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OCTOBER 2016



LEADER OF THE YEAR

AMIR KARIM

From aerospace to Wall Street to plastic bags



A look at the other
CPIA AWARD WINNERS

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The latest technologies

The hot
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for 2017

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FROM THE ARCHIVES

The April 1961 issue of *Canadian Plastics* reported on the new Brake glide-on deodorant for men from Mennen Corporation. The deodorant's container consisted of five separate parts: a linear PE cap, a high-impact styrene roller, a small rubber grommet, a roller holder made from LDPE, and a linear PE body. All of the parts were made by Cooksville, Ont.-based Imco Container Canada – the cap, roller, and roller holder were injection molded and the Brake package was blow molded and screen-printed – and then shipped to Mennen's filling and assembly plant in Toronto. "The Brake deodorant has triggered a wave of impulse buying, with repeat orders coming in to Mennen even before the consumer advertising campaign began," our story noted.

Number of the month: **3.5 billion***

*Total capacity, in lbs, of Nova Chemical Corporation's Joffre, Alta. PE production site.
(See pg. 7)

Cover photo and pg. 3 photos of Amir Karim by Claude Roussel



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It's not complicated: Dust and streamers in pellets and granules can cause flaws in molding and extrusion processes. Which means that if your resin conveying equipment isn't delivering quality material to your machines, you've got problems that could cost you a lot of business. So say hello to these problem-solvers: some of the latest raw materials handling technologies.

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Unless consumer product makers want very early retirements, they have to manufacture things that the marketplace actually, you know, *wants*. Developing products in the right colours is step one. Here's a look at some of the latest consumer colour trends forecasts.

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Ontario's looming cap-and-trade fiasco



Metaphorically speaking, it seems the Ontario Liberals just can't stop kneeing the province – and Canada's largest economy – in the nether regions.

On the heels of the Liberal government's ruinous Green Energy Act (GEA), which has led to some of the highest and fastest-increasing industrial electricity rates in the country, Ontario is now set to join an existing cap-and-trade market with California and Quebec next January, mandating pollution limits on companies but allowing them to buy emission credits or sell them to others if they're under their quota.

The stated purpose of a cap-and-trade market is to reduce greenhouse gas (GHG) emissions by setting a maximum, or cap, on the CO₂ that companies emit, which varies according to their industry. If companies emit more, they have to buy allowances from government or from companies that emit less than their allotted amount – a market-based approach touted by cap-and-trade advocates as economically efficient because it reduces compliance costs by allocating capital to those companies that invest the most in GHG reductions.

Dig a little deeper, however, and it becomes clear that cap-and-trade is economically *inefficient*. Nor is this an unintended consequence. For it to "work," cap-and-trade needs to dramatically increase the cost of oil, coal, and natural gas to force consumers to use more expensive forms of green energy. Soaring energy prices are a feature, in other words, not a bug.

Which is why the European countries that have implemented the system are now backpedalling furiously. Europe's Emissions Trading Scheme, introduced in 2005, has been fraught with failure: Massive free credits were doled out to large emitters and trade-

exposed industries, so the price of allowances plummeted, making it cheaper for companies to buy credits than to reduce emissions. Also, fraud and corruption have been rampant. The result? Europe is now confronting what former Canadian federal Finance Minister Joe Oliver calls "de-industrialization." As Oliver wrote in a recent *National Post* article, "Europe's green policies have jacked up energy costs to the point where its companies are relocating to the U.S., which ironically ended up reducing emissions more than Europe did without a cap-and-trade scheme." All of which explains why German Chancellor Angela Merkel recently stated that she would not allow EU climate regulations to go forward "that would endanger jobs or investments in Germany."

To sum it up, then, Ontario is poised to imitate the European failure. It's hard to doubt that the increased cost of energy under cap-and-trade will make Ontario businesses already struggling under massive hydro bills even less competitive, especially since there is no prospect that the U.S. – our biggest trading partner and our nearest rival for business investment – will impose it on a national basis.

With Ontario Premier Kathleen Wynne having partially woken up at last to some of the economic damage done by the GEA – witness her government now offering an eight per cent rebate to be applied to homeowners' hydro bills – you'd think the province would want to do everything it could to enhance the competitiveness of job-creating businesses. Instead, the Liberal government is imposing yet another round of stultifying, job-killing regulations on the industrial base. "We're transforming the way our economy works," Ontario Finance Minister Charles Sousa boasted while delivering the Ontario 2016 budget back in February. Yes, you certainly are; but not for the better.

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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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Canada



3D printing just got a lot faster



Photo Credit: Carbon3D

If the plastics processing industry was an animal kingdom, 3D printing would definitely be the tortoise. Steady, yes, but almost agonizingly slow. But what if you could stick a hemi engine under the tortoise's shell? A start-up headquartered in Silicon Valley, Calif. has just achieved the metaphorical equivalent with the launch of a new 3D printer that can create objects 25 to 100 times faster than competing products.

Most 3D printers use a technique known as fused deposition modeling, which is essentially a hot-glue gun controlled by a robot arm that moves back and forth depositing layers of plastic to make a solid object. By contrast, the new M1 3D printer from Redwood City, Calif.-based Carbon3D uses software that controls a photochemical process that balances the way ultraviolet light and oxygen react within a pool of polymer resin to print plastic objects.

In a variation on a decades-old technique called stereolithography – or the use of light to solidify liquid plastic – the M1 pulls a solid object from a small tub of liquid plastic by using an ultraviolet light projector under a light-sensitive resin pool; as the platform moves upward, the projector moves light along cross sections of the liquid polymer, solidifying it as it goes and forming objects. A robotic arm then slowly pulls the object out of the pool, and more resin flows under.

According to Kirk Phelps, Carbon3D's vice president of product management, the printer – which is available for a US\$40,000 annual subscription – can produce objects of higher resolutions at speeds up to 100 times faster than traditional stereolithographic printers and several other

An M1 3D printer pulling a part from a resin pool.

techniques. "Because the action of the machine is so smooth, it allows manufacturers access to a wider variety of performance materials, such as elastomers that can stretch and high-temperature-resistant resins," he said.

To date, Carbon3D has been working with beta customers in industries such as automotive, aerospace, medical, and athletic apparel, including a number of Fortune 500 companies. "BMW, for example, uses the M1 3D printer to make the name badges on some of its models, which were formerly injection molded; and Ford has the M1 for printing engine duct work," Phelps said. "We're focused on applications where the 3D-printed part is the functional part, where it could go into a car. Existing 3D printers don't do that. And if it works as a final part would, why not just ship the 3D-printed part? If it's just as good, why worry about injection molding?"

In which case, the hemi-powered tortoise would finally get to beat the hare.

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Plastics machinery shipments up in Q2 2016

For the third straight quarter, North American shipments of plastics machinery registered a year-over-year increase in Q2 of 2016, according to figures compiled and reported by the Society of the Plastics Industry trade association's Committee on Equipment Statistics (CES).

Shipments of primary plastics equipment (injection molding, extrusion, and blow molding equipment) for reporting companies totaled US\$312 million in the second quarter. This was 2.0 per cent higher than the total of US\$306 million from Q2 of 2015, but it was 5.6 per cent less than the US\$330 million from Q1 of 2016. For the year to date, shipments of primary plastics equipment are up 7.6 per cent when compared with the first two quarters of 2015.

"The upward trend in the machinery data continued in the second quarter, but the year-over-year growth rate moderated," said Bill Wood, president of Greenfield, Mass.-based Mountain-top Economics & Research Inc., which analyzes and reports on the plastics machinery market for the CES. "The quarterly comparisons will become more difficult in the coming quarters, so the trend of gradual moderation in the growth rate will likely continue.

But the incentives to invest in new equipment will persist, so the shipments totals are expected to stay close to the current levels."

When this data is broken out by reporting sector, there was again a wide variance in the quarterly totals. The shipments value of injection molding machinery escalated 7.3 per cent in Q2 of this year when compared with the total from Q2 of 2015. The shipments value of single-screw extruders increased 12.4 per cent in Q2 when compared with Q2 of 2015; the shipments value of twin-screw extruders (which includes both co-rotating and counter-rotating machines) dropped 35.6 per cent in Q2 when compared with the same quarter last year. And the shipments value of blow molding machines decreased 17.3 per cent in Q2 when compared with Q2 of 2015.

New bookings of auxiliary equipment for reporting companies, meanwhile, totaled US\$123 million in Q2 of 2016. This represented a rise of 1.4 per cent over the total from Q2 of 2015, and it was a gain of 3.0 per cent when compared with the total from Q1 of this year.

The long-term, upward trend in the CES data corresponds with the pre-

vailing trends in the two major data series compiled by the U.S. government that measure overall demand for industrial machinery. According to the Bureau of Economic Analysis, business investment in industrial equipment escalated 2.4 per cent (seasonally-adjusted, annualized rate) in Q2 of 2016 when compared with Q2 of 2015. This follows a gain of 3.3 per cent in the first quarter of this year.

According to data compiled by the Census Bureau, meanwhile, the total value for new orders of industrial machinery slipped a bit – down one per cent – in Q2 of 2016 when compared with the total from Q2 of 2015. This followed a rise of 15.8 per cent in the first quarter of this year.

"Gains in the US GDP were disappointing in the first half of 2016, but economic growth will be closer to the long-term trend in the second half of the year," Wood said. "This means consumer demand for plastics products will gradually increase for the foreseeable future. Our outlook for the economy is little changed – annual, real GDP growth will be in the range of two per cent due primarily to a slow, but steady, improvement in wages and household incomes resulting from stronger employment levels."

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Ingenia Polymers turns 30

Thirty years ago the Montreal Canadiens won the Stanley Cup, Brian Mulroney was settling into the Prime Minister's chair, and a small polymer grinding company called WedTech Inc. started operations in Brantford, Ont. Founded in 1986 as a 50/50 joint venture between Polyvector Corporation and Wedco Technologies, WedTech was eventually rebranded as Ingenia Polymers Corporation, which is how the industry knows it today.

As it turns 30, Ingenia has definitely carved a niche for itself, growing from its original headquarters in Brantford to include facilities in Calgary, Houston, and Al-Jubail, Saudi Arabia. Today, Ingenia is composed of two complementary business units: a primary product division that provides thermoplastic custom compounding, size reduction, custom densified additive blend solutions, and product development sup-

port for resin producers; and a proprietary product division that offers an array of engineered products such as white and black masterbatches, additive and colour concentrates, and specialty products that serve the rotational molding and pipe and film market segments.

And for founders and owners John and Maria Lefas, it's a case of – as they say in Quebec – *plus ça change, plus c'est la même chose*. "While many things in the business environment have challenged us and changed over the past 30 years, the core values and principles we established and adhered to for the company have remained the same," Maria Lefas said. "In these 30 years, we've established a solid platform of people, technologies, relationships, and physical assets to build on. So we're very optimistic and excited for Ingenia's future, and plan to continue exploring and uncovering new opportunities to enhance our long-term success for the next 30 years."

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Nova's new Joffre LLDPE reactor reaches mechanical completion

Calgary-based Nova Chemicals Corporation has announced the mechanical completion of its PE1 expansion project – a third gas phase reactor at the company's site in Joffre, Alta.

The reactor is designed to produce approximately one billion lbs of LLDPE annually, a 40 per cent production increase in the Joffre site nameplate PE capacity to approximately 3.5 billion lbs. This will be the first new LLDPE reactor starting up in the Americas in more than a decade, Nova said in a statement.

According to Nova, the new volume



Nova's PE1 facility in Joffre, Alta.

will be NovaPol butene LLDPE resin to help meet the demand for flexible film products such as food packaging, heavy duty sack, and collation shrink and stretch wrap films.

"Our expansion of the Joffre site with the addition of a third gas phase LLDPE reactor is a key component of our growth strategy to support growing PE demand," said Chris Bezaire, Nova's

senior vice president, PE business. "As we collaborate with our customers, we are excited to bring updated technology to drive better resins, structures, and applications."

A phase of equipment testing will be followed by start-up and production of LLDPE, expected in the fourth quarter of 2016. Commercial sales are expected to begin in late 2016 or early 2017. **CPL**

Photo Credit: Nova Chemicals Corporation

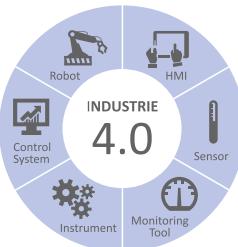
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Chem-Trend has been very busy

Materials firm Chem-Trend LP had an action-packed September.

The Howell, Mich.-based company acquired the Ultra Purge purging compound line from Italy-based Moulds Plus International towards the end of that month. The purchase includes the Ultra Purge brand, along with product and processing technologies and other business assets. The terms of the deal have not been disclosed. Established in 1988, the Ultra Purge line covers a broad range of thermoplastics applications, including injection molding, hot runners, caps and closures, PET preforms, blow molding, film extrusion, and automotive.

And in mid-September, Chem-Trend purchased Huron Technologies Inc., a Leslie, Mich.-based company that specializes in customized mold release agents and related products for multiple molding applications. The terms of the deal were not disclosed.

Chem-Trend is a unit of Freudenberg Chemical Specialties SE & Co. KG of Munich, Germany. **CPL**

PEOPLE



Darlene Carr



Kalvis Cers



Merritt Christian



Darrell Hughes



Matt McDonald



Peter Summo

- The Cambridge, Ont.-based **Canadian Tooling & Machining Association** has appointed **Darlene Carr** as finance and marketing coordinator.
- Pawtucket, R.I.-based material supplier **Teknor Apex Company** has named **Kalvis Cers** as account manager for its nylon division.
- Dispensing equipment supplier **Nordson Corporation**, headquartered in Westlake, Ohio, has named **Merritt Christian** as market development manager for pelletizers in the Americas.
- Aurora Plastics, a Streetsboro, Ohio-based manufacturer of PVC compounds in both powder and pellet form, has named **Darrell Hughes** as CEO and **Matt McDonald** as chief financial officer.
- Munich, Germany-based material supplier **Wacker Polymers** has appointed **Peter Summo** as president. He replaces **Arno von der Eltz**, who is retiring.

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Fast forward to today and Canadian manufacturing is in competition with not only the U.S., but also Mexico, India, Korea, China, and many others. I believe manufacturing requires inexpensive energy that includes electricity, natural gas, diesel fuel, and gasoline. Manufacturing also requires both skilled and unskilled labour, as well as a transportation system that can effectively move raw materials, finished goods, and people to and from the factories; and efficiency of process and utilization of equipment. For example, if you buy a molding machine on credit, you pay interest on the machine on Saturday and Sunday – so it makes sense to run the machine on Saturday and Sunday, right? Also, I visit many molding companies, so why don't I see more cycle time monitoring? A good, old-fashioned stop watch is essential in monitoring cycles.

Manufacturing obviously requires a market. A great idea won't amount to much if you can't sell it. The law of competition requires manufacturers to produce goods of high or superior quality, and therefore requires good and well-maintained equipment. A molder in New York that my company sells to has a computer monitoring the "cushion" on all of its presses – as soon as a given machine doesn't hold a "cushion", the machine is stopped, purged with Tec-Purge (a Pounds of Plastic Inc. value-added product, by the way), and the screw is pulled. Often a new check ring is put in place, which is why check rings for all of their machines are kept in stock. A manufacturer may elect to make a "me too" product – this product needs to have superior quality, and the price has to be competitive or the extra cost versus the competition has to justify the superior quality. It's called the trust factor.

It's no secret that the rising cost of electricity in this province is impairing manufacturing. Given this, why on earth would a would-be manufacturer put a new plant in Ontario? How does a plastic processor that's already here plan or budget under these conditions? This, in my opinion, is the reason that manufacturing plants are leaving Ontario.

Also, the cost of fuel in Ontario and in Quebec is not competitive. As set out in the Ontario provincial

government's September 2016 throne speech, "cap-and-costs" will not only raise fuel but also raise the price of everything consuming fossil fuel. The non-competitive aspect is tax. Everything you buy got to the store via truck.

Another thing: The roadways in both Quebec and Ontario are not conducive to manufacturing. Canada doesn't have to look very far to find an example of a sterling transportation infrastructure. In my opinion, U.S. president Dwight D. Eisenhower was instrumental in cementing the U.S. as a manufacturing powerhouse back in the 1950s. The Interstate Highway System that he implemented allowed goods to be shipped with ease, and also allowed Americans to travel with ease. They wanted to travel by car, so they had to buy cars: built auto assembly plants to meet demand – creating a snowball effect which bloomed manufacturing. The Interstate Highway System gave birth to new towns and new industries. I believe Canada should adopt something similar.

Heading even further south to Mexico, the first thing one notices is that the labour laws are much looser than in either Canada or the U.S. And looking towards China, you find low labour costs and labour laws that are next to non-existent. Concerns for the environment in China do not exist. Canada cannot compete against China. The playing field is so uneven. I believe that Sir John A. Macdonald's plan needs to go into effect against China. China will still buy our wood, wheat, canola, pork, and oil – they have to eat, after all. But why is Ontario premier Kathleen Wynne entertaining China? You can't fix stupid, as the saying goes, you can only vote it out of office. With apologies to Walmart and Canadian Tire, I think we should levy a tax (calculated to compensate for the unbalance) on goods coming into Canada from China. This tax could be as high as 200%.

The bottom line is, at present Canada cannot compete against Mexico; and Canada cannot compete against the U.S. unless our dollar is well below theirs in parity.

As product makers, we should be **OUTRAGED!** Premier Kathleen Wynne's government is impairing manufacturing. And it's only going to worse under her "leadership".

As I've said before in this space, I think it is time to **BREAK WYNNE**.

If you are **OUTRAGED** or if you want additional information on how Ontario's disastrous Green Energy Act is hurting us – or if you want to make suggestions or just vent – you can contribute to the **BREAK WYNNE** campaign by emailing me at

breakwynne@poundsofplastic.com

Canada has excellent engineers (see "labour", above), no matter what Volkswagen says. I'd like to mention two great Canadian engineers that I know personally; Jim Mantyla and David Murphy. Both of these men can fix anything. If Volkswagen had these two gentlemen on their team, they could fire all the rest.



ARC de TRIUMPH

From aerospace engineering to high finance to plastics packaging is a wild career arc. But when Amir Karim returned to Quebec and joined family-owned Polykar Industries after a successful stint on Wall Street, he didn't know that he would eventually be propelled into the ranks of the elite, as the Canadian Plastics Industry Association's 2016 Leader of the Year.

By Mark Stephen, editor

Amir Karim, chief operating officer of Saint-Laurent, Que.-based Polykar Industries, never pictured himself working in plastics processing when he was younger, despite the fact that Polykar is a family-owned enterprise founded by his parents Elyse Damjee and Aziz Karim. "When I was a child, I wanted to be an astronaut," Karim said.

It didn't quite pan out that way, but the Canadian Space Agency's loss is the plastics industry's gain: In his 15 years with Polykar, a manufacturer of PE film garbage bags and industrial and food packaging, the 48-year-old Karim has been instrumental in helping the company grow through a series of investments and expansions; and has been no less instrumental volunteering for some important pro-plastics advocacy, as well as a variety of other charitable activities. "Amir was the driving force behind Polykar's construction of its new, expanded production facility in Saint-Laurent, which included a \$4 million investment in new three-layer blown film, converting, and recycling equipment," said Randy Shermet, Polykar's vice president of sales and business development. "As an industry advocate, meanwhile, Amir served on the task force that addressed the Montreal plastic bag ban earlier this year, and served on the Canadian



Photo Credit: Claude Roussel

Plastics Industry Association's Board from 2009 to 2015 and as CPIA Board chairman from 2013 to 2015. And as a philanthropist, he was invited to a meeting in 2015 between Prime Minister Stephen Harper and Microsoft founder Bill Gates that focused on the Canadian government's support of global maternal, child, and newborn health; and he also supports Polykar's annual donation of one per cent of all sales to various charities. Amir is an excellent entrepreneur and an excellent spokesman for the industry."

All of which helps explain why Karim has now been launched into a different kind of stratosphere altogether, as CPIA's Leader of the Year for 2016.

TAKING OFF, COMING HOME

Although he never made it into literal outer space, Karim's childhood ambition of becoming an astronaut was at least partially realized for a time. "I studied aerospace engineering at the University of Toronto, and then worked in a lab

testing composite materials for use in space,” he said. “But it was more monotonous than I had anticipated, so I went back to school and completed an MBA in Finance at HEC Montreal.” Graduating in 1992, at the beginning of the 1990s technology boom, Karim quickly found work as a research analyst. “I covered many of the technology companies specializing in Canadian stocks, such as Nortel, Mitel, and Research in Motion,” he said. “My engineering and finance background was a valuable tool in this environment, and I was hired by Deutsche Bank in 1994, and then in 1998 moved to Goldman Sachs in New York City.” Warned by a seeming sixth sense that the dot-com bubble was about to burst, Karim left the industry in early 2001 and returned to Quebec. “I’d had a very good 10-year run, got out before things turned sour, and was looking forward to relaxing for a while,” he said.

Once again, though, events unfolded differently than planned. “I started visiting Polykar just to say hello to my family, and my visits became longer on each occasion as I began to spend more and more time on the shop floor getting to know the workers and the business,” Karim said. “I learned how the bag making process works, and how to set up and operate nearly every machine on the plant floor.” But when he signed on with the company in late 2001 as vice president of sales, it wasn’t just a case of the prodigal son returning to the fold. “As opposed to what happens in many family-owned firms, there had never been a plan for me to join my parents’ business,” he said. “I only did so because I believed I would be a good fit, given my background in engineering and finance, and I was also intrigued by the challenge of helping take the company to the next level.”

Founded in 1987 as a manufacturer of garbage bags, Polykar was still making nothing but garbage bags in 2001 – which was, Karim believed, both a strength and a potential weakness. “My parents worked extremely hard to make a very good product that had an excellent reputation, and they had grown the business from nothing to about \$7 million in annual sales, almost all of that in Quebec,” he said. “But their story wasn’t being told – the company didn’t advertise and relied on word-of-mouth to get its message out. My goal was to share Polykar’s story with new potential customers outside Quebec, and I spent most of the next eight years travelling around Canada meeting distributors. During that time, we were able to grow to between \$15 million and \$20 million in annual sales.”

But, much as he had foreseen the dot-coms dot-bombing years before, Karim was growing uneasy about the long-term viability of the traditional garbage bag industry. “Even as I was selling, I became convinced that the black garbage bag business didn’t have much more room – if any – for growth, due to the marketplace becoming more sensitive to waste and the growing use of recycling,” he said. “So although we kept our involvement in garbage bags, I convinced our family to diversify into other markets, including the manufacturing of compostable bags, and to enter the

food and industrial packaging markets. Our goal is to create a solid foundation for the company to grow further.” And when Karim says “further”, he isn’t kidding. “We’ve already transitioned from a small-to-medium size business into a medium-to-large size business, and my ultimate goal is for us to go bigger still: to reach \$100 million in sales,” he said. “Working in finance in the 1990s, I had access to some of the best CEOs and entrepreneurs of the time, and I learned a lot from them about how they grew their businesses. So I’m confident we can do it at Polykar.”

GENEROSITY PAYS

But Karim’s drive also extends to helping grow the industry as a whole. “I enjoy participating in industry causes, and I also believe that if you have success, you should give back, both in time and in financial resources,” he said. “My involvement in the CPIA reflects that: It’s satisfying to be able to volunteer my time to help the industry get ahead and confront some of the challenges it faces, especially in the areas of promoting sustainability and fighting back against anti-plastics legislation, and changing some of the misconceptions about plastics. I feel a loyalty to the industry, and it disturbs me to hear false information about it being spread around, especially when the industry is working so

**Working in finance in the 1990s,
I had access to some of the best
CEOs and entrepreneurs of the time,
and I learned a lot from them.**

hard to become more sustainable and environmentally responsible.”

To close the loop, Karim’s involvement with CPIA is also a good way to help Polykar. “As an SME, I would never have access to the bigger players in our industry on my own; my association with the CPIA Board has helped me make valuable connections,” he said. “As with any association, you only get out of CPIA what you put into it. You get a lot more out of your membership dues if you also become involved.”

As astute as it is, Karim’s sixth sense didn’t see his selection as CPIA’s Leader of the Year coming. “My first reaction when I heard the news was, why me?” he said. “Having thought about it since, I believe the award is actually for all the SMEs in our industry. The plastics industry is probably the last major manufacturing sector in Canada that hasn’t fallen victim to massive consolidation; we still have many SMEs making great products, and we don’t always get the profile and the recognition we deserve. So I’m honoured to accept the award as a representative of this group.”

However you want to look at it, it’s well-earned recognition for a career arc that started in outer space and keeps going higher.



LIFETIME ACHIEVEMENT AWARDS



GRANTLAND CAMERON is an independent consultant with experience in several industries. “As an active participant in the Alberta solid waste and recycling industry for more than 25 years, Grant has hands-on experience in the collection, hauling, and processing of plastics; has been involved with design, operation, and policy at more than 75 Alberta landfills, transfer stations, and recycling depots; and was a pioneer in the collection of multi-material, post-consumer recyclables in rural Alberta,” CPIA said. “He is a long-serving committee member of the Recycling Council of Alberta, and has been the executive director of the Alberta Plastics Recycling Association since 2007.”

SAJJAD EBRAHIM purchased Brampton, Ont.-based rigid plastics packaging supplier Par-Pak Ltd. in 1977, and over the next 36 years built the company into a major player, with 900 employees and over \$200 million in revenue today. “Over the course of his career, Sajjad has received numerous awards, including the prestigious Canada Award for Business Excellence in the entrepreneur category in 1993, and our Leader of the Year award in 2008,” CPIA said. Ebrahim sold Par-Pak in 2013, and now devotes much of his time to philanthropic activities.



MIREK PLANETA founded Mississauga, Ont.-based film and sheet extrusion machinery supplier Macro Engineering Co. Ltd. in 1978, which later became Macro Engineering & Technology Inc. Drawing on his background of an engineering degree in plastic and rubber processing from the University of Prague, Czech Republic, Planeta has over 30 machinery and process patents. Under his guidance, Macro Engineering won an award for excellence in exports from the Canadian government in 1995. Planeta resigned as Macro Engineering president earlier this year to concentrate on research and development.



TOM ROSE was a co-purchaser of Edmonton, Alta.-based rigid plastic product maker Layfield Plastics in 1977, and since then has been instrumental in diversifying the company’s product line into such markets as environmental containment, industrial fabrics, and blown film production. “Tom also helped grow Layfield from a single operation in Edmonton to its present position as a vertically integrated company with manufacturing, fabrication, construction, and distribution hubs in Vancouver, Edmonton, Calgary, Toronto, San Diego, Seattle, San Diego, Houston, North Dakota, and West Virginia,” CPIA said. He remains active in the company today.



ROBERT TOROKVEI, whose career at Toronto-based injection molder and blow molder Scepter Corporation spanned over 42 years, became president of the company in 1992. “He was instrumental in transforming it into the largest manufacturer of portable fuel containers in North America, the leader in portable OEM fuel containers for the marine industry, and the largest manufacturer of plastic packaging for heavy caliber ammunition,” CPIA said. Torokvei retired as president of Scepter in June 2016.

PLASTICS INNOVATOR AWARD



DR. CHUL PARK is a University of Toronto Distinguished Professor of Microcellular Engineered Plastics. He is the founder and director of the Microcellular Plastics Manufacturing Laboratory and of the Centre for Industrial Application of Microcellular Plastics, both of which are leading research facilities in microcellular plastics foaming technologies. “Dr. Park has invented numerous foaming technologies,

and has successfully transferred them to various industrial companies,” CPIA said. “He has attracted a large number of companies to the Consortium for Cellular and Microcellular Plastics; has identified the fundamental mechanisms of cell nucleation and foam expansion; and has published more than 900 papers, including 270 journal papers and three books.”

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PLASTICS INNOVATOR AWARD

POLYTAINERS INC. is a Toronto-based supplier of plastic containers to the food and dairy industries. The company's new Ultimate series of in-mold label (IML) plastic containers is an injection molded container said to have the highest top-load per gram of resin in the North American marketplace. "The use of IML allows customers to present their brands with premium graphics," CPIA said. "The result is a premium container with industry-leading material utilization that reduces resin consumption by approximately 20 per cent."

PLASTICS SUSTAINABILITY AWARD

LAFARGE CANADA INC. is a Toronto-based supplier of materials for the construction industry. "At locations across Canada, the company has worked to reduce CO₂ emissions, restore wetlands for native plants and animals, and identify waste materials that can be recycled and used at their operations," CPIA said. "Over the past five years, Lafarge has been working towards its goal of reducing fuel-based carbon emissions by 30 per cent – one of the most comprehensive lower carbon fuel programs in the world. This work has led to a growing focus on the potential role of non-recycled plastics and related mixed plastic/fibre composites in the manufacture of cement. Where feasible, Lafarge believes that plastics should be recycled into new plastic products such that these products are also produced in the most sustainable way possible."

URBAN POLYMERS, a Toronto-based affiliate of Canada Fibers Ltd., is being recognized for its "commitment to divert valuable, usable plastic away from landfill and to help their customers achieve more sustainable manufacturing practices," CPIA said. The company's high-performance polymers are sold to plastic goods manufacturers in the packaging, construction, and film extrusion industries.

CANPLAST AWARD



MARC ROBITAILLE, president of Saint-Hubert, Que.-based flexible packaging supplier Omniplast, "has contributed an immeasurable amount of time, energy, expertise, and resources to improving the competitive and environmental performance of the Canadian plastics industry, including an active involvement in our bag ban task force," CPIA said.

PLASTICS INDUSTRY YOUNG LEADER AWARD



SOLENNE BROUARD GAILLOT is the founder and CEO of Anjou, Que.-based PS recycler Polystyvert Inc. "Solenne created a disruptive technology that is revolutionizing the PS market, and created her company from the ground up, putting together a dynamic team of young experts who are dedicated to sustainable development," CPIA said.



DOMENIC DI MONDO, technical director of Brantford, Ont.-based chemical supplier GreenMantra Technologies, is being recognized for his work in developing high-temperature and high-pressure catalysis, including his role in creating a new proprietary technology and patented process that produces synthetic waxes from underutilized plastic recycling streams, including films and bags.



KRISTA FRIESEN, CPIA's vice president, sustainability, has more than 15 years' experience in designing and developing programs to manage end-of-life materials including plastics. "Since mid-2014, Krista has led the development and execution of our sustainability, advocacy, and partnership programs to promote solutions that increase the recovery of plastics at their end-of-life," CPIA said. "These programs involve collaboration with and support of governments, stewardship organizations, and others to expand plastics recycling and energy recovery."



GEOFF WOOLLEY, president of Surrey, B.C.-based EcoSafe Zero Waste, is being recognized for his work in designing and implementing cradle-to-cradle solutions for source separation of organics and recyclables, with a focus on diverting organic waste from landfill to commercial compost facilities. In addition to leading EcoSafe Zero Waste, Woolley was recently selected by his alma mater, Kwantlen Polytechnic University, to sit on the School of Business program advisory committee.

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MOVE IT OR LOSE IT



It's not complicated: Dust and streamers in pellets and granules can cause flaws in molding and extrusion processes. Which means that if your resin conveying equipment isn't delivering quality material to your machines, you've got problems that can cost you a lot of business. So say hello to these problem-solvers: some of the latest raw materials handling technologies.

By Mark Stephen, editor

Plastics processing doesn't have much in common with country music, but there's a lyric from an old C&W song by Cowboy Jack Clement that sums it all up for resin conveying: "It's the journey, not the arrival, that matters."

The quality of plastic pellets or granules is essential to the economical success of plastics manufacturing companies and compounders alike. High dust and streamer – or "angel hair" – content in resin leads to product flaws, higher customer rejects, and lower market prices. Which means that a processor needs an optimal resin conveying system to get the material to the molding machine in good shape. The journey, in other words, matters a helluva lot. On the plus side, there's never a shortage of new raw materials handling equipment hitting the market, especially during a K show year like 2016. So here's a look at some of what's

been introduced lately to get your materials from point A to point B in top condition.

SLOW AND STEADY

New from The Conair Group, the R-Pro vacuum conveying system is designed to offer a new approach to the old problems of pellet fracturing, angel hair, and equipment wear caused by conventional dilute phase conveying. Comprised mainly of standard vacuum conveying components, R-Pro offers slower flow, and therefore less resin damage, without limiting throughput. Material speeds can range from as slow as 70 meters per minute up to 336 meters per minute, compared to up to 1,372 meters per minute in conventional high-speed conveying. "In a conventional system, material is constantly accelerating as it moves through con-

veying lines, and can double in speed by the time it reaches its destination," said Doug Brewster, Conair's product manager, conveying. "In the R-Pro system, the material speed might increase slightly over the full conveying distance, but is never remotely as fast as a typical system; you can run at a slow speed when demand is low and then increase it when you add processing capacity or bring idle equipment back online. But even at maximum throughput, material speed is never very high." And since R-Pro uses standard vacuum pumps, conveying tubes, and material receivers, Brewster continued, the system can be easily retrofitted to existing systems.

Also designed to combat angel hair is a line of automated inline angel hair traps from Lorenz Conveying Products. "Manufactured of aluminum construc-

Photo at top: Conair's R-Pro vacuum conveying system in action. Photo Credit: The Conair Group

tion with a standard 16-inch square bolt pattern, our square angel hair traps mount at the base of the silo or storage bin; they fit directly onto the Lorenz probe box and Lorenz maintenance gate or silo/hopper shut-off," said company president Peter Lorenz. "And our inline angel hair traps mount in the material stream to collect angel hair while allowing the pellets to pass through. The inline traps also have a clear viewing cover for level indication, and automated models are available to eliminate downtime." Both models offer quick removable screens for fast removal of angel hair, Lorenz added.

Maguire recently introduced a new vacuum loading system for conveying pellets and regrind from storage to single or multiple blenders. Called LoPro, the system is said to be simpler to operate than standard systems and consists of autonomously controlled receivers that are fully 80 per cent shorter than conventional material loaders and

receivers. "The low-profile receivers protrude only 200 mm above the lid of a blender, providing a low centre of gravity that minimizes potential sway on fast-cycling processing machines," said Frank Kavanagh, Maguire's vice president of sales. "Also, each receiver is self-controlled, with no central control required; and connection and installation is simple, with plug-and-play cabling and sequential linking of components." Receivers load on a first-in/first-out basis, and the vacuum is supplied from a "mini-central" unit mounted on a portable floor stand or on the blender frame. "The discharge or 'dump' flap in the LoPro receiver is three to six times wider than the flap on traditional upright receivers, making possible a dump time of only one to two seconds per cycle, depending on material flow properties," Kavanagh said.

GOING REMOTE

Motan Inc. recently unveiled a remote

maintenance system designed for all system components of raw material handling, from conveying to drying to dosing. The remote maintenance box offers access through either the internet or a company's internal intranet; no programming knowledge, proprietary hardware and software modules, or complex firewalls are required for operation. "As a standardised system that's delivered ready-for-use, the system contains an extensive software package for fault-finding and analysis of the system components, as well as monitoring and documentation of the system status," Motan said. In the event of a fault – and instead of immediately alerting the customer's own staff – the remote maintenance box can first bring some clarification to the situation. "Via internet or intranet, quick analyses can be performed on any PC, faults can be isolated in extensive nets, and the causes can be specified, making quick and precise measures possible," the company said.

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Pelletron Corporation's well-known DeDuster dust cleaning system is now available with new automated inlet devices designed to save costs and simplify operation. "This DeDuster feature was designed for cleaning large capacities of plastics pellets in plastics production plants, from 40,000 to 330,000 lbs per hour, at bagging, truck, railcar loading and container loading,"

Pelletron said. "The new device eliminates the use of expensive and heavy rotary valves that are normally used for feeding product into the DeDuster." The automated inlet deflectors move to adjust the product flow to the desired flow rate, Pelletron said, evenly distributing product over the wash decks of the DeDuster, and shutting down the product flow completely if desired.

Also, rugged pneumatic actuators with integrated positioners move the inlet deflectors to any position, based on a control signal from the plant DCS.

The Wittmann Group has introduced two new material loaders. With a capacity of up to six litres, key features of the FeedMax Basic include easy cleaning due to the fact that the vacuum connection is separate from the canted lid, as well as the ability to set the desired conveying time easily via potentiometer. In combination with high-capacity blowers, the loader manages high material throughputs and longer conveying distances, making the FeedMax Basic well-suited for use in workcells or when drying hoppers have to be filled with a volume of up to 150 litres from a long distance. The second loader, FeedMax Plus, has a capacity of up to 80 litres. Both units are equipped with the ambiLED status display, which is designed to make it easier for the operator to determine the condition of the conveying unit. All loader parts that are in contact with the material are made of stainless steel, and the material inlets are made of cast stainless steel.

So if your current raw materials handling system is creating problems with your plastic pellets or granules, consider giving these equipment suppliers a call. C&W songs are supposed to end badly; resin conveying isn't. **CPL**

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Maguire Canada/Novatec Inc. (Vaughan, Ont.); www.maguirecanada.com; 866-441-8409

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COLOUR COMMENTARY

How important is it for plastics product designers and manufacturers to get early and reliable information on tomorrow's consumer colour trends? That's like asking the Trump campaign how important it is for Donald to stop ad libbing in front of the TV cameras. Colour is one of the most influential factors impacting

Unless consumer product makers want very early retirements, they have to manufacture things that the marketplace actually, you know, wants. Developing products in the right colours is step one.

By Mark Stephen, editor

product design and consumer buying trends, which is why choosing the right shade is so important for marketers. By working with experts to identify the palettes and effects trending with consumers right now, material suppliers can get next-generation colourants to the product makers in time for them to deliver the goods. So here are some of the hip hues and themes that some colourant makers are betting on.

AMERICHEM INC.

Americhem's 2017-18 colour trends revolve around a common theme: travelling the world and finding inspiration in every corner of it.

HOLIDAY. A bold palette highlighting dramatic oranges, bold pinks, and violets blended with rich, dense greens and blues against a classic, elegant black.

SABBATICAL. Neutral and crisp, fresh picked greens and bright golds contrast with warm beiges, giving a sense of brightness and well-being.

CULTURE FUSION. Strong reds fuse with coral pinks and lemon yellows, evoking a bright, luminous, and fresh intuition. Sample: "Seashell."

CITYSCAPE. Pastel tones of pinks and blues are mixed with subdued browns and neutrals for a palette described as both feminine and masculine. Sample: "Metro."

RAINFOREST. Deep tones of blues and greens partner with shadowy red-browns to highlight brilliant golds and red-oranges, providing inspiration from the Earth's rainforests. Sample: "Teak."

COASTAL HAVEN. Refined neutrals and soft beiges play well with elegant greys to create a sophisticated and luxurious palette.

GIGGLES

GIGGLES gets the nod

The verdict is in: **PLASTICS COLOR CORPORATION** has chosen its 2016 Colour of the Year. The top spot goes to a bright red hue appropriately named "Giggles," a lively shade that the company said was the most popular of its 2016 collection released last fall.

METRO

SEASHELL

TEAK

AMPACET CORPORATION

"All of our new colours for this year have a bit of a dirty cast, which reflects the twin consumer imperatives of moving forward but not forgetting the need to remain grounded," said Linda Carroll, Ampacet's colour insight manager. "Underlying this is the growing demand for a heightened consumer experience – a desire to be entertained by the product package without the experience being so over-the-top that it becomes off-putting."

Carroll identified four trends driving the company's food and beverage packaging and consumer goods colours heading into 2017.

FACES OF LUX. "These colours are meant to reflect the new definition of luxury, which is defined by three characteristics: it has to be experiential, localized, and have an air of exclusivity," Carroll said. "The goal is to help product makers attract attention and extend brand reach through augmented reality: incorporating shiny hyper-metallic effects and wrap-around looks that will entertain the consumer from the shelf."

Colours in this theme include "Adaptive Orange," which is meant to reflect grounded independence; "Mobilized Mauve," meant to reflect nurturing strength; and "Unbridled Blue," meant

to evoke a confident, precognitive quality.

Effects include reproducing the random cellular structure of cork; the afore-mentioned hyper-metallic effect; and "Vantablack," said to be the darkest product colour ever made and currently being used in packaging for Lynx men's grooming products.

UBER ECON. "These colours are meant to represent the changing global economy, in particular the shift of China away from being a manufacturing giant and into a global innovation hub, and the fact that our method of exchanging currency is changing through the 'Uberization' of finance," Carroll said.

Colours include "Capital Canary," meant to reflect change and optimism; "Gilder Grey," which reflects caution, tradition, and control; and "Real Asset Rust," which reflects self-assurance.

"The effects are transparent and translucent, much as consumers now expect transparency in their own lives and from segments such as the financial sector," Carroll said.

OPTI-LIVING. "These colours reflect the fact that today's consumers are always in beta mode – a state of relentless improvement and evolution, of breaking away from tradition in the constant search for the next big thing," Carroll said. "The colours are a

UNBRIDLED BLUE

CAPITAL CANARY

GREGARIOUS GREEN

throw-back to the 1980s: very strong and vibrant, but with a dirty tinge."

Colours include "Uncommitted Cobalt," meant to reflect strength and confidence; "Multiplied Mandarin," meant to reflect passionate optimism and independence; and "Gregarious Green," which reflects change and rebirth.

"The effects include organic greys and neutral silvers, to reflect androgyny and the establishment of identity through abstraction," Carroll said.

BENEFICIAL INTELLIGENCE. "These colours are organic with dirtied undertones, and are meant to represent new technologies such as morphing materials – organic and inorganic – that adjust seamlessly to

their environments; and CRISPR, a new genome editing tool that's transforming the field of biology," Carroll said.

Colours include "CRISPR Crimson," which reflects a passion-driven approach to technology; "Pre-Emptive Pearl," which reflects equilibrium; and "Bio-Brown," which is meant to reflect grounding and stability.

"The effects are organic and suggest the concept of having a second skin," Carroll said. "On the store shelf, these effects can make a product appear alive and moving by incorporating VaporFX in PET bottles to create the impression of flow; or chameleon-like flexible films that change colour when stretched or bent; or wrap-around labels that change into decorative bows when consumers pull on them."

CLARIANT MASTERBATCHES

Now in its 11th year, Clariant's annual ColorForward directions are the result of the collaborative effort of plastics colour specialists throughout the world. They've identified four key trend themes for 2017.

ANNOY FIRM OMIT. An anagram of the phrase "my information," this trend is meant to capture the ambiguous, yin/yang nature of the information universe. "Data mining, or the systematic sifting of digital information to achieve a specific purpose, is central to this

trend theme," said Clariant ColorWorks Europe lead designer Judith van Vliet. "The duality of the web-world is captured in the Annoy Firm Omit trend colours. Two of the five are dark and sinister."

DELONELINATION. "In a connected world, the last taboo is being lonely, and the Delonelination theme is a wake-up call," van Vliet said. "It's a warning that loneliness is on the rise, particularly among young people. The five colours representing this trend are generally pale and muted, ranging from a beige that suggests the human need to be handled with care, to a plain brown."

NEBULOVE. "This theme is the antithesis of loneliness because it recognizes a trend toward complex, connected relationships between multiple people who may be married or not depending on what gives them fulfillment," van Vliet said. "Colours representing this theme are a light green/yellow – like the inside of a cucumber – and a diffuse red. There is also a lilac purple; an almost cognac-coloured brownish orange shade; and a soft pink colour called "Perky Star" that's intended to represent the 'happy single.'"

PERKY STAR

IT'S A TRAP! "Life can be a trap – either hard and stressful or dull, if you allow it to become that way – and people are seeking new ways to break out," van Vliet said. "This trend is about escapism and finding new modes of perception. The colours of this trend theme tend toward a funky new aesthetic." CPL



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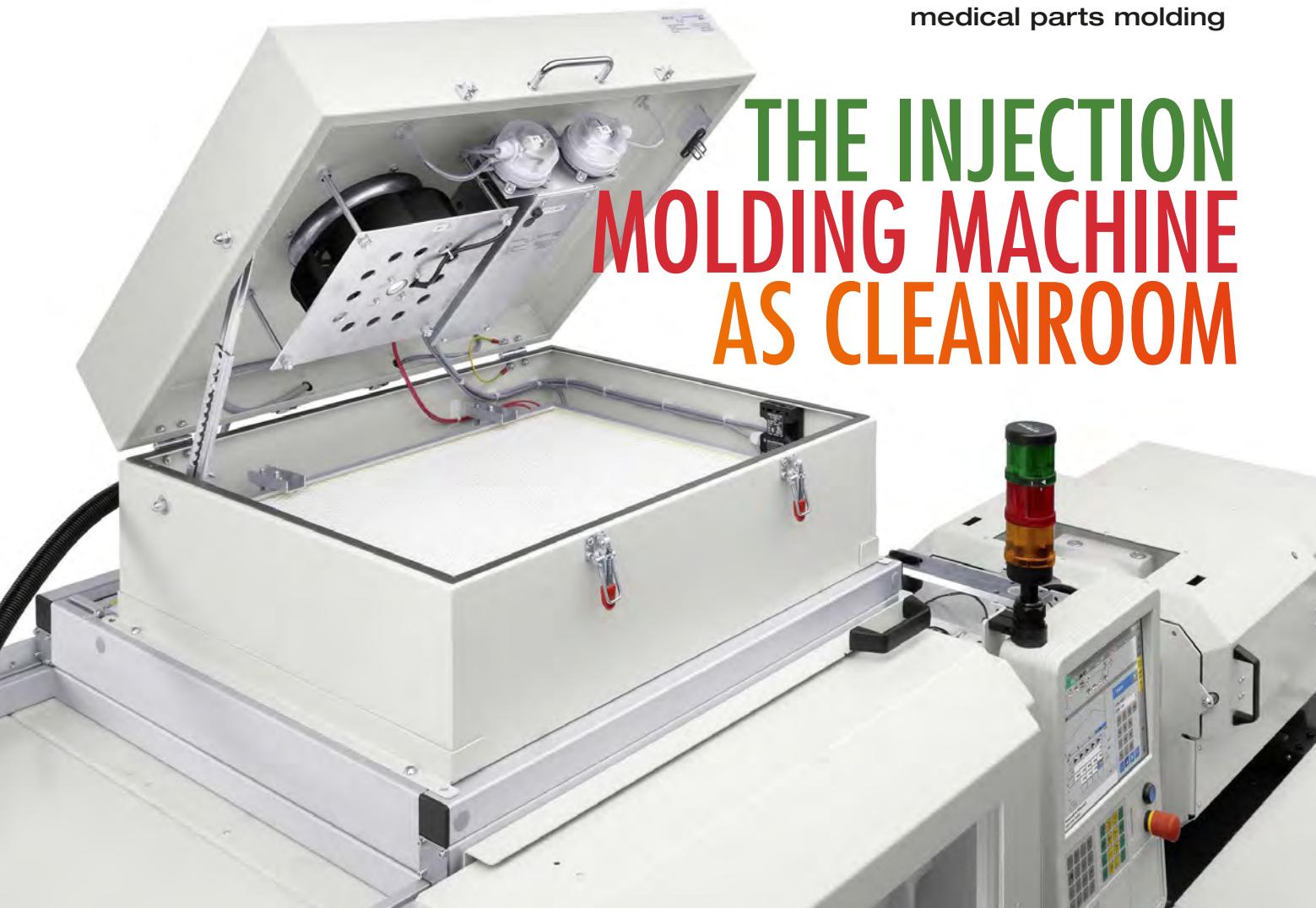
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THE INJECTION MOLDING MACHINE AS CLEANROOM



Reconfiguring an injection molding press into its own cleanroom is already a thing in Europe. And there's no reason why it won't work for small and medium-sized shops on this side of the pond looking to get in on the growing demand for plastic medical parts without shelling out big bucks on a full-blown cleanroom. **By Mark Stephen, editor**

Injection molders who aren't interested in medical parts making are probably thinner on the ground these days than Hillary Clinton supporters at an NRA rally. And there's a good reason why so many shops want a piece of this particular action: Led by the bulge of aging baby boomers, there are now more people in North America age 60 and over than there are under age 15, a demographic fact that's ratcheting the demand for medical devices of all types – from disposable packaging, syringes, petri dishes, and test tubes to parts for sensoric and diagnostic equipment and plastic implants – into overdrive. Which makes the healthcare industry the

closest thing to recession-proof this side of food packaging.

For the product makers, however, the big catch to the healthcare boom is that there's no room for error. Medical plastic parts are subject to some of the most stringent quality tests on the planet, from the development phase to high-volume production. And nothing looms larger than cleanliness, which has to be guaranteed from the outset. The air in premises where medical products are being made must be free from germs and particles to an extent determined by the classification of the manufacturing/assembly cleanroom. For injection molding, cleanrooms of Class 7 (350,000 dust particles per cubic foot of air in idle condition), Class 6 (100,000 dust particles per cubic foot), and Classes 5 to 3 (10,000 to 100 dust particles per cubic foot) are generally specified.

Full-blown production cleanrooms have been the solution for satisfying medical part standards for decades now. But they're expensive to build, operate, and maintain – prohibitively so for many small and mid-sized molders. The good news? Depending on the stringency of the requirements,

Photo at top: A cleanroom module with air ionization above the clamping unit generates clean air using a preliminary filter and a HEPA filter and neutralizes electrically charged mold parts with ionized air. **Photo Credit:** Arburg Inc.

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the injection molding machine can be reconfigured into its own cleanroom.

If this option surprises you, odds are you're from North America. "Turning an injection molding machine itself into a cleanroom is a fairly common practice in Europe, but it's a new concept to many North American molders," said Juergen Giesow, director of technology and engineering with Arburg Inc. "It's a production-efficient approach that more molders should look into as a way to establish cleanroom production at a lower cost."

CLASS ACT

To configure an injection molding machine in a cleanroom that satisfies Class 7 or better is comparatively easy in most cases, the experts say. "To begin with, the injection molding machine must be subjected to complete and thorough cleaning," said Gernod Dittel, managing director of Dittel Cleanroom Engineering. "To accomplish this, any contamination must initially be removed with conventional cleaning agents, followed by washing the machine down with more advanced and more thorough cleansers. Surfaces with non-slip or anti-slide coatings that cover walk-on surfaces must be removed because dirt particles will adhere to them." To be better able to maintain that level of cleanliness, Dittel continued, use presses with clamping units in stainless steel with nickel-coated fixed and moving mold platens with covered bores. "These are easy to keep clean by following the relevant cleaning instructions," he said.

Once clean, the press must be encapsulated at the exposed points where the molded parts could come in contact with the environment. "A Class 7 cleanroom can be reached by placing a cleanroom module – that uses air ionization and preliminary filter and a high-efficiency particulate air, or HEPA, filter – above clamping units and the conveyor belt," Giesow said. "The conveyor belt links the injection molding machine to the cleanroom by passing the parts through an air lock into the cleanroom, where the final assembly and packing take place." The machines with HEPA filters can be easily certified to the required cleanroom classification, he added.

And when a mold has to be changed, it's necessary only to close the air lock between the machine and the cleanroom. "The HEPA filter can then be pushed over the clamping unit of the press, giving good access to the clamping system and mold," Giesow said. "Once the mold change is completed, the HEPA filter is moved back over the clamping unit and activated, ensuring the machine is again suitable for cleanroom use." But make sure to clean the entire area again before restarting production, the experts say. "It's usually necessary to purge and clean the injection unit," Dittel noted.

AYE, ROBOT

Integrating a robotic system into the production sequence can be more challenging. "In general, the normal positioning above the clamping unit for vertical entry of the robot arm is impossible in these cases," Giesow said. Consider using either an integrated side-entry robotic system or a six-axis robotic system instead. "Both can be placed next to the machine in a

docked cleanroom environment," Giesow continued. "The housings feature separate HEPA filters, thereby upgrading the environment to the same cleanroom level as that in which production takes place."

In the end, the decentralized concept of reconfiguring an injection molding machine into its own cleanroom for Class 7 products or better offers a number of advantages. "Due to the crane heights required for installing and removing molds, classic production cleanrooms need significantly high ceilings, sometimes up to 20 feet high," Giesow said. "By taking the production element out of the equation, the decentralized concept not only allows for lower ceilings in an assembly-only cleanroom, but an overall size reduction of up to 25 per cent, all of which lowers the operational cost dramatically."

Second, since flushing and cleaning of the injection unit will now take place completely outside the cleanroom,



The housing of the robotic system features a separate HEPA filter, which upgrades the environment to the required cleanroom level.

Photo Credit: Arburg Inc.

And because the production is taking place outside the cleanroom, fewer people are required *in* the cleanroom, which reduces the risk of part contamination. "Also, the machine operators working alongside the molding machine don't need to follow special dress codes because the machine itself has been sealed off and protected at its exposed points," Giesow said.

So for Canadian plastics processors looking to get in on the growing demand for plastic medical parts without emptying their coffers on full-blown cleanrooms, reconfiguring their existing presses might be the first step towards reconfiguring their profit margins. **CPL**

RESOURCE LIST

Arburg Inc. (Newington, Conn.); www.arburg.us; 860-667-6500

D Cube (Montreal); www.dcube.ca; 514-272-0500

Dittel Cleanroom Engineering (Kochel/Ried, Germany); www.dittel-engineering.eu

there's no harmful impact from that on the assembly and packaging operations going on inside.

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AUXILIARY EQUIPMENT

Blender controller with increased capacity



With seven times the speed of its 1212 controller, eight times the memory, and 45 times the resolution of the load cells used to weigh batch ingredients, **Maguire's** new *4088 controller* for gravimetric blenders is designed to enhance communications with other devices in an Industry 4.0 setting and offer centralized control of both blending and loading.

Options for operators include a keypad/digital thumbwheel interface or a new touchscreen that is removable for remote operation, intuitive graphical displays, and multiple languages. Standard with the touchscreen is built-in software for a conveying system for loading multiple materials into a blender and metering the combined materials into a processing machine.

In comparison with the Maguire 1212 controller, data processing in the new system is increased from 16- to 32-bit; speed from 16 to 120 MHz; and memory space from 12 to 96 KB. Flash memory is now rated at 512 KB internal and 8 MB external, and random access memory at 96 KB internal and 32 MB external. The increased memory makes it possible to have more storage for data logs, and also offers the ability to handle larger communication buffers.

Maguire Canada/Novatec Inc. (Vaughan, Ont.);
www.maguirecanada.com; 866-441-8409

Barway Plastic Equipment Inc. (Vaudreuil-Dorian, Que.);
www.barway.ca; 450-455-1396

Next-generation shredders for plastics

Rapid Granulator is introducing its new *Raptor* series of shredders for plastics – modularly designed units that feature an “open-hearted” design that enables quick and direct access to the shredder rotor and cutter chamber, drastically simplifying the cleaning and service process.

The Raptor is a shredder and granulator hybrid with the shredder’s heavy-duty cutting technology combined with granulator features such as the “open-hearted” design that makes it easy to operate, service, and clean: The front door, hinged on the side, provides unrestricted access to the rotor and to the screen, which is mounted in the door; once the front door is open, the shredder hopper mounted on a rear hinge can be tilted back.



Rapid offers 36 base configurations of the Raptor in order to handle various customer applications. The modular systems feature two diameters and two widths (31.5 inches and 53 inches).

There are two system designs for pushing material into the rotor: FlexiPUSH and PowerPUSH. The PowerPUSH is available with an extended pusher length (PowerPUSH-XT); there are also three different cutting systems: quad cut, claw, and power wedge.

Rapid Granulator Inc. (Cranberry Township, Pa.);
www.rapidgranulator.com; 724-584-5220
Dier International Plastics Inc. (Unionville, Ont.);
www.dierinternational.com; 416-219-0509
D Cube (Montreal); www.dcube.ca; 514-272-0500

BLOW MOLDING

Hybrid electric unit for the production of canisters

The new *Eblow 37* hybrid electric blow molding machine from **Bekum** is designed for producing packaging, especially canisters.



By combining the technology of the company's Eblow series of electric powered packaging machines with its proven BA 34.2 hydraulic canister press, the Eblow 37 offers the best of both worlds:

an energy saving system with fast closing pressure build-up. On the Eblow 37, closing unit and mold closing are electrically driven, while the closing pressure build-up for force transmission is done using servo hydraulics for speed.

With a closing force of 370 kN and a mold width of 700 mm, canister production is the machine's specialty: Eblow 37 can boost canister production by up to 15 per cent over conventional hydraulic machines, with an output volume of 240 pieces per hour based on a 20 litre lightweight canister.

Additionally, the Eblow 37 has a spiral distributor blow head, which offers superior, uniform wall thickness distribution in the preform and the finished article, allowing the operator to optimise the parison quality not only for single-layer products, but especially for products with a multi-layer structure.

Bekum America Corporation (Williamston, Mich.);
www.bekumamerica.com; 517-655-4331

EXTRUSION

Engineering updates including quick screw exchange technology

Davis-Standard LLC is introducing a slew of engineering updates to its extruders, such as a *new extruder frame, innovative feedscrew design, and quick screw exchange (QSE) technology.*

The standardized extruder frame is built with additional space to simplify maintenance and improve heater access. Computer designed stainless steel feedscrews provide reliable melt homogeneity for resins like acid copolymers, which improves bond performance to materials such as aluminum foil. Other extruder advantages include electrical barrel heating with air-cooled blowers for each zone; temperature controlled water cooling for gearbox oil cooler, water-cooled screw, and feed section; and fixed die support and thermal expansion capability.

The QSE adapter (pictured) enables processors to easily change the screw without dismantling the melt pipes, feed block, and other components. An extraction tool is included to manually change the breaker plate melt-filtering inserts. The adapter is engineered with an electrical pressure gauge,

manual or motorized pressure spindle, double thermocouple for every heating zone, and breaker plate with two-screen pack.



Davis-Standard LLC
(Pawcatuck, Conn.);
www.davis-standard.com; 860-599-1010
Auxiplast Inc.
(Ste-Julie, Que.);
www.auxiplast.com;
866-922-2894

PACKAGING

High-speed form/cut/stack machine

Designed for food, medical, and industrial packaging, the new **GN800** from **GN Thermoforming Equipment** also marks the company's entrance into the form/cut/stack market and expands its plug-assist machine offering.

The GN800 has a forming area of 800 mm by 570 mm (31.5 inches by 22.4 inches) and is capable of forming 150 mm above and below the sheet line. The cutting force of the form-

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ing and cutting stations is 75 tons. The GN800 also has additional space between the forming and cutting stations to provide extra cooling time when running heavier gauge materials or PP.



cut-in-place capabilities as a standard feature. The unit also features independent top and bottom servo-plug drives for better material distribution.

The GN800 handles sheet widths up to 880 mm (34.6 inches), and can run sheet thicknesses ranging from 0.25 mm (0.010 inches) to 1.5 mm (0.060 inches). The unit comes fully equipped and handles all thermoformable grades of PET, OPS, HIPS, PLA, PP, and PVC.

GN Thermoforming Equipment (Chester, N.S.);
www.gnplastics.com; 902-275-3571

The GN800 features a standard oven that is four times the index length of the forming area. The machine incorporates high-efficiency heaters, and is equipped with

ROBOTS & AUTOMATION

New robots for large and small injection molding machines

Wittmann Battenfeld has extended its W8 pro series robot range at both ends of the manufacturing spectrum with the new *W853 pro* and *W863 pro* robots.



Standard equipment includes the ambiLED status display and the new decentralized drive control. Above that, the new large models can use the intelligent EcoVacuum function, a shutdown function of the vacuum producer that allows for minimizing the robot's demand for compressed air and therefore a significant saving of operation costs.

The new robots are also equipped with the R8.3 robot control system as a standard feature, which provides access to many special real-time functions – for example, the iVac intelligent vacuum system with teachable switch-points, the QuickNew function for easy programming via a visual selection system, or the SoftTorque programme for a flexible removal motion based on the ejector motion of the injection molding machine.

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But the two new models differ in regard to the length of their axes and their payloads. The W853 pro (pictured) is designed for a payload capacity of 40 kg; the W863 pro is rated for 75 kg, making it particularly well-suited for use in the large machine segment.

Wittmann Canada Inc. (Richmond Hill, Ont.);
www.wittmann-canada.com; 905-887-5355

SOFTWARE

Supervision software for the “smart factory”

The integration between the production, distribution, and information structures of the manufacturing industry is key to the “smart factory” concept – and **Piovan** has implemented this with the evolution of its process control and management software based on Industry 4.0 guidelines, creating communication networks with an exchange capacity well ahead of schedule to allow for connections between the various parts of the technological ecosystem.

Piovan’s *Winfactory 4.0* can be configured in several ways. Piovan developed different modules to manage each situation, from the production of PET to flexible film preforms, or preforms for specific sectors like the medical and automotive industries with a completely customized set-up for each aspect based on the particular type of process.

The possibilities of *Winfactory* are extended by a series of optional and on-demand functions and services – for example, tracking, OPC-UA server, remote assistance, line power, formula, production, and necessary material reordering manage-

ment. The system itself automatically manages the use of the lines based on what and how much must be produced.

With the installation of the OPC-UA protocol, both the basic and additional *Winfactory 4.0* features can be made available on machines, systems, and automation devices not manufactured by Piovan, and can interface directly with the management system at the individual plant as well as the company network to share information between systems and collect process data.

Piovan Canada (Mississauga, Ont.);
www.piovan.com; 905-629-8822



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A closer look at screws and pellets (part 1)

By John Bozzelli, Injection Molding Solutions



Screw design, pellet type/size, and material behaviour are all critical issues in delivering uniform melt to the mold, but they don't always get the consideration they deserve. I'd like to help change that by examining them in greater detail, beginning with screw design.

Screws have three zones: one for feeding; a second for transitioning solids into melt, also known as the compression or melting zone; and a third zone for metering. The function of the feed zone is to convey unmelted plastic to the transition zone. Usually the feed zone accounts for about half the total length of the screw, and the flights in this section are deep. The feed section of the screw is not designed to melt the plastic, but to auger the granules forward and prepare them for melting. The granules are "gravity fed" through the feed throat, and there is lots of air between the granules in this part of the screw. This air, as well as volatiles such as residual moisture and light fractions of the poly-

mer (and perhaps of the additives), must be vented through the feed throat as the material begins to heat in the rear zone.

The transition zone is the workhorse of the melting process. The deep flights in the feed zone transition or taper into the shallow flights of the metering zone, which accounts for about 25 per cent of the screw length. This transition zone compresses the granules against the barrel wall, generating roughly 80 per cent of the energy needed to melt the granules. Plastic sticks to the barrel wall, and as the screw rotates the flights wipe off a thin film to form a melt pool between the flights of the screw. This melt pool rolls in a spiral and grows larger as the resin progresses toward the metering zone. The transition zone is supposed to melt the pellets completely, but this is often not the case; if you've ever wondered why a part in a multi-cavity mold didn't fill, unmelted or partially melted pellets may have been the culprits.

If you ever take a close look at the flights in the transition and early stages of the metering zone, you're almost guaranteed to see a layer of carbon built up behind the flights; and you might also see unmelted granules, or even residue of colours that you ran weeks ago. This shows that all the new resin arriving in the transition zone is not pushing all of the old resin out in front of it. And it means that there are dead spots behind the flights where resin "hangs up," partially melted and degrading into carbon. This carbon on the flight is the root cause for the dreaded black specs, or carbon showers, that cause you endless hours of purging. And if you decide to bite the bullet and tear it down for cleaning, don't use wire brushes and the like. For the screw to work properly, it must be smooth and highly polished with no scratches or undercuts. The concept is for plastic to stick to the barrel and "slip" off the screw. Those who mold clear parts are especially sensitive to carbon, as it's a significant cause of rejects. Eliminating the dead spots on the screw will significantly reduce carbon formation.

The metering zone of the screw pumps plastic forward to form the shot and overcome the backpressure set by the operator. Normally, it's not designed to finish melting or mixing the plastic. If unmelted or partially melted granules make it through the transition zone, the metering zone will not complete the melting process.

Now that we've gone over some screw design basics, we'll examine resin in our next article in the next issue. **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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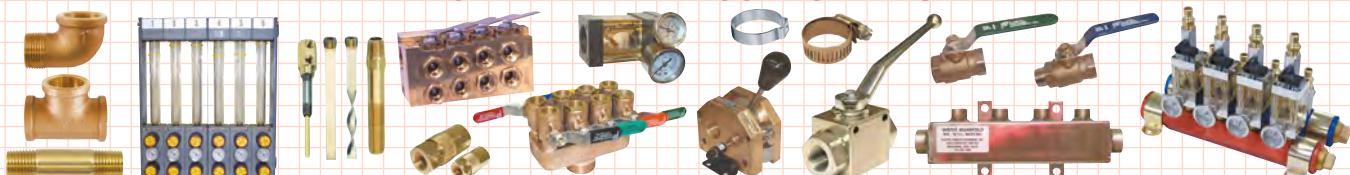
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