring Bowers turns over company reins, but will stay active in industry

By Brad Dawson  
Rubber & Plastics News Staff

STOW, Ohio—A rubber industry veteran is selling most of the interest in two companies he founded, saying that after 45-plus years in the business world he's ready to slow down.

But Bruce Bowers is only "semi-retiring" from the job he loves, and is even adding a few new ones to keep him busy.

To anyone who knows the 65-year-old Bowers, his taking a reluctant view toward retirement isn't surprising. After all, anyone who has founded a handful of companies, attained five patents and consistently worked 50-plus-hour workweeks—during down times—in his career has to enjoy what he's doing.

Plus, Bowers already "retired" once less than three years ago when he left SilMix Inc., the silicone compounding business he founded in 1985 and sold to Wacker Chemical Corp. in 2002.

He was back at it again less than a year later when he announced he was starting CT Extrusions L.L.C., a close-tolerance extrusion operation. But now he's decided to sell his interest in CT to his son, Richard (Rick) Bowers, and his longtime employee George Stamper. The two have been CT vice presidents since its founding in 2006.

Bruce Bowers is also selling half of his interest in TRC Industries Inc., the rubber reclaiming company he founded in 1979, to his son and Stamper. Rick Bowers is now the president and CEO of TRC, with Stamper the vice president; Stamper is president of CT, with Bowers as executive vice president.

Bruce Bowers will stay on as chairman of TRC and devote part of his time to the company.

"I don't have the same energy, the same drive to work 70- to 80-hour weeks," he said. "I don't want to start another company, but there are new challenges out there."

Bowers wants to do some consulting, particularly in the area of licensing and technology in foreign countries. He's working closely with an outfit in China that has shown some interest in TRC's technology and he's gotten inquiries from companies in India and Brazil as well.

He also feels strongly about educating the industry on rubber devulcanization technology, an area close to his heart—and where he has one of his U.S. patents—through his work with TRC. He's giving a presentation on devulcanization at the Rubber Manufacturers Association meeting next month in Florida.

### Good hands

Bowers said he's excited about the prospects for CT and TRC under his son and Stamper, but also confident. "They've had their hands in both businesses for a long time and have the drive and ambition necessary," he said. "If I wasn't confident, I wouldn't be able to do it."

Rick Bowers, who was nine years old when his dad started TRC, said he's honored to take the reins of one of his father's companies.

"From a young age, I've understood the time and dedication it takes for something like this," he said. "I always had hopes and aspirations to take his place and followed his leadership and guidance. I've learned a lot from him,



Bruce Bowers, left, is selling shares in TRC Industries Inc. and CT Extrusions L.L.C., two of several companies he's founded over the years, to his son Richard Bowers (below right) and George Stamper. Bruce Bowers is officially retiring, but plans on doing some consulting work, speaking and educating within the rubber field, and traveling with his wife, Carol.

RPN photos by Brad Dawson



and now he's turning over one of his 'children' to me."

Bruce Bowers said Rick earned his positions at TRC and CT with his accomplishments and experience, and believes that his time spent with Wacker as an employee there was a big benefit. "It's good he went to another industry company, a large conglomerate, and got some experience in a different setting."

Stamper, too, has a long resume at big and small companies and has brought the knowledge from varied experiences into the TRC/CT fold. He learned much over time from Bowers, perhaps the most important being, "don't be afraid to fail."

Stamper recalled a story that took

place shortly after he joined SilMix, when he was working on a project he couldn't seem to get right and in the process was running up an expensive number of failures. Frustrated, he went to his boss and actually told him he was going to leave because he was costing him too much money.

Bowers, ever the optimist and risk-taker, simply told Stamper that he had found lots of ways that don't work and that he needed to find the one that does work.

"I've known Bruce for a long time. Even before I started here I had worked with him as customer," Stamper said. "He's always been a great teacher and a role model for the long hours he put in to

be successful. This is a real challenge for me, but it's not as scary as starting your own company. Plus, I know he'll be around to lend advice or a hand when we need it."

Bowers said he's leaving his companies not only in good hands but great shape as well. The revenues at TRC—now the only devulcanizer of butyl, EPDM, natural rubber and silicone in North America, he said—were up 52 percent in 2006 from the year before and up 86 percent in 2007 from 2006, and January's sales volume rose 40 percent from a year earlier.

CT's sales, meanwhile were up 68 percent in 2007 from its initial year.

### Good feeling

In addition to his consulting and part-time work with TRC, Bowers plans on staying involved with community activities, particularly his work with the University of Akron. The alumnus has been active with committees and boards over the years and even taken home a few awards for his participation and accomplishments.

Last year, he started a scholarship program for nontraditional students at the university in which they can get need-based scholarships and loan money to buy books in cases where they are having trouble paying their bills, he said. A percentage of the loans are forgiven based on the grades the students attain.

Bowers also plans on continuing to travel, something he and his wife, Carol, started doing a couple of years ago. They've been to Hawaii, Alaska and parts of Italy, and they'd like to visit southern Italy, Greece and Australia in the near future.

While he's got a lot to be proud of in his long career, Bowers said he's happy he's been able to develop good relationships with people, treat them well and maintain a family atmosphere in his businesses. And having success hasn't been too bad, either.

"Every time I started a company, and the feelings I had when I knew I had a profitable company, those are good moments," he said.

## Tire vet Evans back to public service roots

By Miles Moore  
Rubber & Plastics News Staff

MIDDLETOWN, Conn.—Anne S. Evans has been involved with the U.S. Commerce Department's Commercial

Service for many years, helping the agency aid Connecticut businesses with their plans to go global.

So when the job of district director for Connecticut opened up, it was logical she was asked to fill it.

"I started my career in public service, and now I've come back to it," Evans said about her new job, which became official Jan. 28. "I'm working in the same building on the same street as I was 35 years ago."



Anne Evans

That building is the U.S. Export Assistance Center in Middletown, where Evans now leads a team of trade specialists that will assist Connecticut companies in developing their own export strategies and increase their global market presence. Evans and her office will provide trade counseling, market research, organized trade events and other services to Connecticut businesses, which in 2007 did a total of \$12.2 billion in export sales.

"More than 70 percent of the world's purchasing power is outside of the United States, and Connecticut businesses looking to sell globally will benefit from Ms. Evans' wealth of international business experience," said James M. Cox, director of the Commercial Service's Northeast Network, in a press release at the time of Evans' appointment.

She began her career as an aide to a member of Congress, but a 1978 family

emergency brought her back to work in her family's tire import-export business. In the 1980s and 1990s, she lived in Wolverhampton, England, where she developed and operated the world's largest tire-derived-fuel power plant.

Back in the U.S. in the mid-1990s, Evans founded two companies: EER Ltd., an environmental services company, and TYRES 2000 Ltd., which exported U.S. tires to various world markets.

Among many honors, Evans has been secretary and president of the Connecticut Small Business Federation; received the 2003 Pioneer Award from the Tire Industry Association for her efforts in scrap tire recycling; and won the Metro Hartford Chamber of Commerce's International Business Leader of the Year award in 2000.

Evans also founded TIA's Global Council in 2003 and served as its chair until 2006.



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It's a promise by the Bridgestone family of companies across the globe to set the standard for environmental performance. Our teammates across the Americas are recycling, reducing waste and maximizing efficiencies at our facilities. We're working with our communities to protect our natural resources. When it comes to finding better ways to care for our planet, we're all in this together.



**The** Bridgestone Firestone Centennial Wilderness, which includes the spectacular Scott's Gulf, provides a protected habitat for many birds and animals. The 10,000 acres, donated to the State of Tennessee and located just 80 miles east of Nashville along the Caney Fork River, includes hardwood forests, waterfalls and hiking trails for people to also enjoy.

Boy Scouts plant an American Chestnut Tree in the wildlife habitat area at the Bridgestone Firestone tire plant in Warren County, TN.

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**In** Aiken County, South Carolina, students and teammates planted 15,000 long leaf pines, habitat for the Red Cockaded woodpecker, a threatened native species.



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Six Bridgestone Firestone North American Tire plants and four Firestone Building Products plants have been granted NEPT status. The voluntary EPA program recognizes companies that go above and beyond current requirements and have a proven track record of improving the environment.



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Opinion

# Waiting for decline of NR prices? Don't hold your breath

**J**ust think where the world will be in 18 months. The new U.S. president will have been in office eight months, and the candidates to replace him or her will be lining up for the 2012 election. LeBron James will have at least one MVP trophy on his mantel and American Idol will have crowned two more kings or queens.

And rubber processors finally may see a decline in natural rubber prices, according to a top NR trader. Or will they? Today the cost of NR is beyond anything seen in...well, ever. The average price F.O.B. has been \$1.16 a pound this year. Compare that with the budget-breaking 97 cents a pound average of 2007.

Just eight years ago, Hevea rubber hit an all-time low of 23 cents. But the typical price, historically, has been in the 50-cent range. Oh, if it only would settle there again, rubber processors wistfully say.

Not very likely, for several reasons. The world is hog-tied to oil, and not about to get loose. While natural rubber has no direct connection with oil, it does compete with oil-based rubbers, particularly the workhorse SBR. Not only are American oil company executives ordering new yachts and oil-state sheiks adding to



their BMW collections thanks to \$110-a-barrel oil, a cut-back in feedstock availability—butadiene, in particular—has helped drive up the cost of synthetic rubbers. Price hikes, of course, helped by the unquenchable thirst for all things material from China.

You'd think if the U.S. economy improves—one can always hope—NR prices could start to come down a bit. There are other worries for the long run, though.

Whitney Luckett, the expert in the field from rubber trader RCMA Americas Inc. who opined that prices could fall in 18 months, also reported workers in Indonesia and India are overlapping Hevea trees. That guarantees the trees won't survive the expected 25-year lifespan—maybe even halving it. This comes on the heels of predictions by NR experts in the past couple of years that by 2010, worldwide demand for the rubber will outstrip supply.

By then, just two years away, NR at \$1.16 a pound may be a bargain.

### THE EDITOR'S VIEW

## Image problem

By Edward Noga

**P**oor Goodyear. I never thought I'd be saying that again. Or, at least I hoped I wouldn't, since the company dug its way out of the financial mess of the early 2000s.

This time, though, the expression of sympathy isn't about money. In that regard, Goodyear is doing very well, thank you. No, it's about image.

Goodyear has been on a hot streak lately, posting good financial results and winning various business awards. Then along comes a nasty squabble concerning NASCAR that throws a wrench into the tire maker's well-oiled image machine.

It seems some big names in NASCAR—drivers Tony Stewart, Dale Earnhardt Jr. and Jeff Gordon—had some seriously hard things to say about the tires produced for the March 9 Sprint Cup Series at the Atlanta Motor Speedway.

"That was the most pathetic tire I've ever seen in my career," said an irate Stewart. He went on. "They can't build a tire worth a crap."

Earnhardt had a mouthful, too. "We couldn't run side by side, or we'd wreck," he complained. "Goodyear doesn't like to hear drivers bash them, and I don't like to ... but I'm not going to just sit here and take this."

Gordon, who tried to hold back and not simply blame Goodyear, did say, "This car on this tire at this track was terrible."



The problems arose when Goodyear engineers worried about excessive wear on tires after running them through some tests. To compensate, they built a harder right-side tire, and combined it with a left-side tire that provided more grip.

As far as the drivers were concerned, it just didn't work, and resulted in a race Earnhardt felt wasn't exciting. Gordon said he felt like "I was going to crash every lap."

Officials from NASCAR, which is joined at the hip with its tire supplier, came to Goodyear's defense with platitudes about its commitment to safety, etc. Goodyear stood up for itself and pointed out nobody whined about the same tire setup when it was used in another race on March 8.

Still, Goodyear admitted, "If the drivers are not happy, then Goodyear's not happy."

The most-vocal of the drivers, Stewart, later backed off a bit from his rant. He met with Goodyear's head of racing, and came out of it saying the drivers spoke out of frustration, and what they really wanted was to get Goodyear's attention. That they did.

I readily admit NASCAR isn't my cup of tea. But I do know its importance as entertainment in America, the favorite pastime of millions of average Joes who happen to drive cars or trucks, which is most everyone.

As a marketing vehicle, it's huge. Otherwise, why are so many companies willing to pay to plaster their name all over the vehicles, the drivers and the tracks? If it wasn't a marketing Mecca, Goodyear wouldn't be making tires for racers.

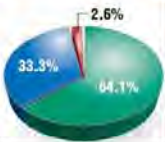
I'm sure Goodyear will work this out. There's a lot riding on it.

Noga is the editor of Rubber & Plastics News.

### WEB POLL RESULTS

**Q:** What are your e-mail habits at work?

- I read and respond to all e-mail promptly.
- I read most of them, but don't respond very rapidly.
- What e-mail?



Total Votes: 39 Poll Date: March 6-20, 2008 Vote at www.rubbernews.com

### QUOTE OF THE WEEK

*"We can't let it slip on a day-to-day basis. You have to stay on top of 14001. It will bite us if we don't, so we have to be very diligent with it."*

—Donald Palf, SAS Rubber Co., on ISO 14001.

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Vol. 37 No. 17

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Rubber & Plastics News is published every other Monday by Crain Communications Inc.

Subscriptions: U.S., one year \$99; two years, \$178. Group rates, \$79 each for five or more copies. Air mail and first class delivery to U.S., U.S. possessions, Mexico and Canada, \$164; the Middle East and Europe, \$219; all other regions, \$293.

For surface delivery to Canada, \$138 (including GST); Mexico and all other foreign countries, \$140. Single copy, \$4.50.

Rubber Directory & Buyer's Guide, \$89 per copy plus \$8 for first class postage and handling in the U.S. and Canada. Four weeks' notice required for change of address. GST #136750444. Printed in the U.S.

For new subscriptions and change of address, write: Circulation Department, Rubber & Plastics News, 1155 Graboel Ave., Detroit, Mich. 48207-2912; or call 1-800-678-9595, for customer service. Lisa Rogudale, circulation manager, 313-446-0480; Jennifer Nation, circulation coordinator, 313-446-0479. For single copies, call 313-446-1623.

Reprints: Jenny Wertz, 717-399-1900, ext. 130, e-mail, rubbernews@reprintbuyer.com. Microfilm copies, write University Microfilm International, P.O. Box 1346, Ann Arbor, Mich. 48106.

Web site: http://www.rubbernews.com.

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# Calendar

## Rubber groups

**Brazilian Association of Rubber Technologists:** 12th Brazilian Rubber Technology Congress, April 22-24, ExpoCenter Norte, São Paulo, Brazil. (Web site www.rubber.org)

**Chicago Rubber Group:** Joint technical meeting with the Wisconsin Rubber Group, May 13, Lake Geneva, Wis.; golf outing, July 24, location to be announced; technical meeting with the WRG and Central Illinois Rubber & Plastics Group, Oct. 2, Huntley, Ill. (Web site www.rubber.org)

**Connecticut Rubber Group:** Spring technical meeting, April 3, Norwalk Inn, Norwalk, Conn. (Carrie Burr, e-mail cburr@vanderbilt.com); golf outing, June 19, Traditions of Wallingford, Conn. (Michael DiPino, e-mail michael.dipino@downco.com); NERPG golf outing, Blackstone National Golf Course, Sutton, Mass. (Kelly Loefer, phone 508-864-2985); holiday dinner dance, Dec. 5, Providence, R.I. (Kelly Loefer, phone 508-864-2985)

**Energy Rubber Group:** Spring technical meeting, May 15, Arlington Hilton Hotel, Arlington, Texas. (Web site www.energyrubbergroup.org)

**Fort Wayne Rubber & Plastics Group:** Golf outing, June 12, Maxwellton Golf Club, Syracuse, Ind. (www.rubber.org)

**MidAtlantic Rubber and Plastics Group:** Fall technical symposium, Sept. 25, The Architects Golf Club, Phillipsburg, N.J. (Robert Carroll III, phone 609-695-6211, Web site www.marubber.org)

**Ohio Rubber and Plastics Group:** Spring technical meeting, April 22; fall technical meeting, Sept. 16; Hilton Garden Inn, Twinsburg, Ohio, golf outing, June 17, Avalon Inn, Warren, Ohio, golf outing, Aug. 25, Silver Lake Country Club, Silver Lake, Ohio. (Bey Lipsinko, phone 330-920-1699)

**Ontario Rubber Group:** Technical session, April 15, Mississauga Grand Hotel, Mississauga, Ontario. (Web site www.ontariorubbergroup.org)

**Quebec Elastomers Group:** Technical symposium, March 26, Delta Hotel, Sherbrooke, Quebec. (Thierry Montcalm, phone 450-546-2776)

**St. Louis Rubber Group:** Golf outing, May 22; technical meeting, Oct. 30. (Greg Peckham, phone 314-458-4695)

**West Michigan Rubber Group:** Golf/salmon fishing, May 26, Holiday Inn, Grand Haven, Mich.; technical meeting/dinner, Sept. 3, McGuintz's, Cadillac, Mich.; technical symposium/dinner, Nov. 5, Ferris State University, Big Rapids, Mich. (Mike Morrow, phone 617-599-0812)

## Seminars/conferences

**Adept Global Conference 2008:** April 2-4, Livermore, Calif. (Web site www.adept.com)

**AseanRubber 2008:** International trade fair for rubber, May 26-29, part of AssenPlus 2008, Singapore Expo, Singapore. (Web site www.mdna.com)

**Automotive Rubber Executive Conference:** May 6-7, Inn at St. John's, Plymouth, Mich., sponsored by Rubber & Plastics News and Excel Polymers. (Web site www.rubbernews.com)

**European Coatings Conference:** "Medical Coatings and Adhesives" April 10-11, Berlin. (Web site www.european-coatings.com)

**Hose Manufacturers' Conference:** June 10-11, the Conference Center at Holiday Inn, Cleveland, sponsored by Rubber & Plastics News and Vyanca Technologies Inc. (Web site www.rubbernews.com)

**International Latex Conference:** July 22-23, the Conference Center at Holiday Inn, Cleveland, sponsored by Rubber & Plastics News and Akron Dispersions. (Web site www.rubbernews.com)

**International Rubber Molding Conference:** April 8-9, Wyndham O'Hare, Chicago, sponsored by Rubber & Plastics News and LWB Steinel. (Web site www.rubbernews.com)

**International Silicone Conference:** April 8-9, Wyndham O'Hare, Chicago, sponsored by Rubber & Plastics News, Momentive Performance Materials Inc. and Wacker Silicones. (Web site www.rubbernews.com)

**ITEC:** International Tire Exhibition and Conference, Sept. 16-18, John S. Knight Center, Akron, sponsored by Rubber & Plastics News. (Web site www.rubbernews.com)

**Nanocomposites 2008:** Sept. 15-17, Crowne Plaza, San Diego. (phone 734-737-0507, Web site www.executive-conference.com)

**University of Wisconsin-Milwaukee courses:** Professional development course, April 28-30; University of Wisconsin-Milwaukee. (Murali Vedala, phone 414-227-3121)

## Trade/tech associations

**ACS Rubber Division:** Spring technical meeting and thermoplastic elastomer conference, April 29-30, Dearborn, Mich.; fall technical meeting and mini-expo, Oct. 14-16, Kentucky International Convention Center, Louisville, Ky. (phone 502-972-7814, Web site www.rubber.org)

**Adhesive and Sealant Council:** World Adhesive Con-

IN COMING WEEKS	
Quebec Elastomers Group technical symposium . . . . .	March 26
Connecticut Rubber Group spring technical meeting . . . . .	April 3
NAHAD annual meeting and convention . . . . .	April 5
International Rubber Molding and Silicone conferences . . . . .	April 8

ference and Expo, April 20-23, Miami InterContinental, Miami. (Web site www.asconetl.org)

**Center for the Polyurethanes Industry:** Polyurethanes 2008 technical conference, Sept. 24-Oct. 1, Marriott Rivercenter, San Antonio. (www.polyurethanes.org)

**Gasket Fabricators Association:** Gasketing/Converting Expo '08, April 1-3, Caribe Royale, Orlando, Fla. (e-mail info@gasketfab.com, Web site www.gasketfab.com)

**International Institute of Synthetic Rubber Producers:** 49th Annual General Meeting, May 12-15, Royal National Hotel, Moscow. (Web site www.iirp.org)

**NAHAD:** 24th annual meeting and convention, April 5-9, Williamsburg Inn & Hotels, Williamsburg, Va. (phone 410-263-1014; Web site www.nahad.org)

**NIRA:** Annual convention, Sept. 17-20, JW Marriott Starr Pass Resort, Tucson, Ariz. (Web site www.nira.org/convention.html)

**Polyurethane Foam Association:** Business meeting, technical program and Polyurethane Hall of Fame induction, May 21-22, Sheraton Inner Harbor, Baltimore; business meeting and technical program, Oct. 1-2, Orni La Mansion del Rio, San Antonio. (Web site www.pfa.org)

**Polyurethane Manufacturers Association:** Processing Techniques Seminar, May 3-4; annual meeting, May 4-6, Hyatt Regency, San Antonio. (Web site www.pma-home.org, phone 414-431-3094)

**Rubber Manufacturers Association:** Annual meeting, Tire and Elastomer Products Groups, April 12-14, Renaissance Resort, St. Augustine, Fla.; Second Annual Scrap-to-Profit seminar, May 6-9, Solimar Hotel, San Diego, Calif. (Web site www.rma.org)

**Rubber Roller Group:** Annual meeting, May 4-6, Dallas. (Carol Johnson, phone 817-529-0600; Web site www.rubberrollergroup.com)

**Tire Society:** Annual meeting and conference, Sept. 15-16, John S. Knight Center, Akron. (www.tiresociety.org)

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*Don - By combining our technology resources, we can now aggressively offer cost-effective compounding solutions for our customers.*

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*Ed - With transport costs skyrocketing, our strategic locations throughout North America allow us to provide customers with economical and timely deliveries.*


**3. What else can Hexagon-Gold key provide?**

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# Rubber Goes Green

## What does 'green' mean for rubber?

By Edward Noga  
Rubber & Plastics News Staff

Just what is green to the rubber industry?

As the world grapples with climate change and a host of other environmental issues, the rubber sector is intimately involved in being part of the solution. A chemical-based, heavy manufacturing industry, the rubber business for much of its history was part of the problem.

Leaving a soiled footprint on the world's environment no longer is the norm for manufacturers of rubber goods, and the suppliers that provide the chemicals and materials needed to produce them. Change came over time, and in some ways predated the environmental movement that began in earnest in the 1960s.

The rubber business was built on discovery, one invention at a time. What you see today is a culmination of years of innovation. So, too, is the greening of the business—many different parts that add to the whole.

Becoming green for many companies means adopting ISO 4001 environmental management standards. Companies throughout the industry—from big tire makers like Yokohama Rubber Co. Ltd., Bridgestone Corp. and Goodyear, to non-tire manufacturers like Lauren Manufacturing Co., to suppliers ranging from Columbian Chemicals Co. to Lehigh Technologies Inc.—now abide by the standard that seeks to minimize how a company's operations negatively affect the environment and comply with laws and regulations.

### A century of being green

Retreading is green and always has been. As many as 18 million tires are re-

treaded annually, according to the Rubber Manufacturers Association, tires kept out of the scrap tire heap. As Harvey Brodsky, managing director of the Tire Retread & Repair Information Bureau, put it, "Tire retreading has been 'green' for nearly 100 years before the word became fashionable."

Tires that are scrapped, nearly 300 million a year, no longer end up in huge piles, home to mosquitoes and fuel for enormous tire fires. Recycling of newly generated scrap tires hit the 87-percent level in 2005, according to the most recent figures.

As many as 188 million tires are burned as fuel, most often in cement kilns. TDF remains a controversial end-use for scrap tires, opposed by those who feel it's a waste of materials, as well as communities and individuals who take the "not in my backyard" stance.

Shredded scrap tires have found a home in civil engineering projects, particularly landfill, septic system and road construction projects. Ground rubber is used in playgrounds, running tracks and to hold soil together, and advancements have turned it into fine powder with growing use in rubber goods manufacturing.

The recovery of other materials from scrap tires also is advancing. Delta Energy, for example, is getting ready to open a second plant that snatches carbon black and oil and vapors for fuel from used tires.

Scrap recovery in the rubber manufacturing process continues to grow. Specialty Elastomer Recovery Inc., for one, makes a living at this, taking high-end scrap from rubber processors that would have been waste and grinding it into a powder that has the same attributes as the virgin material.



Todd Palmer (right) manager of environmental affairs for Firestone Polymers L.L.C. gives middle school students a tutorial on wastewater treatment at the firm's facility in Lake Charles, La. Bridgestone Americas said all of its business units take part in programs that support environmental educational initiatives.

The use of such material is growing, according to Julie Johnson, president and founder of SERI. "I have noticed an increased enthusiasm to eliminate the flow of waste elastomers within manufacturing," she said.

### Big green, little green

What is green? It's as big as Sid Richardson Carbon Co. switching from just incinerating waste gas byproduct to capturing and converting the heat into electricity. It's as invisible as Kenrich Petrochemical's organometallic couplings,

which make compositions stronger and longer-lasting, allowing the use of more filler rather than oil-derived fuel. And it is as small, yet important, as King Industries Inc. replacing 500 lights with energy-saving bulbs, and adding motion sensors to turn them off when not needed.

New tire plants today look like supermarkets. Even the smallest rubber shop has to follow much-tougher environmental standards than in the past.

The world has become serious about the environment. So has the rubber industry.

### In this section

- Tire makers are very visible in creation of earth-friendly initiatives. Page 13.
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- Jyco flexes environmental muscles with JyGreen line. Page 17.
- SAS Rubber models parent firm's green way of thinking. Page 18.
- Evonik to push technology that saves on fuel consumption. Page 19.
- WDG supplies roofing industry with its environmental savvy. Page 20.
- Chemical companies rise to challenge of new standards. Page 22.
- Rubber recyclers defend their commitment to the earth. Page 23.
- Tire-derived fuel still biggest market for scrap tires. Page 24.
- Can tire-derived fuel be considered green? Page 26.

## An environmental evolution

As times change, so do the habits of the rubber industry

By Edward Noga  
Rubber & Plastics News Staff

The environmental mantra for today is reduce, reuse, recycle, recover.

In the old days the philosophy was make it, use it, throw it away. And the rubber industry was no exception to that rule.

Ralph Graff remembers. In 1947 he was one of the college students on the Goodyear "Flying Squadron," filling in where needed and learning many jobs at the firm's Akron plants. The city—where homemakers had to sweep the soot that belched out of the plants off their porches every morning—was the Rubber Capital, and looked it in the pre-Clean Air Act days. Factories pumped out non-scrubbed smoke, the bottom of Summit Lake was a toxic goo of accumulated waste, dangerous chemicals were being shipped to landfills.

Inside the plants, things weren't any better, Graff recalls. "The first time I walked out on the plant floor I said, 'What am I doing here?'" There were no hoods over the mills and the air was full of particulate matter.

"The Banbury floor was awash in discarded paper, which sometimes got into the mix," he said. At a rubber foam operation, "you came out of there with latex sticking to every part of your anatomy." Scrap rubber that wasn't sent out to reclaim, asbestos, any kind of byproduct, was sent to the dump.

Graff later moved to DuPont, where he spent most of a career, and accumulated a broad view of how the various sectors of the rubber industry operated.

"The chemical industry was quite a step up as far as environ-

mental concerns," he said, a characteristic it had shown for decades. Graff said it was a ladder effect: "The tire people were another step above the mechanical goods places. When you got into the people who made low-value mechanical goods, they had very little environmental standards."

Graff also worked at a reclaim plant. "My memory was that no matter how many showers I had to take, whenever I would go to a movie, everyone around me moved, the sulfide odor was so pervasive."

### The environment becomes an issue

The world changed, though, and with it the rubber industry. Like it or not, the industry had to alter its view and procedures, starting with the first Air Pollution Control Act of 1955, followed eight years later by the first Clean Air Act and ultimately the creation of the Environmental Protection Agency in 1970.

Many other regulations followed, from the Toxic Substance Control Act to the Resource Conservation and Recovery Act, and other versions of the Clean Air Act.

By the 1970s, rubber companies and their suppliers, while often fighting such regulations, in general had become conscious of their place in the environment. In a recording made in 1976, James D. D'Ianni, director of Goodyear research who had just won the Charles Goodyear Medal from the ACS Rubber Division, discussed the changed attitude.

"In the past we were perhaps less concerned with what hap-

See Industry, page 12





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# Rubber Goes Green

## Industry

Continued from page 10

pened to the environment," said D'Ianni, who died in August. "We were more interested primarily in making new rubber and the new products from them. Now we have to consider this as another factor, and we are solving those problems as well."

self or make compounds are harmful to people and the environment. Chemicals like 1,3-butadiene, chloroprene, hexachlorobenzene, epichlorohydrin, acrylonitrile and many others have been tagged as carcinogenic. Rules were developed to limit workplace and environmental exposure to such chemicals over the years.

The industry, wherever possible, has substituted for the oil-based chemicals of the past.

Cars got smaller, and the tire industry responded with improved rolling resistance tires and often smaller-profile products.

Another change in the carbon footprint left by the rubber industry came from the shifting of tire production from the big, aging, multistoried factories of the North to new, one-story plants in the South. The new structures were much more energy-efficient than the buildings they replaced.

universally.

For example, William Cole, vice president of product management at Delta-Energy L.L.C., said he's finding good acceptance for the products the firm extracts from scrap tire shreds.

The company's DEPolymerization process produces D-E Black, a powder used to reinforce rubber and sold as Phoenix Black. The firm also gets a powder for plastics and coatings, as well as an organic liquid mix and fuel vapors, from the material.

Customers have been able to duplicate Delta-Energy's claims, and that has helped the company get a foothold in the business. The firm also has had to overcome the past history of many recycled material providers that failed to deliver on their promises, Cole said.

"I'll tell you, the industry, especially with today's economics, is taking the first step in terms of evaluating and making sure what we're saying is true," he said. "We've had very few companies that dismissed us out of hand."

What Cole has found is that some companies are very interested in the green aspect of Delta-Energy's product. Others want to keep it quiet that they are using recycled materials.

"It depends on the company philosophy," he said.

### "Whenever we discover or invent a new process now, we make sure it has no adverse effect on the environment before we put it into production."

James D. D'Ianni

D'Ianni continued: "Some of the chemicals we make to use in rubber products will sometimes have environmental problems. So whenever we discover or invent a new process now, we make sure it has no adverse effect on the environment before we put it into production."

A critical issue the rubber industry always has faced is that many of the chemicals it used to produce rubber it-

### Trends dictate changes

Some trends in the marketplace have had a major impact on how the rubber industry operates in regards to the environment. Oil prices and availability often have provided the spark.

The OPEC oil embargo of 1973 gave impetus to improve fuel economy in vehicles. CAFE standards were enacted in 1975, and for the auto industry, lighter was better to reduce fuel consumption.

The industry also turned to more-automated manufacturing processes. All the high-tech systems used by the tire makers, for example, tout the energy efficiency of their processes.

### Highly visible waste

Throughout much of the history of rubber production in the U.S., scrap tires mostly ended in a landfill—if that. Scrap tire disposal wasn't high on the agenda of tire manufacturers—out of sight, out of mind.

It came into sight, however, when several massive scrap tire fires garnered huge publicity. In particular, a 7 million tire fire in Winchester, Va., in 1983 sent a plume of smoke 3,000 feet into the sky, nearly 50 miles long. Scrap tire piles became a big national issue, caught the attention of legislators and put the tire industry on the defensive.

In the early 1990s there were 1 billion scrap tires stockpiled in the U.S., ready to serve as breeding grounds for mosquitoes or fuel for tire fires. The industry had to act.

The problem always had been finding markets for scrap tires.

Many processes to separate the components of scrap tires into useful commodities had been tried over the years. But many processes weren't cost-effective and often there were insufficient markets for the materials. Also, rubber processors typically didn't consider the materials up to snuff, in comparison with virgin materials.

That changed as the price of oil and its derivatives went into a steady rise.

Rather than one big bang to get rid of tires, many smaller markets have developed. The burning of tires for fuel remains the largest, and most controversial, end for scrap tires, followed by civil engineering.

Recycled material use is much more widely accepted today—although not

### Greenest of the green

While some rubber processors have used ground rubber for years, nothing has matched retreading in terms of "green" volume. Retreading has been the longest-running and most-prevalent way to utilize used tires.

"A retread tire has one of the highest post-consumer contents of any recycled product," said Harvey Brodsky, managing director of the Tire Retread & Repair Information Bureau. "Although retread tires look round and black, they are really very green, saving the world hundreds of millions of gallons of oil every year that otherwise would have gone into the manufacture of new tires."

Retreading of commercial truck and aircraft tires continues to be strong. Passenger tire retreading, however, has declined from a fairly large business to an afterthought today, largely because the price of new tires has remained low.

Meanwhile, many of the chemicals and materials used in the rubber industry have become more environmentally friendly.

Curtailed of certain chemicals, more controls and outright bans have affected many supplies. Asbestos, once found in many rubber plants and products, disappeared from the rubber industry in a wave of litigation; water-based chemicals often have replaced those that were oil-based varieties.

As a global business, the U.S. rubber industry reacts to changes that occur abroad.

One that can be expected to echo at home is REACH, chemical regulations that began being implemented in Europe last June. The rules seek to improve the protection of human health and the environment and will impact many chemicals commonly used in the rubber industry.

Whatever happens with REACH, the rubber business today continues to adapt to the world's focus on the environment. That emphasis, and the problem of hypoallergenicity, has helped encourage the development of guayule as a U.S.-based source of rubber used in gloves. The desert bush's energy source is as green as they come—the sun.



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## Rubber Goes Green

# All eyes on eco-friendly tire making

By Brad Dawson  
Rubber & Plastics News Staff

When you're the most visible players with the most visible product in the rubber game, people are going to watch what you do and follow your lead.

That's the burden carried by tire makers, who have the recognizable names, the television commercials, the large magazine advertisements, the catchy slogans. But generally these global corporations embrace the responsibilities thrust upon them because of the goods they provide and their resources, and environmental awareness and action are no exception.

Tire companies are multifaceted in their efforts to be green. They produce tires with better rolling resistance and thus emit less carbon dioxide into the air. They develop ways to recycle and reuse rubber. They reduce potentially toxic chemicals in their processes. They attain international standards—such as the ISO 14001 environmental management certification.

And they strive to create environments of education through green-related reports, Web sites and community programs.

The stakes are high. According to data supplied by Michelin, road transport accounts for 18 percent of worldwide carbon dioxide emissions, and tires account for about 24 percent of those road transport emissions and more than 4 percent overall.

"It's our responsibility to be environmentally conscious," said Dave Chapman, director of global environmental engineering for Goodyear. "It's our role as a premium company with premium products and a leader in our industry. We want to have the environment in mind in everything we do."

### Green attitudes

Japanese tire maker Yokohama Rubber Co. Ltd. has been a driver of green initiatives for many years, "long before it was an issue," said Mark Chung, director of strategic marketing for the company's U.S. subsidiary, Yokohama Tire Corp. The Tokyo-based firm developed its first environment-friendly products—a pneumatic fender—back in 1958.

Since then, the company has worked to find the "best ways to produce tires with minimal pollution and waste," Chung said. It's not a trendy stance for Yokohama, but rather a requirement of all companies in the transportation sector who use potentially harmful materials and processes, he said.

Yokohama has achieved "zero emissions" at its Japanese plants, obtained ISO 14001 certification for all its facilities—including its sole U.S. tire manufacturing site in Salem, Va., in 2007—cut greenhouse gas emissions at its plants by 8.2 percent in 2006 and introduced the "DNA" eco-friendly passenger tire line.

The most recent release from that product group, the DNA dB Super E-Spec, is composed of 80-percent renewable materials and manufactured from Yokohama's "Super Nano Power Rubber," a compound that utilizes natural rubber and citrus oil.

The company also introduced "ZEN," a new eco-brand for truck and bus tires, in 2007.

Goodyear has had environmentally responsible programs in place for a significant period of time as well, Chapman said. The company uses the best materials available from an environmental stand-

point, he said, and believes an environmentally friendly tire will provide good fuel economy, a quiet ride and long life.

The tire maker looks at its goals on an annual basis, and has been working to meet an objective of "Zero-Zero-Zero," referring to zero waste to landfills, zero solvent usage and zero noncompliance with environmental legal requirements, he said.

Of 58 global plants at Goodyear, 56—including all its North American and European sites—send no waste to land-

fills, and the remaining two should meet that requirement by year's end, Chapman said. The ongoing program to reduce solvents in manufacturing tires has made good progress over the past five years without reducing the quality of the products, he said.

And while the company isn't completely where it wants to be in terms of compliance, it is improving and will reach its "zero" goal eventually, he said.

"Respect for the environment" is one

of Michelin's core values, and with the efforts it has made over the years to be energy-efficient as a tire maker, being green has become "part of our DNA," said David Stafford, chief operating officer of Michelin Americas Research Co.

Michelin is wary of the types of materials that go into its products, making sure they comply with energy standards; is nearly 100-percent compliant at its production facilities with ISO

See Tires, page 14

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# Rubber Goes Green

## Tires

Continued from page 13

14001; is looking at renewable energy sources, particularly in Europe; and is working to reduce its waste stream and landfill use, Stafford said.

In examining the impact of tires in the environment, Michelin has found that 86 percent of energy consumption actually comes during the "use" phase, when the tire is actually being driven upon, he said.

That's why the company's goals for environmental progress over the next two decades include doubling tire wear life to reduce the amount of raw materials needed by half; reducing rolling resistance for passenger cars tires by 50 percent; and substantially cutting braking distance to enhance safety.

One example of a company product aimed at making an impact in North America is the Michelin X One tire, which is a single-wide tire replacing dual tires on commercial vehicles. The tire maker claims the product improves fuel



Stafford

economy by about 4 percent and saved in more than seven years an estimated 15 million gallons of fuel and 165,000 tons of carbon dioxide emissions.

South Korea's Kumho Tire Co. Inc. is "carefully devoted to improving the world we live in" and takes preventative steps to eliminate negative environmental effects in its activities, products and services, a company spokesman said.

Some of those steps include minimizing and reusing wastewater; reducing waste and air pollutants; increasing energy efficiency and making active efforts to reduce carbon dioxide emissions; and considering environmental consequences first when developing materials and products, he said.

An example for Kumho is its use of high aromatic-free oil technology on its snow tires, because of the pollution caused by the vacuum-distilled crude oil.

Bridgestone Americas Holding Inc., the U.S. arm of Japanese tire maker Bridgestone Corp., also strives to be environmentally conscious and a leader in initiatives, a company spokeswoman said, utilizing a global theme of "One Team, One Planet."

The company's programs include qualification of its North American tire and Diversified Products plants for the National Environmental Performance Track initiative, a federal recognition program for companies with outstand-



Goodyear introduced its Fuel Max truck tire technology in 1996 with a stated goal of delivering a 4-percent improvement in truck fuel economy.

ing environmental management practices; implementation of the ISO 14001 standard for all facilities; and eco-friendly alliances within its commercial roofing business to boost its energy-efficient product offerings.

### A worthwhile effort

"Going green" isn't necessarily cheap, even if many environmental changes are tied directly or indirectly to saving time

and money. Most tire makers, however, will tell you that doing things the right way is worth it as long as the customer is getting the products they want and need.

For example, the Bridgestone/Firestone tire plant in Warren County, Tenn., is using hydrogen fuel cells to power its automated material handling vehicles. The technology is environmentally friendly while allowing the operation to improve efficiency, reduce downtime and ultimately save money, the BFS spokeswoman said.

The bottom line is that good environmental performance is also good business, she said.

Chapman said Goodyear believes in doing the right things and doing them economically, but also that they are worth the costs. "Quality is our first concern, and we invest our resources in the right materials, equipment and processes so that we have a long-lasting product that has little to no impact on the environment," he said.

"It goes back to being a leader in the tire industry. You're expected to set and be held to a higher standard. We try to be at the highest level in how we treat our employees, our suppliers, our customers and the environment."

The company's fuel-efficient Fuel Max truck tire technology exemplifies Goodyear's efforts to jointly conserve energy and money. Introduced in the summer of 1996, the Fuel Max line was designed to deliver 4-percent improved truck fuel economy.

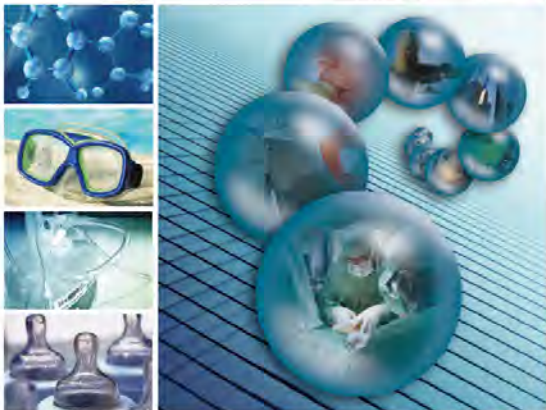
About a year later, the Environmental Protection Agency certified the Fuel Max technology for use on trucks participating in the SmartWay Transport Partnership, a collaborative initiative developed to reduce emissions from freight transport and improve fuel efficiency.

Each truck participating in the program can realize savings of up to 4,000 gallons of fuel per year, or more than \$11,000 annually, Goodyear said.

Michelin's Stafford said it costs money to be green, but it is a choice the company wants to make and is an attribute customers are willing to pay for. The truck side of the business has realized for years there is a payback to being energy-efficient, and on the car tire side there is a continuing effort to meet carbon dioxide standards and increase consciousness at the consumer level, he said.

The company unveiled its green meters—real-time counters located in New York, Shanghai, Paris and Berlin—displaying the savings in fuel and carbon dioxide emissions via its production of environmental energy-saving tires

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## Rubber Goes Green

worldwide over the past 15 years. At the time, Michelin said the 570 million green tires it had sold over that period reduced fuel consumption by 2.4 billion gallons and cut carbon dioxide emissions by 25 million tons.

Yokohama's Chung said that the company's "uncompromising performance" credo means that quality shouldn't be lost in any environmental initiative; rather, the two should work together.

"We don't want one part to shrink while the other grows," he said. "We want both the environmental benefits and quality to grow. That's the best way to success."

Kumho links its customers' needs and its drive to be an environmentally friendly company, the spokesman said.

The firm knows it can't exist without its customers' need for its products, he said, and it wants to be environmentally conscious at the same time. So Kumho respects its customers by meeting their needs and its neighbors by putting some of its profits back into the company to help improve the environment, the spokesman said.

### Community-active

Tire companies have done much to improve their operations up and down the production stream, but it's also outside of the plant setting that they've left their green mark.

Goodyear, for example, has developed and supported consumer awareness programs for proper tire inflation and fuel economy education, Chapman said.

At the beginning of 2008—as part of its "ecoMotion activities program"—Yokohama announced its "Forever Forest" initiative, under which the company will create forested areas around its production sites. The trees—more than 500,000 covering 25 acres—will be planted over the next decade—will absorb carbon dioxide from the atmosphere, the company said.

Bridgestone Americas has certified wildlife habitat areas surrounding three of its tire facilities as well. The company also is involved with several programs nationally and in its home state of Tennessee, including Keep America Beautiful; Team Green, an outdoor adventure club in Nashville; and Tennessee's Wildlife Resources Agency, to which it donated 10,000 acres of pristine wilderness as a preserved wildlife area.

The company's commitment to its "One Team, One Planet" theme has helped it earn the trust and pride of the communities it calls home, the spokeswoman said.

Kumho's Gok-Sung factory in South Korea has preserved the nearby Sun-Jin River and surrounding area—which is home to many wild animals and fish—via a "reverse osmosis" facility that recycles the plant's wastewater and monitors pollution levels. The water in the wastewater pond is clean enough that plant workers raise fish in it and deer come to drink from it, a spokesman said.

The Gok-Sung plant also operates facilities that reduce air pollutants and separates waste for recycling purposes.

Michelin last month announced it was investing \$6.8 million in a three-year research and development project focused on improved fuel economy via reduced rolling resistance. Part of the funding is a \$1.9 million research contract with Clemson University and the institution's International Center for Automotive Research.

Environmental R&D and education are among the areas a corporation like Michelin can have a great impact, Stafford said. The tire makers can't do it alone, he said, but need universities and

government and the media and other partners to help make changes and get information out there.

Last fall, Yokohama also started an environmentally themed Web site called EcoTreadsetters. It isn't simply touting the company's efforts, but instead has ecological news, information on current environmental projects, blogs, tips and other features.

"It's not 100-percent Yokohama," Chung said. "It offers some great things for people to think about and shows lots of ways they can help support the environment. It shows that green is good."

Education efforts and tree plantings don't necessarily translate to more tires

sold, but the tire makers' efforts show that, as stakeholders in a cleaner world, they are willing to use their resources and knowledge to benefit the environment, he said.

"It shows we care," Chung said. "From a business perspective, we need to be profitable, but we're confident we can adapt quickly to new processes and materials that are environmentally friendly. We all contribute to the problem by traveling, and we're trying to offset that. And it's not a token effort. We'll continue to do what we're doing."



Kumho's Gok-Sung facility has a wastewater pond clean enough for fish to inhabit.

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## Rubber Goes Green

# Polyneer's mantra: Less waste is more

By Brad Dawson  
Rubber & Plastics News Staff

NEW BEDFORD, Mass.—Fewer raw materials used and more energy-efficient processes are the keys to being environmentally friendly for rubber molder Polyneer Inc.

But the firm also has adopted green programs throughout its facility—in its office operations and even its kitchen, for example—to promote a companywide pro-environment attitude.

Polyneer's objective of environmental consciousness is good for the earth and the firm's financial outlook, said Tino Fidalgo, the company's co-owner and vice president of technology.

Being green is a path to applying new environmentally friendly technologies into the company's processes which also are beneficial to the industry, he said.

"Ultimately it leads to cost savings to us and our customers while helping the environment," Fidalgo said.

The main thrust for Polyneer is to reduce the amount of raw materials needed in its processes, Fidalgo said. By cutting down on those materials, the company and its partners on the supply chain create less pollution, he said.

The firm—which serves markets such

as automotive, energy, consumer and defense—also offers polymers certified under the Restriction of Hazardous Substances (RoHS) directive, which took effect in Europe in 2006, he said.

Purchasing and using more energy-efficient equipment benefits the environment indirectly, Fidalgo said, and New Bedford-based Polyneer also has modified its own internal processes to use fewer and different materials.

The development phase of a new product takes on a green aura by not only minimizing polymer material content and the number of processes used, but by improving the product's efficiency as well, Fidalgo said.

For example, Polyneer engineered one process in which the product's sealing efficiency increased significantly, he said. But the process also allowed the customer to use a component that contained fewer volatile organic compounds in the final product.

"By applying greener processes and with our team of engineers being cognitive about the environment, we're indirectly saving the earth," Fidalgo said.

### Cutting waste

Polyneer's patent-pending Lo-Waste

Mario Fernandes, one of Polyneer's process engineers, developed the company's vacuum system, which regulates the number of pumps needed to provide a constant vacuum level. It saves energy by minimizing the number of pumps used, only turning them on as needed.

molding technology exemplifies its green commitment. The company touts the Lo-Waste process as reducing material waste by up to 80 percent, manual labor by up to 50 percent, cycle time by up to 30 percent and pricing by up to 30 percent.

Lo-Waste molding uses significantly less rubber, energy-efficient injection molding equipment and flashless technology that reduces the number of post-molding processes required to finish the part, Fidalgo said.

The injection molding machinery in the Lo-Waste process meters the amount of rubber used per cycle and uses variable speed motors as the main power source, he said, and typically the equipment uses 50-percent less energy versus a fixed-speed motor.

And since the product is "finished" coming out of the molding process, it doesn't require cryogenic deflashing or trimming and thus requires less rubber. The result is fewer processes, less equipment, less energy used and less waste generated, Fidalgo said.

The company also has developed a machine that washes and dries parts in a single cycle, recycling the water in the process. It uses a filtering system that greatly reduces the number of times the water tanks have to be refilled, and the drying system uses efficient heating components that generate the necessary high heat but use less energy, Fidalgo said.

Polyneer also designed a PLC-controlled process central vacuum that optimizes space and energy, he said. The system dynamically monitors the vacuum level to control the number of pumps needed to maintain the molding processes in the company's facility.

Initial results for the vacuum system have been surprisingly good, where only a single pump is needed most of the time during production, Fidalgo said. A filter-



ing system for the vacuum component also screens out polymer gases.

Polyneer's top managers—co-founders Fidalgo and Mike Fernandes, the company's president and CEO—have encouraged green initiatives outside of the manufacturing arena as well. For example, the company's front office is about 95-percent paperless, with documentation kept online and customers and vendors encouraged to use e-mail.

The seven-year-old firm's "green kitchen" program involves giving each employee a Polyneer coffee mug and water bottle and encouraging them to use the dispensers to help reduce waste, Fidalgo said. The firm no longer purchases Styrofoam cups and recycles cans, plastic, cardboard and paper.

### Looking forward

The company isn't finished with its green ways. Long term, it will look at ways to purchase and/or generate electricity via wind turbines and recycle energy through other processes, Fidalgo said.

For example, it can try to contain the heat generated by its molding processes and re-introduce it into the cooling system during the winter months, he said. Conversely, it can use the cooling system to reduce the temperature in the facility during the summer.

Polyneer also is trying to introduce a paper recycling program for the business park where it is located so that smaller companies that don't benefit from free waste paper pickup service can do their part to help the environment, Fidalgo said.

The company's—and Fidalgo's—drive

See Polyneer, page 17



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## Rubber Goes Green

# Jyco's weatherseals get even greener

By Brad Dawson  
Rubber & Plastics News Staff

DEXTER, Mich.—Automotive weathersealing manufacturer Jyco Sealing Technologies Inc. was founded as a "green" company eight years ago and is continuing to treat the environment as a top priority with its latest product line.

The company's new JyGreen-brand technology is a recycled version of its JyFlex material, a high-performance thermoplastic vulcanizate compound introduced in 2003 for use in weathersealing applications. JyGreen utilizes re-ground EPDM from recycled tires and other sources within its extruded TPV material to be used in high-end sealing systems, Jyco said.



Shawn Jywook

Generally, recycled TPV has been limited to dunnage or basic injection molded parts such as grommets, bushings, bumpers and mud flaps, said Shawn Jywook, the company's vice president and chief operating officer. JyGreen's cost and environmental benefits now can be extended to primary seals, glass-run channel systems, hood and trunk lids, sunroofs and other more demanding weathersealing applications.

"This is a major advantage to our customers trying to build the greenest possible vehicles," he said.

Tires have been a bulk contributor to landfills for years, and by recycling them, Jyco is helping customers build more environmentally responsible vehicles than ever, giving consumers better performing weathersealing systems and saving everyone money, Jywook said.

Mark Steward, Jyco material development manager, said the initial customer reactions have been positive. "Going beyond the benefits of tire recycling, the idea that all of the weatherstripping systems can eventually be stripped from the vehicle and recycled is one that we think the whole auto industry will embrace," he said.

Because it utilizes reprocessed tire rubber, no recomounding is required for JyGreen materials, and the scrap from the TPV processing is recyclable. TPV production is free of volatile organic compounds and particulate emissions characteristic of EPDM processing, Jyco said.

The company's production lines already meet the stringent environmental standards of Europe and Asia, where the Dexter-based manufacturer has sites in addition to its North American plants.

### Green from the start

Since its founding by President and CEO Sam Jywook in 2000, Jyco has

## Polyneer

Continued from page 16

to be green have led him to be nicknamed Polyneer's "Al Gore," he joked. But it's not governmental mandates or regulations that have led him and the firm to take the steps they have in Polyneer's short history.

Rather, it's a commitment by all employees to be aware and become involved, Fidalgo said. And it's an "attitude of helping the environment and in the process indirectly reducing manufacturing costs and innovating new processes," he said.

touted its TPV technology as having the performance of EPDM seals while costing 10 to 20 percent less and yielding reduced cycle time and product weight. At the same time, the company also has pointed out JyFlex's green benefits, such as 100-percent recyclability, fewer chemicals and no mixing or curing required.

While the average EPDM extrusion line is about 400 feet long, Jyco's TPV lines are about 100 feet long and use about one-third of the energy, Shawn

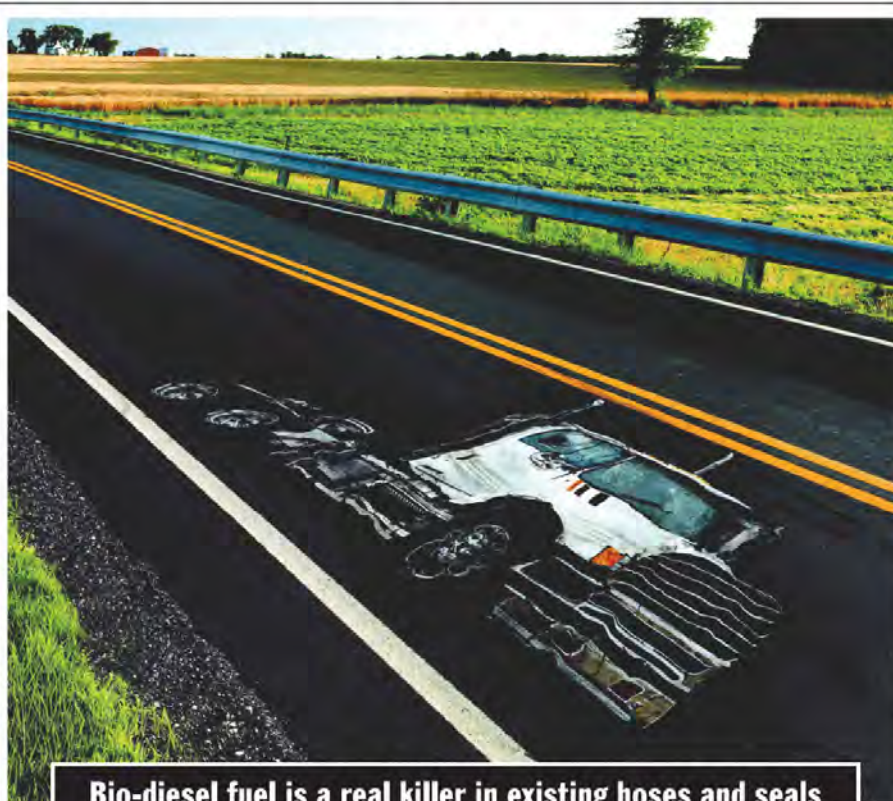
Jywook said. EPDM lines average about 15-percent scrap, none of which is recyclable, while the TPV lines average about 4-percent scrap, all of which is recyclable, he said.

The TPV materials also require less mold and total manufacturing time, the company said.

Jyco's environmentally positive outlook made it a natural choice to supply the weathersealing for the Kurrent neighborhood electric vehicle, which was rolled out

for the first time early last year. The car, designed to travel short distances—35 to 40 miles—at 25 miles per hour, weighs less than 2,500 pounds, doesn't require oil changes and runs on electricity, meaning it doesn't emit any fuel waste into the air.

"Our idea of the perfect component supplier is good, green and local," said Scott Thornton, president of Kurrent maker American Electric Vehicle Co., shortly after the vehicle was launched. "Jyco hit on all counts."



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## Rubber Goes Green

# A nudge from corporate

## SAS Rubber changes culture to meet standard

By Bruce Meyer

Rubber & Plastics News Staff

PAINESVILLE, Ohio—SAS Rubber Co. is proof that an old dog can learn new tricks. But of course it doesn't hurt to have some prodding from its master—or in this case, parent company—as well.

The rubber shop, located on a 23-acre site east of Cleveland in Painesville, probably was no different than a lot of other rubber factories that have been around a half century or more.

In the past, the maker of automotive hose and a variety of industrial products really didn't think much about the environment, and the plant pretty much looked that way—both inside and out. It's not that the company was an enemy of the environment, it's just that other things took priority.

"We get so wrapped up in business," said Executive Vice President Donald Patt said. "It's 'Get the parts out. Get the parts made. Get the customer taken care of.' You forget what your own house is supposed to be like."

That's where the little push from a parent came in. Formerly a part of Mohawk Tire, SAS for about the past two decades has been a subsidiary of Yokohama Rubber Co. Ltd., ever since the Japanese firm purchased Mohawk.

In April 2006, Yokohama released its "New Management Plan: Grand Design 100," which included a policy of asserting world-class strengths in technologies for protecting the environment. It required all Yokohama group companies to obtain ISO 14001 certification.

ISO 14001 is an environmental management standard that specifies a set of requirements for environmental management systems. Its stated purpose "is to help all types of organizations to protect the environment, to prevent pollution and to improve their environmental performance."

Because all Yokohama sites were given until this past March 1 to meet ISO 14001, it also was a standard with which SAS became quite familiar.

### Long process

Donald Jones, SAS quality assurance manager, was tasked with heading the firm's effort to achieve ISO 14001. The first step was developing a management

committee that included Jones, Patt, the general managers of two SAS Rubber divisions, the company president and the firm's environmental director.

The next progression was a steering committee set up at the supervisor level of the 104-employee firm. Jones said that led to about six key people conducting an initial analysis. They walked around the plant's interior and exterior and identified things that—even without a knowledge of ISO 14001—"just didn't look right."

What they discovered was a variety of things—from overflowing hoppers of reclaimed rubber left outside to an overabundance of used 55-gallon drums on the property to an old cooling tower that had been replaced but never taken away. The SAS property also was a bit of a dumping ground for the local community, with a collection of scrap tires strewn about the land.

"It's not that we just were blatantly not caring about the environment," Jones said. "It was just normal business practice that we accumulated things."

That self-inspection yielded 255 "potential impacts" on the environment. From there, the committee had to determine which rated being a "significant impact."

Such items included missing sealing bungs on the 55-gallon barrels that could lead to leftover hydraulic oil seeping out and making its way into the nearby river. Or extra carbon black stored outside in plastic bags that could rip. And barrels inside the plant stored too closely to floor drains.

In the past, the company would have thought that many of the items weren't a big deal, Jones said, because the materials weren't toxic and nobody was getting hurt.

"These are the types of things we weren't really conscious of until we got into the standard. Now it's become such an attitude, as you walk around, you'll never see that type of stuff again."

As part of the process, SAS developed an environmental policy that has led to projects that have cut gas and electrical use, and also a new program where most water is run through towers and evaporated rather than routed through the sewer system, Patt said. The company also received state grant money to help



RPN photo by Bruce Meyer

Now that SAS Rubber follows the environmental management standard, employees make sure that the scrap rubber that is to be recycled is stored neatly in containers, rather than overflowing in receptacles outside the facility.

with training involved in the program.

All the preliminary work led up to an audit by an independent registrar. For this part of the process, SAS asked for one specific auditor deemed to be the strictest—if she passed the company, it definitely meant the firm had stepped up. "We were not looking for a free ride," Jones said.

The auditor was there for what Jones called "an intense three days." She looked to make sure that SAS was following certain procedures; that the firm wasn't polluting the environment; and that the standards were followed explicitly.

"She came out and she worked with us, but she was a bear," Jones said. "It was not easy. There were several corrective actions we had to do, but we got through it and it was well worth it."

### Change in attitude

Although much of the work of receiving ISO 14001 was physical, Patt said it was really more of an attitude change.

"It has to come from the top," he said. "If it doesn't come from the top, it doesn't happen. Then the managers have to buy into it and it has to trickle down to everybody."

Getting employees to come aboard took a two-pronged approach, he said. First, management explained what the company was trying to accomplish so the workers understood what was going on.

"Then there's a little muscle that goes along with it," Patt said. "You tell them we're going to acquire 14001 and the employees are going to help us do that. It's part of everyday living, and it's a part of their job and it's a part of doing it for everybody that works here."

The workers also have to be familiar with the basic tenets of the SAS environmental policy. "Employees are conscious that this is not just another one of those programs that they pay lip service to," Jones said.

Patt acknowledged the Yokohama mandate helped push things along. SAS even beat the March 1 deadline by more than two months.

"I'm just as much to blame as anybody else. You get rolling along and business is good and you say, 'We'll take care of that later.' Well, later never came until now."

Jones said the company will be audited on an annual basis, so it's essential to keep on top of its environmental programs. "We can't let it slip on a day-to-day basis. You have to stay on top of 14001. It will bite us if we don't, so we have to be very diligent with it."



### Before and after

At top, the back pad behind SAS Rubber's mixing storage area previously was a resting zone for several hundred 55-gallon barrels that had held hydraulic oil. Above, the same area is all cleaned up as the rubber company went through the process of becoming ISO 14001-certified.



Donald Jones (left) and Donald Patt were two members of the team that helped lead SAS Rubber to meet parent Yokohama Rubber Co. Ltd.'s edict that all of its facilities worldwide be certified for the ISO 14001 environmental management standard.



## Rubber Goes Green

# Evonik wants more silica/silane in tires

By Bruce Meyer  
Rubber & Plastics News Staff

AKRON—Evonik Industries is hoping to push its silica/silane technology to gain greater acceptance in tire production in the U.S. following the success the firm has had with the know-how in Europe.

Officials from Essen, Germany-based Evonik—formerly Degussa A.G.—said consumers can benefit if their technology had higher penetration in the U.S. market.

Consumers would save on fuel consumption because the tires would have lower rolling resistance, three Evonik executives said in an interview in Akron. In addition, the tires would be safer because of increased wet traction.

Evonik's silica technology involves organosilanes that serve as coupling agents. The firm said the organosilane acts like a bridge between the rubber and the reinforcing agent silica. Evonik claims using this silica technology rather than relying solely on carbon black as a reinforcing agent results in an increased fuel efficiency of 3-5 percent.

The German firm—which has a U.S. headquarters in Parsippany, N.J.—also has unveiled VP Si 363, a new organosilane aimed at improving fuel efficiency by another 2-3 percent.

While Evonik's silica/silane technology has had good success in Europe dating back to the 1990s, its market penetration

remains small in the U.S., with some usage in original equipment but very little in the replacement tire market.

Some tire makers are starting to introduce high-performance tires made with the technology in the U.S., and now may be a good time for Evonik to make more of an inroad, said Hans-Detlef Luginsland, director of strategic marketing for rubber silicas and silanes.

"It's good for the environment and it's a technology to offer tire makers to differentiate themselves against cheap imports," he said. "So I think the silica/silane system will come. It's just a question of how fast."

Thomas Trempler, vice president of strategic marketing for rubber additives, said as the auto industry continues to look for ways to produce more fuel efficient cars, each part of the automobile will have to contribute.

"The tire is a very essential part," Trempler said. "We are a second-tier supplier to automotive where we can really improve the fuel efficiency and carbon dioxide emissions of tires without violating any other important properties of tires."

Evonik is trying to do all it can to push the system, including contact with auto makers, but Trempler said there's only so much a material supplier can do. "We are not a deciding factor," he said. "We have no contact with the end user."



From left, Evonik Industries' Bernhard Schwaiger, Hans-Detlef Luginsland and Thomas Trempler discuss the firm's silica/silane technology for tire manufacturing.

The car makers will continue to be the driving force and he's sure they are pushing tire makers for more fuel efficient tires. But in the end, OE accounts for only about 30 percent of the U.S. tire market and much of the aftermarket is dominated by big distributors looking mainly at how much a tire costs and how long it lasts, Trempler said.

Evonik, also a major carbon black producer, can help by trying to educate consumers—much like what was done to promote energy efficient light bulbs. "It's not just a round, rubber article," Luginsland said. "It's a high-tech article that can get from point 'A' to point 'B' in a safe manner, but it also has an impact on the consumption of your car."

He said the U.S. is a perfect location for its silica/silane technology to be effective, given the opportunity for consumers to drive long distances at a regulated speed. "In that situation, the tire

will have an impact."

As for a cost premium, Evonik officials placed it in the range of \$3 to \$5 a tire—an amount they said is difficult to pass on in OE but shouldn't be a factor in the replacement market. Trempler said he can even imagine a point where the silica/silane system will be no more expensive than carbon black because the latter is so dependent on feedstock prices.

Luginsland said a doable goal is 60-percent penetration of the OE passenger car market in the U.S. by 2015, roughly double the current share. Growth on the replacement side will take longer and will depend on such factors as how much the government pushes the fuel efficient technology.

Trempler said the company also is working on developing the next generation of the technology for Europe and also wants to find a similar breakthrough for truck tires, as the current system works only with car tires.

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## Rubber Goes Green

# Environment gets high billing at WDG

By Brad Dawson  
Rubber & Plastics News Staff

LAGRANGE, Ohio—West Development Group, a silicone and polyurethane foam product supplier to the roofing industry, doesn't make a move until it considers the environment first.

The company's commitment to being "green" is quite simple: any new products must be environmentally beneficial while at the same time be economically viable and functionally equivalent to the product being replaced, according to WDG owner Richard West.



West

The LaGrange-based firm also examines each aspect of its business activities and its environmental impact, including areas such as raw material sourcing, regional purchasing, energy usage and the carbon footprint left by its actions and products, West said.

The construction industry inherently affects the environment, and all aspects of the sector have room for improvement, West said. The green movement within the construction industry also has been pushed along by government actions, such as restrictions on landfill materials, stricter environmental and energy standards for government buildings, mandates on renewable energy, and tax abatements for green construction, he said.

WDG has improved the roof environmentally by using renewable

resources—such as soy and sucrose—and recycled raw materials, and by eliminating the use of hydrocarbon solvents. The company's philosophy is exemplified by its System 14-brand silicone roofing line, which includes silicone sheet goods, skylight glazing, silicone sealants and coatings, and spray polyurethane foam insulation for commercial and industrial roofing applications.

Within the line is a solvent-free silicone—marketed as R2R—that utilizes recycled EPDM from old torn-off roofs to strengthen and enhance the silicone topcoat, WDG said. System 14 also includes a zero-volatile organic compound coating applied over the SPF insulation, creating a durable and flexible moisture-resistant seal.

The SPF itself contains a renewable soy-based polyol instead of petroleum-based polyol, and 25 percent of the standard polyol used in the insulation's production is recycled, the company said.

The EPDM recycling issue is an important one because of the amount of used roofing membranes that are diverted to landfills and the time they take to compose.



A "before" photo in the roofing process, as an old rubber roof is torn off before a new one is put in its place.

About 185,000 tons—or 1 billion square feet—of EPDM roofing materials are removed and put into landfills every year, West said. And according to a study from the Environmental Protection Agency, EPDM and tire rubber takes about 10,000 years to decompose in a landfill, he said.

Use of solvent-free materials makes a difference as well. A VOC-free silicone on a 100,000-sq-ft. roof, for example, prevents the release of about 1,000 gallons of those solvents into the atmosphere—enough petroleum to drive a family sedan around the world, WDG said.

The company began its research into making green products back in 2005 and found in some cases that embracing environmental solutions actually reduced its marketability, West said. If "going green" in a particular application is not a sus-

tainable, cost-effective alternative, WDG won't participate.

One area WDG definitely is putting its money into is environmental education. The company is giving financial assistance to the Scientia Terrae Causa (Knowledge for the Earth) Environmental Science Scholarship Fund at Ferrum College in Ferrum, Va.

The fund helps high school students planning to study environmental science at Ferrum.

The college's Environmental Science program is the second-oldest academic program in the U.S. devoted to training environmental scientists, behind only Stanford University.

WDG plans to donate a percentage of future sales of its environmental products—including its solvent-free silicone coatings—to the fund. "We're committed to better roofs, a cleaner planet and providing financial assistance to young people who want to pursue a career in environmental sciences," West said.

"We hope our scholarship program at Ferrum helps produce the next generation of green guardians."



West Development Group utilizes recycled EPDM roofing material to make its solvent-free R2R-brand silicone, which is used as a topcoat for new roofing projects.

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## Rubber

The following are eco-friendly accomplishments by companies and organizations throughout the rubber industry.

**Nokian Tyres** has introduced a production method using earth-friendly oils and guarantees the complete absence of toxic chemicals with its birch leaf insignia. The firm also emphasizes reducing tire rolling resistance, which helps reduce fuel consumption, lowering exhaust emissions and costs.

**Yulex Corp.** of Maricopa, Ariz., specializes in guayule-based clean technologies to produce what it calls a "greener" rubber.

Yulex said guayule requires less water, and the firm does not use insecticides on this perennial crop. The company said its energy-efficient factory uses carbon dioxide to manufacture its products instead of making more of it. Other eco-friendly processes at the plant include the ability to capture used water and reuse it and utilize water in the extraction process instead of harsh chemicals.

**Videojet Technologies Inc.** unveiled its "Green Peace of Mind" logo to help create awareness among its customers of the commitment the company



Videojet's new logo

has made to support green programs and efforts. Among the firm's history of eco-friendly initiatives are its energy-efficient systems, inks with reduced or no volatile organic compounds, less waste and reduced packaging.

**Franklynn Industries Inc.** of Loveland, Ohio, has rooted its business in the elimination of harmful solvents to create water-based release agents for rubber molding applications.

After 17 years of research and development, the firm said 90 percent of its release agents are water-based and it continues to seek ways to minimize environmental impact where volatile organic compounds can't be completely eliminated.

The company said all of its raw materials are listed on the Toxic Substance Control Act and that laboratory byproducts are strictly monitored. Franklynn said it offers spray equipment to customers to ensure release agents are properly applied and that little is wasted.

**Rhein Chemie Corp.'s** Chardon, Ohio, facility achieved RC 14001 Certification, a standard developed by the American Chemistry Council that extends the environmental requirements of the ISO 14001 standard to health, safety and security.

**Cri-Tech Inc.** recently received ISO 14001 certification—the internationally recognized standard for environmental



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## Goes Green

management systems—at its Hanover, Mass., plant. Cri-Tech also is certified in ISO 9001 and ISO 17025 standards and has A2LA-accredited laboratory facilities.



**Mossberg Industries Inc.**, which supplies the extrusion sector, has developed an assembly and disassembly knock down, all-plastic reel design it said greatly reduces inbound freight costs and allows the reels to be instantly disassembled for recycling, reuse or return.

For the past 20 months, **Specification Rubber Products Inc.** in Alabaster, Ala., has been a test site for the Super Boiler, installed by Cleaver-Brooks Inc. and the Gas Technology Institute.

During that time, the 300-horsepower, high-pressure steam boiler has operated 24 hours a day, five days a week. Cleaver-Brooks said the unit has produced the following results:

- in more than 6,000 hours of operation, the fuel-to-steam efficiency consistently has been 93-94 percent, compared with less than 80 percent with traditional boilers;
- fuel savings have averaged about 13 percent on a fuel bill that was \$800,000 annually; and
- emissions of less than 9 parts per million by volume of nitrogen oxide.

Specification Rubber President Philip Robertson said the main thrust of the test was to achieve energy reduction, but the emissions reduction is an added bonus. "It's a very clean system," he said.

Cleaver-Brooks expects two more Super Boiler test sites to go live in 2008, with commercialization by mid-2009, pending further test results.

Conservation is the theme of the next **Connecticut Rubber Group** technical meeting, its April 3 spring event. Representatives from local power/natural gas and water companies will discuss ways to cut back on consumption. For more information, visit [www.ctrubbergroup.org](http://www.ctrubbergroup.org).

The **Rubber Recycling Topical Group**, a subcommittee of the ACS Rubber Division, provides educational symposiums and technical presentations at annual rubber expos and assists manufacturers that want to recycle rubber.

It was created in 1993, as a result of discussions about the feasibility of and interest in rubber recycling.

For more information, visit [www.rubber.org](http://www.rubber.org).



## Rubber Goes Green

# Chemical firms raise technology bar

By Mike McNulty  
Rubber & Plastics News Staff

Most specialty material producers figure they're well ahead of the curve when it comes to producing environmentally friendly products for the rubber industry.

The movement toward greener processes is not new to them, according to officials from three companies who can cite key environmentally friendly innovations each has made recently and throughout the years.

As tough environmental regulations arrived over the last 20 years, the firms adjusted, raised the bar on their technology and moved on with new greener products. In fact, some leaders in the industry—like Dow Polyurethanes, Momentive Performance Materials Inc., and Rohm and Haas Co.—have gone far beyond mere acceptable standards, each said.

But green chemistry is not an end-all, because the bottom line is still the bottom line and a company can't stay in business without making a profit.

"Cost and performance override anything that's green and probably will for the next several years," said Dow Polyurethanes' Doug Warner, global

business director for Dow polyols.

It's an old cliché, but he and executives from Momentive and Rohm and Haas said their customers always come first.

### Duel focus

Rohm and Haas' Patrice Barthelmes, the global leader of the company's Packaging and Building Materials business, said while environmental benefits may be touted, the marketplace and the firm's customers still have the final say. Generally, they want high-performance products they know they can count on but are better for the environment, he said.

Momentive's goal "is to help our customers achieve their goals," according to Michael Stout, global marketing manager. "Various regulations impact or will impact our tire customers, and we expect that type of impact to continue to guide their and our product development."

As the world's largest producer of polyether polyols and a leading manufacturer of aromatic isocyanates, Midland, Mich.-based Dow Polyurethanes, a Dow Chemical Co. business unit, is committed to uncovering green alternatives "because it makes good business sense,"



Warner



Barthelmes



Stout

Warner said.

He cited the scarcity of petroleum-based resources available globally and the fact that the population is growing as two reasons the firm is focused on reducing the use of natural resources. "We are always trying to find renewable resources" that are cost-effective because it has to make sense financially.

Momentive's Stout said his company has been focused on finding green alternatives for many years. "Improving the environment is essential," he said. "To us, we can profit and offer environmentally friendly products at the same time."

Rohm and Haas has been committed to sustainability since 1953 when it began developing acrylic waterborne alternatives to solvent-based materials, Barthelmes said. "Sustainability covers many aspects, and Rohm and Haas is active in each: energy, water, emissions recycling and more."

He said that "doing the right thing as far as environmental responsibility is concerned is ingrained in our culture."

### Green initiatives

All three firms made a big splash with green initiatives in 2007 or early 2008.

In September, Dow Polyurethanes introduced Renuva natural oil-based polyols, technology that breaks down vegetable oil and functionalizes it, then uses a proprietary process to react seed oil monomers with traditional polyurethane components, according to Warner.

The new technology is greenhouse-gas natural and uses 60-percent fewer fossil resources than needed to make conventional polyols, the company said.

Renuva is virtually odor-free, overcoming a problem of other bio-based polyols and, according to a spokeswoman, doesn't show any decline in performance when compared to oil-based polyols. Thus, it helps decrease the dependence on oil-based feedstocks, she said.

The company is building a wide range of polyols, boasting high levels of renewable content that can be customized for specific applications, Warner said.

The polyols are performance-based and reduce the impact polyurethane manufacturers will have on the environment, he said. "No one else has anything like Renuva. It's a winner."

In October, Momentive unveiled its e-free 189 silane, which significantly helps cut ethanol emissions, improves mineral coupling in rubber products and possibly reduces production costs, Stout said.

The new coupling agent is part of the firm's growing NXT Z silanes line of products, he said, which the company came out with in 2006. NXT Z is a member of the family of NXT silane materials. It has excellent overall performance, while typically improving processing characteristics, according to the firm.

Stout said that e-free 189 silane may take rubber manufacturing to a new level of efficiency, cost-effectiveness and environmental friendliness. The product can be used in a variety of rubber goods, including belts, hoses, shoe sole compounds, grommets, wire and cable, and flooring.

While e-free 189 silane is aimed at different markets, "our new NXT Z silanes and NXT LowV silanes are intended to improve tire performance, including fuel consumption characteristics," Stout said. "These new silanes also offer reduced VOC (volatile organic compound) emissions during tire manufacture and use."

He said that most tire makers "are focused on reduced rolling resistance to reduce vehicle fuel consumption" and Momentive's products play a key role in reaching that goal.

### More innovations

Rohm and Haas' latest advancement is Avanse MV-100, used for industrial coatings, which allows for controlled absorption of latex particles on surfaces of pigment particles, making for more even distribution throughout the film, according to a company official.

Other recent innovations include Robond Prohesion, an environmentally advanced solution for tough bonding applications in harsh conditions such as automotive and industrial bonding; and the Advapack NEO system that allows pipe makers to eliminate lead from the production process.

"We're offering alternatives to solvent-based materials in pressure sensitive adhesives such as solventless and water-based materials, which are also better for the environment," Barthelmes said.

Beyond its numerous innovations, Rohm and Haas—one of only a handful of companies to have earned two Presidential Green Chemistry Challenge awards for two different sets of products—took its green chemistry initiative a step further in January when it teamed with Natural Step International, which specializes in developing systematic, science-based approaches for organizations to become more sustainable, he said.

The partnership will build on the company's commitment to apply the principles of sustainable development and green chemistry to design new technologies that address key societal needs, including more environmentally friendly building and construction products, and solutions to meet growing energy concerns, said Raj L. Gupta, chairman, president and CEO of the company.

The move toward green technology by Rohm and Haas, Momentive and Dow Polyurethanes, the three officials said, has become part of each firm's culture.

For the industry itself, "it's not a fad, it's a trend" that will likely continue, Dow's Warner said.

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## Rubber Goes Green

# Rubber recyclers say they bleed green

By Miles Moore  
Rubber & Plastics News Staff

WASHINGTON—How “green” is rubber recycling?

To those involved in the business, the question is too obvious to be worth asking.

“By definition, recycling is taking the older material, processing it and putting it into a new product,” said Michael Blumenthal, vice president of the Rubber Manufacturers Association and an authority on scrap tire recycling. “More ground rubber is going to more end-use markets than ever before. Black is the new green.”

### The nay-sayers

The profitable reuse of scrap rubber, however, has always been afflicted by nay-sayers. Tire-derived fuel—which many, including Blumenthal, don’t define as recycling per se but defend as energy recovery and a major driver of recycling’s economies of scale—has long faced serious challenges by environmental groups.

Even rubber mulch, playground fill and athletic turf, among the fastest-growing markets for recycled rubber, are seeing environmental challenges, particularly in the Northeast, thanks to a recent study by a North Haven, Conn.-based nonprofit organization called Environment & Human Health Inc.



Blumenthal

“It is clear that the recycled rubber crumbs are not inert, nor is a high-temperature or severe solvent extraction needed to release metals, volatile organic compounds or semi-volatile organic compounds (from them),” the EHHI study concluded. It recommended a moratorium on installing any new athletic fields or playgrounds pending further research, and limiting access to rubber-filled playgrounds and athletic fields.

Thanks largely to the EHHI study, there is a bill before the New York General Assembly calling for a six-month moratorium on installing new rubber playgrounds and athletic fields. Also, the Trust for Public Land, a nationwide conservation organization devoted to establishing public parks and gardens, has said it no longer will use rubber fill in the network of playgrounds it is building around the five boroughs of New York City.

According to Blumenthal, the EHHI study was flawed from its inception.

“Its testing protocols are not consistent with standard testing protocols,” he said. “If you manipulate testing procedures, you manipulate the results.”

The RMA is doing a technical review of the EHHI study, according to Blumenthal. Meanwhile, studies from Denmark, Sweden and the Netherlands demonstrate the environmental stability and safety of rubber mulch, playgrounds and athletic turf, he said.

Jerry Swensen, president of Auburndale Recycling Center in Auburndale, Wis., and incoming president of the International Scrap Recycling Institute’s Scrap Tire Chapter, is in total agreement with Blumenthal.

“The people in Connecticut and New York are crying wolf to a great extent,” Swensen said. “The Trust for Public

Land says it’s going to use tufted nylon at playgrounds from now on, but how long will it be before someone says tufted nylon has an impact on the environment?”

### Nuts and bolts

The mainstream rubber industry’s interest in rubber recycling is signified by the ACS Rubber Division’s establishment of a Rubber Recycling Topical Group. The group’s current chairman, Marvin Myhre, and past chairman,

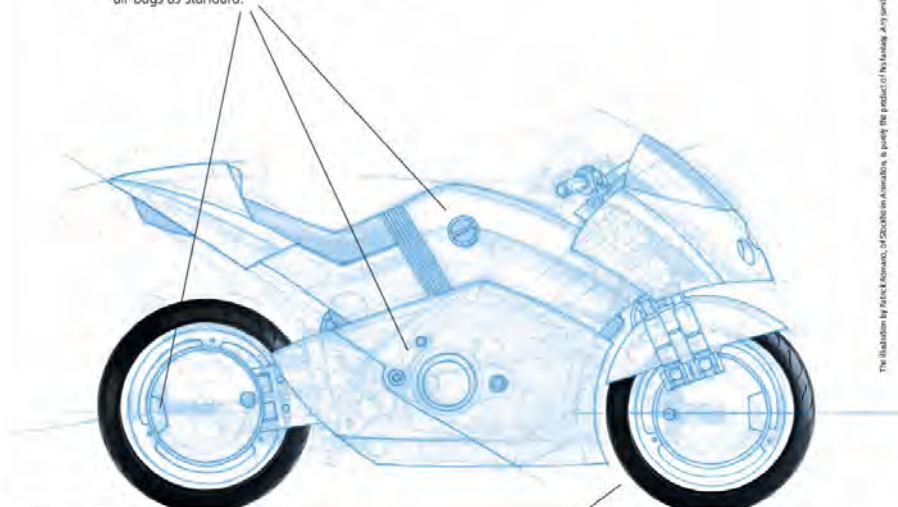
“The people in Connecticut and New York are crying wolf to a great extent.”  
Jerry Swensen

Evan R. Piland, recently gave a presentation before the Fort Wayne Rubber Group on the RRTG’s work and the im-

portance of rubber recycling. Piland, sales manager of the Industrial Rubber Group at Midwest Elastomers Inc. in Wapakoneta, Ohio, discussed the basics of rubber recycling at Fort Wayne. “Rubber recycling is a specialty business. See Recycling, page 24

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## Rubber Goes Green

# TDF still top destination for scrap tires

By Miles Moore  
Rubber & Plastics News Staff

WASHINGTON—Many approaches have been tried, but tire-derived fuel remains the largest single market for scrap tires in the U.S.

TDF accounts for more than half of the 299 million scrap tires disposed across the country in 2005, according to the latest Scrap Tire Report from the Rubber Manufacturers Association.

When the RMA releases an updated Scrap Tire Report later this year, TDF is expected to remain the dominant method of reusing scrap tires in the U.S.

However, other markets for scrap rubber—some that encompass post-industrial scrap as well as post-consumer rubber—continue, some of them gaining significant market share. These include:

**Civil engineering.** Since the early 1990s, scrap tire chips of two to 12 inches have found excellent use in such applications as lightweight fill for highway embankments, drainage layers for landfills and aggregate for septic tank leach fields. A couple of early incidents in which tire-chip-filled highway embankments combusted gave the use of scrap rubber in civil

engineering adverse early publicity, but further research demonstrated limiting tire chip size and removing as much metal as possible from the chips effectively ended that problem, the RMA said.

Nevertheless, tire-derived aggregate in civil engineering has declined in recent years. In 2005, a total of 49 million scrap tires went to civil engineering projects in 2005, down 6 million from 2003, according to the RMA.

Tire-derived aggregate is often in direct competition with TDF, which is a higher-value-added application. *See Markets, page 25*

## Recycling

Continued from page 23

ness," he said. "The kind of scrap rubber being processed is core to the way a business operation is set up."

Collection of scrap rubber for processing, with establishment of feedstock specifications and standards, is vital to the success of any rubber recycling business, according to Piland.

It makes a difference, for example, whether you choose to process post-consumer rubber (tires and other rubber products discarded after useful life) or post-industrial scrap (cured and uncured scrap in the form of rejected parts, flash or trimmings from rubber molders, extruders and mixers). Different types of rubber have different processing requirements, according to Piland.

"Setting up a successful collection program takes time," he said. "It is a business relationship that works both ways for the grinding processor and rubber feedstock supplier."

Particle sizes for ground rubber generally range from 10 to 200 mesh, and size specifications should follow the D-5644 standards from ASTM International, according to Piland. The smaller the particle specified by the customer,

the more expensive the process, he said.

In processing rubber, the first stage generally is to use a shredder to ambiently grind tires into chips of six to 10 inches, according to Piland. From there, a primary granulator—also known as a rasper, grizzly or liberator—is used to reduce the chips further and remove wire and fiber.

Cryogenics or freezing tunnels may also be used to make the particle reduction process easier.

Cracker or finishing mills can serve primary or secondary functions to reduce particle sizes further and achieve final removal of metal and fiber, Piland said.

Devulcanization or reclaim, ambient processing, wet grind processing, cryogenic processing and uncured rubber processing are the major processes for further refining crumb rubber into a higher-quality product, according to Piland.

All five are very different and have different customers, but in general the recycling industry and its representative associations do not recommend any one process over the others.

While recycled rubber has many value-added uses, most observers agree that the ultimate goal is to process rubber from an old product and make it into a new product.

The advent of ultra-fine-mesh recycled rubber powders has raised the hopes for total recycling to new levels.

"We recognized that if we could put the rubber into a new form, we could create a whole new industry," said Dennis Gormley, CEO of Naples, Fla.-based

According to Gormley, acceptance of fine engineered powders as a substitute for virgin rubber in new tire manufacturing is coming, albeit extremely slowly. "This is an industry that is, appropriately, very deliberate in trying new technologies," he said.

However, there is considerable disagreement in the industry as to how much rubber powder, by percentage, could go into a new tire.

According to Gormley, test data demonstrate that a new tire could contain as much as 10 percent fine-mesh powder. Blumenthal thinks the realistic percentage is only 0.5 percent to 1 percent.

Taking the middle ground is Sam Kauffman, general manager of Chambersburg, Pa.-based Edge Rubber Co. Kauffman said his company supplies 90 to 95 percent of all the crumb rubber and fine-mesh recycled powders to the tire and brake manufacturing industry throughout the U.S., Canada and Mexico.

According to Kauffman, the realistic level of recycled rubber in a new tire is 2 to 5 percent, depending on the variety of tire.



**"This is an industry that is, appropriately, very deliberate in trying new technologies."**

Dennis Gormley

Lehigh Technologies L.L.C. The recycled rubber powder specialist, founded in 2004, has its processing plant in Tucker, Ga., with plans for new facilities soon.

To Gormley, the ultra-fine-mesh powder business is the greenest of green businesses.

"To the extent that you recycle rubber, you save carbon dioxide emissions, you save petroleum and you keep that rubber out of landfills," he said.

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## Rubber Goes Green

### Markets

Continued from page 24

ation for scrap tires than civil engineering, the RMA said. Conflicting state regulations, government policies biased against tire-derived aggregate and some reports of clogging in landfill leachate liners also have contributed to the decline, according to the association.

Civil engineering applications seem to be in permanent decline, according to some rubber recycling experts.

Jerry Swensen, president of Auburndale Recycling Center in Auburndale, Wis., and incoming president of the International Scrap Recycling Institute's Scrap Tire Chapter, believes the recycled rubber market from now on will be a matter of TDF and ground rubber applications. "Civil engineering and other applications are so minuscule, they don't have a major impact," Swensen said.

**Ground and crumb rubber.** Ground rubber applications were still third behind TDF and civil engineering in 2005, accounting for slightly less than 37.5 million scrap tires, according to the RMA report. But whereas civil engineering applications fell significantly from 2003, ground rubber skyrocketed. In 2003, the RMA reported, ground and crumb rubber accounted for 28.2 million scrap tires, which means the market grew by nearly one-third in two years.

It is a good bet that ground rubber will continue to be a boom market in years to come, industry observers said. It encompasses many different applications, including crumb-rubber modified asphalt, molded goods, athletic turf, rubber mulch, playground fill and fine-mesh engineered powders which can be added to new tires and rubber products.

Despite recent controversy over the putative environmental effects of rubber playground fill and athletic turf, ground rubber in general fulfills the fundamental ideal of recycling: to make a useful new product from a discarded old one.

"With rubber mulch, playground surfacing and asphalt rubber, you're certainly getting the longevity out of rubber," said Troy Hess, vice president of Mahantango Enterprises Inc. in Liverpool, Pa., and outgoing president of the ISRI Scrap Tire Chapter.

**Retreaded and used tires.** "Retreading is recycling" has been a battle cry of the Tire Retread Information Bureau from its inception. The RMA does not include retreading in its scrap tire recycling statistics—in the association's words, "retreading is a viable technology that prolongs tire life and makes a positive contribution toward decreasing scrap tire disposal."

Nevertheless, there is little question that retreading, in a very real sense, transforms an old tire into a new one. Nearly 16.3 million tires were retreaded in the U.S. in 2005, according to the RMA.

Used tires—those tires that are still usable on vehicles after being removed from initial service—have long been a viable market, particularly among low-income families, though technically they are neither scrap tires nor a new product.

However, used tires have come under increasing fire for alleged safety reasons because of their age and possible internal damage. Groups such as Safety Research & Strategies Inc., the Rehoboth, Mass.-based consumer group with ties to trial lawyers, has petitioned the National Highway Traffic Safety Administration for strict regulation of the used

tire market.

Auburndale's Swensen is among those who find this a sad situation.

"Individuals who go out and buy used tires accept a certain liability until someone gets hurt," he said. "Then it's never their fault. So we'll ban used tires, and all the people who are buying the used tires won't be able to afford to pay two, three or four times as much for a new tire."

**Pyrolysis.** Pyrolysis—which is also known by other terms such as carbonization, thermal distillation or retort conversion—is not exclusive to tires, but can be performed with any organic material. It is the process under which an organic substance is reduced to its component parts by exposure to heat in a reduced oxygen environment.

Via pyrolysis, scrap tires can be reduced to petroleum, gas, and carbon char. Both the U.S. Environmental Protection Agency and the RMA have fact sheets about pyrolysis on their Web sites.

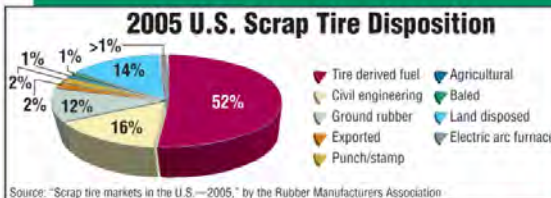
The EPA said pyrolysis hasn't worked in the U.S. because its products are lower quality than virgin materials.

Since 1985, some 75 pyrolysis projects have been announced, and at least four pyrolysis plants have been built, according to the RMA. However, the group said, "Pyrolysis appears to be a capital-intensive process for conversion of a solid, non-hazardous material such as scrap tires into a low-grade liquid fuel or solid fuel."

Other sources, however, cite enormous strides in pyrolysis technology over the past decade. David Forrester, founder and CEO of North Carolina-based TIRES Inc., said at the 2007 Clemson Tire Industry Conference that he had visited at least two pyrolysis facilities he thought had a good chance of becoming commercially viable.

Jesse Klinkhamer, CEO of Vancouver, B.C.-based Klean Industries Inc., believes he holds the key to making a rubber carbonization process commercially viable.

"All of our plants are commercially viable," Klinkhamer said. "We are not a research organization." Klean Industries currently has about 500 plants



Source: "Scrap tire markets in the U.S.—2005," by the Rubber Manufacturers Association

worldwide processing various materials, including tires, through carbonization techniques.

Klean Industries' first North American tire carbonization facility will open in the U.S. before the end of 2008.



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## Rubber Goes Green

# TDF

## Green or not green, that is the question—and running argument

**By Miles Moore**  
Rubber & Plastics News Staff

WASHINGTON—Does tire-derived fuel qualify as a “green” technology? It depends very much on whom you ask. But be prepared to take cover if you do.

Never mind that a federal appeals court ruling last year, which struck

down the rules under which the Environmental Protection Agency regulated TDF, could spell the end of the technology, according to the Rubber Manufacturers Association. Fans of TDF, such as the Portland Cement Association, will continue to be enthusiastic about it.

“The environmental benefits of utilizing scrap tires as a supplemental fuel in

the Portland cement manufacturing process are manifold,” according to the PCA’s fact sheet on TDF, available on its Web site. The steel belting in whole tires replaces most or all of the iron required in cement manufacturing, and tires burned in cement kilns reduce carbon dioxide and nitrogen oxide emissions compared with burning coal only,

with NOX emissions dropping by more than 30 percent in some cases, it said.

TDF’s opponents are just as adamant, as a 1997 paper from the Lone Star Chapter of the Sierra Club demonstrates.

“A basic principle is that the incomplete combustion of tires may yield dozens of organic compounds, with some not naturally occurring in coal, but the technical issue is that tires contain several hazardous constituents and inadequate combustion may result in the release to the air and the creation of new compounds forming downstream of the combustion devices,” the Sierra Club paper states.

Cement kilns may combust tires more completely than industrial boilers, the paper adds, but retrofitting cement kilns with modern air pollution control systems is prohibitively expensive. “Cement kilns will not burn waste including TDF unless they are authorized to use fewer control systems and emit more air

**“The TDF ruling has the potential to destroy the entire scrap tire recycling industry.”**

**RMA**

pollution,” it said.

The Sierra Club was one of four environmental groups that filed suit in the U.S. Court of Appeals for the District of Columbia Circuit, arguing that the EPA violated the intent of the Clean Air Act by allowing TDF to be regulated under the section of the act governing industrial boilers. TDF and other alternative fuels, they argued, should be regulated as waste incineration, with the much more stringent—and expensive—pollution controls waste incineration requires.

The appeals court agreed and ruled that TDF burning should be regulated as waste incineration. Although TDF still is being used, the Rubber Manufacturers Association said the ruling has the potential to destroy the entire scrap tire recycling industry, because the industry’s economy of scale is based on tire collection and processing for TDF.

Even without the specter of the EPA enforcing the court ruling, TDF is generating mixed reactions throughout North America.

Ash Grove Cement Co., a major user of TDF, obtained a permit from the Nebraska Department of Environmental Quality late last year to use TDF as a supplemental fuel at its Louisville, Neb., plant. But an advisory committee to the government of Nova Scotia recommended against going ahead with a proposed contract with Lafarge Canada to ship the province’s scrap tires to its kilns in Nova Scotia and Quebec.

Also, International Paper Co. decided in late 2006 not to use TDF at its Ticonderoga, N.Y., plant. The company decided TDF use wasn’t economically feasible

See TDF, page 27



AND



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### KEYNOTE ADDRESS

**Daniel Hertz Jr.,  
Founder and President,  
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Mr. Hertz, Rubber & Plastics News' Rubber Industry Executive of the Year will give the keynote presentation on the necessity of education and the challenges facing us to be a player in the synthetic rubber industry.



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**Andrew A. Laperriere, CFA, Managing Director  
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ISI is an institutional brokerage firm specializing in economic and political research. Mr. Laperriere works in ISI's Washington office, where he analyzes the implications of political developments for financial markets. His presentation will focus on the issues before Congress that could affect a number of industries, including rubber, as well as U.S. fiscal policy and politics.

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## Rubber Goes Green

The following are more eco-friendly accomplishments by manufacturers and suppliers in the rubber industry.

**TieTek L.L.C.** of Irving, Texas, developed and commercialized technology to produce plastic composite railroad ties that replace creosote-treated hardwood ties on both freight and passenger railroads.

TieTek's product uses rubber raw material from 1 million recycled tires and has led to the preservation of 75,000 mature hardwood trees per year, the firm said.

Other positive environmental benefits for every 300,000 ties produced include 50 million pounds HDPE recycled and 1 trillion BTU energy demand conserved.

**Gates Corp.** offers a variety of products that meet its goals to reduce carbon emissions and increase fuel efficiency as part of its Energy Solutions technology line. It also aims to prevent leaks and provide products compatible with biodegradable fluids.

The Gates Electro-Mechanical Drive start/stop technology works in hybrid cars to reduce fuel consumption and emissions.

Depending on the application, fuel savings can range from 6 to 10 percent and more than 20-percent savings in urban traffic, according to independent studies, the company said.

It said the E3 Drive System technology aims to reduce fuel consumption by at least 5 percent in passenger vehicles by allowing accessories such as air conditioning compressors and alternators to operate at idling speed, where fuel is used most efficiently.

The CabRunner Integrated Power System eliminates the need for semi-truck drivers to idle their engine while sleeping during a long-haul trip by powering cab accessories. The system can reduce idling fuel consumption by 60 percent and greatly reduce emissions, according to Gates.

The firm's Barricade low permeation fuel line hose is designed with a layer of thermoplastic material called GreenShield Barrier Technology and exceeds many environmental standards. The hose is designed to handle gasoline, diesel fuel, and additives, as well as new fuels such as biodiesel and E85 ethanol.

The Gates EnviroFluid hydraulic hose is built with special nitrile tube stock to prevent fluids from seeping through the tube and blistering the cover. The hose is compatible with biodegradable fluids, including polyester, polyglycol and vegetable oil and standard petroleum-based fluids.

The abrasion-resistant MegaTuff cover is made of special hybrid compounds. Tests indicate it can last up to 300 times longer than standard rubber-covered hydraulic hoses, Gates said, which will reduce fluid leaks, increase service life,

lower maintenance and eliminate the need for hose protectors.

The Full-Torque Nut coupling is stronger and more durable than traditional staked-nut couplings, according to Gates, because it evenly distributes stress at the nut to eliminate cracking, seat damage, fluid leaks and premature coupling failure.

**Mid-States Tool and Machine Inc.** provides Cold Pots and Cold Runners it said reduce wasted rubber by as much as 90 percent.

The firm touts a program it said will save its customers more than 10,000 pounds of rubber per day in manufacturing waste as well as reduce costs significantly, according to Mid-States. The company said the systems are available with ROIs in the 6- to 12-month range.

**Nike Inc.** has created the first performance basketball shoe made from manufacturing waste.

The Nike Trash Talk shoe uses scrap-ground foam from factory production. The outsole uses environmentally preferred rubber that reduces toxics and uses Nike Grind material from footwear, the company said.

Nike created a recycling program in 1993 called Reuse-A-Shoe, which collects worn-out athletic shoes of any brand and recycles the footwear into Nike Grind.

**Simmons Bedding Co.** is unveiling a line of bedding goods in collaboration with environmental lifestyle expert Danny Seo. The Natural Care mattresses are built using latex made from the milk sap of the rubber tree, which is a biodegradable material.

**Rubberlite Inc.** has incorporated powdered rubber that has been reclaimed from discarded tires into its line of open-celled polyurethane foams.

It said HyPUR-cal GT contains 17 percent recycled content. The benefits of using recycled rubber products in foam applications include an oil savings of more than 780 million gallons a year and a reduction of 25 percent of the scrap tires generated annually in the U.S.

**Eaton Corp.** has introduced an upgraded version of its GH134 multi-refrigerant veneer hose. The hose is a result of Eaton's GH134-Refresh project

aimed at reducing refrigerant permeation by 50 percent.

The GH134-Refresh hose features an advanced internal polyamide veneer, a synthetic rubber backing layer, a stabilized braided synthetic reinforcement and a chlorobutyl rubber cover.

**Unity Creations Ltd.** recycles whole tires and scrap rubber products into products and services with no waste factor. The other raw materials are sold or recycled again. The steel generated is sold by weight to buyers in local markets.

The firm manufactures interlocking, unitary rubberized safety surfacing, flooring and paver products used in playgrounds, rooftops, weight rooms, walkways and pools through its subsidiary Unity Surfacing Systems.

Unity Surfacing Systems said it developed and patented a resilient product made from 100-percent recycled tires that is clean and safe to use in any indoor or outdoor environment.

Offerings include a maintenance-free safety surfacing, flooring and paver

voltage lighting at Santa Fe Springs.

Excel said it also worked through the state of California to replace all urinals with waterless units, saving thousands of gallons of water per year.

**Midwest Elastomers Inc.** supplies cryogenically ground rubber in the U.S. and processes more than 30 million pounds of rubber every year.

The company custom granulates SBR, NR, EPDM, nitrile, neoprene, FKM, butyl, polyisoprene and HNBR.

MEI supplies recycled rubber for tires, industrial, plastic applications, running tracks, playgrounds, and safety surfaces and performs specialty size reduction of plastics for industrial and automotive applications.

The firm said it was the first rubber recycler to be ISO 9000-registered in 1996 and today is ISO 9001 certified.

**Black Iron Rubber Co.** said all activities in its Babbitt, Minn., facility could be considered recycling in some respect.

The firm processes rubber at various stages, compounds and molds products. It develops processes to use off-spec and wide-spec uncured compounds along with processed scrap rubber in new products.

**Monmouth Rubber & Plastics Corp.** of Long Branch, N.J., said it recycles 99 percent of the scrap material it generates.

The firm offers its recycling program to all its customers and accepts back all materials Monmouth supplies, including skids, banding wire, stretch wrap, and all cellular and solid materials.

Through its recycling program, Bondaflex—a 100-percent recycled product—was born, the firm said. The process to create Bondaflex is based on controlled particle size and particle size distribution. It offers high density at a cost effective price, Monmouth said. The company touts that for every manufactured sheet of Bondaflex, 34 pounds of carbon dioxide are not released into the atmosphere and 3.4 gallons of crude oil are not consumed.

Bondaflex is being used in high-performance footwear, federally specified concrete joint applications, industrial components, cross-linked polyethylene and eva foam.

**TRC Industries Inc.** devulcanizes butyl, EPDM, natural, SBR/BR, silicone and fluorosilicone rubbers. TRC's capacity exceeds 12 million pounds, which in turn saves that same amount from landfills each year.

The firm's devulcanization process doesn't use chemicals and has been issued an Environmental Protection Agency permit.

In recent years, the company discovered there was a sulfur dioxide emission from the devulcanized rubber during the

See Greening, page 30



Hummers aren't known for fuel economy, but this one uses Gates Corp.'s H1 Hydraulic Hybrid Drive system, which replaces a vehicle's traditional motor system with a hydraulic pump that drives a hydraulic motor for propulsion. It offers a potential fuel savings of between 50 to 70 percent, the company said.

product, which is a double tile-mat-block with an authentic, quadruple, interlocking design built directly into the product.

**Excel Polymers L.L.C.'s** custom rubber compounding facility in Santa Fe Springs, Calif., began a recycling program in 2002 it said has resulted in a 36-percent reduction of waste going to landfills.

The company said it took advantage of "green" grants to update the plant. It replaced an open top waste container with a trash compactor, and it recycles used oil, dust from the collector, scrap rubber, cardboard, metal, wooden pallets, drums and other waste.

The firm said it saves \$1,000 a month in electricity costs because it worked through a local electricity supplier to install low-

## TDF

Continued from page 26

at the site at that time, but the path to that decision was long and contentious, with continuous protests from elected officials and environmentalists across Lake Champlain in Vermont.

More TDF controversies appear all the time. On March 5, the Erie, Pa., City Council agreed to draft an ordinance calling for continuous air emissions monitoring of some new factories, including—some observers say especially—a proposed \$235 million tires-to-energy plant on the city's east side.

Even some organizations that represent the scrap tire industry fall short of endorsing TDF.

The Institute of Scrap Recycling Industries, for ex-

ample, doesn't consider TDF recycling, according to Jonathan Levy, assistant director of legislative and regulatory analysis.

"We think it would be better to shred the tires and use them as playground surfacing or mulch, or better yet turn the rubber into a powder and put it back into a new tire," Levy said.

RMA Vice President Michael Blumenthal said he doesn't necessarily disagree, but added that TDF is still a technology of great value.

"I don't think anyone has ever suggested that TDF is a form of recycling," Blumenthal said. "It's energy recovery. It is a high-value-added application for tires."

In a time of soaring energy prices, TDF has proved a cost-saving boon to industries that use it as supplemental fuel, according to Blumenthal. Furthermore, when burned correctly, it is very sound environmentally.

"TDF has not caused any of its users to exceed their

permitted emissions levels, and in many cases it's caused a reduction," he said. "In cement kilns alone, it's brought about a large decrease in nitrogen oxide emissions, and the cement industry is under an EPA order to reduce its nitrogen oxide emissions. TDF is doing the economy and the environment a lot of good."

Jerry Swensen, president of Auburndale Recycling Center in Auburndale, Wis., and incoming president of the ISRI Scrap Tire Chapter, believes TDF is really starting to come back into vogue after recent controversy.

"I guess that whether you consider TDF recycling really hinges on your interpretation of recycling," Swensen said. "If you can find a value-added application for a material, I probably would have to call that recycling. If we're talking about a scrap tire that for many years was thrown into a landfill being turned into a clean, cheap fuel, you should be able to consider that recycling."



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# Plants

Continued from page 1  
shipped in returnable, reusable containers.

Much of this comes with economic payoffs, such as not having to purchase boxes for rubber storage or paying to haul scrap rubber to a landfill. "The company that purchases the rubber that gets recycled brings in a truck to take it to the recycling plant," King said.

While still in its infancy, Park-Ohio is beginning to study exactly what it must do to be known as a "green company." That includes such efforts as replacing older molds—some in service for up to 20 years—with redesigned molds that have less flash.

And as with many of its green efforts, King said many of the changes that give an older plant a less intrusive environmental footprint will come from the workers. "You just have to be a little bit creative and keep your eyes open. Employees are the people out there doing it all the time."

## Gates: Long list of programs

Denver-based Gates Corp. has a high-level team studying all aspects of green initiatives, be it for new plants coming on stream or factories that have been operating for years, said Randy Cutler, global manager for health, safety and the environment.

For new facilities—Gates opened one recently in Virginia and is readying an assembly plant in Iowa—one area studied includes designs that maximize use of natural light to cut down on energy usage.

While Gates has for the time being ruled out solar technology as being cost prohibitive, Cutler outlined a number of areas where the hose and belt maker has found success:

- use of natural gas instead of oil where possible in heating systems, resulting in a 30-40 percent savings over conventional systems.
- use of more efficient lighting in both production and office areas, often resulting in rebates on taxes or utilities. Some lights also are tied to motion sensors to be turned out when not in use. "It's green for the environment, and less green out of our pockets," he said.
- preventive maintenance on older equipment to find and fix air leaks, which can be a big waste of energy.
- use of air conditioning only in offices and use of other, less costly ways to cool production areas, including cross-ventilation and large fans.
- in landscaping, utilizing Xeriscape, a specially designed low water-use vegetation that is common in Colorado and other areas where low water levels are a

problem.

- treatment and recycling of water to cut down on water usage and sewer costs.

Cutler said it is feasible to incorporate green practices at older facilities, particularly at the time of major renovations or by replacing furnaces with more efficient models. It also makes sense to go for continual improvement year to year, and put lean and green initiatives in place when possible.

"It may cost a little more, but it's an investment that's worth it," he said.



**Cold Jet L.L.C. dry ice blasting technology is used to clean a production mold. Cold Jet says its products are both cost-effective and environmentally friendly.**

## Sid Richardson: Top priority

Sid Richardson Carbon Co., a producer of carbon black, has made it a priority to be active on environmental issues, according to Riaz Bismilla, director of carbon operations.

"This is a core value and a priority that has been set by the owners and senior management," he said. "Sid Richardson is committed to sustainable development through environmental protection, social responsibility and economic progress."

In the area of sustainability and energy conservation, it did a waste gas-to-energy project at its Big Spring, Texas, plant. The cogeneration unit, in place since July 2006, captures thermal energy and converts it to electrical energy. Sid Richardson said the project saves about 90,000 tons of coal a year that would have had to be burned to generate a like amount of electricity.

The project also uses an air-cooled condenser instead of a traditional water-cooled unit, saving an estimated 125 million gallons of water a year.

Sid Richardson also is applying for environmental leadership programs that

will require the firm to make commitments beyond what is already required by state regulations. In addition, it plans this year to be a partner with the U.S. EPA to reduce greenhouse gases through the Climate Leaders Program.

The firm has decided purposely not to seek certification to ISO 14001, but instead will incorporate an independent system it said focuses on value-added results. "We believe being a leading steward of the environment will make our company more viable as a long-term business," Bismilla said.

Sid Richardson expects that such an environmental push will set it apart from the competition as a favored supplier, show its commitment to the North American market and help make it more profitable.

Bismilla said companies can make older plants greener, but it takes a commitment from management "that it is good for business and that it is the right thing to do." He said it's also vital to reduce energy use; implement state-of-the-art technology; change a culture from doing what is legal to doing what is right; and "be willing to spend money and make the difficult decisions to make the necessary changes."

## Cold Jet: Pushing technology

Cold Jet L.L.C. has been in business for more than 20 years selling dry ice blasting and dry ice production technology, used in the rubber industry as an environmentally friendly way to clean molds.

And while being a green technology is a selling point, Tony Lehnig, vice president for research and development, is the first to admit that's not the main criteria. "The reality is making it green is a nice benefit, but not the primary driver," he said.

Cold Jet's technology's main advantage is that it allows companies to clean molds in the normal course of production. What normally takes six hours to let a mold cool, clean it and then get it back to production temperature can be done in a fraction of that time with dry ice blasting, Lehnig said.

But the firm's systems also are friendly to the environment in that they cut down on a firm's solvent usage, among other benefits, said Chief Technology Officer Jerry Carstens.

Though the firm is building a successful track record, he said Cold Jet still barely has scratched the surface in terms of market penetration. So as green initiatives become more important, Carstens sees an opportunity to convince more rubber firms to make the switch.

"Those that use it are typically ecstatic about it," he said. "It's a good solution that will become more accepted for lowering cost and improving production, as well as environmental benefits."

# Veyance

Continued from page 1  
strengthen its position in the heavy-duty products sector, he said.

Veyance is searching for a buyer that will recognize the value of the lightweight operation, including Belt Concepts' name, employees and customers, Toppen said. He said the sale exploration process won't interfere with the unit's daily operations and customer needs.

Belt Concepts offers a lot to both an investment buyer or strategic buyer, said Ben Schlatter, treasurer and director of global corporate strategy.

"It is a healthy business with a respected name in the industry," he said. "It has solid manufacturing and product technology, innovative products, a strong management team and customer base, as well as great associates."

Goodyear purchased Belt Concepts in 1996 for an undisclosed amount, and at the time claimed the deal made it the market leader in lightweight conveyor belting, although competitors disputed that contention.

Belt Concepts is located 30 miles northeast of Raleigh, N.C., and manufactures a wide range of polyurethane and PVC interwoven, plied and monofilament belts, the majority of which are produced for companies in North America.

Schlatter said there is no timetable on when a sale needs to be made before Belt Concepts is pulled from the market. "We intend to keep the business moving along in order to protect it and its associates. We will only sell the business if we believe it is the right fit with the right buyer and the right value."

If it's not sold "we will focus on the business' strengths to grow it. Sold or not, we believe it will keep growing."

Schlatter said Veyance, which focuses heavily on hose and belts, is not exploring the sale of any of its other operations, including automotive and truck power transmission products, air springs, tensioners and molded products.

However, he said, "Veyance certainly evaluates its business portfolio from time to time."

# Greening

Continued from page 27  
steam blow-down process from the autoclaves. As a result, the firm invested \$500,000 in 2007 to install a high-pressure steam condensing system and a water treatment system to take care of contaminants and odor.

**Green Rubber**, a subsidiary of the **Petra Group**, patented the DeLink devulcanization technology, a chemical formula added to scrap rubber crumb.

It uses conventional milling processes, making it cost effective, the firm said.

The result is the company's namesake product, Green Rubber, a devulcanized rubber the firm said retains the properties of the original crumb rubber and can be devulcanized and blended with virgin rubber.

**Rubber Resources B.V.** has three plants dedicated to recycling and devulcanization.

Its original plant in Maastricht, Netherlands, still its main unit, is used to devulcanize natural and butyl rub-

ber. The firm said these grades of rubber regain their viscosity and the characteristics of the original compound.

In Lommel, Belgium, Re-Tyre N.V., a sister company of Rubber Resources, grinds truck and car tires into rubber powder granules. The granules are used in soccer fields, hockey fields, flooring, playgrounds, asphalt and other types of surfacing.

Rubber Resources' South Africa facility near Johannesburg offers a standard range of rubber crumb, rubber chips and natural rubber reclaim used in sports fields, road surfaces, tennis courts, conveyor belts, brake pads and shoe soles.

**Carbolytic Materials Co. L.L.C.** of Hudson, Ohio, has created a process that recovers carbon black, fuel oil and gas from end-of-life rubber materials by taking rubber shred and de-polymerizing it at high temperatures under vacuum.

The carbon black will be recycled into new rubber and plastic products, according to Carbolytic, and the fuels will be consumed at the plant to power the manufacturing process or be sold.

By doing so, the company said the amount of end-of-life materials sent to landfills is significantly reduced,

petroleum oil used to generate virgin carbon black is scaled back and carbon dioxide emissions are cut.

Carbolytic said the recovered carbon black alternative, ApexCMTM, has been tested successfully as a blend or full replacement of virgin carbon black for various classifications and as a plastics tinting agent.

A heat transfer method patented by **SuperCool L.L.C.** utilizes wasted refrigeration capacity at liquefied natural gas regasification terminals used in cryogenic grinding, according to the company.

This method provides reduced costs and environmental benefits, the firm said. The process can be used in the production of fine mesh crumb rubber from scrap tires, which can be used as an additive in tires, molded products, thermoplastic elastomers and many other goods.

**Custom Rubber Products Inc.'s** plant in Houston is one of only 15 in Texas being recognized by the U.S. Department of Energy for implementing projects that resulted in significant energy saving.

The 47-year-old company makes oilfield elastomer products, phenolics and thermostat plastic products for the oilfield and industrial markets.



# NR

Continued from page 1

Luckett sees another 18 months of rising NR prices. The cyclical nature of commodity pricing, as well as the fact that natural rubber is denominated in U.S. dollars, will account for the continued surge, she said.

After that year and a half of increases, prices may come down—although that depends on what's happening in the global economy, said Luckett, who was a speaker at the Clemson University annual Tire Industry Conference, held March 12-14 in Hilton Head.

The NR market is very small as commodities go, less than 2 percent the size of the market for wheat, Luckett said. But it is capable of giving rubber manufacturers big headaches, particularly at current price levels.

Luckett said NR is a rare topic at the Clemson conference, which generally concerns itself with technical and government issues. Her presence was indicative of the unwanted burden for rubber processors.

### Market impact

Rubber product makers are having to face up to the increases. Michelin, for example, expects an additional \$315 million in costs this year from price increases in NR and petroleum.

"Against this background, Michelin will pursue its pricing policy aimed at offsetting the negative impact of raw material cost increases and will continue its drive to improve competitiveness through productivity gains and streamlined structure costs," the company said.

Economies of scale available to companies like Michelin, however, aren't in the cards for manufacturers like Hecht

Rubber Corp., the Jacksonville, Fla.-based firm which custom-fabricates a wide range of molded, extruded, lathe-cut and die-cut goods.

Some 40 percent of Hecht Rubber's business involves NR, according to company CEO Larry Hecht.

"It's a very bad situation," Hecht said. "It's the worst I've ever seen in the 40 years I've been in the business. Prices aren't even going up quarterly any more, but month to month. In certain applications, certain polymers can be switched, but you still have the fuel costs involved with synthetic rubber. It's a Catch-22."

Making the situation worse are fuel surcharges, which range up to 27 percent above the actual cost of fuel, according to Hecht.

"There's only so much of this price increase you can pass on to a customer," he said. "You have to eat a good bit of it yourself."

In her Clemson speech, Luckett explained the vicissitudes of the NR market and how her audience could mitigate the effects of spiraling prices.

### NR price factors

Many people, she said, speak of "price volatility" as the culprit. Yet, when measured as the five-day average of market price as a percentage of the total, price volatility is about the same as it's been the past 12 years.

"Price volatility alone is not the issue," Luckett said. There are many factors that influence NR prices, she said, including supply and demand fundamentals, exchange rates for the U.S. dollar, overall global economic conditions, consumer buying patterns, Asian futures speculation and the general health of Hevea trees.

That last item is a major concern right now, according to Luckett. Newly plant-

ed Hevea trees take seven years to mature and produce latex, and there is reason for alarm regarding existing trees.

"There are signs in Indonesia and India that tappers are doing double tapping or 'slaughter tapping,'" she said. "You're only supposed to tap a Hevea tree every three days, but some tappers are doing it every day, which means that the trees wear out at 12 years instead of 25."

Rubber planters also have been going through their "wintering" season, which means that the Hevea trees shed their leaves and curtail sharply their latex production. Some part of the rubber-growing regions—which are always found within 10 degrees latitude of the equator—undergoes wintering between December and June every year, she said. In some countries, such as Guatemala, the rubber plantations shut down entirely during wintering season.

Until 2002, NR was severely undervalued, Luckett said. It underwent a natural correction in prices in 2002-2005, but since then has undergone unprecedented increases.

"It's mind-boggling to see natural rubber prices fluctuate even in one day," she said. "A few years ago, the price might change one-quarter cent in a month. Prices now can change three or four cents a night."

NR supply and demand also have pretty much reached equilibrium, meaning that spot buying is a lot more difficult than it used to be, according to Luckett.

"Importers are just not carrying inventories," she said. "They used to have 2,000 or 3,000 tons on the docks ready for sale, but they're no longer doing that. One of our customers wants 1,000 tons ex-dock in March, and we can't come up with it."

Even in a market in which tire producers buy 78 percent of the world's NR directly, the rubber trade can act as a

partner to help rubber manufacturers keep their costs down.

The key point, she said, is to remain flexible as to country of origin, producing factory, alternative grades, contracting forward and contract pricing.

### Big producers

Indonesia, the world's second-largest NR producer, has the strongest growth, according to Luckett. But although the catastrophic tsunami of December 2004 caused remarkably little damage to Indonesia's rubber plantings, it did disrupt shipping from Indonesian ports.

Malaysia, though still the third-largest NR producer, has seen its production shrink notably in the past few years, she said. Thailand, the world's largest producer, has much of its production tied up in direct contracts.

To get the best prices, manufacturers shouldn't always insist that their rubber come only from one country, according to Luckett.

"The supremacy of Thailand, Indonesia and Malaysia is safe for now," she said. "But there is a very fast-growing industry in Vietnam, and also in Cambodia if it can ever get its processing and testing facilities going."

Guatemala, though still a small producer, has grown from 40,000 to 75,000 metric tons in the past few years, and the rubber is top quality, according to Luckett. As for West Africa, "there's not a lot of replanting there, but there are a lot of new processing facilities," she said.

In the current market, buying forward as much as 12 months makes sense, Luckett said. She also recommended looking at CV and L grades as well as TSR and RSS, though some companies are prejudiced against CV and L grades because they come from latex.

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