

KEYSTONE REVIEW

JULY

AUGUST

SEPTEMBER

2007

Intertape Adds Speed, Output and Technology with Six-Up Stretch Film Line

Packaging industry leader Intertape Polymer Group Inc. is achieving even faster line speeds at its facility in Danville, Virginia, with a new Black Clawson Converting Machinery stretch film line from Davis-Standard, LLC. The new line, installed last fall, is consistently running between 2,000 and 2,200 feet per minute (610 and 670 meters per minute), with



Intertape's new six-up stretch film line is used for producing standard and differential cling films at high speeds.

outputs netting up to 4,700 pounds per hour (2,136 kg per hour). Together with Intertape, Davis-Standard designed the six-up 120-inch (3 meter) line to run 53 to 350 gauge (13.5 to 89 micron) standard and differential cling

films. In addition to high speeds and output, the line was value-engineered by combining standard and proprietary custom equipment using modular pre-wired machine concepts. This provided significant reductions in field

Intertape continued on page 5

New Euro Blue II Extruders Built on Quality and Competitive Pricing

Davis-Standard, LLC is pleased to announce the introduction of its new high performance, cost competitive Euro Blue II extruder model. This extruder, available from D-S Brookes Limited, the company's Extrusion Systems Europe subsidiary based in the United Kingdom, is an upgraded version of the original Euro Blue model introduced in 2004. It offers even higher specifications and processing rates at a reasonable cost with fast delivery. In stock machines can be delivered in as quickly as one week based on location. D-S Brookes sold its first Euro Blue II to a customer in Barton-Le-Clay, UK, within a matter of days after the extruder's introduction.

An example of this extruder model in its standard form includes a double reduction gearbox with helical carburized gears, an integral high capacity thrust bearing, cast iron feed section, four-zone DS1000



The cost-effective Euro Blue II supports higher specifications and process rates.

bi-metallic barrel assembly with heated clamp arrangement, DSBM-T high performance barrier mixing screw, AC motor and drives, integrated control cabinet with four barrel and three die zones, digital speed and ammeters. It also comes with a two-year warranty and support from D-S Brookes' UK-based technical and aftermarket services.

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24/7 Support

Extrusion Systems: +1 800-480-8105
Converting Systems: +1 800-338-3660
Europe: +49 173-710-6407

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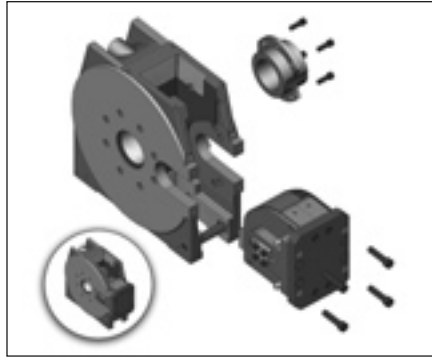
D-S Davis-Standard®

Newly Patented Feed Roll Assembly Reduces Leakage/Scrap

A recently patented leakage-free feed roll assembly from Davis-Standard, LLC helps minimize the leakage and scrap created during elastomeric extrusion processes. Known as the ELF (Elastomer Leakage Free) system, the invention was patented earlier this year by Davis-Standard engineers John Radovich and Jeffrey Bryan. The ELF provides effective feedback of overflow material and can be retrofitted to existing extruders to provide cost savings.

According to Radovich, "This development was market driven. Customers did not want the cost of lost product or scrap from feed roll leakage. The maintenance associated with feed roll bearing failures and the clean-up of rubber leakage were also issues. Our patented roll housing and roll end seal design address those problems."

The new feed roll assembly features a shell, feed roll seal plates and feed roll end plates to curtail leakage. The material is redirected back to the feed section by means of a varying bore diameter of the shell and grooves contained in both the feed roll seal plates and



The newly patented feed roll assembly minimizes leakage and scrap during elastomeric extrusion processes.

the feed roll end plates. All major components are coated with a solid, dry lubricant coating to reduce friction. The result is a cleaner and more efficient elastomeric extrusion process that helps processors save on material and maintenance costs.

Radovich and Bryan worked collaboratively to make the new assembly effective, yet practical. They consulted component suppliers and ran prototype tests until they were able to consistently prove mechanics and manufacturability. There are currently three units in the field and a fourth due to ship in the near future. Feedback from customers has been positive.

For more information about the newly patented feed roll assembly, customers can contact Joe Wnuk, Business Area Manager of Davis-Standard's Elastomer Group, at jwnuk@davis-standard.com.

Davis-Standard IBC Blow Molding Machines Excel in Price and Quality

The extensive blow molding product line from Davis-Standard, LLC offers customers a cost-competitive alternative for Industrial Bulk Container (IBC) manufacturing. Davis-Standard has seen increased demand for high-quality machinery to support the growing market for IBCs. To address this demand, Davis-Standard has engineered a line of IBC blow molding equipment based on nearly 30 years of proven experience and technology.

Systems can be supplied with molds for

800L, 1000L and 1200L units. Options include statically deformable dies for optimizing wall distribution and custom blow stands for various designs. Machines can be supplied in both single and dual extruder configurations for high output applications. Davis-Standard also offers complete start-up, processing assistance and operator training.

Equipment is both cost-effective and reliable to provide customers with one of the best values in the industry. For more information, contact Frank Kennedy at kennedyf@bc-egan.com.

and 90mm in 24:1 configurations. Should demand dictate, D-S Brookes will look to expand this range of extruder sizes.

For more information about the Euro Blue II, contact Mark Woodgate at mwoodgate@dsbrookes.com or at +44 (0) 121 522 0030.

Euro Blue II *continued from page 1*

Pricing for a standard Euro Blue II extruder is £23,000 GBP.

This machine, like its predecessor, is engineered for custom profile and tubing applications as well as basic wire and cable processes. The extruder range currently includes sizes of 50mm, 60mm, 75mm,

Safety Bulletin #3

Solution Coater Safety

The safety bulletin being highlighted in this issue of the *Keystone Review* is about safe operating procedures for solution coaters. This includes general guidelines for safe operation and information on how to avoid potential hazards. Topics include the importance of proper lighting, safe maintenance procedures, and a listing of unsafe practices that should be avoided. Following are a few examples.

- **Nip barrier guards must be installed when practical.** Operators must never touch the coater rolls, attempt to remove anything from the rolls, or clean the rolls while in operation.
- **The drive must be turned off** and all nips open before threading the tail or leader through the coater.
- **Keep clear of coater in-running nips.** Never touch rotating coater rolls while in operation.
- **Stop the drive and open all nips before cleaning.** It is recommended that one roll be cleaned at a time. Engage only the drive for the roll to be cleaned and use a soft pad to clean it as it is rotated. Never use loose rags to clean rolls.
- **Some coatings can be explosive!** Coatings containing solvents other than water must be handled according to the manufacturer's recommendations. Also, equipment utilized within the NFPA designated danger zone must meet explosion proof standards.
- **All drives and controls must be locked out and de-energized** before performing any work on the equipment by personnel.
- **Unsafe practices** such as unguarded nip points, unguarded wrap points, static electricity build-up, improper threading, inadequate lighting, and lack of safety signs must be avoided.

All this and more is available by visiting: www.bc-egan.com/images/PDFs/safety_solutioncoater.pdf

Consultant's Corner

Laboratories at Your Service

Davis-Standard's R&D facilities in Fulton, New York, and Pawcatuck, Connecticut, are available to customers for trial runs, training, and product research and development.

Pawcatuck, Conn.

The R&D facility at Davis-Standard's headquarters in Pawcatuck specializes in the area of feedscrew design and development for all product lines. A committed team of knowledgeable and respected process engineers with more than 100 years of cumulative industry experience head up all laboratory operations and trials. The 25,000 square-foot (2,320 square-meter) lab is equipped with highly instrumented extruders for both smooth bore and groove feed extrusion for single stage and two stage vented applications.

Multiple screw designs are available to support a variety of polymer processing applications including blown and cast film, extrusion coating, fiber, profile, sheet and elastomer extrusion. This facility is also used for new product development, product testing, and extrusion systems trials for systems up to and over 140 feet (43 meters) long. The following extruder sizes are available for design development:

Smooth Bore	L/D
2 1/2 inch (64mm)	24 and 30
4 1/2 inch (114mm)	24, 30, 34

Groove-Feed	L/D
3 1/2 inch (90mm)	24, 30, 34

Installation of a state-of-the-art co-extrusion medical tubing extrusion line is planned for August 2007. The line will feature Davis-Standard HPE high temperature 3/4-inch (19mm) and 1-inch (25mm) extruders, and will be controlled with an EPIC supervisory control system. The line will have the capability to process high temperature polymers, including Fluoro-polymers. The products targeted for development include microbore, multi-lumen and catheter tubing. The line will also be configured with a payoff and take-up for producing fine wire products. The HPE extruders will be available in a stand-alone configuration for screw design development testing.

The facility is available to all Davis-Standard customers from 8:00 a.m. to 4:30 p.m. To schedule an appointment or to obtain more information, customers need to contact Bill Lee, Lab Manager, at (860) 599-6722 or by e-mail at blee@davis-standard.com.

Fulton, NY

The laboratory facilities in Fulton include a production coating line, pilot coating line, and co-extrusion pilot line to offer one of the world's most well-equipped R&D labs for converting applications. Customers can test formulations, determine methodologies, fine-tune techniques, develop new products, evaluate equipment and improve upon



R&D Facility - Pawcatuck, Conn.



Extrusion Coating Lab - Fulton, NY

existing technologies. These facilities are supported by a team of experienced and skilled process engineers and technicians who work with customers before, during, and after the trial and testing process.

Production Coating Facility

This line has an operating speed range of 30 to 3,000 feet per minute (10 to 900 meters per minute) with a web width of 18 to 36 inches (460 to 900mm), and 18 inches (460mm) for tandem operation. The turret unwind and winder are capable of roll diameters up to 36 inches (900mm) and in 3-inch (75mm) or 6-inch (150mm) cores. Examples of line components include a splicer,

corona treater, pull rolls, universal coater, dryer, ultraviolet curing station, cooling pull roll and web guide, multifunctional cooling section with laminating nip and AC vector drives. Several configurations are available including variations of offset gravure, reverse gravure, direct gravure, slot die, 2-roll smooth, 3-roll smooth, flex bar, and others. Customers utilize this lab for new product development, exploring new markets, equipment trials and development of more efficient manufacturing methods.

Pilot Coating Facility

This lab offers over 50 configurations to customize coating techniques including air knife, doctor blade, slot die, curtain die, contact die, wet on wet, reverse roll variations, hot melt and others. The line is capable of speeds from 30 to 3,000 feet per minute (10 to 900 meters per minute) with web widths of 18 inches (460mm). Examples of equipment include single position unwind, corona treater, pull rolls, universal coater, air floatation dryer, multifunctional cooling section with laminating nip, auxiliary single position unwind and Integrator™ II process control system. Other testing equipment such as a stereoscopic type microscope, various viscometers, a solids test and moisture analyzer are also available.

Co-Extrusion Pilot Facility

This laboratory is designed for complex R&D processes involving cast polypropylene films, stretch wrap, packaging films, flexible packaging and board coating, among others. The line has an operating speed range of 15 to 600 feet per minute (5 to 182 meters per minute) with film gauge capabilities from 0.5 mil to 20 mil. The maximum extrusion throughput is 1,200 pounds (544 kg) per hour. Extruders include two 3 1/2-inch (90mm) machines and one 2-inch (50mm) machine with a co-extrusion feedblock that supports structures up to five-layers with up to three distinct polymers. Other notable components include an EDI autoflex cast film contour die with vacuum box, Cloeren 48-inch and 60-inch EBR extrusion coating dies, multiple nip rolls, a casting section/extrusion coater/laminator, an Integrator™ process control system, NDC gauge, robotic winder/roll changes, and auxiliary and primary unwinds.

All three labs operate on a first come, first serve basis. Hours for trials are 8:00 a.m. to 4:30 p.m. with overtime available if needed. Customers can call or e-mail Jeffery Lawler, lab manager, at (315) 593-0253 or lawlerjj@bc-egan.com to inquire about a trial or for more information.

Biax-Fiberfilm Purchases Davis-Standard Fibermaster® II for Large Line



Davis-Standard's Fibermaster® II is designed to give users more flexibility when using compounds with recycled content.

Brown. "We are addressing the needs of the industry by implementing the latest technology in our equipment. In this way, Davis-Standard will help us accomplish future goals by supplying the best extruders for our product line."

Among the company's future goals is the marketing of a new ultra strength meltblown material recently unveiled at IDEA07 that Brown

Biax-Fiberfilm, a leader in meltblown and web/film stretching technologies, purchased a 165mm Fibermaster® II from Davis-Standard, LLC for a large-scale meltblown line supplied to a customer earlier this year. This is the largest and most advanced Fibermaster that Biax-Fiberfilm has purchased from Davis-Standard, the company's preferred extruder vendor since 2002. This specific Fibermaster model revolves around screw design to give end users more flexibility when using compounds with a high recycled content. Davis-Standard has continued to fine-tune its screw designs to improve performance and efficiency for processing these types of compounds.

"We've purchased Davis-Standard extruders ranging from pilot equipment to the recent 165mm extruder and have been very pleased," said Doug Brown, President of Biax-Fiberfilm. "Customers like the quality workmanship and technical staff at Davis-Standard, which fits with our commitment to providing customers with value-added services. The quality of

Davis-Standard's equipment really enhances our high quality product line."

Biax-Fiberfilm's largest product line is meltblown machinery for fine to course fibers. The company, based in Greenville, Wisconsin, serves customers in the oil sorbents, filtration, hygiene and insulation markets with about 50 percent of the business in the U.S. and the other 50 percent throughout Asia and Europe. Depending on application, Biax-Fiberfilm can build systems capable of processing fibers ranging from submicron to 30 microns. Currently, the company is in the process of developing products with biodegradable microfibers and submicron fibers. Most meltblown products are synthetic, so Biax-Fiberfilm is working with customers to spin cellulose fibers which would be 100 percent biodegradable.

"The market for nonwovens is diverse and growing. Specifically, we anticipate a lot of growth in the area of fine fibers," explained

anticipates will "turn the market upside down." The production of this new material will involve only one meltblown step rather than three, spunbond, meltblown, spunbond (SMS). Properties of the new material such as tensile strength, hydro-head, and filtration efficiencies are equivalent to that of SMS products, but with reduced costs. Equipment and production costs will be lower due to the need for only one machine rather than three, and processors will be able to use light basis weight materials to achieve the same performance.

For more information about Biax-Fiberfilm visit, www.biax-fiberfilm.com. For more information about Davis-Standard's equipment for the meltblown and nonwovens industries, contact John Plante at jplante@davis-standard.com.

Personnel News

Converting Systems

The Converting Systems Group recently promoted Steve Cole to Vice President, Manufacturing and Purchasing. Along with consistent and sustained improvements in his departments during his seven years with the company, Cole and his teams have successfully integrated the manufacturing and purchasing functions of Davis-Standard's Fulton and Somerville locations.

Also recently promoted is Bill Stevenson to Vice President, Customer Support. A 29-year veteran of the company, Stevenson and his field service team have successfully incorporated the Fulton and Somerville locations. His spare parts team is currently making excellent progress with an integrated Spare Parts group.



Steve Cole



Bill Stevenson



Larry Bagley



Brian Caulfield

Extrusion Systems

The Extrusion Systems Group recently announced that Larry Bagley has returned to Davis-Standard in the position of Field Sales Engineer for the Sheet/Foam/Reclaim/Single Screw Compounding product groups. Bagley will work from his home office in Monroe, North Carolina. His sales territory will cover the Southeastern United States, including Tennessee, North Carolina, South Carolina, Mississippi, Alabama, Georgia and Florida.

Brian Caulfield has also returned to Davis-Standard in the position of Technical Sales Engineer for the Sheet/Foam/Reclaim/Single Screw Compounding product groups. He will be responsible for customer service activities, including selling and technical support. Caulfield had spent the last several years as Inside Regional Sales Manager for American Kuhne.

Davis-Standard Introduces Large Gusseting Unit for Ag Films

To support the growing wide industrial and agricultural film markets, Davis-Standard, LLC has developed a new gusseting unit for blown film bubbles up to 60 feet (18 meters) in circumference. The unit simplifies installation and minimizes overall tower width by reducing the space required for the support and retraction mechanism. The unit's advantages are seen in widths from 100-inch to 220-inch (5,588mm) roll face upper nip assembly. The 60-foot (18 meter) unit shown is also engineered with a modular design consisting of seven sections that conveniently fit into shipping containers for product protection and reduced shipping costs.

"We designed this unit with size requirements,

installation time and shipping economics in mind," said Rick Keller, Vice President of Sales for Davis-Standard's Converting Systems Group. "It's a good addition to our large-scale blown film line for the agricultural films market, including 80-inch (2,032mm) multi-layer dies and 8-inch (200mm) extruders."

Unique to the gusset is an articulated adjustment mechanism that is mounted directly on the upper nip frame. This design replaces traditional separate steel supports beyond the tower structure, eliminating excess building width. Operationally, the upper nip mounted arm swings under the nip unit, which is used for motorized adjustment of the gusset's top position. This gives customers a processing range from full depth gusseting to complete retraction without requiring additional plant space or bulky adjustment equipment. The tetrahedral-shaped gusset is fabricated from multiple tubular steel skeleton sections, covered in a special hardwood with careful

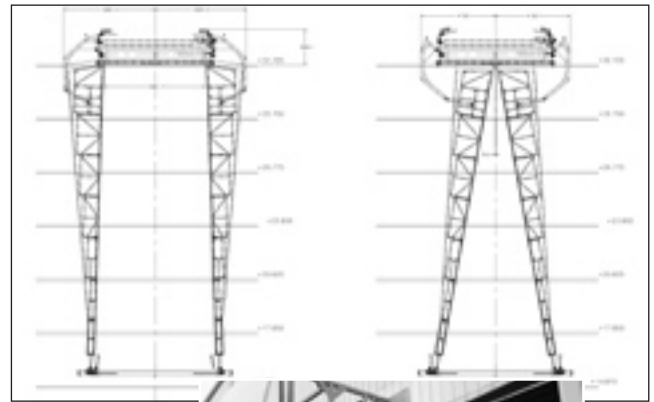


Diagram of gusseting unit.



Modular gusset sections prepared for shipment.

attention to the face/side transition edges and the top of the blade.

For more information, contact Rick Keller at kellerr@bc-egan.com.

Intertape *continued from page 1*

installation and start-up time and reduced costs related to wiring, piping and site work.

"We're using the new line to produce 68 and 78 gauge film (17 and 20 micron) at an average minimum winding speed of 2,000 feet per minute on respective film grades on a continual basis, maxing out near 2,200 feet per minute frequently," said David Bennett, Intertape's Operations Manager. "The only time we stop is for routine die lip cleaning. The line has performed exceptionally well and the modular concept worked well for us from the perspective of overall cost and ease of installation."

The 120-inch (3,048mm) net finished stretch film line is capable of processing multiple co-extruded sub skin layers. This is made possible via five high-output extruders specifically sized to process Intertape's co-extruded film structures. The screws were custom designed to process Intertape's *Genesys* and *Stretch Flex 5LI* proprietary formulations, which offer a higher degree of differential cling and film properties while allowing processing stability at elevated line speeds.

In addition, the line includes a unique

vacuum box, an oversized chill roll, and optimized processing techniques for stable



The design of Intertape's stretch film line was a cooperative effort between Intertape and Davis-Standard, LLC.

edge pinning without edge encapsulation. Edge and bleed trims are continuously reclaimed and directly fed back into the core extruders, eliminating the need for re-pelletizing or densification. For added efficiency, the line features an automatic roll and core handling system and "BMW II" winder with a center core shaft support for high speed stability and in-line slitting. The entire system and process is linked together

with the Integrator™ Pro control system. The entire control system is modem-accessed for expedited service and process assistance.

Intertape's Production Manager Bob Wise added, "This line produces minimal scrap. The average scrap is around 0.4 percent, which is impressive considering the line speeds. On a restart after a die lip clean, we are back to speed and packing all six rolls in two turn ups of the winder."

Intertape, based in Montreal, Quebec, and Sarasota/Bradenton, Florida, employs approximately 2,600 employees with operations in 15 locations. The company develops and manufactures specialized polyolefin plastic and paper packaging products and complementary packaging systems. This includes product lines for industrial distribution, pressure-sensitive tape, shrink film and stretch wrap, as well as woven and flexible intermediate bulk containers. Intertape's performance products, including tapes and cloths, are designed for demanding aerospace, automotive and industrial applications and sold to a broad range of industrial/specialty distributors, retail stores and large end-users in diverse industries. For more information, visit www.intertapepolymer.com.

Alpha Plastics Appreciates Timeliness of HPE and Super Blue® Extruders

Custom profile extruder Alpha Plastics, Inc. of St. Louis, Michigan, got a new project off the ground in good time due to a speedy extruder delivery by Davis-Standard, LLC. Alpha Plastics, which became a Davis-Standard customer last summer at NPE with the purchase of an HPE 125A (adjustable) extruder, recently added two more HPE extruders and a Super Blue® extruder for a coextrusion project involving rigid and flexible PVC. The company placed the order the second week of February and by the first week in March, the extruders were installed and operational.

"Davis-Standard has a great reputation for quality extruders, and the HPE and Super Blue extruders are no exception," said Dan Buschle, Vice President of Sales and Engineering for Alpha Plastics. "Turnaround time was critical and since these are stock machines, it worked out well. The machines are running great. We get rates up to 20 feet (6 meters) per minute."

The versatility of the HPE and Super Blue models was also important for Alpha Plastics. The company processes PVC, HIPS, ABS, ASA, HDPE, Acrylic, Polypropylene, Polycarbonate

and Butyrate for a range of profile products including appliance parts, POP display parts, porta potty parts and tubes. Despite Alpha Plastics' relatively small size as a custom facility, serving customers primarily in the U.S., the company has seen strong growth due to a commitment to quality and willingness to embrace a modern manufacturing template.

"We are modest in size, but we continually push the envelope with service and technology," added Buschle. "The addition of the Davis-Standard extruders is an example of that. The quick turnaround and performance of the new machines has helped us continue to operate near capacity while expanding our product line."



Dan Buschle stands with an HPE extruder and Super Blue® extruder on the Alpha Plastics' plant floor.

The HPE and Super Blue extruder models have been well received by the industry due to competitive pricing, quality and availability. The HPE is available in an adjustable or horizontal configuration, utilizes a direct drive motor and is built on a smaller footprint. Sizes range from 3/4 inch (19mm) to 1 3/4 inch (44mm), making this extruder ideal for coextrusion and laboratory

applications. The Super Blue is available in sizes from 2 inches (50mm) to 4 1/2 inches (114mm). This machine is equipped for a range of extrusion applications including pipe and profile, sheet, fiber, film and basic wire and cable processes. A low noise, high-torque double-reduction gearbox, cast aluminum finned heaters, brushless AC drive and motor, and high capacity air cooling system are just a few advantages of the Super Blue.

For more information about Alpha Plastics, visit www.alphaplastics.com. For more information about Davis-Standard's HPE or Super Blue extruders, contact Wendell Whipple at wwhipple@davis-standard.com.

Inventory for Sale on Website

Davis-Standard's Extrusion Systems Group periodically offers surplus inventory for sale at significantly reduced rates. To better advertise this service to our customers, we are featuring an inventory listing in the *Keystone Review*. We have also created a "Surplus Inventory" link on the homepage of our website, www.davis-standard.com, listed under *Products* and *Customer Support*. The product listings will be regularly updated.

Currently, we have surplus parts for **D-Tex Twin Screw Extruders**. These parts include:

- DTEX113 Flender gearcase**
- DTEX32 Various screw shafts, screw elements, and flender gearcase**
- DTEX47 Flender gearcase**
- DTEX58 Various parts including screw elements**
- DTEX69 Various parts including screw elements, screens, vent insert**
- DTEX82.5 Flender gearbox and strand die**

For more information, please contact us at surplus@davis-standard.com. Additional surplus inventory can be seen at the Davis-Standard website at www.davis-standard.com, listed under *Products* and *Customer Support*.

D-S Davis-Standard®

1 Extrusion Drive
Pawcatuck, CT 06379 U.S.A.
www.davis-standard.com
email: info@davis-standard.com

Telephone: +1 860-599-1010
Fax: +1 860-599-6258

24/7 Support

Extrusion Systems:
+1 800-480-8105

Converting Systems:
+1 800-338-3660

Europe:
+49 173-710-6407

To update your Keystone subscription information with new addresses, contact names, e-mails, etc., please contact Wendy Smith at wsmith@davis-standard.com.

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Upcoming Tradeshows

Davis-Standard, LLC will be exhibiting at the following tradeshows during July, August and September. We will also be hosting a seminar at our Pawcatuck, Connecticut, facility.

Thermofforming Conference
September 16-19, 2007
Cincinnati, Ohio
Booth 223

Rubber Expo
October 16-18, 2007
Pittsburgh, PA
Booth 520

IWCS Conference
November 11-13, 2007
Orlando, FL
Booth 135

The Basics of Plastics Extrusion
October 2-3, 2007
Pawcatuck, Connecticut

K 2007
October 24-31, 2007
Düsseldorf, Germany
16A43

*We look forward
to seeing you.*