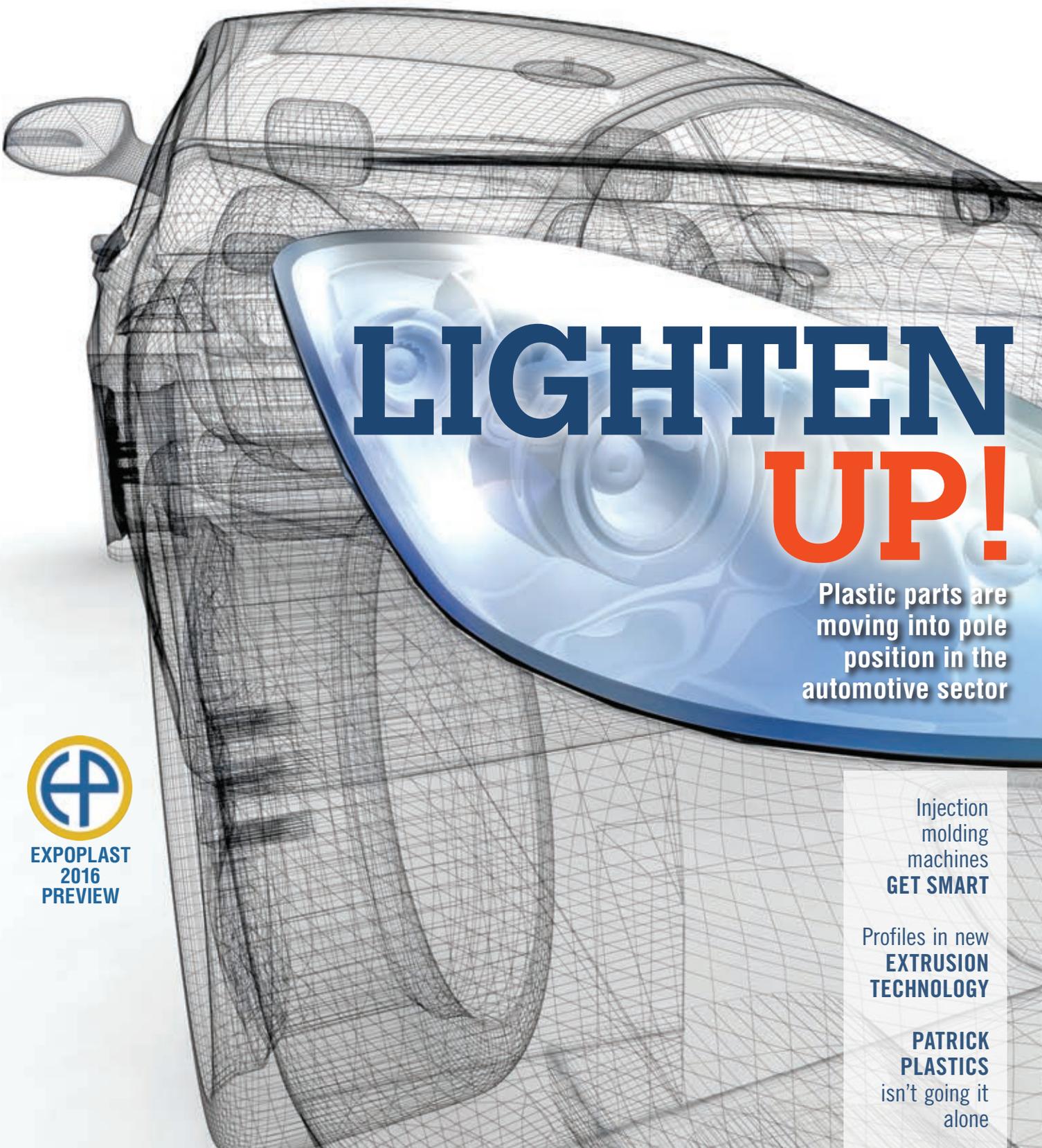


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# Canadian Plastics

NOVEMBER 2016



## LIGHTEN UP!

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## FROM THE ARCHIVES

The July 1993 issue of *Canadian Plastics* reported on a new sector strategy initiative being undertaken through the cooperative efforts of the Ontario provincial government's Office of Plastics and Chemicals — yup, they actually had something like that back then — and a 15-member advisory committee made up from members of the plastics industry and labour unions. “Priority topics include establishing a Plastics Exports Institute and making it easier for plastics processors to achieve ISO 9000 registration,” our report said. “These projects fall within the mandate of the Ontario government's Sector Partnership Fund, a \$150 million fund which supports projects that strengthen the competitiveness of key industry sectors.”

Number of the month:  
**230,000\***

\* The number of visitors who attended the K 2016 trade show in Düsseldorf, Germany in October. (See pg. 6)

Cover Photo: Getty Images/Thinkstock



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Adapting injection molding to the concept of Industry 4.0 has more momentum these days than the backlash against President-elect Trump. And it's all about having interconnected, integrated control. Here's a look at some of the latest machine control options that will allow you to go boldly into the new frontier of the “Smart Factory.”

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This Markham, Ont.-based custom injection molder draws strength from belonging to a global electronic manufacturing services company. But technical proficiency and a diverse product portfolio are the real sources of its success.

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# Brexit is good for us

Since we tend to lack any serious drama in our collective national life, millions of Canadians have been getting their vicarious kicks lately by following the duelling news juggernauts of the Brexit vote in Britain and the U.S. presidential election. And no sooner is the latter finally behind us than the former is back in the spotlight, thanks to a recent decision by the United Kingdom High Court that the British government must submit its activation of the Lisbon Treaty's Article 50 — the jump-off point for negotiations on British withdrawal from the European Union — to a vote of Parliament before actually withdrawing.

As I write this in mid-November, the British government is appealing against the High Court's decision, arguing that a parliamentary vote isn't necessary as it already has powers to decide when negotiations with the EU should start. The country's Supreme Court is expected to hear the appeal early next month.

I hope the government wins its appeal, and that Brexit goes ahead, for two reasons. First, in a democracy, the people are always right, and the Leave side won the referendum fair and square — which is why the central dispute surrounding the High Court's decision isn't really about Brexit at all, but rather whether the people or the political elites rule. By appealing, the government is acknowledging the supremacy of the people. Which is fine by me.

Reason number two is less high-flown, and it's also where our plastics industry — and every other Canadian manufacturer — comes in. Canada has long wanted free trade with the UK, a fellow G7 country that became the world's fifth-largest economy in 2014 after overtaking France — but we haven't been able to get it. Until Brexit, Canada was shut off from this economic powerhouse, and our only access route

to profitable British trade involved navigating the labyrinth EU bureaucracy headquartered in Brussels, which controls trade access to every EU country. And as Canadian economist and policy analyst Lawrence Solomon noted in a recent policy paper, "a frustrated Canada knows only too well from almost a decade of interminable, ongoing jockeying in aid of sealing a Canada-EU trade deal that the EU is the world's largest closed shop. No one gets to trade with the EU on preferential terms without either joining the union or trading away national sovereignty for the privilege."

But that was then. Since Brexit, Britain has become the world's most eligible free trade partner, and also its most attainable. According to the UK's international trade secretary, Liam Fox, the U.S., Canada, Japan, India, and China are all lining up to strike trade deals with Britain. "These and other nations are saying 'we'd love to do a trade deal with the world's fifth-biggest economy without having to deal with the other 27 members of the EU,'" Fox told Britain's *Sunday Times* in August. Which might explain why the International Monetary Fund — which was against Brexit at the time of the vote — now says post-Brexit Britain will be the fastest growing G7 economy this year.

Once Britain strikes free trade deals with Canada, the U.S., and several others, it will have gained access to a much larger market than it had in the EU. From the Canadian and American perspectives, meanwhile, the opening up of free trade with Britain will create a trading bloc with a combined GDP far exceeding that of the NAFTA partnership.

By removing tariff walls that have been in place around the UK since 1973, Brexit has the potential to be a defining event in the annals of free trade. So here's hoping the High Court fails in its attempt to — as the British would say — throw a spanner in the works.

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Canadian Plastics magazine reports on and interprets developments in plastics markets and technologies worldwide for plastics processors, moldmakers and end-users based in Canada.

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# Recycling chewing gum into TPEs. Stop laughing



Photo Credit: Teknor Apex Company

There are many joys of summer, but this isn't one of them: strolling down a sidewalk and stepping on a semi-molten splotch of discarded gum that instantly melds itself to the sole of one of your new high-end sandals.

It's something that happens to most of us at some point, given the large waste stream of the 500,000-ton-per-year chewing gum industry; and it's something that UK-based Gumdrop Ltd. wants to eradicate. The seven-year-old company is the first in the world to recycle chewing gum into a range of new TPE polymers — called Gum-Tec — that can be used in the rubber and plastics industry.

In its early days, the firm created a pilot program in London, England for reclaiming pre and post-consumer gum for use in material — passersby simply dumped any unwanted chewing gum into one of the company's many bright pink receptacles that had been installed across the city. Once full, they were mailed to Gumdrop Ltd.'s headquarters where the gum was recycled to produce more receptacles.

With the recovery program up and running smoothly, Gumdrop Ltd. has now partnered with compounder Teknor Apex Company to move beyond making receptacles by developing and producing compounds that can be used in commercial-scale production of consumer goods. “We assembled a multi-disciplinary team that addressed basic considerations such as feeding the gum into our equipment, formulating compound recipes using this unique raw mate-

rial, determining optimal compounding process parameters, and other issues posed by such an unusual feedstock,” said Stef Hordijk, Teknor Apex's senior market manager.

The chewing gum waste comprises up to 30 per cent of the Gum-Tec compounds. “Like standard TPEs, the Gum-Tec compounds exhibit a low compression set, can be formulated for either glossy or matte finishes, readily accept colours, and are recyclable,” Hordijk said.

Among the first commercial applications for Gum-Tec compounds was for Wellington boots; other uses include caster wheels, automotive bumpers and floor mats, window gaskets, wristwatch straps, toothbrush grips, and extruded pencils.

And the latest application is almost too perfect: shoe soles. So instead of discarded gum winding up on the bottom of your shoe, in other words, it might just *be* the bottom of your shoe — proof that the Universe does, in fact, have a decent sense of humour.

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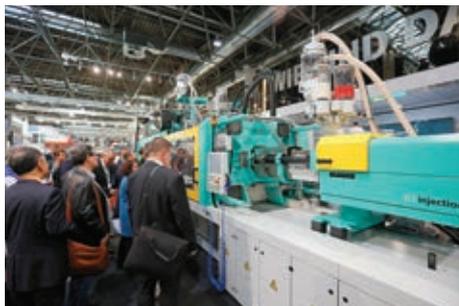
## K 2016 drew 230,000 visitors

The K 2016 trade show held in Düsseldorf, Germany in October drew 230,000 visitors from over 160 countries, an increase of 12,000 visitors — or approximately 5.5 per cent — from the previous edition of the show in 2013.

According to Werner Dornscheidt, president and CEO of show owner Messe Düsseldorf, some two-thirds of the attendees were from top or middle management, and almost 60 per cent described themselves as having final decision making authority or decisive involvement in their companies' investment decisions.

The world's largest plastics trade event, K also featured 3,285 exhibitors in 2016, up from the 3,220 exhibitors in 2013. Machinery and plant manufacturing occupied the largest exhibit area at K 2016, with over 1,900 exhibitors.

Some 70 per cent of attendees came from abroad, Dornscheidt continued, and more than 40 per cent were from overseas — including from as far away as Bangladesh, Costa Rica, Ethiopia, the Ivory Coast, Jamaica, Oman, Madagascar, Mauritius, Surinam, and Togo. "As expected, attendees from Asia accounted for the largest group among foreign guests, which increased



Scenes from K 2016.

Photo Credits: All photos courtesy of Messe Düsseldorf

again: nearly 30,000 came from South, East, and Central Asia," Dornscheidt said. "Visitors from India again made up the largest contingent, but the number of attendees from China, South Korea, and Iran also rose significantly."

Approximately six per cent of the foreign visitors were from the U.S. and Canada; the U.S. was also well represented on the exhibitor side, with 119 American-based exhibitors.

With reference to visitors from neighbouring European countries, Italy dominated with over 10,000 visitors, followed by The Netherlands (9,500), France (6,700), Belgium (6,300), and Spain and Poland (5,000 each). "There was also noticeably stronger participation from Turkey, Hungary, and Greece," Dornscheidt said.

K 2016 ran from October 19 to October 26 at the Messe Düsseldorf trade fair grounds. The next edition of the triennial show is scheduled for October 16 to October 23, 2019. **CPL**

## Private equity firm buys Dominion Colour

Toronto-based colourant supplier Dominion Colour Corporation has been purchased by private equity firm H.I.G. Capital for an undisclosed price.

Dominion Colour supplies pigments to plastics, coatings, specialty inks, and paints markets. Founded in 1946, the company has more than 400 customers in 70 countries. Dominion Colour operates plants in Canada, The Netherlands, and the UK, as well as technical sales offices throughout the Americas, Europe, and Asia.

Michael Klein and Jack Nelligan, who have been Dominion Colour's CEO and CFO, respectively, will remain as minority shareholders and will provide consultancy support for a transitional period. Mark Vincent, who was executive vice president, will lead Dominion Colour as its new CEO. **CPL**

## Gravenhurst Plastics sold to Mexico-based pipe maker Mexichem

Gravenhurst Plastics Ltd., a Gravenhurst, Ont.-based plastics pipe manufacturer, has been purchased by Mexico-based plastics pipe maker Mexichem SAB de CV for an undisclosed price.

Founded in 1968, Gravenhurst Plastics supplies HDPE conduit and innerduct for fibre optics as well as building supply products to the Canadian market. The company has a secondary location in Temiskaming, Ont., about 320 kilometers north of Gravenhurst.

In a statement, Mexichem said it will consolidate Gravenhurst Plastics and the Temiskaming division under its Fluent Business Group and will upgrade the company's facilities. "Gravenhurst Plastics' telecommunication products complement Mexichem's Fluent offerings," said Paresh Chari, president of Fluent Business Group. "The company's longstanding relationships in the Canadian market will enable us to expand Fluent's international footprint... while preserving its local presence."

Gravenhurst Plastics reported \$15 million in revenues for 2015. **CPL**

## Flexible packager Transcontinental buys Flexstar Packaging



The Flexstar Packaging plant.

Photo Credit: Flexstar Packaging Inc.

**M**ontreal-based flexible packaging supplier Transcontinental Inc. has acquired all of the shares of Flexstar Packaging Inc., a flexible packager based in the Vancouver suburb of Richmond, B.C.

The terms of the deal have not been disclosed.

Flexstar specializes in converting high barrier film, including printing,

lamination and pouch making, for the cereal, confectionery, snack, frozen

food and coffee markets. The company employs approximately 120 workers, and will generate an estimated \$36 million in revenues in 2016.

It's the latest in a long line of new owners for Flexstar. The company has had eight owners since it was founded in 1970. For the past 11 years, Flexstar has been owned by a group of Vancouver-based investors led by Stern Partners Inc., a group that included the president and CEO of Flexstar, Marc Bray, who is staying on with TC Transcontinental. **CPL**

### SUPPLIER NEWS

– Cambridge, Ont.-based size reduction equipment supplier **Shred-Tech** has been appointed the exclusive North American distributor of **Haas Tyron** shredders, manufactured by Germany-based Haas Recycling Systems. **CPL**

### Digital integration, productivity, efficiency

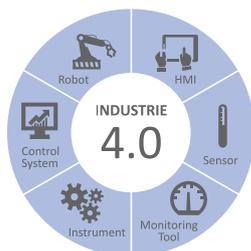


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PEOPLE



John Aagaard

Eric Gulnac

Gerd Liebig

Michael Mehnert

Damon Patton

Steven Peiffer

Steve Petrakis

John Richardson

Greg Temple

- Extrusion equipment maker **Davis-Standard LLC**, headquartered in Pawcatuck, Conn., has appointed **John Aagaard** as its product manager, reclaim-fibre.
- Cranberry Township, Pa.-based auxiliary equipment maker **The Conair Group** has appointed **Eric Gulnac** as its continuous improvement manager.
- Injection molding machine maker **Sumitomo (SHI) Demag** has named **Gerd Liebig** as its CEO, effective January 1, 2017. He will succeed outgoing CEO **Tetsuya Okamura**.
- Berlin, Germany-based blow molding machine maker **Bekum Maschinenfabrik Traismauer GesmbH** has appointed **Michael Mehnert** as its managing director.
- Hickory, N.C.-based dispensing equipment manufacturer **Nordson Corporation** has appointed **Damon Patton** as application engineer for pelletizing systems in the Americas.
- Newton, Kan.-based magnet and magnetic equipment manufacturer **Bunting Magnetics Company** has appointed **Steven Peiffer** as its chief financial officer.
- Process cooling equipment supplier **Thermal Care Inc.**, headquartered in Niles, Ill., has named **Steve Petrakis** as vice president of sales and marketing.
- Fairlawn, Ohio-based plastic compounds supplier **A. Schulman Inc.** has appointed **John Richardson** as chief financial officer. He replaces outgoing CFO **Joseph Levanduski**.
- Bolton, Ont.-based processing equipment maker **Husky Injection Molding Systems Ltd.** has named **Greg Temple** at its vice president, global supply chain and operations.

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# LIGHTEN UP!

With strict new CO<sub>2</sub> emission and fuel efficiency standards locked in by governments in North America and Europe, the automotive industry is under tons of pressure to shed tons of vehicle weight, fast. Which is why plastic parts, including those made from some of the newest polyolefins and lightweight engineering resins, have moved into pole position in the auto sector.

By Mark Stephen, editor

Driven by the need to satisfy stringent CO<sub>2</sub> emission and fuel consumption standards being phased in by governments in Canada, the U.S. and the EU, new vehicle innovations are rapidly reshaping the automotive industry. And nothing bulks larger than the lightweighting trend: From small components to large body panels, automotive OEMs are substituting lighter weight plastics for conventional materials such as metal and higher density engineering resins to build cars and trucks that require less fuel and create fewer emissions. Here's a look at some of the newest cutting-edge applications made possible by the latest polyolefins and lower density engineering materials.

## STAYS COOL EVEN WHEN IT'S HOT

Manufactured by Germany-based Mann+Hummel, a charge air duct for the 2.0-litre four-cylinder turbo engine used in numerous BMW vehicles — including the 4, 5, and 7 series, as well as in the X3, X4, and X5 models — is made with BASF's new Ultramid Endure D5G3 BM material, a polyamide 6/6 with 15 per cent glass fibres created specifically for blow molding applications.

The part is designed as a lighter weight alternative to conventional charge air ducts made from aluminum or polyphenylene sulfide. Weight savings aside, the polyamide 6/6 can be processed easily, BASF said, and is temperature resistant up to 220°C at continuous use, with possible peak temperature loads of up to 240°C.

The material also responds well to changes in processing parameters — corrections can be made easily during the production process — and can be welded particularly well with other polyamide 6/6 components through infrared welding, BASF said.



## A LESS WEIGHTY CAR OF THE YEAR

The new Opel/Vauxhall Astra, the 2016 European Car of the Year, weighs in at a whopping 200 kg less than predecessor models thanks to 35 kg of low density parts made from Borealis and Borouge's tailor-made lightweight PP compounds.

"In the developmental stage, our challenge was to fulfil stringent technical specifications such as achieving superior surface aesthetics, including high scratch resistance, the elimination of tiger stripes and flow/pressure lines, and uniform and well-balanced matte interior surfaces," said Alfred Stern, Borealis executive vice president, polyolefins and innovation technology. "In the production stage, we worked with Opel/Vauxhall and Tier 1 molders to produce high quality results for door panels, pillars, and other interior trims, particularly in terms of surface quality, processability, and



reduced VOC emissions."

Other applications included front and rear bumpers, bumper brackets, and a range of large and small parts for the dashboard and trunk claddings, Stern added.

## CARBON FIBRE UNDERBODY BRACES LIGHTEN CORVETTES

The only thing more fun than driving a Corvette is driving a more fuel-efficient Corvette. So let's rejoice, then, that PolyOne Corporation has developed a new lightweight, carbon fibre-reinforced underbody brace offered as a performance upgrade for the current C7 generation of General Motor's popular Chevrolet Corvette sports car.

The braces are 17 per cent lighter than conventional aluminum versions, said Matthew Borowiec, general manager, PolyOne Advanced Composites, and retain torsional stiffness while also increasing flexural stiffness for improved structural integrity and long-term fatigue strength. PolyOne produces the continuous composite profile braces using pultrusion technology.

General Motors uses the Corvette as a validation vehicle for many of its new technologies, including new, lightweight composites — so we're betting the automaker wasn't disappointed when a Corvette Z06 that incorporated the new underbody brace won last year's Car and Driver Lightning Lap with the fastest speed, which also ranked as the second fastest lap time in the history of the event.



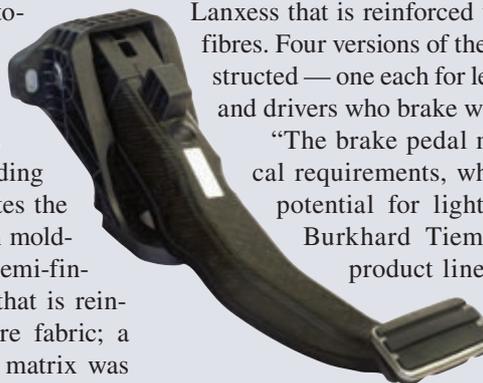
## ALL-PLASTIC BRAKE PEDAL RECEIVES SPE AWARD

An all-plastic brake pedal with an insert made of Tepex dynalite from Lanxess has been awarded first place in the "Body Interior" category of the 2016 Automotive Awards of the Society of Plastics Engineers.

Used in the Porsche Panamera NF and the Bentley Continental GT, the pedal is manufactured through a one-shot hybrid molding process, with short cycle times, that integrates the shaping of the Tepex insert into the injection molding. Tepex dynalite is a fully consolidated semi-finished product with a thermoplastic matrix that is reinforced with layers of continuous glass fibre fabric; a composite construction with a polyamide 6 matrix was

selected for the brake pedal. The injection molding material is Durethan BKV 60 H2.0, a polyamide 6 from Lanxess that is reinforced with 60 per cent short glass fibres. Four versions of the brake pedal have been constructed — one each for left- and right-hand drive cars and drivers who brake with the left or right foot.

"The brake pedal meets the very high technical requirements, while also exploiting the full potential for lightweight construction," said Burkhard Tiemann, head of the plastics product line at Germany-based molder BOGE Elastmetall GmbH, which manufactures the part.



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## materials

### DAIMLER NINE-SPEED AUTOMATIC TRANSMISSION GOES PLASTIC

A new production-ready oil pan used in Daimler's state-of-the-art nine-speed automatic transmission replaces sheet metal



with DuPont's Zytel 70G35 HSLRA4 glass fibre-reinforced nylon for a weight saving of 1.3 kg per car.

Comprising two plastic oil filters that are fully integrated into the oil pan housing, the part displays a good balance of stiffness and toughness over a wide temperature range. "This grade of Zytel also combines low warpage, easy processing, and laser weldability," said Franz Spitznagel, senior development programs manager at DuPont Performance Materials. "Also, in combination with a special rib design it withstands stone impacts of up to 200 km per hour, and offers transmission oil resistance and creep resistance at 150°C."



### HEAVY TRUCK SLIMS DOWN WITH SABIC MATERIALS

If good things come to those who wait, this should be awesome: After almost 10 years in development, the newest generation truck

model of Sweden's Scania AB has hit the road with more than 30 part applications made with thermoplastic materials from Sabic Innovative Plastics, totalling up to about 140 kg of weight savings per vehicle.

In addition to supplying material, Sabic supported part design and provided Scania with CAE and mold flow analysis, material evaluation, part performance simulation, testing and mold trial support. "Sabic's resins — such as its Xenoy PC/PBT blend — helped provide the design freedom to achieve greater aerodynamic efficiency," said V. Umamaheswaran, Sabic's director of global marketing, automotive. "The result is a new truck generation that offers an estimated five per cent reduction in diesel fuel consumption."

Through its use of Sabic's thermoplastics, Scania was also able to cut costs through parts consolidation, the elimination of secondary operations, and the streamlining of production, Umamaheswaran added.

### “SMART MOLECULE” TECHNOLOGY REPLACES METAL

Designed for components in demanding automotive thermal management systems, such as charge air coolers (pictured), Solvay’s Technyl REDx is a new heat performance polyamide 6/6 that features a unique “smart molecule” self-reinforcement technology.

Present in the polymer chain — but without affecting its structure — the self-strengthening technology remains inactive during injection molding of car parts, leaving the material behaving like a high-flow polyamide 6/6. During the vehicle’s use, the elevated temperatures activate the

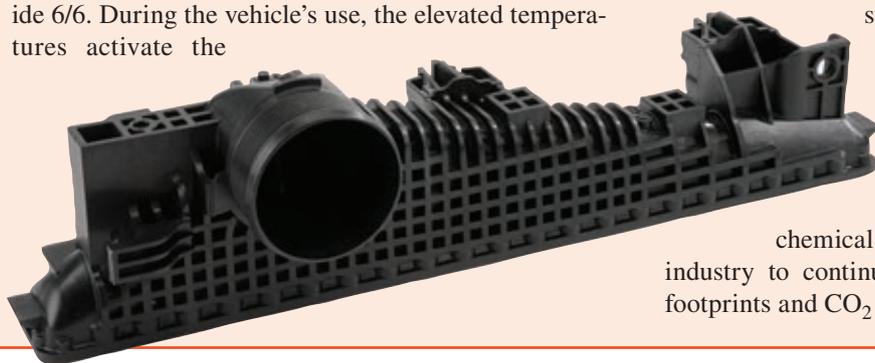
smart technology, leading to rapid cross-linking that boosts the mechanical properties far beyond their initial values.

“Ageing tests over 3,000 hours at 220°C demonstrate very high retention property as well as tensile property gain of more than 50 per cent, without degradation of elongation at break,” said Antoine Guiu, Technyl REDx project leader. “By providing long-term thermal stability, superior processability, and excellent surface aspect, Technyl REDx helps

meet the growing demand for downsized engines that continue to offer lightweighting performance and power output. Its metal replacement capabilities — offering fire, thermal, and

chemical protection — help the automotive industry to continuously reduce vehicles’ ecological footprints and CO<sub>2</sub> emissions.”

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November 30—December 1, 2016



# GET SMART

Adapting injection molding to the concept of Industry 4.0 has more momentum these days than the backlash against President-elect Trump. And it's all about having interconnected, integrated control.

Here's a look at some of the latest machine control options that will allow you to go boldly into the new frontier of the "Smart Factory."

By Mark Stephen, editor

Think "pi" is hard to define? Try nailing down the precise definition of "Industry 4.0." The term — which is meant to stand for the fourth industrial revolution — is everywhere these days, and it means umpteen different things to umpteen different people. For argument's sake, however, let's sum it up as the complete networking of all processes in production, including self-regulating systems. By that standard, some injection molding machine makers have already been doing Industry 4.0 for years. And more are getting with the program all the time. Here's some of the latest injection molding control offerings that allow you to enter the brave new world of the "Smart Factory."

## COMPATIBILITY TEST

The new Gestic control system from Arburg Inc. has web-interface, and is designed to open up a new dimension by looking and feeling like a smart mobile device. "The system has a modern glass front; a high-resolution, full HD screen; industry-grade multi-touch technology; and one-click ergonomic hardware keys," said Heinz Gaub, Arburg's managing director of technology and engineering. "The operating



Photo Credit: Wittmann Battenfeld

Wittmann Battenfeld's new Unilog B8 controller.

panel is also ergonomically tilted as well as height-adjustable and swiveling." With the new "Easyslider" operating element, Gaub continued, movements can be simply and precisely controlled and displayed via colour-variable LED technology during set-up. "Acceleration and deceleration can be controlled with a swipe of the finger along a bar at the edge of the screen," he said. "The data records of the Gestic are fully compatible with our Selogica control system, and the hierarchical structure and graphical programming systems are identical."

Boy Machines Inc. is taking a step towards Industry 4.0 with the option of connecting its machines to the internet via its new Procan Alpha 2 controller. The Procan Alpha 2 has a 15-inch multi-touch display that enables simple, intuitive, and fast operation throughout. "While the computer takes over all control functions with the real-time operating system, the newly developed hardware module relieves it of all time-relevant tasks," Boy said. "Extensive calculation processes, which constantly occur in the injection molding cycle and negatively influence the processing speed of customary, computer-aided



Photo Credit: Milacron

Sealed in a metal box, Milacron's SmartMold module in action.

machine controls, are being carried out by this new hardware module without delay and with superior precision.” Additionally, the entire operation manual of the control is stored in the system, including explanations of alarm codes, a complete list of alarm causes, and fault corrections; if necessary, the operator has immediate access to the required information.

As part of what it calls its “inject 4.0” technology, Engel introduced the e-connect.monitor smart service module last year, designed to offer 24-hour continuous remote monitoring of machine conditions to schedule maintenance, predict wear or component failures, and generally maximize machine availability by reducing both planned and unplanned downtime. Two new diagnostic modules are now in development. The first is said to eliminate the need to pull a screw to evaluate wear by using easy-to-install sensors that require only a few minutes to evaluate screw performance. Engel has developed ultrasonic technol-

ogy to measure the clearance between the screw flights and the barrel; the sensor can be mounted magnetically on the outside of the barrel. Second, another module uses sensors to monitor the condition of electric-drive ball screws. These modules will be able to send data to Engel's service platform to schedule maintenance or order spare parts, the company said, as well as build a database to predict component lifetimes and reduce future spare parts inventory.

## LESSONS LEARNED

KraussMaffei Corporation has launched a new production timer for injection molding machines designed to significantly reduce energy costs and waiting times — an “excellent example,” it said, of implementing Industry 4.0 by using intelligent machines. “The new Weekly Timer function is now a default part of our MC6 control software,” said Reinhard Schiffers, head of machine technology at KraussMaffei. “The MC6 ‘learns’ the boundary conditions of the machine thanks to an intelligent sequence, which tells the control system how long the preheating phase will take, which in turn allows the machine to be ready with pinpoint accuracy.” The new timer is also said to respond to changing temperatures (caused, for example, by seasonal changes) or the installation of new plasticising units. “The MC6 detects changes to the process and reconfigures the times immediately and continuously,” Schiffers said. “Thanks to this intelligence, the machine operator can define the exact start of production intuitively and without calculations, meaning that inconvenient programming is no longer necessary and sources of error are reduced. And by eliminating machine waiting times, molders can realize significant savings in energy costs.”

Milacron's SmartMold module is the result of a multi-year development project to make injection molding machine cells truly intelligent. “The SmartMold allows different pieces of equipment to talk to each other, improving process quality and efficiency while providing improved information and metrics,” said Kevin Bamford, director of controls products for Milacron's Mold-Masters product brand. “Smart-

**Some injection molding machine makers have already been doing Industry 4.0 for a few years now. And more are getting with the program all the time.**

Mold collects data and then reports it via the cloud or LAN. Sealed in a metal box and linked to sensors in the mold, SmartMold also comes embedded with software for set-up management, preventive maintenance routines, and engineering change records.”

## injection molding

Sumitomo (SHI) Demag has no less than three key elements underpinning its “Smart Factory” vision. First, smart machines equipped with an intelligent and future-proof user interface, fully synchronized to external ERP systems, robots, and the supply chain; second, smart service that integrates quality assurance and features remote diagnostics and maintenance to increase machine availability; and third, smart production with fully connected systems and a host manufacturing execution system that tracks real-time production information. At the recent K 2016 show, the company ran two EI-Exis SP machines, two all-electric IntElect machines, and a Systec Servo machine that were all equipped with an OPC/UA interface. “The goal was to demonstrate a broader scope for connectivity that enables injection molders to use data to optimise production, make operation decisions quickly, and generate reports,” the firm said.

Based on the operating logic of the previous Unilog B6 control system, Wittmann Battenfeld’s new Unilog B8 controller runs under the Windows 10 IoT operating system, which enables easy integration of standard applications as well as Internet-based service support. “Windows 10 IoT offers extensive capacities for process control and data com-

munication, and thus supports the latest, Industry 4.0-compatible software,” the company said. “With this newest generation of control systems, connection via OPC/UA to higher level systems, such as MES, has also become possible.” Unilog B8 is available for all of Wittmann Battenfeld’s PowerSeries machines.

So whatever your definition of Industry 4.0 is, the odds are good that at least some of these control technologies measure up to it. **CPL**

### RESOURCE LIST

**Arburg Inc.** (Newington, Conn.); [www.arburg.us](http://www.arburg.us); 860-667-6500

**DCube** (Montreal); [www.dcube.ca](http://www.dcube.ca); 514-272-0500

**Boy Machines Inc.** (Exton, Pa.); [www.boymachines.com](http://www.boymachines.com); 610-363-9121

**Engel Canada Inc.** (Waterloo, Ont.); [www.engelglobal.com/na](http://www.engelglobal.com/na); 519-725-8488

**KraussMaffei Corporation** (Florence, Ky.); [www.kraussmaffe.com](http://www.kraussmaffe.com); 859-283-0200

**Milacron Canada Corporation** (Burlington, Ont.); [www.milacron.com](http://www.milacron.com); 888-254-1919

**Sumitomo (SHI) Demag/Plastics Machinery Inc.** (Newmarket, Ont.); [www.pmiplastics.com](http://www.pmiplastics.com); 905-895-5054

**Wittmann Canada Inc.** (Richmond Hill, Ont.); [www.wittmann-canada.com](http://www.wittmann-canada.com); 905-887-5355

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# MANDATE to INNOVATE



The outside (left) and inside of Tronoplast's new HQ in Brampton, Ont.

Photo Credits: Tronoplast Technologies Inc.

As part of its mandate to devote serious resources to R&D, film extrusion technology supplier Tronoplast Technologies Inc. has relocated and expanded.

Untold numbers of hockey fans in Canada were severely irritated recently when the news broke that Las Vegas was being awarded an NHL expansion franchise. After all, it's not like the American Southwest – hardly a hockey hotbed in the first place – doesn't have enough teams already thanks to Gary Bettmann's infamous sunbelt strategy. And in a similar vein, you might ask yourself why the Toronto area needs another plastic film equipment supplier, since it's already home to a number of heavy hitters in the film extrusion technology business.

But in this latter case, it turns out there's actually a very solid reason. When Tronoplast Technologies Inc. was founded in 2014 by blown film industry veteran Felix Guberman, it had a literal mandate for change. As a condition to receiving financial support from Silicon Valley, Calif.-based private investment firm 3P Equity Partners, the company had to be innovative when it came to supplying polymer film extrusion equipment as well as turnkey solutions for the industry. "We received in excess of \$5,000,000 to fund the expansion of our operational footprint and capabilities," Guberman said. "The only condition attached to it by 3P was that we would spend a sizeable amount of time and money on commercially viable R&D."

To further that end, the company recently moved from its original office in Toronto into a new headquarters in Brampton, Ont. that includes a 43,000-square-foot manufacturing facility. "Our first location only had small office and production space, which made it hard for us to focus on our main areas of R&D, which include developing systems that process PVC, including a planetary extruder that can shorten production time by allowing material to be mixed directly into the machine; developing new approaches in annular film dies; and developing technologies for barrier shrink film applications," Guberman said.

## KNOWING WHEN NOT TO COMPETE

Tronoplast currently employs 16 workers, and Guberman points to its principals' experience in blown and cast films as key to its thrust in complete film systems. "We are a machinery builder and engineering solution provider, and we have 300 suppliers locally and another 50 globally," he said. "We don't want to compete with someone who already knows how to make perfect dies, screws, and dosing systems." And it's here, Guberman believes, that Tronoplast has found its niche. "We're surrounded by bigger players in the film making equipment industry, all of whom make good products and have good reputations, so there's no room for another company making another traditional three-layer blown film line," he said. "We're not interested in chasing after their customers – we want customers that are looking for an innovative, game-changing system supplier to help them do something new; a supplier that is lean and flexible enough to adapt quickly to their technical needs."

Tronoplast reported sales of \$4.5 million in 2016, and sells internationally, including to the U.S., Russia, Italy, and other European countries. But this is just the beginning of the company's ambitions. "Our goal is to develop into a \$15 million organization within the next three to five years," Guberman said.

So in a region populated with film machinery Goliaths, Tronoplast is happy to play David, at least for the time being. "It's unusual to see a startup company in our industry, but we, together with our investors, are convinced that the established suppliers in the GTA have come to the limits of their abilities to expand and innovate, which is where we see our opportunity," Guberman said. "We know we have to prove ourselves, and we're looking forward to doing it."

But an NHL team in Las Vegas still seems like a bad idea.

CPL

# IN THE PIPELINE: PROFILES IN NEW TECHNOLOGY

Just in time for Xmas, these equipment suppliers have unwrapped their latest innovations.

## Air quench pelletizer for highly filled and water soluble formulations



The new LHLG series air quench pelletizer from Leistritz mates

with an extruder and enables die-face cutting of pellets in air for water soluble, highly filled and foamed formulations as typically used for pharmaceutical, nutraceutical, and specialty plastics products.

The die is electrically heated, and the flow geometry is matched with the formulation and throughput rate. The die, blades, and all contact areas are fabricated from hardened stainless and carbide steels.

Standard features include an electrically heated pelletizing die, a self-aligning cutter hub with replaceable blades driven by an AC motor, blades that are manually adjusted for allowable wear, a stainless steel cutting chamber with sight glass and safety interlock, and a height adjustable support cart on tracks.

**Leistritz Extrusion (Somerville, N.J.);**  
**www.leistritz-extrusion.com; 201-934-8262**

## Redesigned unit with increased torque

Making its debut in North America, Coperion's newly redesigned ZSK 26 Mc18 twin-screw laboratory extruder has an increased torque of 15 Nm/cm<sup>3</sup> for higher throughputs,

and comes equipped with a user-friendly CSpro medium control system.

The unit is mobile and requires only a minimum of floor space, as the control cabinet is integrated

into the base frame of the machine. Heating and cooling systems are installed ready for use (Plug and Play). The ZSK 26 Mc18 laboratory extruder has a simple design, is operator-friendly, and easy to clean. With a wide throughput range of between 20 and 400 lbs per hour, the extruder is also suitable for the compounding of small production batches.

The control system comes with high-grade, standardized and pre-tested software; is fitted with the latest Siemens Simatic S7-1500 controller; and is connected via ProfiNet to the CPU with compact ET200SP peripheral modules. Integration and data exchange in superordinated

networks takes place via the standardized OPC/DA and OPC/UA protocols. The control system is rounded off with additional complex software functions such as recipe management, order and material management, analysis of downtimes, and the evaluation of historical values.

**Coperion/K-Tron (Seawell, N.J.);**  
**www.coperion.com; 856-589-0500**

## Flexible model to meet worldwide requirements

New from Battenfeld-Cincinnati, the revised conEX NG series conical twin-screw extruder is designed to offer a robust, mechanically flexible drive train and an improved screw tempering system that meets all current demands of the global extrusion industry.

Due to the mechanical design of the screw core, the units can easily be adapted to different temperature control systems and, as a result, to different markets and end products.



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The machine also caters to the continuously increasing tool back pressures, is able to operate under a permanent process pressure of up to 520 bar, and is available with several different space saver or pedestal designs.

A longer pre-heating zone and an optimized screw design are said to provide higher outputs than competing machines. And the geometry concept ensures a balance between mechanical energy input over shear and thermal energy input, which increases the bandwidth of PVC-based materials to be processed; this minimizes machine wear and also ensures that a wide variety of material blends can be processed with just one screw configuration.

**Battenfeld-Cincinnati USA (McPherson, Kan.);**  
**www.battenfeld-cincinnati.com/usa; 620-241-6843**

Lab-scale unit for R&D applications and small batch production

KraussMaffei Berstorff's new ZE BluePower laboratory

extruder is designed to substantially extend the process window for R&D applications as well as for small-batch production as compared to conventional laboratory-scale extruders.

Together with the selected motor/gear combination rated for high torque density, the 28-mm twin-screw extruder achieves a substantially enhanced performance when compared to the previous laboratory twin-screw extruder with a diameter of 25 mm. While the output rate can be increased by up to 43 per cent with torque-limited processes, an increase of up to 70 per cent is possible for processes that are limited in terms of volume.



With a screw speed of up to 1,200 RPM, the lab-scale ZE 28 BluePower extruder is designed for output rates between 20 and 200 kg per hour. Also, the identical design of all extruders within the ZE BluePower series allows the processing parameters to be up-scaled to a production line at any time.

**KraussMaffei Corporation (Florence, Ky.);**  
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# EXPOPLAST 2016: Destination Montreal



Quebec's only plastics trade show is also Canada's only plastics trade show this year. Here's what you need to know at a glance.

With a 40-year history as the dedicated resource to custom and captive molders in Quebec, the Expoplast plastics trade show in Montreal features the top suppliers of processing machinery, auxiliary equipment, molds, molding components, materials, and services providers. And there are more than a few of them in Quebec — almost 650 plastics processors in the province, in fact, molding more than one-quarter of all plastic products made in Canada. Quebec plastics processors employ more than 21,000 people, according to the Institut de la statistique du Québec, generate an annual payroll of \$926 million, and spend a whopping \$2.6 billion per year on materials and supplies used in production.

Held every two years by UBM, the latest edition of Expoplast takes place November 30 to December 1 at the Palais des congrès in Montreal. And with Quebec's economy forecast by RBC Economics to benefit in 2016-17 from the lower value of the Canadian dollar, improving conditions in the U.S. market, and sustained growth in Ontario's economy, the timing seems good. Adding to its strength, Expoplast continues its co-location with four other shows: PACKEX Montreal, Design & Manufacturing, Powder & Bulk Solids, and ATX Automation.

There were over 300 exhibitors in total at the five shows at UBM's last show in Montreal in November 2014, and a similar number are expected this year. **CPL**

## CONFERENCES AND SEMINARS (Schedule as of press time)

### Wednesday, November 30, 2016

- 11:15-12:00:** Panel Discussion: Collaborative Robotics in Canada — Case Studies, Wins & Challenges  
Moderator: Jim Beretta (UBM)  
Panelists: Peter Fitzgerald (FANUC Canada), Gren Cowper (Cowper Inc.), Sam Gerdes (Advanced Motion & Controls Ltd.)
- 12:15-1:00:** Battle of the Brains: Packaging Edition  
Speaker: Sara Shumpert (The Packaging School)
- 12:45-1:15:** Breakthroughs in Barrier Film Technology: How We Made Recyclable Standup Packaging Possible  
Speaker: Stacy Fields (The Dow Chemical Company)
- 1:00-1:30:** SAM 4.0 Compressed Air System Management: Key Technology for Industry 4.0  
Speaker: Louis-Philippe Codère, Eng. (Kaeser Compressors)
- 1:30-2:00:** Exploring Trends in Packaging  
Speaker: Carol Zweep (NSF International)
- 1:45-2:15:** Clariant HiFormer Introduction to Liquid Colour  
Speaker: Craig Brantley (Clariant Plastics & Coatings — Masterbatches)
- 2:00-2:30:** Digital Manufacturing: Accelerating Product Development and Reducing Risk  
Speaker: Jeffrey Schipper (Proto Labs)
- 2:00-3:00:** Innovation Tour: The Latest in Manufacturing Automation  
Speaker: Jim Beretta (UBM)
- 2:30-3:00:** Overcoming the Top Challenges in Spray Drying and Tower Cleaning with Spray Nozzle Technology  
Speaker: Christine Pagcatipunan (Spraying Systems Co.)
- 2:45-3:15:** The Role of Art and Science in Packaging Development Now and in the Future  
Speaker: David Feber (Amcor Rigid Plastics USA, LLC)
- 3:30-4:00:** Achieving Proper Injection Profile  
Speaker: Louis Brisson (Brisson Consultation)
- 4:15-4:45:** Get Smart with Smart Materials  
Speaker: Helen Lentzakis, PhD (NanoXplore Group Inc.)

### Thursday, December 1, 2016

- 10:30-11:00:** Polymer Composites for Automotive Applications  
Speaker: Karen Stoeffler, PhD (National Research Council Canada)
- 11:00-12:00:** Innovation Tour: New Possibilities in Plastics Equipment and Materials  
Speaker: Norbert Sparrow (*Plastics Today* magazine)
- 11:15-11:45:** Industry 4.0 and Automation: The Future of Manufacturing Begins Today  
Speaker: Ben Hope (Festo Canada)
- 11:30-12:00:** Optimizing Product Protection  
Speaker: Ben Eugrin (CHEP North America)
- 12:00-12:45:** Panel Discussion: Trends in Packaging Automation  
Moderator: Jim Beretta (UBM)
- 12:15-12:45:** The Additive Impact: 3D Printing Technologies Shaping the Future of Product Development and Manufacturing  
Speaker: Nicolas Lacoursiere (Proto3000)
- 1:00-1:30:** CESA: Additives by Clariant, Improving the Performance of Plastic Products  
Speaker: Craig Sibol (Clariant Plastics & Coatings)
- 1:00-1:45:** Sounding the Alarm on Water Risk: Nestle Waters' Journey Toward "Zero Water" Factories  
Speaker: Tim Brown (Nestle Waters North America)
- 2:00-3:00:** Plastics Possibilities — Tools to Increase Recovery  
Speaker: Stephen Tramley (Canadian Plastics Industry Association)
- 2:45-3:15:** Understanding IFS PACsecure  
Speaker: Karen Leacock-Bingham (NSF International)

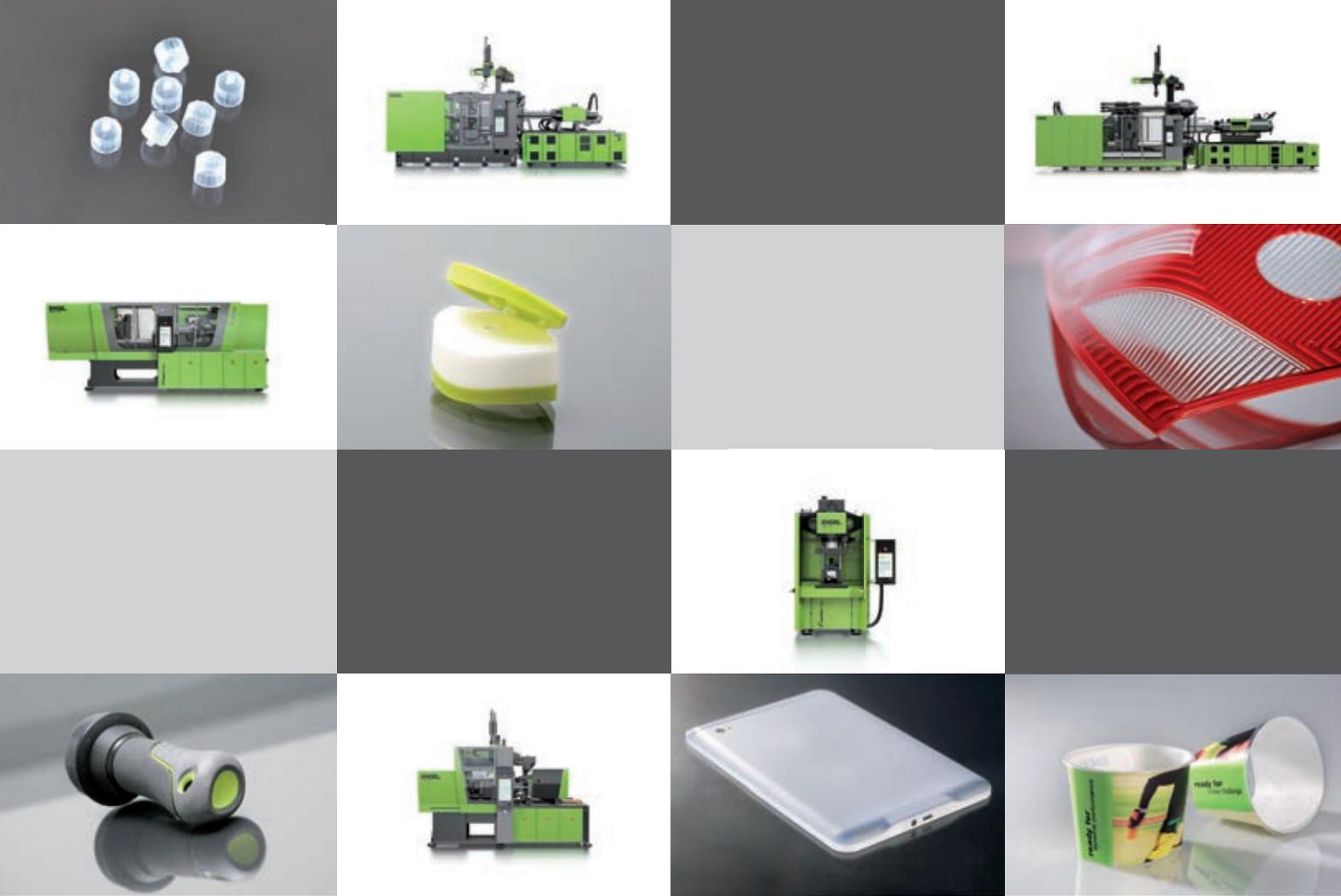
Full details and registration costs are available at: <http://schedule.admmontreal.com/en/list>

**WHEN:** Wednesday, November 30, 10:00 a.m. to 5:00 p.m.  
Thursday, December 1, 10:00 a.m. to 4:00 p.m.

**WHERE:** Palais des congrès de Montreal  
1001 Place Jean-Paul-Riopelle, Montreal

**WEB:** <http://admmontreal.com/en/expoplast>

- **Registration fee:** Free for all qualified attendees, \$125 for a two-day pass unless qualified.
- **Parking:** There are several parking lots at or near the Palais des congrès, including: Quartier International de Montréal (QIM), 249 Saint-Antoine Ouest, 1,200 spots, \$18 maximum for 12 hours; and Viger, 1025 rue Chenneville, 400 spots, \$20 maximum for 12 hours.



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# PATRICK PLASTICS

## isn't going it alone

This Markham, Ont.-based custom injection molder draws strength from belonging to a global electronic manufacturing services company. But technical proficiency and a diverse product portfolio are the real sources of its success.



Product testing.

By Mark Stephen, editor

A famous poem by British author Rudyard Kipling opines that “he travels the fastest who travels alone.” It’s sound advice for the globe trotter, perhaps, but when it comes to plastics processing it definitely helps to have a support system. Which Patrick Plastics Inc. has in spades.

The Ontario-based customer injection molder, part of the Season Group global electronic manufacturing services company, is in the midst of an impressive growth spurt: The firm has just expanded into a new manufacturing facility in Markham, purchased a moldmaking company and brought it in-house, plans to add up to four new injection molding presses, and is pre-

paring to enter the thermoforming sector next year.

According to Patrick Plastics’ general manager Linda Young, the company’s success can be traced, at least in part, to its relationship with Season Group. “The various affiliates of Season Group all operate independently, but we also all work together to provide a one-stop solution for all of our customers,” she said.

### SEASONALLY ADJUSTED

Patrick Plastics’ relationship to Season Group isn’t exactly mysterious: both businesses were founded by Chinese entrepreneur Patrick Hung. Hung is a Hong Kong native who emigrated to

Canada in 1976 and promptly started Patrick Plastics, his own injection molding company, while at the same time keeping his business ties to China. One year before emigrating, Hung had opened a Hong Kong firm called Season Components Co. Inc., which made battery connectors before branching into injection molding. Fast forward 40 years and Season Group has grown into a 1,800-employee-strong, vertically integrated corporation with headquarters in Donguang, China, and affiliates located in Hong Kong, Malaysia, the U.S., Mexico, and the UK, and sales offices in Ireland, Thailand, Japan, and Australia. Season Group’s home plant and other Season Group affiliates provide design,

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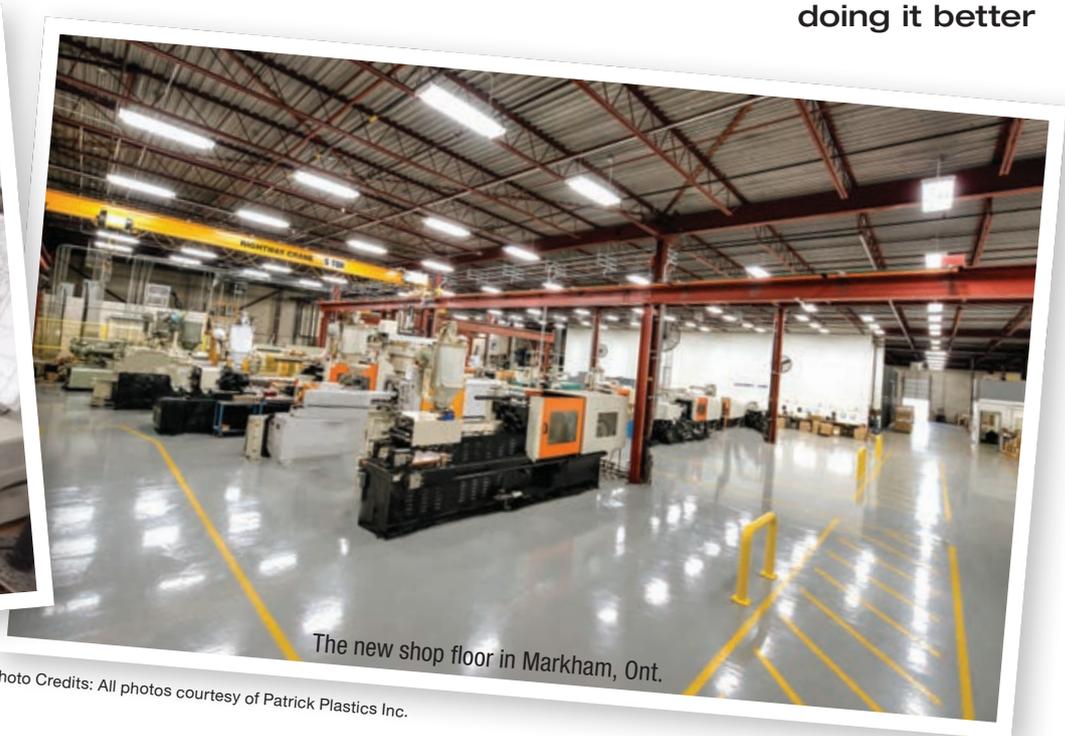
A glass-filled nylon handle for a medical device.



PC/ABS fender brackets with assembly.



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The new shop floor in Markham, Ont.

Photo Credits: All photos courtesy of Patrick Plastics Inc.

manufacturing, and aftermarket services to electronics OEMs and other industries. All of the corporation's affiliates have at least ISO 9001 certifications and most carry TS 16949, AS 9100, and/or ISO 13485 certifications.

As Season Group's only injection molding operation in North America, Patrick Plastics services some of the continent's biggest parts providers, especially in the automotive sector, where much of its custom work involves making parts for Tier 1 and Tier 2 manufacturers. The company has 16 injection molding machines ranging from 55 to 600 tons, with four new machines on order in both smaller and larger tonnages. "The rest of our injection mold-

ing is for consumer goods, toys, and enclosures," Young said. "We also manufacture our own Pro-Tech brand of carbon monoxide alarms that we sell directly to various U.S. government agencies for use in their facilities, and provide other electromechanical systems assembly."

The firm was initially located in Toronto, moved to a 30,000-square-foot plant in Concord, Ont. in 1995, and moved into the new 60,000-square-foot facility in Markham in October of this year — but not before buying its own moldmaking company. "The owner of our tooling supplier wanted to retire, so we acquired all of the company's machines and workers in

April 2016 and moved them with us to Markham," Young said. "Ironically, the tooling we're doing now is not primarily for us, but for other molders in the Toronto area."

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The new operation is located in a high technology region with good transportation infrastructure, Young said, and sits on a 4.3-acre site that offers room for further expansion. “The plant in Concord was just too small and too limiting,” she said. “We needed extra capacity for anticipated growth over the next few years, since we have the necessary certifications — including recently achieving AS 9100 — to bolster our business in medical, auto, and aerospace markets.” To facilitate entry into this last sector, Patrick Plastics plans to establish a new thermoforming plastics division. “Having a thermoforming division is necessary to get into aerospace molding,” Young said. “Season Group has a thermoforming plant in Malaysia that is very successful, and it’s looking for us to become its supplier in North America.” Patrick Plastics currently

employs about 80 workers, Young added, a figure that she expects to rise with expansion.

### BEST OF BOTH WORLDS

For Young and her colleagues at Patrick Plastics, the company’s move into a larger plant is proof that the manufacturing world is, in one important respect, shrinking. “More and more, Tier 1 suppliers and other customers want one-stop providers, from part design to tool design to molding to post-mold assembly; it’s less hassle for them,” she said. “As a stand-alone company, our new facility allows Patrick Plastics to do it all in-house. At the same time, we’re linked with — and have access to — all of the global services that Season Group offers, so if we need help, it’s readily available. It’s the best of both worlds, and I believe it’s what the marketplace will soon be



Linda Young

demanding from everyone.”

As Patrick Plastics demonstrates — and with apologies to Kipling — those plastics processors planning on moving the fastest in today’s globalized world definitely shouldn’t do it alone.

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## AUXILIARY EQUIPMENT

### Control technology extended to chillers

To give plastics processors the ability to better meet increasing demands on their businesses, **Frigel's 3PR controller**, launched several years ago on its Ecodry line of cooling systems, has been extended to its Micro-gel machine-side combination chillers and temperature control units and Heavygel air-cooled chillers.



Key features of the intelligent process control system include an intuitive, seven-inch touchscreen that allows users to access data in real-time to optimize their equipment and improve productivity, and automatic adjustments that are calculated based on a range of operating parameters. On-board maintenance recommendations, troubleshooting guides, and processing history logs contribute to maximizing equipment uptime.

3PR technology also enables Wi-Fi and Ethernet connectivity, said to be a first in portable chillers. It allows users to access crucial operating data, including temperature, pressure, flow rate, and energy consumption.

**Frigel North America (East Dundee, Ill.);**  
[www.frigel.com](http://www.frigel.com); 847-540-0160

**Hamilton Plastic Systems (Mississauga, Ont.);**  
[www.hamiltonplasticsystems.com](http://www.hamiltonplasticsystems.com); 905-890-0055

## INJECTION MOLDING

### Smallest cavity pressure sensor

Said to be the smallest injection molding pressure sensor of its kind, the 6-mm *Strain Gage* sensor from **RJG Inc.** is designed for high cavitation molds with small, tightly packed ejector pins, allowing customers to measure cavity pressure in order to improve quality and reduce costs.



The sensor works in conjunction with the RJG's eDart system to assist molders in diagnosing processes and automatically sorting suspect parts. The sensor head is one of the smallest strain gage sensors available, permitting the use in molds that may have tight clusters of pins with limited room.

Featuring flexible, robust, order-to-length cables, the new model is designed with a sensor head that matches the dimension and installation pocket of the Piezoelectric 9211 6-mm button, which means it contains all of the capability of the Piezo at a more cost-effective price — approximately 20 per

cent below comparable Piezo multi-channel systems. Unlike Piezo, though, the connector cables can be bent and folded without damage, making them more flexible and easier to maneuver around obstacles.

RJG is introducing two models of the Strain Gage: one rated to 50 lbs for use with the ejector pins up to 2-mm diameter, and another rated to 250 lbs for pins up to 4.5-mm diameter.

**RJG Inc. (Traverse City, Mich.);**  
[www.rjginc.com](http://www.rjginc.com); 231-947-3111

**Dier International Plastics Inc. (Unionville, Ont.);**  
[www.dierinternational.com](http://www.dierinternational.com); 905-474-9874

**KLA Enterprises (Kitchener, Ont.); 519-894-0164**

### Haitian Mars Eco now available in Canada

An economic version of **Haitian's Mars II** servo-hydraulic injection molding machine is now available to Canadian molders.



The efficiently equipped Mars II Eco features the energy-saving Mars technology which is patented in China, yet offers an attractively priced alternative that supports the competitively priced production of standard parts. The Mars II Eco is sold at around 50 per cent below the cost of competitor machines in similar clamp force categories, and is available from 67 to 596 tons (MA II/e 600 to the MA II/e 5300).

Available as stock machine inventory, the machine offers such standard features as UL safety compliance with 460-volt power; KEBA 1075 control; two air circuits for part ejection — one on the stationary platen and one on movable platen (additional air circuits are optional); one core pull circuit on the movable platen up to the Mars 4700e; and two core pull circuits on 5300e SPI robot interface.

**Absolute Haitian (Worcester, Mass.);**  
[www.absolutehaitian.com](http://www.absolutehaitian.com); 508-459-5372

**Shadow Automation Inc. (Uxbridge, Ont.); 416-464-2070**  
**Barway Plastics Equipment (Vaudreuil-Dorion, Que.);**  
[www.barway.ca](http://www.barway.ca); 450-455-1396

## BLOW MOLDING

### Saving energy while improving PET bottle performance

**Agr International Inc.'s** new *CrystalView* measurement system is designed to allow PET bottle manufacturers to run the coldest possible process in order to optimize their bottles' material properties while maintaining target material distribution. As a result, superior strength-to-weight ratio for a given bottle design can be achieved, improving overall bottle performance while reducing costs.



The CrystalView system incorporates a set of discrete vision components that are mounted inside a rehear stretch blow molder. As bottles exit the mold, the CrystalView system scans every bottle for the onset of pearlescence. During operation, sophisticated control algorithms incorporated into the

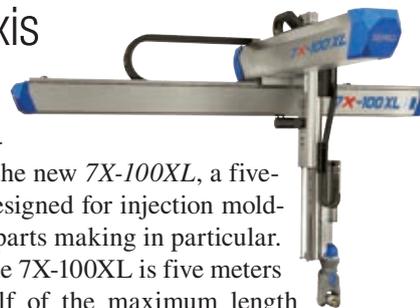
CrystalView system actively monitor the levels of pearlescence. In conjunction with the Agr Process Pilot automated blow molder management system, and based on a learned mathematical model that identifies the ideal control variables, adjustments are continuously made, including preform temperature, to manage bottle production to the point where the PET material properties are fully optimized, at a level just before the onset of pearlescence.

The CrystalView system also offers the potential for significant savings along with improved bottle production in a number of areas, including reduced blower energy consumption, materials savings through expanded lightweight potential, and improved downstream efficiencies.

**AGR International (Butler, Pa.);**  
**www.agrintl.com; 724-482-2163**

## ROBOTS & AUTOMATION

### Very large five-axis Cartesian robot



**Sepro Group** has just introduced its biggest robot ever, the new *7X-100XL*, a five-axis Cartesian beam robot designed for injection molding applications, automotive parts making in particular.

The horizontal beam on the *7X-100XL* is five meters in length, but that's just half of the maximum length available. The telescopic vertical stroke is 3.2 meters and the maximum payload is 100 kg.

The advanced servo-driven wrists on the robot makes it possible to complete complex part extraction movements and/or pre- and post-mold secondary operations including insert placement, edge flaming, assembly, simple or complex palletizing, and more.

The *7X-100XL* completes Sepro's line of five-axis beam robots (5X and 7X ranges), which now includes six models that can automate injection molding machines from 20 to 5,000 tons.

**Sepro Canada (Montreal);**  
**www.sepro-america.com; 514-515-9349**

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## HOT RUNNERS

### Nozzles with compact mounting dimensions

The new *Vario Shot* nozzle series from **Hasco** is designed to provide compact mounting dimensions, optimum temperature control, ease of servicing, and a modular design.



The rapid implementation of more than 1,000 nozzle variants permits a wide range of demanding applications, from simple gating onto a sub-runner through to high-end valve gate solutions.

The different Vario Shot nozzles permit immersion depths of up to 300 mm, and can be used to process engineering and reinforced plastics and produce medium-sized injection moldings with a shot weight of up to 2,000 grams. The complete interchangeability of all the relevant components — including the heating, thermocouple, nozzle body, nozzle tip, and melt chamber — significantly facilitates maintenance and servicing.

A precise, uniform temperature is achieved over the full length of the nozzle through the arrangement of the Fe-CuNi thermocouples and efficient insulation from the cold mold. Engineering plastics with narrow processing temperature ranges can also be reliably processed with these nozzles.

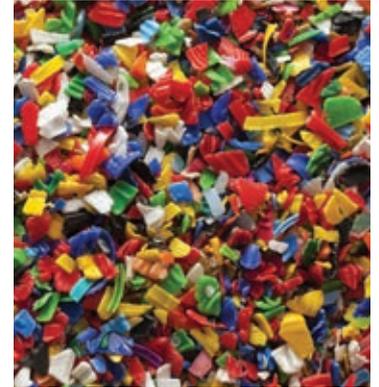
Additionally, all Vario Shot torpedo tips are made of an innovative high-tech alloy and have flow-optimised geometries. In addition to their superior thermal conductivity, they have a high wear resistance. A special coating can also be applied where necessary.

**Hasco Canada Inc. (Toronto);**  
**www.hasco.com; 416-293-5044**

## MATERIALS

### Additives for recycled plastic compounds

**Struktol** is introducing several new process additives for reclaimed/recycled plastics and for polymer compounds that contain recycled content.



*Struktol TR 229* is for use in both PC and PC/ABS blends as well as nylon 6 and 6/6 compounds. It can be used in FDA-approved applications and is also well-suited for use in recycled applications. And *Struktol TR 219* is designed for use in nylon 6 and 6/6 compounds, and is also effective in polyester (PET and PBT) compounds, especially recycled or recyclate-containing applications or in cases where the polyester compound is contaminated with other plastics.

The company also has additions to its line of additive products for recycled PP. *Struktol RP 38* is a new, multi-functional package that incorporates vis-breaking technology with lubricant and odour control. It provides for significant viscosity reduction at low loading levels, and the lubricant base provides improved processing characteristics, increased mold flow, and superior metal release. And *Struktol RP 37* is designed to provide superior viscosity modification and lubrication in recycled PP compounds and resins that contain high levels of PE contaminants.

**Struktol Canada Ltd. (Uxbridge, Ont.);**  
**www.4struktol.com; 416-286-4040**

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# A closer look at screws and pellets (part 2)

By John Bozzelli, Injection Molding Solutions

**S**crew design, pellet type/size, and material behaviour are all critical issues in delivering uniform melt to the mold, but don't always get the consideration they deserve. In my column in the last issue, we went over some screw design basics.

But what about the resin? Can the type of resin or shape or size of the pellets influence the melting process? Amorphous resins melt differently than semi-crystalline resins. Amorphous resins like PS, PC, and ABS melt like butter: they soften and mush easily as they come up to temperature. By contrast, semi-crystalline resins like PE, PP, or nylon melt like ice: they stay hard up

until their melting temperature, then melt. Most semi-crystalline resins require nearly twice as much energy to melt as do amorphous resins. Amorphous resins are somewhat forgiving in the melting process, while semi-crystalline resins present a difficult challenge to get them melted uniformly.

The size and shape of pellets, and the means by which they have been pelletized, also influences melting. My experience has been that a general-purpose screw will melt almost anything as long as the granules are the same size, shape, and cut. But how often is that the case? Problems develop whenever you have a mixture of granule sizes or

shapes. Non-uniform regrind — especially fines, regrind with virgin, tiny colour granules with larger virgin granules, and cut strand mixed with under-water die-face cut beads — wreaks havoc with the melting process. They begin to melt at different spots along the screw, creating non-uniform pockets, partially melted granules, degradation, black/white specks, et cetera.

Most molders don't have the luxury of running just one kind of granule, so what can be done? Start by working with competent screw designers. Get prints and review them before any steel is cut. A screw designed mainly for melting semi-crystalline resins should also be capable of running amorphous resins.

Here are some more general rules of thumb: L/D ratios should be at least 20:1 or greater. Demand that flights have a large radius (more like a farmer's plow) that eliminates the dead spot on the flights. Make sure the metal of construction is appropriate for your resins. And ensure your screws are polished and scratch-free and have reasonably sharp flight edges.

Also, if working with clear materials, eliminate fines and make sure your screw is chemically resistant. In addition, inspect pellets for uniformity from the supplier. Use only 25 to 65 per cent of the barrel capacity. Evaluate grinders for granule uniformity and minimum fines generation. And remember that if you do micromolding or run screws smaller than 25-mm diameter, the criteria are even more stringent. **CPL**

*John Bozzelli is the founder of Injection Molding Solutions (Scientific Molding) in Midland, Mich., a provider of training and consulting services to injection molders, including LIMS and other specialties. Email john@scientificmolding.com or visit scientificmolding.com.*



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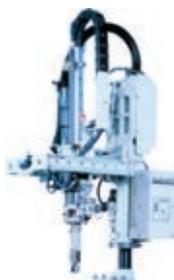


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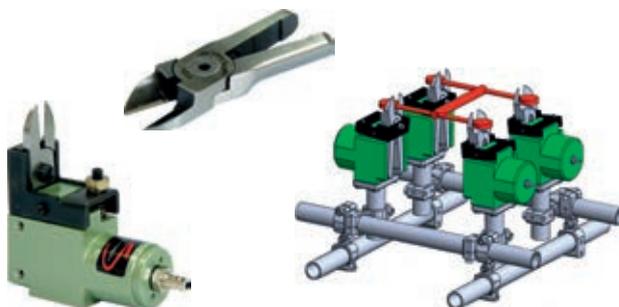
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