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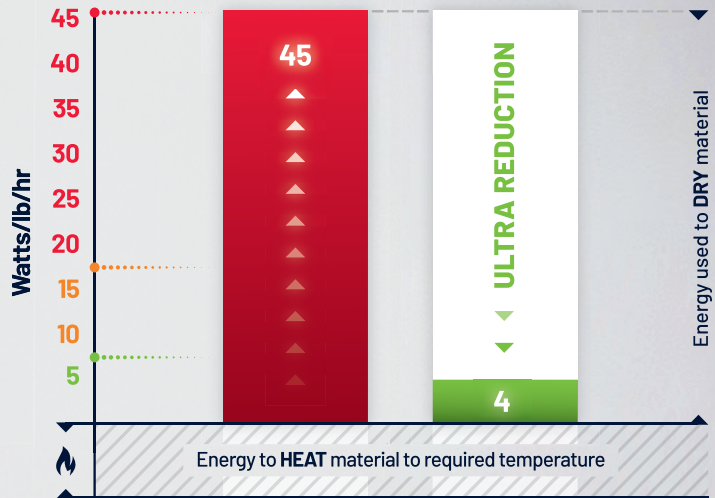
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FROM THE ARCHIVES

In these difficult times, here's a quick laugh for you at our expense. The July 1994 issue of *Canadian Plastics* reported on the recent annual meeting in Toronto of SPI Canada, the forerunner of the Canadian Plastics Industry Association. Giving the keynote address at the event, on what it takes to be a winner, was former Toronto Maple Leafs captain Darryl Sittler – only that's not how we referred to him. We managed to misspell his first name twice in our story, two different ways: first as "Daryl" and then as "Daryll." Sorry about that, Darrell.

Number of the month: 10 million*

* Number of units per month that injection molder Tessy Plastics will produce with help from its two new automated manufacturing systems. (See pg. 22)

Cover photo: ©iNetizen - stock.adobe.com



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Even in the middle of a pandemic, the science behind molding plastic parts doesn't change. Which means it's just as critical now as ever to dry plastics in the processing phase. These new technologies really bring the heat.

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One of the few bright spots to emerge during the COVID-19 pandemic is industrial automation, which is helping to maintain social distancing between plant floor workers. And it could trigger a lasting boom in factory robotics.

As COVID-19 spreads so does single-use plastic

As the COVID-19 pandemic continues, there's a lot of concern among the usual anti-plastics suspects – Greenpeace, Twitter mobs, et cetera – that the virus will undo all the hard work of putting in place single-use plastic bans.



Before the pandemic hit, much of the world was waging a war against single-use plastics. Corporations and big companies that used plastic were being shamed on social media – and then sometimes boycotted – as major polluters, and many countries across the world began banning or at least considering a ban on single-use plastics. Just weeks before New York City became a COVID-19 epicentre, the New York State legislature banned plastic grocery bags.

But the threat of the virus and the risk its infectious nature poses have changed all that. Whether it's for essential equipment like sanitizers, face masks, latex gloves, syringes, or even the disposable packaging that restaurants are relying on to reduce the risk of spreading the virus through home deliveries, the pandemic has catapulted the consumption of plastic.

And when it comes to bags, the once fashionable alternatives of canvas and paper are all but banished now. My local grocery store has stopped letting customers bring in reusable bags and distributes single-use plastic bags only, and I'll bet yours is doing the same. Such a policy would have been unthinkable three short months ago. In acknowledgment of the hygiene connection, the legislators in New York temporarily suspended implementation of the law banning single-use plastics, and California – the most populous state in the U.S. – has suspended its four-year-old ban on single-use plastic bags. On a larger scale, the U.S. and UK are reversing guidelines that limit or prevent the production of plastic, the use of single-use plastics in

Asia has grown rapidly during the pandemic, and officials in India are calling for all barriers and bans on plastics to be removed immediately. Which is why some critics are now claiming that the resurgence of plastic bags is one of the worst things to come out of the pandemic. An editorial in the *Los Angeles Times* called our industry “reprehensible...for taking advantage of the crisis”, and an anti-plastics advocacy group publicly fretted that the pandemic “will normalize the use of single-use plastics.”

Leave aside the fact that single-use plastics were “normalized” decades ago, and the critics – wrong in so many other ways – are right about one thing: some single-use plastic packaging is just marketing and isn't necessary from a public health perspective. (This doesn't make it invalid, though, since it's what consumers are drawn to. And it all can – and should – be recycled.) But most of our current reliance on plastic packaging was clearly motivated by the need for public hygiene. The days of getting our meat from open counters are largely history, as people grew uncomfortable with the exposure of meat to insects and germs. As for disposable plastic water bottles, they are – as Ross McKitrick, a professor of economics at the University of Guelph and a senior fellow at the Fraser Institute, pointed out in a recent *Financial Post* article – “one of the great public health inventions of the modern age. They are remarkably cheap and they save us the ordeal of shared public water fountains.”

The COVID-19 crisis shows that public hygiene is an important priority – ultimately *the* most important priority. Those dreaming of a plastic-free future are being shown the real future instead: When the chips are down and lives are on the line, plastic delivers in ways that alternative materials can't.

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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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Two cutting-edge 3D printing applications



In an industry-specific example of the butterfly effect, researchers at the University of Toronto in Scarborough have successfully 3D-printed a high-resolution, biodegradable butterfly from waste cooking oil – and it could have big impacts on both additive manufacturing and recycling.

The project was led by Professor Andre Simpson, director of the Environmental NMR Centre at U of T Scarborough, and used waste oil obtained from a local McDonald's outlet. Simpson and his team filtered out chunks of food particles and then used a straightforward one-step chemical process in the lab, with about one litre of used cooking oil necessary to make 420 ml of resin. The first of several items printed was the aforementioned plastic butterfly (pictured).

“The formulated resin produced high-resolution prints with features down to 100 micrometers,” Simpson said. “The rapid prototyped prints show considerable thermo-mechanical stability, morphological homogeneity, and biodegradability when compared to a state-of-the-art research resin and a commercial resin.”

Other benefits of the new material include offering a constructive, biodegradable end-use for used cooking oil, which can otherwise cause serious environmental issues by clogging sewage lines; and since it can be made for as little as US\$300 per tonne, it's an inexpensive alternative to conventional high-resolution 3D printing resins, which can cost upwards of US\$525 per litre.

“Most recycled waste cooking oil is currently used in the production of soap and biodiesel,” Simpson said. “It may be transformative for recycling programs if high-value commodities [such as resin] can be manufactured directly from it.”

CPL

Materialise NV, a 3D printing technology supplier headquartered in Leuven, Belgium, has designed a 3D-printed door opener that makes it possible to open and close doors with your arm instead of your hand, lessening the direct contact that's responsible for spreading COVID-19.

The company is offering the printable design as a free download in hopes that it catches on worldwide.

Researchers believe COVID-19 can live on surfaces for an extended time – as long as three days on some surfaces – and the virus is commonly found on doorknobs, which are among the most germ-infested objects in houses, hospitals, factories, and homes for the elderly.

The hands-free door opener is installed by fastening two 3D-printed pieces together with four screws over an existing door handle. No drilling is required, and the handle itself doesn't have to be changed. The first model can be attached to cylindrical handles – but not doorknobs – but Materialise plans to introduce additional designs using different 3D printing technologies as needed in response to the spread of the virus.

The idea for the 3D-printed door handle originated at an internal company meeting held to establish measures to protect Materialise employees and visitors; staff realized that people coming and going meant the meeting room doorknob was being touched repeatedly, but leaving the door open wasn't an option either. “It soon became clear that more people could benefit from this design and [we] decided to make it available for free,” company officials said. “Anyone with access to a 3D printer can download the design and 3D-print it locally in a matter of hours, which means it can become available all over the world very quickly.”

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Photo Credit: Materialise NV

Trade shows feeling the brunt of COVID-19 impact

In addition to being a global healthcare and economic crisis, the COVID-19 pandemic has wreaked havoc on the trade show industry, plastics sector events included.

As the virus broke out in China in January, shows in that country began to be either postponed or cancelled, starting with the Asiamold 2020 trade show, which was postponed from its scheduled date of Feb. 26-28 at the China Import and Export Fair in Guangzhou and has not yet been rescheduled.

Many other trade events in Asia and Europe quickly went dark as the virus spread west and into nearly every continent. One of the first big shows to fall in North America was the North American International Auto Show, originally scheduled for June at the TCF Center in Detroit and cancelled in March; the TCF Center, formerly the Cobo Center, was repurposed into a temporary field hospital in preparation for the increased need for urgent health care.

A repeat victim of the pandemic is the massive Chinaplas 2020 show, which has now been pushed back into 2021 and moved to a different city. Following an initial postponement in Feb-



On the show floor at Chinaplas 2019.

Photo Credit: Chinaplas

ruary from April 21–24 to Aug. 3–6, 2020 at the National Exhibition and Convention Center in Shanghai, Chinaplas organizer Adsale Exhibition Services has now announced a further postponement and change of venue to April 13–16, 2021 at the Shenzhen World Exhibition and Convention Center in Shenzhen, Guangdong Province.

So far, North America's biggest upcoming plastics show, NPE in Orlando, Fla., hasn't been rescheduled from its date of May 17-21, 2021. "With NPE2021 more than a year away, we anticipate that things will turn around in the coming months, leading up to an especially vibrant and necessary show,"

said Susan Kryz, vice president, trade shows with show sponsor the Plastics Industry Association. Other shows are being combined – event organizer AMI is planning to stage four co-located exhibitions in Cleveland, Ohio on Nov. 4-5, 2020: Compounding World Expo, Plastics Recycling World Expo, Plastics Extrusion World Expo, and Polymer Testing World Expo.

And while some portion of the cancelled events are being reimagined in creative ways as online or virtual shows, the true impact of show closures, postponements, and event transformations to online formats won't be known for many months. **CPL**

Ingenia acquires former LyondellBasell compounding plant in Texas

Ingenia Polymers Corp., a compounder with Canadian roots, has acquired the Bayshore masterbatch tolling operations in LaPorte, Tex. that were part of A. Schulman Inc. prior to its acquisition by LyondellBasell in 2018.

The financial terms of the deal have not been disclosed.

In a statement, officials with Toronto-based Ingenia said the acquisition "brings added expertise and capacity to its team and infrastructure, increases its leadership in the polymer producer services market, and expands its capability to serve the converter market."

"The Bayshore operations at La Porte, led by an experienced team and combined with Ingenia's leading technologies and operations management, will help Ingenia to better serve its customers across North America," Ingenia founder and CEO John Lefas said in the statement. "We are committed to serving the industry with the best quality and service in the market, and our acquisition of the Bayshore operations reflects that commitment." **CPL**

IPG buys assets of Nortech Packaging

Montreal-based packaging systems supplier Intertape Polymer Group Inc. (IPG) is acquiring the operating assets of Nortech Packaging for approximately US\$36.5 million.

Based in Chicago, Ill., Nortech specializes in manufacturing, assembling, and servicing automated packaging machines under the Nortech Packaging and Tishma Technologies brands.

In a statement, IPG officials said the acquisition "will expand [our] product bundle into technologies that are increasingly critical to automation in packaging."

"Automation system design and service are key capabilities in growing markets like e-commerce," the statement added. "With an installed fleet of more than 400 machines, the acquisition provides IPG with opportunities to supply consumables to the existing fleet, as well as deploy system-selling for new customers combining machines with ongoing consumables." **CPL**

Good Natured Products buys Shepherd Thermoforming & Packaging

In an all-Canadian deal, bio-based plastic packaging supplier Good Natured Products Inc. has acquired Shepherd Thermoforming & Packaging Inc. for approximately \$9.5 million.

Headquartered in Brampton, Ont., Shepherd designs custom packaging including engineering, mold production, and final product manufacturing for both thin-gauge and heavy-gauge applications. Customers include several Fortune 500 companies throughout Eastern Canada and the Northeast U.S.

Founded in 2006 and formerly known as Solegear Bioplastic Technologies Inc., Vancouver-based Good Natured Products is a plant-based products and packaging company that designs, produces, and distributes bioplastics for use in packaging and durable product applications.

“After nearly doubling our revenues in 2019, this transaction marks another significant milestone in [our] growth trajectory,” said Good Natured Products CEO Paul Antoniadis. “The acquisition enables us to expand on the development of custom packaging solutions, one of our largest growth sectors.”

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SUPPLIER NEWS

- **Arakawa Chemical Inc.** has appointed Oakville, Ont.-based chemical distributor **Cambrian Solutions** as its Canadian distributor for its C9 hydrogenated hydrocarbon line sold under the Arkon brand name. Arakawa’s market focus in the Americas is in supplying to hot melts, sealant, PSA, tapes, and plastic film modification among other adhesive applications.
- Resin distributor **Nexeo Plastics**, headquartered in The Woodlands, Tex., is now distributing sustainable materials provider **BioLogiQ’s** BioBlend materials in North America. Nexeo will carry and distribute BioLogiQ products in Canada and the U.S., and will provide logistics in Mexico, to include BioBlend XP, BioBlend XD, and BioBlend BC product lines. BioLogiQ is headquartered in Idaho Falls, Id.
- South Korea-based chemical maker **Songwon Industrial Group** has appointed Toronto-based **A. S. Paterson Co. Ltd.**, a distributor of performance chemicals, as its sales representative for Canada.

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PEOPLE



Frederique van Baarle



Tanja van Dinteren



William J. Hayes



Julia Keller



Michael Müller



David Lalancette



Gene Mueller



Robert (Kim) Nollner



Wolfgang Steinwender

- German specialty chemicals company **Lanxess AG** has named **Frederique van Baarle** as head of its high-performance materials business unit.
- Netherlands-based colourant, additive, and masterbatch supplier **Holland Colours NV** has named **Tanja van Dinteren** as CFO.
- Chicago-based packaging supplier **Berlin Packaging** has appointed **William J. Hayes** as president and CEO.
- Extrusion blow molding machinery maker **Kautex Maschinenbau**, based in Bonn, Germany, has named **Julia Keller** as CFO; and **Michael Müller** as global sales manager for its packaging division.
- Elastomer supplier **R.D. Abbott Co. Inc.**, headquartered in Cerritos, Calif., has named **David Lalancette**

- as account manager for Quebec and the Maritime provinces. He is based out of Montreal.
- Swiss-based specialty chemical maker **Clariant AG** has appointed **Gene Mueller** as president of its North American operations. Mueller is headquartered in Louisville, Ky.
- Macomb, Mich.-based tooling provider **Tooling Tech Group** has named **Robert (Kim) Nollner** as business development sales manager for its automated systems offerings.
- Austria-based recycling machines manufacturer **Next Generation Recyclingmaschinen GmbH (NGR)** has named **Wolfgang Steinwender** as CEO. He replaces Josef Hochreiter.

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Canadian Plastics

THE DCAST

RESIN SUPPLY, DEMAND & PRICING DURING COVID-19 - A podcast series

The COVID-19 pandemic is hitting the plastics industry in wildly different ways. For health and safety reasons, demand for plastic products such as single-use bags, disposable wipes, cleaning agents, hand sanitizer, disposable gloves and masks is at a record high.

At the same time, as billions of people around the globe stay home to slow the spread of the virus, physical demand for crude oil has dried up, creating a global supply glut and historic drops in oil prices. For plastics processors, this means some virgin plastic could be significantly cheaper than recycled resin for the foreseeable future.

Given these unprecedented factors, trying to make sense of the resin market going into the second quarter and beyond requires an expert touch. Which is why Canadian Plastics is presenting a series of podcasts that feature analysis from ICIS market experts Zachary Moore and Jeremy Pafford on supply, demand, and pricing trends for a range of the most widely-used production polymers, including PET, polyethylene, polypropylene, polystyrene, PVC, and engineering resins.

Join us for a series of podcasts beginning in June available on

[Canplastics.com](https://www.canplastics.com)

Speakers

- **Zachary Moore**, Deputy Managing Editor for ICIS in the Americas
Zachary has been working in the petrochemical industry for the past eleven years – including in Asia and the Middle East – and has covered a wide range of petrochemical products including polyolefins, aromatics, and aromatics derivatives.
- **Jeremy Pafford**, Head of North America, ICIS
As Head of North America, Jeremy drives ICIS's commercial strategy for the U.S., Mexico, and Canada. He has extensive background in analyzing Americas chemical markets such as ethylene and propylene down to intermediates, oleochemicals, and polymers.



Canada, plastics & **COVID-19**

More than just a humanitarian crisis, the COVID-19 pandemic is causing global economic disaster. Manufacturing is among the industries to be most negatively affected as the virus domino toppled supply chain lines and shuttered factories in China, Europe, and then worldwide. And Canada's plastics industry isn't being spared the effects.

By Mark Stephen, editor

In his 1922 poem "The Waste Land," T.S. Eliot famously described April as the cruelest month. But what was poetic license nearly 100 years ago is harsh reality today. April 2020 will be remembered for a long time to come as the month when the COVID-19 pandemic became life-changing for most of us.

Lockdowns, border closures, and strict social distancing requirements have turned daily life upside down, and the world economy – which was rosy just three months ago, with the International Monetary Fund forecasting income growth on a per capita basis for most nations – is now projected to suffer its worst year since the Great Depression of the 1930s.

And manufacturing is a major part of most of these economies, accounting for nearly 16 per cent of the global GDP in

2018. Due to the epidemics of COVID-19 across the globe, the manufacturers of such major industries as automobile, chemical, electronics, and aircraft are facing concerns regarding the availability of raw materials. In Asia-Pacific, China is mostly affected by the condition, due to the fall in industrial production coupled with the shutdown of factories. At the peak of Chinese efforts to control the COVID-19 outbreak, factories making 80 per cent of Chinese exports were shuttered.

In Europe and North America, factories were among the first to feel the effects of the deadly virus, as supply lines from China were disrupted. Production and factory employment fell sharply as the pandemic weighed on the factory sector. In the U.S., new orders hit their lowest level in 11 years. Some large auto plants have shut down altogether in an effort to

protect workers; some, like General Motors and Ford Motor Co., are retooling to make ventilators. Other non-automotive manufacturing plants continue to operate, but social distancing can pose challenges in a factory environment. And with hundreds of millions of North Americans under orders to stay home, demand for big-ticket items has suffered.

The price of oil has fallen significantly due to a decrease in demand for petroleum products used in transportation and a price war between Saudi Arabia and Russia. Although chemical production is deemed critical in the fight against the pandemic, auto manufacturing is a major outlet for chemical production, which is why some chemical makers see a significant slowdown in business ahead. “Polymers highly exposed to the transportation segments are being hit hardest by the pandemic, with polyamides topping the list as about half of PA66 demand comes from auto sectors,” market research firm Wood Mackenzie said in a recent report. Some chemical makers have already closed plants; others are delaying building projects in a bid to preserve cash and/or guarantee the safety of construction crews. In mid-March, Calgary-based Nova Chemicals Corp. paused construction on its new Corunna polyethylene site near Sarnia, Ontario, although work was resumed in mid-April. “We’re keeping these workers, as well as all our site-critical workers, safe with enhanced protocols,” said Nova president and CEO Todd Karran.

On the flip side, chemical companies across the globe have ramped up efforts to combat the pandemic, providing the basic raw materials to the producers of health, hygiene, and safety products such as face shields, sanitizer, disinfectants, and other cleaning products. “PET resin is an obvious winner, here,” the Wood Mackenzie report said. “Polyethylene, polypropylene, and polystyrene are also likely to be supported through robust packaging demand.”

INTO THE ABYSS

Here at home, the pandemic threatens to plunge Canada’s economy into the abyss. Like nearly every other nation on the planet, Canada has put its economy into an induced coma, and the result may be an historic downturn. At the Big Five banks, the average forecast among economists as of the end of March was for Canada’s economy to shrink by nearly 23 per cent in the second quarter on an annualized basis, twice what they predicted less than two weeks earlier. Others forecast an even deeper drop – Capital Economics expects a contraction of 35 per cent.

Oil development projects such as the Bay du Nord project off the coast of Newfoundland and Labrador have been put on hold. On the manufacturing side, major auto companies in Ontario have temporarily halted production to ensure the safety of their workers, but also in response to weaker global demand. Canadian auto parts supply giant Magna International Inc., of Aurora, Ont., withdrew its 2020 forecast amid the COVID-19 pandemic, reduced or suspended operations in many of its facilities – beginning with its China plant – and shifted production to make masks instead of seating at plants in Mexico and Europe. Else-

where in Canada, other companies have ceased operations.

It’s a devastating turn of events for the plastics industry, which entered the new decade on a definite high – North America had a new trade pact in place, the U.S.-China trade war was nearing resolution, concerns over the fallout of Brexit had subsided, and demand expectations had improved following a lacklustre 2019. That said, the manufacturing sector overall may be somewhat less affected by the COVID-19 crisis than other sectors because manufacturers are able to build inventories. And for Canada’s plastics sector, the damage is potentially even less because most, if not all, of these companies have been declared essential service providers under the guidelines of all of the provinces.

MAKING ADJUSTMENTS

But it’s certainly not business as usual. To begin, companies with manufacturing plants must follow guidelines for industry operators that set out screening, social distancing, and cleaning and sanitizing practices, plus additional precautions that can vary from one province to the next. For Brantford, Ont.-based straw maker Stone Straw, some the new guidelines are a heightening of procedures that were already in place. “Stone has always followed food production guidelines, so we’ve always had a hand sanitizing program in effect and we’ve always kept our machines sanitized on a daily basis, so some of the guidelines haven’t been a big adjustment for us,” said Abe Looy, the company’s regional operations manager. But others were more of a challenge. “We now take temperature checks on all our employees before they enter the plant, which takes time; and we’re not bringing in contractors unless it’s absolutely necessary, and we’re doing health screens on them if we have to let them in,” Looy said. “Inside our plant, we’ve redesigned our cafeteria for social distancing, limited the number of people



Photo Credit: AJ Mast for General Motors

Workers build the first production ventilators at the General Motors manufacturing facility in Kokomo, Ind.

allowed on breaks at the same time, and our employees wear face shields when social distancing can't be maintained."

And even companies that had taken steps to prepare for a healthcare crisis have been caught off guard. "We put a pandemic plan in place after the SARS outbreak ended in 2004, but COVID-19 developed so quickly that we weren't able to benefit from it," said Jerome Romkey, president of Chester, N.S.-based machinery maker GN Thermoforming Equipment. Two of the company's biggest COVID-19 adjustments, Romkey said, were to preserve physical distancing on the production floor and to satisfy heightened cleaning and sanitizing guidelines. "We've now split our one shift into two shifts to spread out our workforce, and cleaners come in several times a day to sanitize high-touch areas of the plant," he said.

Following the lead of companies in tech and other industries, most plastics processors and equipment makers are telling non-factory employees to work remotely. The overall system being used by W. Amsler Equipment Inc., a blow molding machinery maker headquartered in Bolton, Ont., is probably being used by most firms. "All of our sales staff and IT and engineers are working remotely," said sales and marketing manager Heidi Amsler. "Key personnel who have to come in every day are segregated in separate offices, and

we've readjusted our factory and scaled back the number of people on our plant floor to allow for social distancing. And we're prohibiting nonessential visitors."

HITS AND MISSES

Both in Canada and beyond, the impact of the pandemic on demand for plastic goods has been nuanced. Processors with the most exposure to the transportation and restaurant segments have been hit hardest, while soaring demand for healthcare products and frenzied consumer buying of necessities as lockdowns took effect in different regions have bolstered other product makers. "We're currently running regular shifts, but not full staff," said Abe Looy. "Our business is typically seasonal and we should be running full bore right now, but we're at only about 50 per cent capacity and new orders are slowing down by about 50 per cent. Restaurants are closed and there's not a lot of demand for takeout, and this is where we're getting hit."

Other companies haven't seen a slowdown. "Most of our customers are in the food packaging industry and their businesses are still strong," Jerome Romkey said. "We still have a lot of orders to fulfill for our thermoformers, so we're continuing production at a near-capacity rate." Plastic Molding Manufacturing (PMM), a Hudson, Mass.-based injection molder with five plants in five different U.S. states, is currently open at all of its locations and operating at full capacity, primarily to service its customers in the healthcare sector like GE Healthcare and Boston Scientific. "Our involvement in automotive molding has slowed down, but our medical and consumer business is stronger than ever," said PMM's CEO George E. Danis.

For many of Canada's plastics processors, as well as counterparts in the U.S., one of the most immediate challenges of the pandemic revolves around supply chain disruptions. Given the global and complex nature of sourcing, many machinery and parts makers are having difficulty accessing and delivering material. Border controls have tightened, leading to lengthy logistics delays. Current delays in goods arriving into Canada from the U.S. – which used to happen virtually overnight – are bad enough, but shipping containers from China are now being delayed by many weeks, even months, since the Chinese trucking industry is not operating at regular capacity and may not be for weeks to come.

By revealing that the globalized supply chain that brings us many of our products is shockingly fragile, the pandemic is highlighting a problem that many have been concerned about – and warning against – for years. George E. Danis, for example, has long advocated and encouraged the reshoring of manufacturing to the U.S. and Canada, and believes the case has been made ironclad by the pandemic. "Reshoring has been PMM's objective since the 1990s, when manufacturing was leaving the U.S.," he said. "It's the only way for manufacturing to succeed, and I think more people are now realizing this. We can't depend

THE NEED FOR SPEED



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on overseas manufacturers to supply us with healthcare equipment and medical supplies during emergencies because the delivery times are far too long. There's no denying the importance of the industry and businesses bringing back their products from offshore or retooling in North America."

Others agree, and suggest this may be one of the lasting legacies of the pandemic. "I think in Canada and the U.S., there will be a re-evaluation of the supply chain, and the need to onshore critical manufacturing," said Peter Fitzgerald, general manager of automation supplier Fanuc Canada Ltd. in Mississauga, Ont. "The need to have better control and access within country borders for critical parts has been made very clear by personal protective equipment shortages. A supply chain has many links, but if one link is missing then the whole thing breaks down, and the pandemic has shown that this can happen very quickly."

THE SHAPE OF THINGS TO COME

As of late April, the pandemic is far from over, but there are signs the world is inching toward a new phase in the crisis. Countries like Singapore and Japan are now tightening measures to prevent a surge in infections, while Italy, Spain, Belgium, Vietnam, New Zealand, and others have moved toward ending their shutdowns, and China has reopened many businesses. Reflecting this divide, two opposing arguments are taking shape, with those on one side saying that restarting businesses is important for a nation's social well-being and for generating much-needed tax revenue, and those on the other who argue that reopening too soon risks a second wave of infections and a far greater negative economic impact.

And the debate about what the recovery will look like is also moving to the forefront. Economic analysts are divided primarily between those who expect either a V-shape or a U-shape recovery for the global economy, although some are predicting a W- or L-shape. In general, though, economists are turning more cautious as the weeks go by. Many no longer think, as they once did, that economic activity will rebound this year on the rationale that most national economies were in good shape before the pandemic hit – especially in the U.S., where unemployment was near historic lows before the crisis. Instead, more are downgrading their projections, believing that staggered reopenings of economies until a vaccine is widely available imply a U- rather than a V-shape recovery. And while still projecting a sharp rise in economic activity in the second half of 2020, some



Nova Chemicals Corp. paused construction of its new Corunna site near Sarnia, Ontario for a month due to safety concerns.

Photo Credit: Nova Chemicals Corp.

Canadian economists believe Canada faces a particularly tough road ahead, especially compared to the U.S., for reasons that include higher household debt on average, greater dependence on oil and gas sector as a driver of growth, and lingering effects of the U.S.-China trade war on our economy.

But for the plastics and chemical sectors, the recovery may be as varied as was the falloff. In sectors that were hardest hit, like automotive, fears over potential shortages caused by future

global healthcare crises might spur companies to start looking to other places, and many analysts predict a return to greater domestic manufacturing of parts and materials – and more diverse sourcing of parts and materials within a country. Most obviously, this would mean a move away from China sourcing. Foodservice is also being hit hard, and ripple effects are definitely hurting the manufacturers who serve those businesses, but the recovery might be quick. "We expect our business to bounce back very fast once the pandemic is over, as our customers will want to refill the pipeline, and more," Abe Looy said. For the chemical industry, which has been designated as essential in both Canada and the U.S., the short-term results may be challenging and the long-term results difficult to forecast. "The contraction in economic growth may reduce overall demand for chemical products in the near future, notwithstanding the increase in demand for essential products," said Todd Karran. "Some long-lasting changes in consumer behaviours can be expected, but these will depend on factors that are challenging to predict today."

There may also be silver linings that emerge, including some that will make the industry stronger in the long-term. When asked about positive impacts of the COVID-19 pandemic on their businesses, respondents to a survey conducted in Ontario in mid-April by Automate Canada and the Canadian Association of Moldmakers identified increased collaboration within their company, diversification of their markets, improved connection to government services, adoption of new technologies, and better workplace health and safety.

The pandemic is still unfolding, and the surest prediction is that we can't predict much. The desire for more supply chain transparency and better contingency planning are apparent even now, but there will surely be other changes no one is seeing yet. The end goal should be to create a more illness-proof industry as part of a larger illness-proof global economy. No one wants another April as cruel as this one.

CPL



Photo Credit: HammerTek

Proceed with **CAUTION**

Pellets barrelling at high speeds through pneumatic conveying systems can create holes, and then leaks, in even the most expensive stainless steel components. Applying the brakes to your conveying speeds can extend equipment life and reduce material waste in your plant.

By Mark Stephen, editor

“Speed kills” has been a popular road safety slogan for decades, but it’s also appropriate for pneumatic resin conveying. As material moves faster, particles generate more heat, friction, and impact force, causing material degradation and contamination, pipe and elbow leaks, equipment and process failures, operational inefficiencies, added maintenance and replacement costs, and a shorter-than-expected lifetime for a resin conveying system. So it’s no exaggeration to say that velocity-related conveying issues can kill your productivity.

And as resin manufacturers expand the use of glass and other abrasive fillers that improve the useful properties of lower cost resins like polyethylene and polypropylene – but which will always abrade conveying system components and production equipment – the problem is probably getting worse.

But it doesn’t have to. Understanding the impact of velocity on your conveying system, and controlling it, can greatly

improve your chances for success, especially when moving abrasive plastics and those sensitive to degradation. Applying both basic and advanced velocity control methods will protect your investment, improve system uptime, and reduce maintenance.

THE GOLDILOCKS ZONE

As opposed to relatively low-speed dense phase pneumatic conveying – where the material is not suspended in the air stream – the plastics industry typically conveys with dilute phase, which conveys the material in suspension in the flowing air, and which can convey almost any material. Clearly, slower is better to avoid erosive wear, angel hair, and other related problems, but it’s not that easy: in dilute phase, high velocities have to be maintained.

Optimizing dilute phase conveying velocity falls into

what some conveying equipment manufacturers and suppliers like to call the “Goldilocks zone.” For a conveying system to work, air in the pickup zone – the area where material enters the conveying line – has to move fast enough to sweep the pellets into the airstream from a standstill; air velocities below the pickup or saltation velocity will create instabilities in the conveying system, the worst being the inability to convey material from pickup point to receiver. “Some resins need a higher pickup velocity to get it out of the Gaylord and into the airstream than others, including filled resins, engineering resins, and some additives,” said Brian Davis, general manager of Maguire Products Canada Inc.

So what’s the acceptable speed range in the pickup zone? “The required speed varies with bulk density, pellet size, and pellet flow characteristics, but 35 to 40 mph is a minimum pickup speed for typical plastic pellets,” said Kevin Embury, vice president, engineered systems and business development with Novatec Inc. “Pellets continue to pick up speed as they move toward a receiver/separator, reaching speeds of 50 to 80 mph or more.” The ideal average conveying velocity for plastic resins that are susceptible to angel hair formation is about 4,000 feet per minute, equipment suppliers say.

And with one or two exceptions – carbon black, for example – the same speeds hold true for powders. “I’ve never used different rules for conveying powders as opposed to pellets, since virtually all plastic tends to react to vacuum in a similar fashion,” said Rob Miller, president of Wittmann Battenfeld Canada Inc.

The reason materials continue to pick up speed as they move closer to the receiver is due to vacuum, which is the pulling force created by the pump. When air first enters a conveying tube, there’s very little pulling force needed, and vacuum is low. As the air travels toward the pump, every foot of tube – and each pellet being carried – adds resistance to the air movement, so that the pump pulls harder, expanding the air so it moves ever-faster until it reaches the pump.

To reduce velocity, then, the temptation might be to choose a conveying tube size larger than needed to reduce vacuum, since less vacuum will “stretch” the air less and air speed will change less from start to finish as a result. In most cases, however, it won’t work that way. “Most standard pump packages already pull air at a preselected speed,” a technical paper from Novatec said. “If it pulls less vacuum, the unintended result is more speed at the pickup area.”

Highlighting how excessive air speed can be an issue, one study showed that an elbow can last nearly 17 times longer when air speed is 35 versus 75 mph when conveying abrasives, and in this range, elbow life nearly doubled for every 10 mph decrease in speed. When conveying LDPE, another study showed steamer generation increased linearly with air speed in a 45 to 75 mph range.

KNOW YOUR OPTIONS

So there’s little doubt that controlling air speed is beneficial, and one of the simplest and easiest methods is a controlled

air leak, usually created by adding a series of holes to the vacuum line before the pump safety filter. “The size and number of holes, along with operating vacuum, determine the magnitude of the air bypassing the conveying system,” the Novatec paper said. “An air leak that’s carefully controlled can reliably reduce system air speed by as much as 30 per cent.” But keep in mind that the air leak steals air from the pickup area, the paper added, so it can cause problems if unplanned or poorly implemented.

A second basic velocity control method, the Novatec paper said, is stepping the tube diameter to a larger size at a strategic point between the material source and the material destination. “By maximizing the large-diameter distance, speed decreases, along with resistance to movement, so the pump can carry more material,” the paper continued. “The key is understanding how resistance builds in the conveying line and how it affects the air speed throughout the entire distance material travels.”

One solution for controlling conveying velocity that’s made an impact lately is Conair Group’s Wave conveying system, a dilute phase system that can also operate in a dense phase mode. “While the 5,000-plus-feet-per-minute speed of dilute phase conveying has been the preferred method of material conveying for decades, it was never ideal for some sensitive resins,” said Rich Shaffer, Conair’s vice president of product development. Wave technology uses controlled-speed conveying of between 300 to 2,800 feet-per-minute to move these more sensitive materials, Shaffer continued. “It controls material speed and density, separate from air speed or air pressure, by blending conventional conveying components – a variable speed vacuum pump, tubing, bends, dust collectors, standard receivers, and surge bins – with an FLX-128 Plus controller and special air valves,” he said. “Depending on the existing conveying piping configuration, the Wave

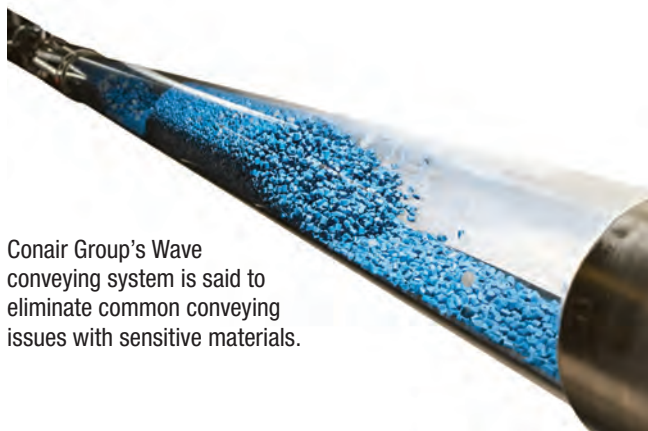


Novatec’s FR-S flow reducer is designed for situations where vacuum pumps and line sizes are mismatched.

Photo Credit: Novatec Inc.

conveying system not only provides dilute phase conveying with controlled speeds, but adds one or two slower-speed conveying modes that prevent resin damage while typically increasing throughput.”

And Novatec has a series of air flow regulators designed to maintain the velocity of vacuum conveying air at optimum levels, which can slow the speed of the resin being conveyed during situations where there’s a lack of material volume in the conveying lines – such as line purging – to reduce issues like angel hair and tuning wear caused by abrasive materials; and also offers its FR-S flow reducer, designed for situations where vacuum pumps and line sizes are mismatched. “The FR-S can be used with line sizes from 1.5 inches to four feet in diameter, and either slows down an entire system if it’s placed at the main pump or isolates a receiver when it’s installed between a station selection valve and a receiver,” said Ryan Ismirlian, a Novatec conveying product engineer.



Conair Group’s Wave conveying system is said to eliminate common conveying issues with sensitive materials.

Photo Credit: Conair Group

A QUESTION OF CONTROL

Traditionally, controls for pneumatic conveying haven’t been overly sophisticated: processors turned their pumps on and got what they got for air speed and material carrying speed and capability. But that was then. New advanced conveying controls allow conveying speed selection for individual stations to entire conveying lines for small processing plants. For example, the net5 system material conveying system from Wittmann Battenfeld can be used for the control of up to 24 mid-sized conveying systems.

Control systems available from other equipment suppliers allow for pump RPM to be adjusted through a motor variable frequency drive, so air speed can be reduced for short distances or increased for heavy and other challenging materials. Some controls can also vary speed during a single fill cycle, starting at full speed to accelerate material and then slowing to the target transfer speed; or slowing speed during a purge cycle as resistance dissipates.

Another way of decreasing – or increasing – velocity for an individual station is with an air adjustment sleeve at the pickup point. “The processor can adjust that to see how the resin is flowing,” Brian Davis said. “But the right calculations need to go into it for this to work effectively.”

Indeed, the right calculations have to be made through-

out – and these are the responsibility of the equipment suppliers. Designers consider both the conveying rate required to keep up with processes and the physical layout of the processing plant when choosing the required combination of tube size and pump to carry the load. But these designs aren’t always perfect, or get scrambled when changes are made later on. “A problem relating to too much conveying velocity usually isn’t the processor’s fault,” said Rob Miller. “While it’s certainly possible for the processor to make a mistake – such as opening a vent at the bottom of the silo – systems that convey at too much velocity either through a poor design out of the gate or due to additions and expansions without changing the line size are ultimately the fault of the system supplier.”

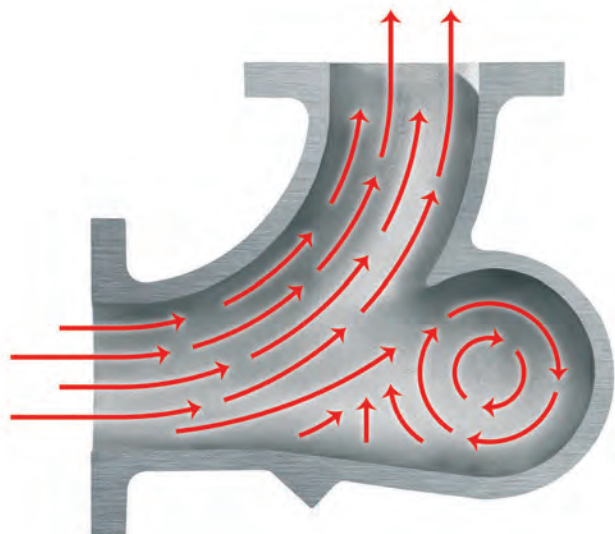
But even the best-designed, best-operated conveying system can be defeated at the very outset by out-of-control conveying velocity from the truck unloading system into the silo. “Stories we’ve heard about conveying velocity problems tend to blame the loading/unloading process – specifically the pressure discharge trucks, as their blowers can be ramped up quite high in order to unload quicker,” said members of Lorenz Conveying Products’ engineering team. According to Charles Williston, HammerTek’s national sales manager, this is a particularly difficult problem to solve. “A lot of customers try to prevent this by posting notes on the silos telling the drivers not to exceed a certain psi as they’re unloading the trucks, but the drivers don’t always pay attention,” he said. “The other option is to monitor the trucks from start to finish, but not all companies can spare a worker for that.”

ELABORATE ELBOWS

In addition to velocity management tools, appropriate component options should be considered to extend maintenance intervals and the overall life of the system. “When it comes to abrasion resistance, sometimes even velocity doesn’t fix that, so we go to materials of construction – ceramic line bends, glass bends, et cetera,” said Rob Miller. According to equipment suppliers, using surface-conditioned elbows provides improved protection against streamers and angel hair when conveying softer, heat-sensitive materials; for abrasive materials, meanwhile, glass elbows and extended-wear options on receiver stations can extend service life. And there are also a number of specialty elbows available that can enhance system operation and service life for both of these sensitive material types. “These enhancements are always a good idea,” said the Lorenz engineering team. “The upfront cost of using the right products for the conveying line will save money spent on repairs, downtime, and wastage later on.”

The Smart Elbow deflection elbow from HammerTek incorporates a spherical vortex chamber that extends partially beyond the 90° flow path, causing a ball of pellets to rotate in the same direction as the air stream, gently deflecting incoming pellets around the bend to eliminate elbow wear, friction, and product degradation. “In addition to preventing pellets from impacting the elbow wall, the vortex

Photo Credit: HammerTek



HammerTek's Smart Elbow design eliminates the impact zone, causing materials to change direction by deflection for reduced elbow wear, friction, and product degradation.

chamber causes the material to exit the elbow evenly and return rapidly to a laminar, steady-state flow within the conveying line," said Charles Williston. "The airstream sweeps the vortex chamber clean after the material feed is shut off."

For processors plagued by damaged components in their

vacuum conveying system or material contamination and plugged lines from angel hair and streamers, excessive conveying speed can be an obvious cause. Understanding the impact of velocity on conveying system operation can greatly reduce these issues, especially when moving abrasive plastics and those sensitive to degradation. Speed doesn't have to kill. **CPL**

RESOURCE LIST

- Conair Group** (Cranberry Township, Pa.);
www.conairgroup.com; 724-584-5500
- Dier International Plastics Inc.** (Unionville, Ont.);
www.dierinternational.com; 416-219-0509
- Industries Laferriere** (Mascouche, Que.);
www.industrieslaferriere.ca; 450-477-8880
- Turner Group Inc.** (Seattle, Wash.);
www.turnergroup.net; 206-769-3707
- HammerTek** (Bethlehem, Pa.); www.hammertek.com; 800-505-9665
- Lorenz Conveying Products** (Cobourg, Ont.);
www.lorenz.ca; 905-372-2240
- Maguire Products Canada Inc.** (Vaughan, Ont.);
www.maguire.com; 905-879-1100
- Novatec Inc.** (Baltimore, Md.);
www.novatec.com; 410-789-4811
- Wittmann Battenfeld Canada Inc.** (Richmond Hill, Ont.);
www.wittmann-group.com; 905-887-5355

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Extraordinary times, **EXTRAORDINARY DRYERS**

Even in the middle of a pandemic, the science behind molding plastic parts doesn't change. Which means it's just as critical now as ever to dry plastics in the processing phase. These new technologies really bring the heat.

By Mark Stephen, editor

The COVID-19 pandemic is wreaking havoc on almost all aspects of plastics processing – supply chain, factory production, delivery times – but the actual science behind part molding remains unchanged. Which means that drying resin in the processing phase is still vital.

So whether you're dealing with hygroscopic polymers such as nylon, ABS, acrylic, PET, PBT, polyurethane, and polycarbonate that absorb moisture internally and release it through the air, or non-hygroscopic resins like PVC, polypropylene, polystyrene, and polyethylene that merely collect moisture on the surface of the pellet, the importance of dryer selection to meet your process requirements is still hugely important.

Here's some of the latest drying technologies for your consideration.

GETTING SMARTER

Industry 4.0 is now everywhere in plastics manufacturing, including many of the newest dryers. Dri-Air Industries Inc. recently introduced the Industry 4.0-compliant SmartTouch control, which gathers data from the dryer and shares it with the injection molding machine and other pieces of equipment, and which is compatible with all Dri-Air dryers. With OPC/UA open platform and communication via an optional Ethernet switch or WiFi bridge

for wireless communication, the Smart-Touch control is driven by thermocouples strategically located in the towers, hoppers, and other locations to properly control the operation of the dryer for maximum energy efficiency. "The OPC/UA open platform allows users to add new sensors, communications devices or protocols that may become available in the future," said Dri-Air president Jason Sears. "The control features a seven-inch colour touchscreen with easy to use prompts for temperature, time, and dewpoint display; and comes standard on our HP series dryers and dual-hopper dryers, and is optional on our Arid-X series dryers."

Maguire Products Inc. is rebranding its VDB vacuum resin dryers as the Ultra series, reflecting its ability to pay for itself by saving in energy costs. In a typical material drying example for a process running at 220 lbs per hour for 6,000 operation hours per year, an average desiccant dryer might run at 60 watts per lb of material, versus the Ultra low energy dryer that would run at 19 watts per lb. Each system uses the same amount of energy but the energy used to dry is dramatically different: a comparable desiccant dryer would use almost 45 watts to dry the material so it can be processed, whereas to the same level the Ultra would only use four watts. Additionally, the use of data provided by the load cells allows the dryer



Photo Credit: Maguire Products Inc.

Maguire Products Inc. is rebranding its VDB vacuum resin dryers as the Ultra series, reflecting its ability to pay for itself by saving in energy costs.

to achieve many functions automatically — such as automatic starts and stops — and also makes possible automatic adaptive drying, so that only the material that's required for a process is dried. Ultra dryers are available for throughputs of 150, 300, 600, and 1,000 lbs per hour.

SLEEP WHEN NECESSARY

The new PowerSmart optional control system from Novatec Inc. manages the energy used by the company's central dryers based on data collected during drying, and not only provides the user with data such as the temperature and

dewpoint in a hopper and dryer, but it also automatically adjusts the process to maximize efficiency. PowerSmart ensures resins are dry enough to avoid surface defects in the final product — but not too dry, company officials said, since overdrying can cause parts that are made of nylon, TPU or PBT to become brittle or inflexible. “PowerSmart monitors the material usage rate in the drying hoppers and then adjusts the machine’s energy use to match the actual moisture level, resin demand, and inlet temperature,” said Mark Haynie, Novatec’s dryer product manager. Additionally, PowerSmart automatically puts the hopper into a “sleep” mode once the resin is dried so that it doesn’t waste energy by running all the time, and then reactivates the drying process when more resin is needed. “In sleep mode, the hopper uses about as much energy as a 200-watt lightbulb, while maintaining the moisture level of already-dried resin,” Haynie said.

A new series of twin-tower or twin-bed desiccant dryers increases energy efficiency and decreases desiccant regeneration times without impacting drying performance, according to manufacturer AEC. The NGX dryers reduce electrical energy consumption by more than 25 per cent compared with competitors’ wheel-drying technologies, company officials said. NGX dryers are available in six sizes, ranging from 25 to 300 pounds per hour of processing capacity. The models are the NGX-25, NGX-50, NGX-100, NGX-150, NGX-200, and NGX-300, with the numbers designating the maximum number of pounds per hour of resin they can process. The dryers are available as stand-alone units; as portable units with a dryer and hopper on a cart; on a Nomad cart that takes the portable dryer/hopper combination and adds integrated conveying for beside-the-press use; and as part of a small, central dryer system that can feed multiple drying hoppers and multiple processing machines.

USE YOUR INTUITION

Plastic Process Equipment’s new FX

series of Max-Dry honeycomb desiccant wheel dryers feature intuitive touchscreen microprocessor controls that make it easy to change settings and view process temperatures and dewpoint values. Offered as a replacement to the company’s MD series dryers, the FX dryers’ honeycomb matrix desiccant wheel has a series of chan-

nels that are coated with molecular sieve and silica gel that are permanently bonded to ceramic fibres inside the rotor. The desiccant wheel has a larger drying surface than a twin-tower desiccant dryer three times its size, company officials said. The wheel should last five years or longer. The FX dryers are available in seven



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dryers

sizes, with drying capacities ranging from 45 to 530 pounds of resin per hour. The beside-the-press units are available in 230- or 460-volt models.

The GenesysNext dryer line from Piovan has been optimized for the processing of recycled PET. Featuring self-adaptive technology, the new dryers can automatically manage the drying process by setting all the critical parameters – from the process air flow rate to its dewpoint value, from the residence time to the temperature – while maintaining optimum operating conditions even as hourly production and initial temperature and humidity conditions of the plastic granulate vary. According to Peter Dal Bo, Piovan's chief commercial officer, the innovations that this new generation machine brings include more intuitive control and improved self-regulation. The GenesysNext dryers also use Piovan's AIPC technology – short for

automatic injection pressure control – which connects drying to injection molding and preform production. “This ensures the lowest production cost for each preform, not just in terms of energy savings but also in terms of optimization of the entire preform production process, with increased end product quality and reduction of rejects,” Dal Bo said.

With its recent acquisition of Austrian company FarragTech, Wittmann Battenfeld has expanded its dryer portfolio range to include new models of the CARD – which stands for compressed air resin dryer – series. CARD dryers can cover all drying applications, Wittmann officials said, from material throughputs of 0.16 to more than 1,000 kg of resin per hour, regardless of the material being dried, without water coolers. The drying containers are made of stainless steel and come with at least one sight glass window for

visual inspection. Depending on their size, the drying containers also have a cleaning door. For filling the dryers – all the way from the CARD IG with a volume of one litre up to the CARD 3500XL with a volume of 3,500 litres – Wittmann offers material loaders to match each appliance. **CPL**

RESOURCE LIST

- AEC** (New Berlin, Wis.);
www.aecplastics.com; 262-641-8600
- Dri-Air Industries Inc.** (East Windsor, Conn.);
www.dri-air.com; 860-627-5110
- Maguire Products Canada Inc.** (Vaughan, Ont.); www.maguire.com; 905-879-1100
- Novatec Inc.** (Baltimore, Md.);
www.novatec.com; 410-789-4811
- Piovan Canada Ltd.** (Mississauga, Ont.);
www.piovan.com; 905-629-8822
- Plastic Process Equipment Inc.** (Macedonia, Ohio); www.ppe.com; 216-367-7000
- Wittmann Battenfeld Canada Inc.** (Richmond Hill, Ont.); www.wittmann-group.com; 905-887-5355



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Automated RESPONSE

One of the few bright spots to emerge during the COVID-19 pandemic is industrial automation, which is helping to maintain social distancing between plant floor workers. And it could trigger a lasting boom in factory robotics.

By Mark Stephen, editor

Economic disruptions tend to highlight and accelerate trends that were already underway. The COVID-19 pandemic is definitely proving more disruptive than a traditional recession – and maybe even the Great Depression – but in this respect it might not be different from other downturns.

If so, the trend of manufacturers, plastics processors among them, using robotic automation to replace human workers in jobs that are dull, dirty, and dangerous – known in the industry as “the three Ds” – might not only accelerate, but become key planks in disaster contingency and supply chain planning going forward.

Although it’s far from over, the pandemic has exposed problems and risks that already existed for manufacturing enterprises, among them a heavy reliance in some factories on human workers. Manufacturers deemed essential

during the pandemic are remaining open worldwide, but social distancing can pose challenges in a factory environment, and this has sparked calls for more industrial automation to keep workers safe from catching COVID-19.

And the virus has also highlighted shortcomings in the automation sector itself, some analysts say. “Before COVID-19 struck, industrial automation was slowed by flat capital expenditure and declining industrial production,” said David Bicknell, principal analyst at consulting firm GlobalData Plc. “The virus has exposed the fact that despite the hype, advanced factory automation has not substituted human workers at scale. Technologies such as cloud-orchestrated AI for assembly line robotics have either been insufficiently developed or too difficult to use.”

So if a great crisis creates opportunity, this current pandemic could pro-

vide the impetus for a widespread rethinking of factory and warehouse automation.

GOING GLOBAL

Just as COVID-19 originated in China, the use of robotic automation as a response to the deadly virus also began there. As early as March, venture capitalists with expertise in the robotics sector – which has traditionally struggled to scale up in China – began anticipating orders from China to rise significantly this year, based on interest since the end of January when the virus started its spread. Perhaps one manufacturing sector has been an inspiration: despite widespread factory shut-downs in China as the outbreak grew, many Chinese semiconductor plants – including those located in the virus epicentre of Wuhan – remained open and running continuously due to their highly automated production processes.

That interest has now gone global, and Canada provides some examples. Cambridge, Ont.-based ATS Automation Tooling Systems received a \$65 million order in late April for two automated manufacturing systems that will produce components for COVID-19 test kits. ATS will design, build, and

deliver the systems within the next four months to Tessa Plastics, a global contract manufacturer located in Skaneateles, N.Y. that specializes in injection molding and custom automated assembly solutions. The systems will enable production of 10 million units per month.

And as the need for more essential equipment arises, other manufacturing lines are being retooled across the country. Many suppliers and integrators have responded by ensuring faster turnaround times, like Saint-Nicolas, Que.-based supplier Robotiq, which is offering to deploy collaborative robot cells and software in under two weeks as part of its “Cobots vs. COVID” initiative. “We’ll examine your manual process and tell you within 48 hours if it’s feasible to deploy a cobot at your business,” said Robotiq president Samuel Bouchard. “Using standard build-

hanging fruit.”

There’s enough sudden interest now in installing automation that some system suppliers are working hard just to keep up. “For the past six weeks, customers that we recommended solutions to six or eight months ago have been asking for immediate installations,” said Siva Krish, vice president of sales with Mississauga, Ont.-based automation supplier Proco Machinery Inc. “Because these projects were already in the pipeline we can handle them.”

IMPORTANT DIFFERENCES

But even as interest in robotic automation spikes upwards, the results are probably going to be uneven. Some types of manufacturing – car assembly, for example – generally already have a lot of physical separation of workers on the line; but goods manufacturing such as consumer electronics commonly

The trend of manufacturers using robotic automation to replace human workers in certain factory jobs might not only accelerate going forward, but also become key planks in disaster contingency and supply chain planning.

ing blocks, we’ll design a ‘good enough’ cell that we’ll send you to approve and place the order. The finished cell might not be perfect, but it will work to increase your capacity.”

Robotiq’s initiative illustrates the fact that, depending on the end product, even the simplest automation solution might be enough to allow processors to maintain – and even increase – production while still adhering to COVID-19 social distancing guidelines. “People underestimate how much difference a basic top-entry, three-axis gantry robot can make to their production just by automating part takeout,” said Tim Lavigne, manager at Worcester, Mass.-based Absolute Robot Inc. “We’ve had customers double their productivity just by doing that alone. Processors don’t have to swing for the fences with new, plant-wide automation – especially during an economic crisis like this – they just have to pick the low-

use manufacturing cells, with workers crowded closely together. For these, the challenge for automation suppliers might be to design work processes and the flow of parts and materials to keep human workers away from each other to reduce infection risk.

While some companies are using automation to help maintain social distancing on the plant floor, others are focusing on long-term projects for after the pandemic. “People are really starting to think about supply chain contingency and continuity, and a lot more companies are looking carefully at onshoring as a way of protecting themselves against supply chain interruptions like the ones we’re seeing during COVID-19,” said Peter Fitzgerald, general manager of Fanuc Canada Ltd. in Mississauga, Ont. “If you’re looking to rapidly scale up your part making capabilities, automation is an enabler.”

In the longer term, automation will

also certainly be part of many companies’ contingency planning – pandemic plans that, among other things, will recognize the health and operational risks posed by people working close together in a manufacturing plant. “I think guaranteeing social distancing in the factory will be a big part of disaster contingency plans going forward, and putting automation systems in place is key to that,” said Siva Krish.

END RESULTS

At present, however, whether or not new customers embrace automation during the pandemic probably depends on which factor is stronger: the need to guarantee worker safety by restricting human contact or the need to balance the budget as sales go down. “I think many processors are struggling with being closed and/or distracted by supply chain issues, and probably aren’t considering automation right now,” said Peter Fitzgerald. “When the pandemic is finally over, they may ask themselves what they could have done differently, and that might lead to conversations about adding robotic automation systems.”

In fact, some of these conversations are already taking place. “Many of the new accounts we’ve been talking to recently are showing interest in automating once the pandemic is over and they’ve started receiving orders again,” said Tim Lavigne. “They joke about how they wish they’d had these systems in place before, but they’re not really joking. At the very least, I think there will be long, hard looks at installing basic automation in most plastic processing plants, even if only putting simple sprue pickers on small presses to separate runners and parts.”

But the first order of business for these plastics manufacturers is simply to weather the remaining COVID-19 storm. “The virus may now focus organizations’ minds on the need to automate faster in the medium term and will accelerate an investment in factory automation when the global economy eventually rebounds,” David Bicknell said. “But that will take a while.” **CP**

AUXILIARY EQUIPMENT

Wittmann 4.0 peripheral devices now with free-of-charge OPC UA connection

All **Wittmann Battenfeld** 4.0-compatible auxiliary appliances can now be connected via OPC/UA as standard, and without any additional costs to suitably equipped Wittmann Battenfeld injection molding machines with B8 control systems.

The interconnection of Wittmann Battenfeld machines with Wittmann appliances via Wittmann 4.0 offers numerous advantages, including central operation, meaning all functions of auxiliary appliances can be selected centrally on the Wittmann Battenfeld B8 control unit and used with their familiar menu structure; and extended mold data set in the B8 machine control system, wherein the mold data set not only consists of the usual process parameter settings for the machine itself, but has now been extended to include the settings of the Wittmann 4.0 auxiliary appliances and the Wittmann R9 robot.

Optionally, the advantages of Wittmann 4.0 can also be utilized outside the Wittmann Battenfeld production cell by connecting the machine and the auxiliary appliances to the TEMI+ MES system.

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



INJECTION MOLDING

Affordable electric machine in a high-speed version



Absolute Haitian, the exclusive distributor of Haitian and Zhafir injection molding machinery in Canada and the U.S., has announced the availability of the *Zhafir Zeres F*, an affordable electric molding machine for fast-cycling applications.

Designed for molders interested in entering the high-speed market that may not have either the production volumes or cycle time requirements to justify the high cost of traditional high-speed machine configurations, the Zeres F machines provide the performance to run many fast-cycling applications, but at an economical price.

Standard features of the series include proven electric technology; integrated hydraulics for core pulls, optional valve gates, ejectors, and carriage movement; injection speeds up to 350 mm per second; high-performance, abrasion-resistant screw and barrel with 25/1 L/D; linear rails for precise injection movement; double-cylinder injection carriage with programmable nozzle contact force; linear rails for clamp movement to support heavy stack molds; and generous mold space.

The units are available from 1,500 to 4,500 kN (169 to 506 U.S. tons).

Absolute Haitian Corp. (Worcester, Mass.);

www.absoluteshaitian.com; 508-459-5372

Barway Plastics Equipment Inc. (Vaudreuil-Dorion, Que.);

www.barway.ca; 450-455-1396

Shadow Automation Inc. (Uxbridge, Ont.);

www.shadowauto.ca; 416-464-2070

Software improves dry-cycle times

A new *controller software update* to **KraussMaffei's** Netstal Elion series of injection molding machines can shave as much as 0.2 seconds off dry-cycle times by adjusting and optimizing the acceleration and deceleration of the clamping unit drive, provided the machines are equipped with the aXos controller starting with version 8.2.



The new software control algorithm calculates the potential mold weight based on the set installation height and incorporates that into the control of the acceleration and deceleration process, and achieves this without damaging the mold.

The Netstal Elion series is available in clamping forces of 90, 135, 197, 247, 315, 360, and 472 U.S. tons. The machines are designed to produce thin-wall packaging, beverage closures, and medical products. All new Netstal Elion series machines are equipped with the aXos controller with the updated software, and older-model machines can be upgraded.

The company had previously implemented the software update on its Netstal Elios series injection molding machines.

KraussMaffei Corp. (Florence, Ky.);

www.kraussmaffei.com; 859-283-0200

EXTRUSION

Inspection system checks corrugated tubing

Pixargus' new *Profil-Control 7 S Corrugated-Tube* is an inline quality-control tool that uses eight cameras to inspect the wavy structure of corrugated plastic tubing.

Designed for evaluating tubes with diameters as large as 30 mm, the system inspects the complete wavy structure of corrugated tubing gaplessly. Newly developed algorithms enable, for the first time ever, the inspection of so-far-undetectable areas: not only the peaks and valleys, but also the transition areas in between and even very small defects. Holes, dents, blisters, nodes, scratches, fissures, and poorly crimped joints can now be detected with 100 per cent reliability, reducing out-of-spec production



and cutting process costs.

The modularly scalable system can be easily integrated into Industry 4.0 environments, and comes with all common interfaces, including OPC/UA.

Pixargus Inc. (Cincinnati, Ohio);
www.pixargus.com; 888-539-4689

BLOW MOLDING

Inspection system uses two lasers for cap sealing

The new *2D-X2* inspection system from **Silgan Equipment Co.** employs dual lasers to scan the surface of the cap on a packaged beverage or food product to determine proper cap sealing, and can inspect up to 800 caps per minute depending on container and cap size.



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The side-by-side laser beams scan the top surface of each cap to immediately detect cap tilt and overall cap height, and detects caps that are too high, too low or missing, as well as if caps are tilted. If any sealing errors are detected, the 2D-X2 signals for the errant container to be rejected. The system's software records a range of production statistics.

The 2D-X2 system installs over an existing conveyor line, saving valuable floor space. The lasers are mounted in a protective housing rated NEMA 4X, and are resistant to washdowns and harsh processing conditions. The sensor height is adjusted by a handwheel and the beam-spread is adjusted by a rotary knob, allowing for fast and accurate placement.

Silgan Equipment Co. (Waukegan, Ill.);
www.silganequipment.com; 847-336-0552

THERMOFORMING

Upgraded spot pyrometers measure wide temperature ranges

Fluke Process Instruments has extended its series of *Thermalert 4.0* spot pyrometers to include new shortwave sensors and additional interface options that make them well-suited for measuring the temperature of thermoformed materials during production.



With three new spectral models – measuring at wavelengths of 1 μm , 1.6 μm , and 2.3 μm , respectively – the full Thermalert 4.0 lineup can measure temperatures between -40° and 2,300°C or -40° and 4,170°F, and is well-suited for applications where non-contact temperature monitoring is critical.

Additionally, Fluke has introduced several fieldbus interface options (Ethernet, Ethernet/IP, and Profinet IO) to all

its new and existing Thermalert 4.0 models, allowing manufacturers to seamlessly integrate the pyrometer with their system so they can sample more data, ensure faster processing times, and more.

Additionally, the pyrometers conform to Industry 4.0 standards, and combine innovative digital technologies and standard two-wire installations for all set-ups.

Fluke Process Instruments (Everett, Wash.);
www.flukeprocessinstruments.com; 425-446-6300

PACKAGING

Masterbatch material allows for recycling of black packaging waste

Ampacet has introduced *REC-NIR-BLACK High Alcohol*, an extension to the detectable REC-NIR-BLACK line of black masterbatches that are near-infrared (NIR) transparent to allow sorting with NIR optical sensors and recycling.



REC-NIR-BLACK High Alcohol is suitable for monolayer PET bottles and containers used in high-alcohol applications, including wine and spirits, hand sanitizers, household cleaners, personal care, and OTC pharmaceutical products.

Since conventional black colourants absorb a significant part of the ultraviolet and infrared spectrum and block the recognition of the resin's fingerprint by a NIR scan, most black packaging can't be sorted by recycling companies and ends up in landfills. Packaging using Ampacet's detectable masterbatch products can be scanned by NIR technology for automated sorting at recovery facilities. This technology enables the reuse, repair, and recycling of black packaging waste and allows recyclers to obtain value from this waste and support the circular economy.

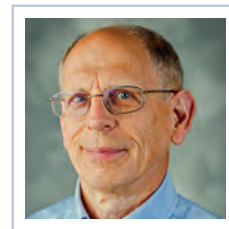
Ampacet Corp. Canada (Kitchener, Ont.);
www.ampacet.com; 519-748-5576

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Eliminating static buildup on polymers

By John Bozzelli, Injection Molding Solutions



If you've worked with plastic pellets for any length of time, you've probably received a small shock by accidentally putting your hand somewhere near a conveyor, pellets or parts. That's because conveying pellets and sometimes parts into dryers, machines, hoppers, conveying lines – or wherever – generates static electricity, and you've just provided the grounding link.

And this static charge can also foul up your processing by causing irregular feeding or separation of blends, as flowing granules cling to the sides of the hopper, conveying tube or discharge wand.

Ground wires are often attached to conveying equipment to prevent static buildup. The charge difference literally causes pellets to repel one another or migrate to the sidewalls of a container. Low humidity and dry pellets often exacerbate static buildup. With higher humidity or moisture, the

water – which is polar – dissipates the charge. I'm not suggesting you add moisture to your granules, but wouldn't it be nice if there was a surface coating or additive that would minimize or eliminate this static charge without influencing processing, physical properties, and part performance?

As it happens, there *is* such a product – and not only does it eliminate static in resins without influencing physical properties or part performance, but the amount needed is very small: only 100 ppm (0.010 per cent). For 1,000 pounds of pellets, you'll only need 0.010 pounds. So what is this magical fairy dust? It's polyethylene glycol 400 molecular weight (MW).

To make sure it wasn't too good to be true, I consulted Robert Pierce, a former colleague of mine in technical service for Dow Plastics. Bob made up sample blends of high-gloss ABS and transparent ABS with several different colour concentrates. The samples were dried in a desiccant dryer for three hours at 180°F or 80°C, and then loaded into an airway loop and conveyed continuously around the loop. At the end of the airway loop, the material dropped from a vacuum receiver through a clear plastic surge hopper and then into a fibre pack. A vacuum wand in the fibre pack would again pick up the material and send it back through the airway loop. After a few minutes of operation, Bob noticed the development of a significant static charge, and a large quantity of colour and some resin building up on the clear plastic surge hopper. At this point, he slowly added a measured amount (100 ppm) of polyethylene glycol 400 MW to the blend. In each case, there was an immediate elimination of the static and the granules stopped clinging to the surge hopper. Continued running of the equipment showed no recurrence of the static buildup on resin or colour pellets.

Samples of the resin and colour were molded into ASTM test specimens and tested for physical properties, and showed no significant difference between the ABS with or without this surface additive.

Bottom line: Polyethylene glycol 400 (don't use a lower MW) eliminates static on plastic granules without diminishing physical properties or part performance. And the cost is minimal, and it's readily available. **CPI**

John Bozzelli is the founder of Midland, Mich.-based Injection Molding Solutions, a provider of training and consulting services to injection molders, including LIMS and other specialties. He can be reached at john@scientificmolding.com, or visit scientificmolding.com.



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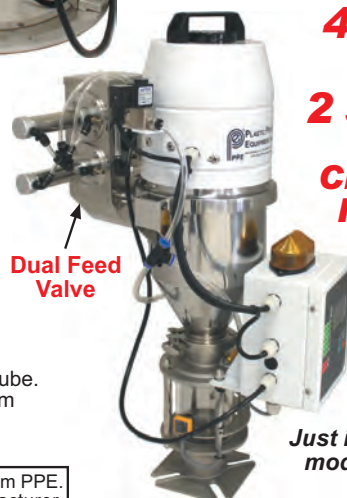


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