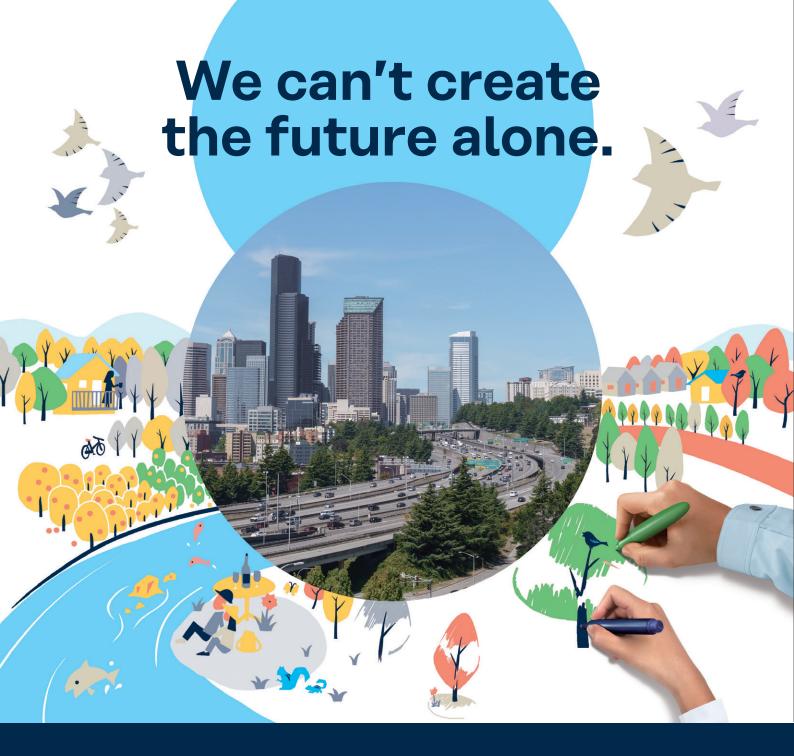
CUTTING-EDGE SOLUTIONS

Prime Automation, Inc.

SPEEDING AHEAD IN THE E-MOBILITY MARKET GROB Systems

COATINGS WITH HIGH-PERFORMANCE PROTECTION

Dynamix, Inc.



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t seems like the world breaks new records for alternative energy generation each week, with an increasing number of sources being added to grids all over the world. But alternative power generation is often less flexible than carbon-based sources, as one can't simply ramp up or down the amount of sunlight shining down or the strength of the wind blowing. And at the same time, everything from microelectronics to vehicles needs better batteries, more capacity, better reus-

"The lithium ion battery has been king for a long while now, but as demands change, more storage solutions are being explored..."

ability, and lower weight.

The lithium ion battery has been king for a long while now, but as demands change, more storage solutions are being explored. Whether that means lifting giant concrete blocks and stacking them up to store potential energy, or experimenting with alternative materials for chemical storage, companies around the world are looking for solutions that will help shape the infrastructure of the future.

In her latest piece, *Smart, Solid, Sustainable – What's in Store for Energy Storage*, Allison Dempsey investigates what's driving new requirements and what sorts of innovations we are seeing in this field today.

Tim Hocken

Tan Hu

Editor



03 EDITOR'S CORNER

06 INDUSTRY EVENTS

07 INDUSTRY NEWS

10 SMART, SOLID, SUSTAINABLE

What's in Store for Energy Storage

14 THE ROAD AHEAD

No Free Ride for EVs

FABRICATION & MACHINING

18 SPEEDING AHEAD IN THE E-MOBILITY MARKET GROB Systems

30 COATINGS WITH HIGH-PERFORMANCE PROTECTION

Dynamix, Inc

36 THIS FAMILY PLASTICS REPROCESSING COMPANY HAS ITS EYE ON GROWTH Kal-Polymers

40 NEW PRODUCTS, NEW OWNERSHIP FOR THIS FAMILY FIRM

Peninsula Plastics

AUTOMATION

48 CUTTING-EDGE SOLUTIONS *Prime Automation, Inc.*

54 PRESERVING A LEGACY *Talbert Manufacturing, Inc.*

60 CELEBRATING A DECADE OF PEOPLE-LED SUCCESS

Vector Controls and Automation Group

68 STRONGER TOGETHERSamuel Automation Solutions Group



SMART, SOLID, SUSTAINABLE

What's in Store for Energy Storage

With energy storage requirements changing quickly around the world, researchers are continuously looking to create effective, long-lasting, and truly innovative solutions. Everything from grid storage at the large scale to the smallest of electronic devices has seen an increased demand for more capacity, longer run-times, better reusability, and higher safety ratings.





STARTUPFEST 2023

12 - 14 July, Montreal, QC

Startupfest is not only Canada's original startup event, but widely regarded as one of the world's must-attend startup conferences. This is the annual gathering at which entrepreneurs, investors, makers, large enterprises, industry veterans, and startup communities chart the course of technology entrepreneurship in a one-of-a-kind festival atmosphere. This year's conference will see Al infused into the content and unique interactions to make your experience even more exciting, while doubling down on creating genuine, human connections—which is what Startupfest is all about.

For more information visit: www.startupfest.com

THE BATTERY SHOW AND ELECTRIC & HYBRID VEHICLE TECHNOLOGY EXPO

12 – 14 September, Novi, MI

This event brings together engineers, business leaders, top companies, and innovative thinkers to network and discover groundbreaking products encompassing the entire advanced battery and H/EV value chain. The three-day educational event brings together battery and EV/HEV manufacturers, industry experts, thought leaders, and academics to discuss and help solve your manufacturing, supply chain, and production challenges.

For more information visit: www.thebatteryshow.com/en/home or www.evtechexpo.com/en/home

BIOMEDEVICE

20 - 21 September, Boston, MA

BIOMEDevice Boston brings engineers, business leaders, disruptive companies, and innovative thinkers from the region's top startups and medical device OEMs together to inspire the next life-changing medical device. Enjoy live demos and uncover the latest technologies, solutions and market-ready products from more than 200 biomed suppliers, and gain access to the experts with exciting keynote sessions, expert-led panel discussions, the Master Class Startup Series conference program, and more.

For more information visit: www.biomedboston.com/en/home

NATURAL PRODUCTS EXPO EAST

20 – 23 September, Philadelphia, PA

With a focus on innovation and what's new in natural and organic, Natural Products Expo East is *the* event to attend if you wish to discover emerging brands, products, ideas, and markets. Enjoy educational content, networking opportunities, exciting exhibits, the Harvest Festival on Sept. 20, and the newly co-located Innovation Experience on Sept. 22, featuring innovative exhibits, experiential education, networking, and discussion.

For more information visit: www.expoeast.com/en/home

ADVANCED MANUFACTURING MINNEAPOLIS

10 - 11 October, Minneapolis, MN

Don't miss the Midwest's largest annual "end-to-end" design and manufacturing event! Explore the latest technologies, equipment, and solutions at this five-in-one event bringing together Medical Design & Manufacturing (MD&M), Automation Technology Expo (ATX), Design & Manufacturing (D&M), MinnPack, and Plastec, all under one roof. Co-located are the Minnesota Chapter of the American Society for Quality's Minnesota Quality Conference and the Surface Mount Technology Association's International Electronics Manufacturing Conference and Exposition.

For more information visit: www.advancedmanufacturingminneapolis.com/en/home

ONTARIO PROMOTES AEROSPACE INDUSTRY

The Province of Ontario is known worldwide for its massive manufacturing industry, which encompasses automotive, biotech, chemical, pharmaceuticals, communications, medical devices, and much more.

During a recent business mission to Europe, representatives from the Ontario Government promoted the province's manufacturing, life sciences, and aerospace sectors alongside dynamic new investment and job creation opportunities. Highlights of the mission included promoting Ontario's manufacturing capabilities to Switzerland and France, and announcing more than \$4 million in investments for the province at the Paris Air Show.

The delegation of 19 organizations to the Paris Air Show—the world's biggest aerospace exhibition—was led by Vic Fedeli, Ontario's Minister of Economic Development, Job Creation and Trade. Announcements made at the show included Shimco North America's new \$3.5 million investment, which will double the manufacturing capacity at the company's Cambridge facility.

Additionally, Airbus Helicopters Canada stated it is investing over \$645,000 in new equipment and technology, which will increase capacity at its Fort Erie facility. "As part of these investments, which will create 61 new jobs, Ontario will provide the companies with a combined total of more than \$634,000

through the Regional Development Program's Advanced Manufacturing and Innovation Competitiveness stream," stated the province in a media release.

The air show also saw meetings with leading aerospace companies, promoting Ontario as a great investment and expansion destination. Some of the companies the province met with included Boeing, Bombardier, Collins Aerospace, Latecoere and Comtek Advanced Structures, Lockheed Martin, Mitsubishi Heavy Industries, Raytheon Technologies, and Safran. Provincial representatives also met with global pharmaceutical companies Roche, Novartis, and Sanofi, all of whom have invested in expanding their Ontario operations over the past three years.

"Ontario is recognized worldwide as a leader in aerospace, manufacturing, and life sciences, and business missions like this help us to strengthen existing relationships and foster new partnerships," said Minister Fedeli at the time. "Thanks to our global supply chain, which includes many of the organizations that participated in the Paris Air Show, virtually every passenger aircraft in the world has a piece of Ontario. Together, we're building a stronger economy and creating opportunities for people and businesses today and in the future."

According to provincial data, "the aerospace industry directly employs over 21,500 people at more than 200 companies and creates an additional 17,200 indirect jobs in Ontario."



CANADIANS SKEPTICAL ABOUT SUSTAINABILITY CLAIMS: REPORT

According to a recent report, many Canadians are taking manufacturers' claims about sustainability with a grain of salt.

Deloitte Canada's latest report, *Creating value from sustainable products: How business purpose and brand trust can make the difference*, shows a "substantial disconnect between how brands and consumers regard sustainability claims and products," says Deloitte, adding, "Companies gain an advantage by closing the perception gap and validating those claims." Not all is lost, however, as Deloitte states, "there is an opportunity for brands to build transparency with authenticity, clarity, and purpose."

From fair trade coffee to so-called 'ethically made denim' products, Canadian consumers are expressing doubts about brands claiming they are behind sustainable and 'green' items. Having an increasingly tough time separating fact from fiction, 57 percent of Canadians state they don't believe these and other claims. Adding to the confusion, business leaders

surveyed stated the public is placing significant (71 percent) or moderate trust into claims and their authenticity.

Joe Solly, Partner, Risk Advisory, Ontario Leader for Sustainability and Climate Change for Deloitte Canada, explained that some companies are now falling into a false sense of security, "believing that if they just produce a seemingly better product and bring any sustainability claim to it, it's going to do well." However, this omits strategic thinking behind the product's creation. "Embedding purpose as part of the entire value chain can have a lasting and powerful impact on brands. Those that dive deeper into understanding their consumers and the values that motivate purchase behaviours will get ahead with truly sustainable products and won't be accused of greenwashing."

The full report is available at www2.deloitte.com/content/dam/Deloitte/ca/Documents/consumer-industrial-products/ca-en-consumer-creating-value-from-sustainable-products-aoda.pdf?icid=en-hero.



CYBERATTACKS TARGETING EMPLOYEES

The latest research from cybersecurity giant Fortinet reveals more than 80 percent of organizations are experiencing employee-targeted cyberattacks.

According to Fortinet's recent **2023 Security Awareness and Training Global Research Brief**, organizations are facing increasing ransomware threat challenges. This comes at the same time as Fortinet's **2023 Cybersecurity Skills Gap Global Report** uncovered that 84 percent of organizations experienced one or more breaches last year.

"Our 2023 Security Awareness and Training Global Research Brief underscores the crucial role employees play in preventing cyberattacks," stated John Maddison, EVP of Products and CMO at Fortinet in a media release. "It also highlights the critical need for organizations to prioritize security awareness and training services to ensure employees serve as the first line of defense." The 2023 Security Awareness and Training Global Research Brief is available at www.fortinet.com/content/dam/maindam/PUBLIC/02_MARKETING/08_Report/ftnt_2023_security_awareness_and_training_brief.pdf?utm_source=website&utm_medium=pr&utm_campaign=pr-security-awareness-training.



VANCOUVER COMPANY GETS \$2M BOOST

North Vancouver-based Novarc Technologies Inc. is receiving over \$2 million CAD from the Federal Government to market its unique welding robots. The move signals the government's support of the country's high-tech manufacturing sector.

Novarc Technologies is behind the Spool Welding Robot (SWR), the first pipe-welding machine of its kind. The company specializes in the design and commercialization of robots and Artificial Intelligence (AI) systems used for robotic welding.

According to Novarc, its solutions automate the manufacturing process of welding, "allowing welders of all skill levels to work collaboratively with the robot—increasing safety and productivity up to five times in carbon steel pipe welding and up to 12 times on stainless steel pipes," according to a media release.

"We are excited and grateful to receive this funding as we accelerate our growth to reach new international markets with our automated welding solutions," said Soroush Karimzadeh, CEO, Novarc Technologies, Inc. in a press release. "The funds will allow us to amp up our sales and marketing efforts, and expand our team with the talent and resources required to provide support in these new markets."

Novarc Technologies Inc. was named one of America's Fastest Growing Companies in 2023 by *The Financial Times* for the second consecutive year, and was named to the *Globe & Mail's* Top Growing Companies for the third consecutive year.



SMART, SOLID, SUSTAINABLE

WHAT'S IN STORE FOR ENERGY STORAGE



ith energy storage requirements changing quickly around the world, researchers are continuously looking to create effective, long-lasting, and truly innovative solutions. Everything from grid storage at the large scale to the smallest of electronic devices has seen an increased demand for more capacity, longer runtimes, better reusability, and higher safety ratings.

To maintain reliable and cost-effective power system operations, the energy storage industry is now concentrating on increasing energy consumption capacity through three general categories: steering clear of conventional lithium-ion batteries in favour of cutting-edge battery chemistries that provide higher stability, densities, and shelf lives; constructing

storage systems that can effectively store intermittent renewable energy and scale it up to supply vast geographic areas with electricity; and converting from centralized to a decentralized, more adaptable form of energy storage.

"Companies all over the globe are competing to develop energy storage solutions that are effective, sustainable, and safe."

The world is experiencing an energy crisis and companies all over the globe are competing to develop energy storage solutions that are effective, sustainable, and safe. In 2020, the market



for energy storage was estimated to be worth \$188.5 billion—by 2030, it's anticipated to reach \$435.5 billion, expanding at a CAGR of 8.3 percent, according to a 2022 report from *BloombergNEF*.

Some of the more interesting solutions rely on Gravity Energy Storage (GES), and they make use of potential energy of large masses to store and then recover energy. There is some conversion loss going from electrical to mechanical energy (and back again when this storage system returns that energy), but GES systems have a very low impact on the environment, a high energy density, and a very long operating life. Although GES systems necessitate a large investment in land and infrastructure, they are reliable and relatively affordable options for long-term storage.

The Energy Vault in Switzerland, which makes use of a tower built of concrete blocks raised by six electric cranes, is perhaps one of the best examples of GES methods. The cranes lift the blocks to store potential energy when supply on the grid is high, then lower the blocks when energy is needed, recovering most of the energy that was used to lift them. Pumped hydro systems represent another application of the same principle; when there is extra energy available, water is pumped to a higher elevation, storing potential energy. The water is allowed to flow back down when energy is needed and energy is extracted from that process. While there are some losses, GES systems generally boast an efficiency rate of between 80 and 90 percent.



• GES has a high energy density; it has the potential to store a lot of energy in a small area. These systems are also ideal for long-term storage since the gravitational potential energy suffers no losses once a mass is lifted. And since these systems are literally as simple as lifting and lowering mass, they can run continuously and have minimal environmental impact—certainly a desirable alternative to conventional chemical batteries for many power plant operators.

"As conventional lithium batteries are falling out of favour, the next generation of battery storage might need to rely on other materials."

Lithium-ion batteries—though they offer high mobility, quick recharging, little maintenance, and versatility—are becoming less desirable, as they require overcharge or total discharge protection, are exceedingly combustible, are sensitive to high temperatures, and deteriorate with age. Moreover, mining the materials needed for battery production has significant environmental consequences.

Before we go giving up entirely on lithium, however, some companies are looking at advancements with other elements interacting within lithium-ion batteries to improve functionality and lifespan. By replacing conventional lithium-cobalt electrodes with lighter and more energy-dense materials including lithium-polymer, lithium-air, lithium-titanate, and lithium-sulfur,

we might be able to significantly increase the reusability of lithium, reducing the environmental impact.

But, as conventional lithium batteries are falling out of favour, the next generation of battery storage might need to rely on other materials. What alternatives are being investigated? Zinc is one possibility, and given its large supply, innate stability, and low toxicity, zinc-air batteries could be a practical substitute for lithium. Batteries made of sodium-sulfur are another effective option as they're made of very affordable materials with longer lifespans, more charge / discharge cycles, and high energy density. Other promising battery chemistries include silicon-based batteries, nickel-zinc batteries, aluminum-ion batteries, and magnesium-ion batteries—all of which show great promise but need further development and testing.

The capacity of today's battery technologies to deliver great power density for shorter time fractions (Short Duration Energy Storage, or SDES) is being fully utilized with supercapacitors, flywheels, and superconducting magnetic storage, examples of long-established technologies. The quality and dependability of the electrical grid are improved even if they dissipate quickly at transient times after system disturbances, load changes, and line switching, and also stop voltage instability from causing electrical systems to collapse. Additionally, several firms incorporate SDES into fuel cell applications to enhance how quickly electric vehicles charge and discharge. Many cities have experienced increases in overall energy storage and charge cycles as a result of linking their energy storage systems to SDES.

Enhanced redox flow batteries—utilized as rechargeable batteries or fuel cells—are made up of two connected tanks with electrolyte liquids and electrodes that are each negatively and positively charged with ions moving from one tank to the next via a membrane in the devices. Redox flow batteries have a longer lifespan than lithium batteries because the membrane isn't harmed by the current flowing from one tank to another. They also provide excellent potential for utility-scale integration of renewable energy because of their adaptable system design and simple scalability. Other good news: new redox chemistries that are less expensive and have higher energy densities are being developed thanks to advancements in the sector.

Conventional liquid electrolytes have low charge retention, are inefficient in operation at high temperatures, and are extremely flammable. Solid-state batteries solve these problems by swapping out the flammable liquid electrolyte for a solid substance that promotes ion migration. Start-ups now utilize electrolytes with strong ionic conductivity, such as polymers and organic chemicals. Solid electrolytes also enable the production of batteries using high-voltage, high-capacity materials, resulting in greater energy density, mobility, and shelf life. Solid-state batteries are also the best option for usage in EVs as they have a better power-to-weight ratio.

High proportions of variable renewable electricity output can be affordably balanced by using heat storage, both seasonal and short-term. Adding heat to the storage system as part of the advanced thermal energy storage process will enable heat to be extracted and used later. In the past, heating firms have stored hot or cold water in insulated tanks to utilize when demand for heating and cooling surges. However, recent advancements indicate how heat energy can be stored using novel materials such as phase-changing materials, molten salts, and eutectic materials. Solar thermal systems are where thermal energy storage is most frequently used, which solves the problem of intermittent renewable energy by making it possible to retrieve solar electricity at night that's been stored during the day.

Energy storage infrastructure construction involves a number of setup fees, and long-term ownership can result in locked-in capital and stranded assets. Businesses can acquire a dependable power supply with zero asset investment and low implementation costs by using energy storage as a service, enabling facilities to assess the worth of a solution for energy storage. Additionally, this strategy provides the most flexibility when market conditions change. Energy storage as a service also helps utilities manage grid infrastructure breakdowns, seasonal peak demand, and traffic congestion while allowing users in outlying areas with spotty or no grid connectivity to profit from improved grid flexibility and effectiveness.

In short, innovative storage solutions result in substantial payoff for society, whether through increased productivity, a healthier environment, or financial savings and gains. Systems for storing energy are necessary for the expansion of renewable energy sources and the decentralization of energy production, and energy storage is positioned to play an increasingly significant role in the shift to a more sustainable and resilient energy system as costs continue to fall and technology advances.

Designed by Laura Pratt









No Free Ride for EVs



Written by Robert Hoshowsky

n Canada and the United States, governments are betting on an EV world, where smog and smoke produced from burning fossil fuels will be, they hope, relics of the past. Billions of dollars have already been spent or allocated to this cleaner, greener future, such as the recently announced multibillion-dollar Volkswagen EV battery plant in St. Thomas, Ontario.

Slated to become one of the largest, if not *the* largest, facilities of its kind, this much-touted 'game changer' is predicted to create some 3,000 jobs along with 30,000 indirect jobs. And although Volkswagen is investing \$7 billion into the project, the Canadian government's pledge of \$13 billion in subsidies and another \$700 million to Volkswagen is raising eyebrows.

Some ask if the investment is worth it, or if this is more of a purely political move. >>

> Expectation, meet reality

As optimistic as EV manufacturers and governments are in pushing for vehicle electrification, cracks are showing. For every positive news piece about the benefits of EVs, there are stories from owners about the downsides, especially estimated mileage, cost, and availability of charging stations.

In some instances, EVs are refusing to start in cold weather, or are travelling a fraction of the distance on a full charge promised by manufacturers, spawning the term 'electric vehicle range anxiety'.

Unlike gas-powered vehicles, where fuel can be obtained from any gas station, EVs require designated charging locations. Sure, you can charge at home after you've invested in the necessary hardware and an electrician's time, but what if you're hundreds of miles from your home? Although some malls and condominium complexes have charging stations, the fear is that there aren't enough to keep up with demand.

"For every positive news piece about the benefits of EVs, there are stories from owners about the downsides, especially estimated mileage, cost, and availability of charging stations."

At this year's Canadian International Auto Show, experts discussed how the demand for EVs is putting additional stress on Ontario to step up the installation of charging infrastructure, with the province lagging behind Quebec and British Columbia. And the federal government's insistence that all new vehicles are electric by 2035 only worsens the situation.

While urban centres like Toronto are installing charging stations, EV owners in northern parts of Ontario face too few of them. Stories about drivers being stranded or barely making it home are commonplace.

For a province of over 15 million residents, where the grid is already overtaxed and blackouts are common in the summer months, the lack of charging stations is just one issue. Another is the cost. Late last year, energy giant Petro-Canada almost doubled charging fees nationwide at its Canada's Electric Highway™ stations.

According to Petro-Canada, it takes about 30 minutes to charge a typical EV, with a maximum of 200kW or 350kW of power output through DC fast chargers (level 3 or 3+) depending on the station.

Charging up? Rates up

Before to the end of October, charging rates varied from \$0.20 per minute in Quebec to \$0.33 per minute in Ontario, Manitoba, Saskatchewan and Alberta. After that time, Petro-Canada increased its fees to a flat \$0.50 per minute. The higher cost was especially felt in Quebec, where it amounted to a 150 percent increase.

In the United States, DC fast-charging station network Electrify America—a Volkswagen Group of America subsidiary with close to 800 charging stations—also announced a price increase for all customers. Depending on charger location, the maximum power vehicles can accept, plan type, and per-minute location, rates vary and may be taxable.

In some instances, EV owners pull up to charging locations only to find they don't work. There have been several reports of angry drivers attempting to charge their EVs at ONroute locations along Ontario's Highway 401, only to find chargers were defective at multiple locations or charging speeds were less than optimal.

As if sluggish or non-functioning charging stations weren't enough, the new technology has brought an old-time issue with it: thievery. Like other means of delivering electricity, EV chargers require copper wiring. There have been multiple instances reported of thieves breaking open public charging stations, stripping them of copper wiring and charging cables, and selling these as scrap.

The problem is, replacement cables cost over USD 2,000, and trained technicians charge hundreds of dollars for their work. In some locations, the situation is so dire that some are suggesting redesigning stations with pole-mounted chargers that are only released via a Smartphone app.

In environmentally friendly California—which has decided to ban sales of gas-powered vehicles after 2035—there is yet another problem. With almost 4,000 charging stations in Los Angeles, 500 of them free to use, the city's homeless crisis is seeing mountains of garbage piled high, sometimes making chargers inaccessible.





A return to gas?

Much like Canada's federal government, the Biden-Harris administration in the U.S. is vowing to have more EVs on the road. Under its EV Acceleration Challenge, the White House is committed to "50 percent of all new vehicle sales [being] electric by 2030."

But it was always an ambitious goal, and tax credits for EV owners, more charging stations, an increase in domestic manufacturing, and over USD 100 billion committed for battery manufacturing alone may not be enough to sway drivers away from gas-powered vehicles.

Perhaps most telling is the reluctance of some manufacturers and states to embrace EVs. Unlike California and New York, which seek to ban sales of new gas-fueled cars, Wyoming's legislature wants to phase out new EV sales by 2035. Viewed by many as a symbolic gesture, some, including the state's Senator Brian Boner, were quoted as broadly saying they don't appreciate other states forcing "technology that isn't ready."

The bill, entitled SJ0004 – Phasing out new electric vehicle sales by 2035, did not pass, but made its point calling oil and gas production "one of Wyoming's proud and valued industries," responsible for jobs, revenue, and transporting goods.

The bill says, "Phasing out the sale of new electric vehicles in Wyoming by 2035 will ensure the stability of Wyoming's oil and gas industry and will help preserve the country's critical minerals for vital purposes." The bill, which was forwarded to President Joe Biden, also takes aim at the President's goals for a gas-free future, saying the amount of electricity needed to support EVs will be massive "to sustain the misadventure of electric vehicles."

And then, there is a reluctance from some of the automobile manufacturers to embrace EVs, namely Toyota. The world's top automaker (by sales), Toyota has stated that battery electric vehicles (BEVs) are not the sector's sole solution to fighting climate change, saying that gas-electric hybrids like its best-selling Prius are a more realistic option on the road to reaching carbon neutrality.

One of the biggest criticisms of electric vehicles remains the cost of ownership. Prices for EVs vary, starting around USD 30,000 on the low end for a Chevrolet Bolt. And even though prices are slowly decreasing, a survey from the University of California Davis found that a whopping 18 percent of all-electric car owners actually went back to gasoline-powered vehicles.

Published in *Nature Energy*, the survey *Understanding discontinuance among California's electric vehicle owners* said in part: "We find that PEV (plug-in electric vehicles) discontinuance in California occurs at a rate of 20 percent for plug-in hybrid electric vehicle owners and 18 percent for battery electric vehicle owners. We show that discontinuance is related to dissatisfaction with the convenience of charging, having other vehicles in the household that are less efficient, not having level 2 (240-volt) charging at home, having fewer household vehicles and not being male."

One thing is certain: the world is shifting to carbon-free vehicles that are kinder to the environment. We may very well see a planet where gas-powered vehicles are relegated to history books. But despite the efforts of manufacturers, government, and environmental activists, that timeline is, as the saying goes, subject to change.

SPEEDING AHEAD

in the E-Mobility Market





Written by Nate Hendley

anufacturing equipment provider GROB is experiencing accelerated growth, with new products, new staff, and a new focus.

Founded in 1926 in Munich, Germany by Ernst Grob (whose family still controls the firm), the company is headquartered in Mindelheim, Germany with a North American branch in Bluffton, Ohio and branches in Brazil, China, and Italy. It has earned an enviable reputation for its high-end machining centers, automated pallet systems, and industrial software. Alongside these products, the company recently introduced a revolutionary, liquid metal printer and a pallet storage tower.

While the company still serves the medical, die and mold, aerospace, energy, and military sectors, it has massively grown its presence in the electromobility market, exemplified by electric vehicles (EVs).

"GROB was primarily a machine tool builder throughout our almost 100-year history. That's what we were known for [plus] some assembly work but, a few years ago, our leadership had enough vision to recognize there was an industry shift from combustion engines," states Glenn Oshel, Director of Key Accounts for E-mobility at GROB Systems Inc., the firm's North American operation.







The company "has made a tremendous investment in e-mobility research. We took engineers who only worked on machine tools their whole life and told them, 'Hey, you're going to work on a [battery] cell manufacturing system.' It was a big culture shock for a lot of engineers but, in the end, we made that transition, and over the past four or five years, we've gone from basically zero percent e-mobility to fifty percent of our business being e-mobility now," he continues.

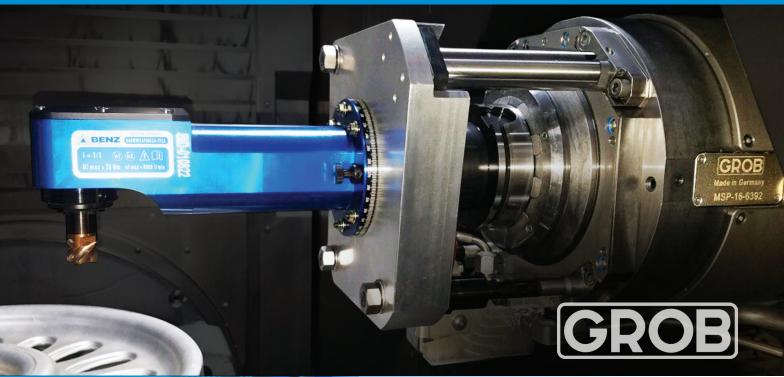
"GROB aims to continue to balance its presence in traditional markets with new opportunities."

This transition has also entailed a massive rethink of the services and solutions required by automotive manufacturers. "Everybody is worried about the displacement of machining centers for cylinder heads or engine blocks or transmission cases. We're seeing a lot of that get replaced now with machining for battery trays. The message I want to share: 'Don't think that because there's not a [gas] engine, all the machining opportunities are gone. They're not. They're just machining different things now. They're [machining] much more structural, larger components," says Oshel. >>

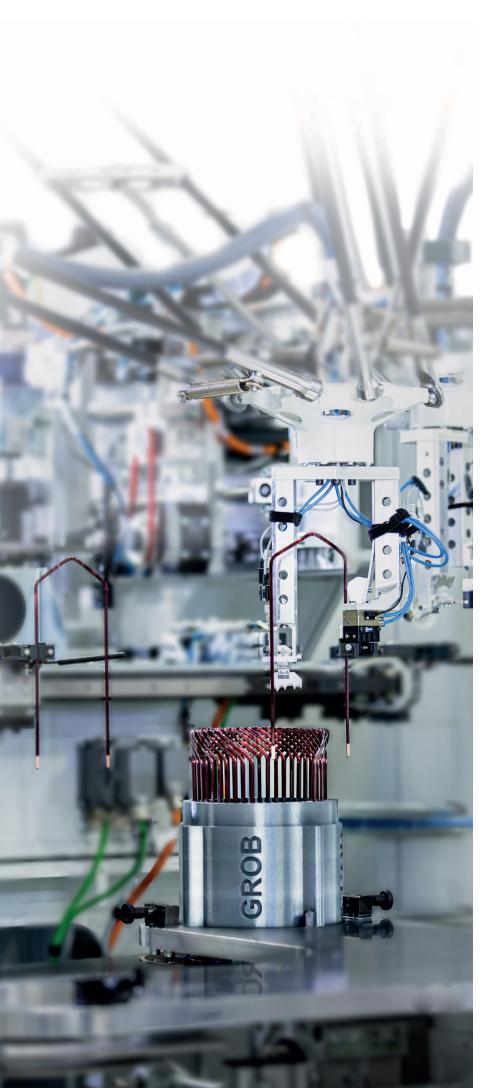


Solution provider for GROB in Aerospace, E-Mobility and Automotive applications

ANGLE HEAD BROACHING ENGINEERED SOLUTIONS MULTI-SPINDLE CONTINUOUS DUTY OPTIONS







▶ Going forward, GROB is looking to offer "larger machines for frames. As e-mobility continues to expand, the types of vehicle frames are changing from primarily stamped types of material to gigacasting and mega-casting; the parts are getting huge. For example, look at a pickup truck. From wheel to wheel, you have a battery tray," says Derek Schroeder, Universal Machine Sales Manager for GROB Systems Inc. Popularized by EV maker Tesla, giga-casting and megacasting are methods of making vehicles with a small number of large-size parts using mammoth casting machines.

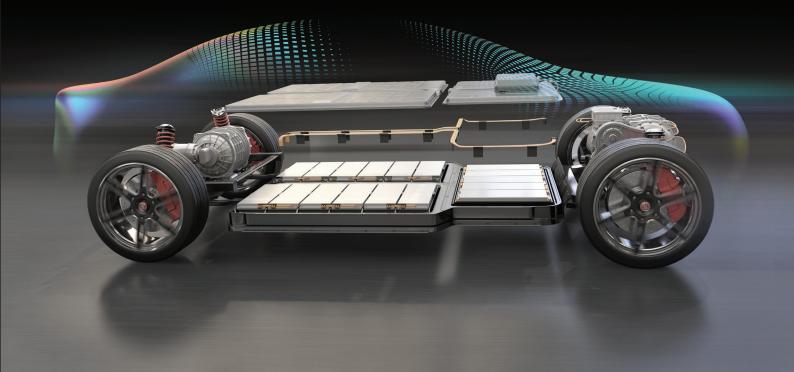
Given the rate at which it is adding personnel, GROB's transition to e-mobility solutions has clearly been a success: since *Manufacturing in Focus* profiled the company in May 2021, it has hired 360 employees at its North American division. Total employment in Bluffton now stands at 850 people. The parent firm also recently hired hundreds of new staff members in Germany.

"GROB's cutting-edge machines and technology are complemented by an emphasis on quality and customer support."

Among other tasks, the company designs and builds equipment and systems for making stators and rotors, as well as battery cells and modules and packs for the e-mobility market. GROB is investigating e-mobility opportunities in aerospace and keeping an eye on future technologies such as hydrogen fuel cells.

Last September, the company announced a partnership with German firms Manz, which specializes in high-tech mechanical engineering, and Durr, which specializes in plant and mechanical engineering. Working together, these three companies want to supply facilities to produce lithium-ion batteries for EVs. >>

EVOLUTIONARY



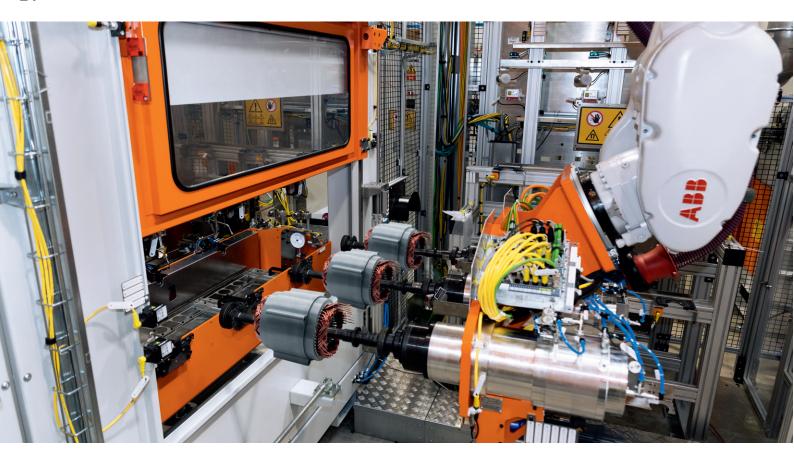
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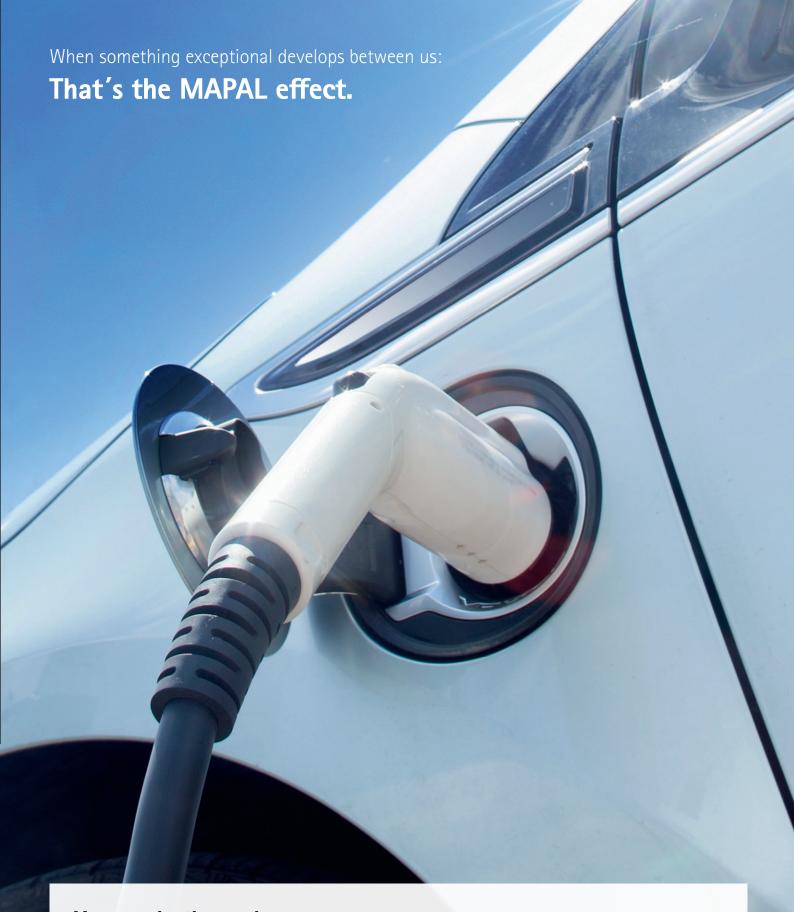


▶ The goal is to "be able to supply a complete turnkey solution from raw material to finished cell system. I think we're the only one-stop shop for cell manufacturing," says Oshel.

GROB has also positioned itself at the forefront of another burgeoning trend with the introduction of the GMP300 liquid metal printer. While additive manufacturing is not a new technology, plastics are the most common material used in the additive sector. GROB GMP300 uses a new technology to print aluminum components without the use of powder and without a laser. "Liquid metal printing represents a completely new technology with fast build rates, no health hazards, and a lean overall process. The parts can be removed and used directly after printing; no mechanical separation or heat treatment is necessary," notes Stephan Kowalski, who works at the Center of Excellence Medical for GROB in Europe.

"A few years ago, our leadership had enough vision to recognize there was an industry shift from combustion engines."

Unlike other additive manufacturing systems, the GMP300 is not only designed for one-off production, but can also produce small batches economically. Oshel suggests that the printer can be used to produce replacement parts, jigs and fixtures, and prototypes. Lightweight structures can even be realized in completely enclosed shapes with this powder-free printing process that produces the components without excess raw material. >>>



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For all this innovation, GROB still excels at making traditional equipment for manufacturing. The company's G150 and G350 universal, five-axis machining centers, for example, are well-suited for machining medical parts. The compact G150 has working travels of 450, 670, and 665 mm in its X, Y, and Z axis, while the larger G350 has working travels of 600, 855, and 750 mm in its X, Y, and Z axis. It also offers four-axis universal machining centers such as the G440, G640, and G840.

"The goal is to 'be able to supply a complete turnkey solution from raw material to finished cell system. I think we're the only one-stop shop for cell manufacturing."

Earlier this year, the G150 came in first place in a review of milling machines conducted by *Produktion*, a European trade publication. *Produktion* judged nearly sixty milling machines from various companies on criteria such as automation, maintenance, control system, and total cost of ownership.

GROB continues to design and build automated pallet storage and changing systems as well. The firm recently introduced



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the customizable PSS-T300 tower pallet storage system, which boosts part production throughput and can store 38 square pallets or 81 round pallets. When connected to a GROB G150, G350 or G350a machining center, the PSS-T300 can operate continuously without human assistance.

Manufacturing clients looking to enhance productivity and efficiency might want to check out the company's suite of GROB-NET⁴Industry applications. These include GROB⁴Line, which allows machines to be controlled and monitored via smartphone, and GROB⁴Analyze, which identifies unproductive phases so that the causes of weaknesses can be quickly identified and corrected. GROB⁴Interface, which allows the transfer of machine data to other systems, regardless of the manufacturer, and GROB⁴TDX, which allows the automatic transfer of tool data to a machine, are two other important applications.

GROB's cutting-edge machines and technology are complemented by an emphasis on quality and customer support. It has maintained its ISO 9001:2015 and ISO 14001:2015 certification and International Traffic in Arms Regulations (ITAR) registration. ITAR registration gives the company entry to American military-related aerospace projects.





▶ Staff from the Bluffton division offer training to clients who purchase GROB solutions in North America. Training can be conducted at the Bluffton facility or the client's worksite, an example of the customer-friendly approach that has been key to the company's enduring success.

Hosting open house events is another way GROB demonstrates its client-centered ethos. In late March of this year, staff in Germany showcased new technologies and equipment and had industry experts on hand for a four-day in-house exhibition. The 3,500 visitors who attended had the opportunity to view more than thirty machines.

"You could spend a whole day and find on every corner a new technology and the solution to your problem," says Kowalski of the German exhibition. The Bluffton facility, meanwhile, recently held an open house of its own. "Every once in a while, we like to have the general public come in, tour the facility, and see what we do. The employees can bring in people they know and the public can see us. In Northwest Ohio, everyone thinks GROB is a factory; they don't understand. It's high technology. It's not line work. Everybody has a complicated job to do," says Schroeder.

The open house was a big hit, with more than 3,000 visitors on a Saturday. As a follow-up, the Bluffton facility will host a customer event in August, to "show processes from different industries."

Like all industries across North America, GROB faces the challenge of attracting new skilled workers. The company has met this challenge in large part through its comprehensive, four-year apprenticeship program. Established over three decades



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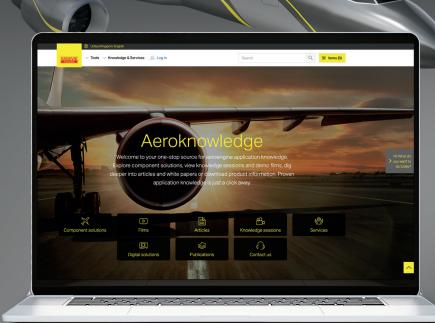
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ago, the program consists of a mix of on-the-job training and classroom education.

"We pay for their school, their wages, their instructors. It's a huge investment for us," Schroeder states, adding that the expense is worth it in terms of preparing well-trained workers.

The company maintains an optimistic outlook, as evidenced by the fact it is adding another 100,000 square feet to the Bluffton facility, with construction scheduled to begin later this year. "If you look at an overhead view of the plant, it keeps getting longer and longer," he says.

In the future, GROB aims to continue to balance its presence in traditional markets with new opportunities. "Strategically, we want to keep it 50/50, as best they can, between e-mobility and machining," states Oshel.

This view is echoed by Schroeder who says, "I think, in the universal machines, we have to continue to gain market share—for example, by expanding in the medical sector. In the e-mobility space, the challenge in the next five years will be to maintain the market share that we have."





Coatings With HIGH-PERFORMANCE PROTECTION

Written by Pauline Müller

ince opening its doors in 2006, Dynamix Inc. of Markham, Ontario, has supplied custom surface-finish coating chemicals mainly used by Canadian and other North American fabricators who supply diverse industries ranging from oil and gas to aerospace. The company also has distributors as far afield as Europe, Mexico, and China.

"We are known for going the extra mile to reformulate and make new products," says Michael Black, Marketing Manager. "We provide clients with commodity chemicals, proprietary chemicals, technical support, and laboratory analysis to keep their processes running."

With thickness, durability, porosity, and sheen all influencing the longevity and performance of the company's products, research and development is a large and crucial part of this team's offering. Customers benefit from the wealth of product and industry knowledge the team has, enabling them to develop chemicals that perform the way customers need them to. Dynamix products thus feature in a vast array of goods, including everything from airplane landing gear and nuclear reactors to display windows, respiratory devices, brake pads and shock absorbers, seatbelt buckles, and more.

Some of the company's largest markets are in metal finishing process chemistry like zinc electro-plating, high-sheen and matte nickel, and chrome. Although the aesthetic of modern cars is sleek and pareddown in contrast to the chrome-heavy glamour of classics such as the 1952 Pontiac Chieftain, a surprisingly large amount of chrome still goes into modern electric vehicles, the popular, protective application protecting the metal beneath from oxidation.



DYNAM



Dynamix also supplies undercoat paint adhesion chemicals that improve the gripping and staying power of powder coatings and the like, as well as water- and solvent-based lacquer finishes that are typically fired onto coated metal substrates. There are also copper and brass finishes and chemicals that enable oxidation and heavy patina effects on products like faucets and other metal bathroom fittings or doorknobs. In addition to all these finish-related chemicals, the company also offers products used in pre-treatment processes, electro-polishing and plating, stripping agents, and wastewater treatment products.

Dynamix is proud of its close relationship with its customers. Its laboratory team works to minimize any unforeseen events for customers, such as downtime. As expert troubleshooters, this research team is also well-versed in spotting and mitigating potential issues, saving clients time and money in reworking products.

"We are at the forefront of technological advancements, and we are proactive with our customers. As regulations change or process improvements are [made,] we work with our customers to [ensure] they benefit as much as possible," explains Black.

Indeed, an interesting aspect of the company's research and development function is keeping up with regulations. The result is continuous innovation and finding new ways of delivering the quality and performance of old-fashioned chemicals—but in modern formulations that are less damaging to the environment.

"Hexavalent chromium-free passivates and plating processes; non-cyanide zinc, cadmium, silver, and black nickel

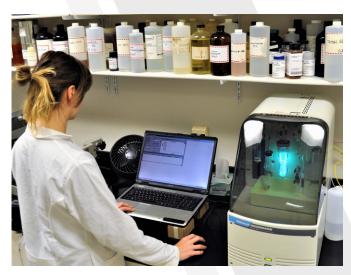
processes; phosphate-free pre-treatments before painting; and citric acid passivation of stainless steels, just to name a few. We presently offer products in all of these areas," says Stewart Tymchuk, Co-President.

"Quality is our legacy and our future. Our products are very important, yet they are often overlooked by the outside observer who does not understand our business," he says.

Dynamix's commitment to excellence ensured that it came out on the other side of the COVID-19 crisis stronger than it had entered. The company's growth has been consistent due to the sincere partnerships it has built up with customers over the years, and its goal is to continue on this path. Today, its drive for achieving the impossible persists.

"We are known for taking the time to understand a customer's wants and needs and finding or developing a product that helps them achieve what they want. Our customization abilities and willingness to help the customer are endless," says Tymchuk.

In tandem with this ongoing research and development effort, a constant stream of new customer projects demands fresh thinking to keep the company's formulations on the leading edge. To this end, Dynamix has an impressive array of technology that most competitors don't have at their facilities, such as a high-intensity x-ray machine and other modern tools for more environmentally responsible electroless nickel plating processes typically used in EV batteries and other parts. The company also offers silicone-free wastewater de-foaming agents and phosphate-free pre-treatment processes for pre-paint applications. >>









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• Growing interest in super-tough, high-velocity oxygen fuel (HVOF) thermal-spray plasma coatings, mainly used in the oil and gas and aerospace industries, has inspired the company to develop a formulation that strips old coatings. This is quite popular, especially with equipment resellers, and it is the first of its kind available to the market. These coatings are favoured for the tremendous durability and protection they provide on expensive components as they melt into the metal, and the company feels there will only be increased demand for the stripping product as the coatings themselves see more widespread adoption.

"In addition to supporting the community, the company is also committed to doing its best to protect the natural environment from harmful chemicals."

A salt-spray cabinet tests how well finishes will protect the metal beneath from the relentless onslaught of accelerated corrosion. Rust and oxides are evaluated after a predetermined amount of time. Positive results mean that products can be salt-spray certified with a customer guarantee on the anti-corrosion performance of the finish. In some applications finished aluminum would need to pass up to 3000 hours and an interior

automotive component, like a nickel- and chrome-plated seat belt buckle, would only need to be certified for 24 hours. An interesting standard benchmark is that 200 hours of salt-spray exposure is believed to equate to ten years of atmospheric exposure in the city of Detroit, Michigan.

After a recent expansion, the company's 23,000-square-foot facility now features revamped finished goods and raw material storage sections alongside its fabrication outfit. Growing from a single unit in an industrial complex, the business has trebled its footprint over the past seventeen years. To mark the auspicious event, the company threw a lavish party in 2021, celebrating its first fifteen years in business. The fun included a managers' dinner and a Maple Leafs' game from the luxury of a gondola suits at Toronto's Scotiabank Arena.

This is a happy and diverse group of 22 people who enjoy camaraderie and the challenges the field provides; most have been with the firm for many years. Part of the company's contribution to its enthusiastic team spirit is proper remuneration. "We pay our staff well but mostly, we treat them right," says Tymchuk.

In addition, the company provides a delicious staff lunch—typically around the barbecue in summer—on Fridays. There is also a complete benefits package, a profit-sharing agreement,

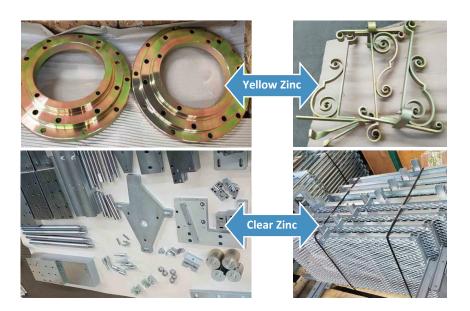






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and an extra two-week vacation during the festive season over and above standard vacation allocations.

Thanks to its light-hearted office spirit, the company takes calamity in its stride. Once, the facility and two neighbours were flooded over a long weekend as the result of a defunct component on a deionization unit. After a three-day deluge, arriving at a drenched site was a bit of an unwelcome surprise, but everyone pulled together and sorted the problem in no time at all.

Dynamix Inc. is also a proud supporter of its favourite student hockey team: the University of Windsor Lancers. As of 2021, the company has ensured that all qualifying student-athletes receive a fixed allowance, as only a handful of them received financial aid in the past.

In addition to supporting the community, the company is also committed to doing its best to protect the natural environment from harmful chemicals. To this end, it reports to Environment Canada annually with detailed information on its waste production. It also reports to the National Pollutant Inventory (NPI), which requires that the company detail its waste and how it prevents it from leaking into the natural environment. Being as strictly



controlled as it is, especially when it comes to wastewater treatment, the plating industry is one of the most conscious industries with regard to ecological responsibility, these leaders feel.

At present, the Canadian surface finishing industry is worth around \$3.5 billion and has over 47,000 employees. Its gross domestic product value is estimated at more than \$1.2 billion, nearly 90 percent of which is believed to be generated in the provinces of Ontario, Quebec, and Alberta. Employment opportunities and production naturally follow. Against the backdrop of the evolving nuclear, food, and medical industries, the Dynamix Inc. team is sparing no effort to continue producing quality surface finishing chemistry.

This Family Plastics Reprocessing Company Has Its

EYE ON GROWTH



Kal-Polymers will be massively expanding its capacity this year, a move that will enhance the company's position as a leader in the North American plastics recycling sector.



ased in Mississauga, Ontario with a second facility near Atlanta, Georgia, this family-owned firm reprocesses and compounds plastic raw material that might otherwise have gone into a landfill. It is an eco-friendly business model that is beneficial for both the environment and the bottom line

"We upcycle plastic scrap into higher-end applications," says Director of Marketing Nemo Saha, son of the company founder.

Kal-Polymers subjects plastic scrap to heat, sheer, and other measures to transform it into pellets that can be reused for various purposes, acquiring its scrap from a core group of businesses.

"We have long-standing partnerships or supply agreements with manufacturers," Saha explains. "Throughout their manufacturing process, they generate a lot of scrap, and we work with them to make sure that scrap material gets recycled."

At present, the company has the capacity to handle a total of 115 million pounds of raw plastic annually at its U.S. and Canadian facilities. If all goes to plan, "by the end of the year, we will be at 150 million pounds," says Saha. This dramatic increase is being driven by positive economic trends within the sectors served by the company, he says.

"The market has been demanding a significant amount of support from us, and we've been happy to supply it. As long as our customer base continues to grow, we will grow with it. That's what we've done for over thirty years; that's the ideology we follow. If [our customers] grow, they're going to need support from us," he says.

Specific services include grinding, colour separation, de-painting, de-metalizing, blending, baling, reprocessing, and de-volatilizing. Polypropylene (PP) is by far the most common material the company works with, followed by polyethylene (PE) and polyethylene terephthalate (PET). Kal-Polymers also handles nylon, polycarbonate (PC), and polystyrene (PS), to name a few.

"The market has been demanding a significant amount of support from us, and we've been happy to supply it. As long as our customer base continues to grow, we will grow with it."

All work is done in-house, and the company has a laboratory where plastic raw materials are subjected to physical and mechanical testing as well as chemical and thermal analysis. Technicians measure everything from strength to melt flow, impact resistance, flexural modulus, tensile, heat capacity, polymer makeup, and filler content. "In the lab, we test the plastic raw materials for all applicable sets of properties based on what the end application warrants," says Saha.

One of the factors the company tries to assess is "the actual performance of the material and how it would react in the real world, under real-world conditions," he adds.

Kal-Polymers emphasizes testing for two main reasons: the company is frequently required to meet stringent health and safety requirements and, at the same time, always wants to provide uniformly high-grade recycled plastic wares.

"Quality is of the utmost importance for us. It really does set us apart from other recyclers," Saha states.

Standardization is sadly lacking within the plastics recycling field, he laments. "You could get two materials from two different recyclers, both of whom are claiming they are supplying you with polypropylene. But you will see significant differences in quality and consistency," he explains. "Being able to provide material with consistent quality specifications has allowed us to succeed and grow over the past several years."



The firm has customers in the automotive and food industries two sectors with exacting standards for the parts, products, and materials they purchase from suppliers. Car and food companies alike set these high benchmarks to avoid causing accidents or illness in end-users.

"Quality is of the utmost importance for us. It really does set us apart from other recyclers."

As proof of its commitment to quality, Kal-Polymers has ISO 9001:2015 certification and approval from the U.S. Food and Drug Administration (FDA). To maintain its ISO status, the company is regularly audited to ensure everything meets specifications.

Handling challenging materials is another way the company differentiates itself from others in its space. For years, Kal-Polymers has accepted material containing print, coatings, laminates, or paint, which other plastics reprocessing and recycling companies might balk at.

The well-being of its workforce is also top of mind here. The company has a joint health and safety committee that meets regularly and "sets specific guidelines, protocols, and procedures to ensure the safety of our employees," says Saha.

When COVID hit, Kal-Polymers adhered to all provincial health protocols to keep its workers from contracting the virus. Interestingly, the company itself thrived despite the contagion. "Our business actually went up tremendously during the pandemic," shares Saha.

At the peak of the pandemic, many companies shut down and told their workers to go home; commercial and entertainment

venues were often closed as well. As a result, homeowners frequently launched renovation and reorganization projects or had products delivered to their residences, he notes.

"There were a lot of goods being produced and purchased by everybody. A lot of those things were made out of metal, wood, or plastic, which is a contributing factor on why you saw all three of those sectors skyrocket in price," he says.

Kal-Polymers was founded in 1992 by Nemo's father, Gobi Saha, who based the company name on the first three letters of his wife's name, Kalyani. Both parents remain involved in the business, with Nemo's mother (who goes by Kelly) working on the operations side. Gobi has stepped back a bit, but still provides input daily "on the big picture side of things," explains his son.

Today, Nemo and his brother, Aris (who serves as Operations Manager) take care of day-to-day business at the firm. The plan is to keep the company running as a family business going forward.

While it has expanded greatly since its launch, its central mission has always remained the same. The focus has always been "to recycle materials and generate revenue while helping the environment," he recalls.

In 2019, the company acquired a facility near Atlanta which has its own laboratory and does much the same work as the Mississauga plant. The U.S. branch "is a natural extension of us. We acquired that facility, and enhanced it significantly over the years," Saha says.

In the same spirit, Kal-Polymers has an intriguing plan to start issuing awards to its customers. "We're going to start providing

our customers with awards and plaques to say, 'You have officially diverted one million pounds from landfill, two million pounds, ten million, twenty million.' We want to start introducing that this year as it's important to remember the benefits of our actions," says Saha.

The company currently has 185 employees across Canada and the United States and, as a family business, corporate culture is very important. "We attract individuals that work hard and come in with a positive attitude every day. Most of your day is spent at work, so it should be with people you enjoy being around and enjoy collaborating with," Saha says.

This approach extends into human resources and hiring new staff. "We like individuals to have a positive outlook, a team orientation, and a growth mindset. The growth mindset is very important to us because we have taken individuals that have started off at an entry-level position and brought them up in managerial positions as a result of their dedication, their commitment to the company, and their ability to learn and take training from us," he adds.

The team also believes in giving back to the community, and regularly donates to local charities in Mississauga and participates in food drives for needy families. However, merely by existing, Kal-Polymers offers a valuable public service through its ability to provide a 'green' alternative to tossing out plastic scrap.

Besides its website, the company takes part in trade shows to promote itself. "There are a lot of industry-specific trade shows that we participate in. They're targeted shows, very specific, because this industry as a whole, the plastics/polymer industry, is very niche," says Saha.

COVID aside, "I'd say our biggest challenge as of late was volume—being able to supply the increasing demands of our customers—but that's why we've invested in the additional 35 million lb. growth," he states.

With this in mind, the company's capacity expansion might not mark the end of its growth spurt. The firm owns an additional 50,000 square feet of land in Mississauga that it eventually plans to develop. It is open to adding new services and making new acquisitions down the road if the right opportunity arises.

"We're always looking at advancing with our customer base. Originally, we expanded to Georgia due to pull from our customers in that region. The next pull seems to be toward Mexico but it's much too early to tell," says Saha.

"In five years, I see us with increased capacity and with a deeper reach in automotive and food applications. It's just been wonderful to be a part of, because [in these sectors, recycled plastics] are less common. So, to be able to assist those industries has been very exciting for me."

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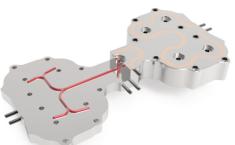




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To honour Craig, the company has retained its focus on topquality products and services, while upholding a loyal, experienced workforce. Peninsula continues to be a one-stop shop that offers a comprehensive range of services including consultation, modelling and industrial design, three-dimensional (3D) printing, part and mould design, manufacturing, packaging, warehousing, and shipping.

Consultations entail detailed discussions with clients and preliminary design work. Moulds can be custom designed according to customer specifications. Once a design has been chosen and successful prototypes have been built, the company will commence a production run of parts and moulds on its thirtyfour custom injection machines and other processing equipment. This work is done in a 65,000-square-foot space at the company's Fort Erie headquarters.

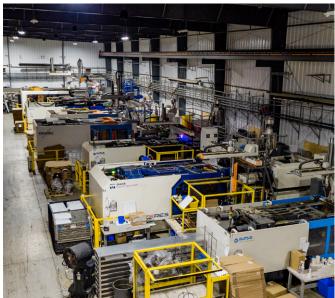
Across the street from the production center is Peninsula's 30,000-square-foot warehouse for logistics work. The warehouse stocks customer products and inventory and this is where some light packaging is done. The company can provide display cases, blister and clamshell packages, and boxes, as well as perform heat sealing, labelling, and polyethylene bag packaging, to highlight and protect customers'

products. Logistics also covers brokerage duties and arranging pick-ups or deliveries for clients.

The company maintains a large inventory of a variety of plastic resins, which is very beneficial to its customers as they are able to pass on the savings of buying material in larger quantities. For commodity resins like polypropylene and polyethylene, there are four silos on-site which allow the company to purchase material in railcar quantities. Material in these silos can then be pumped directly to work centers without requiring a manual transfer of materials. This again provides added cost savings to customers. "We are looking at further improvements to this process by adding more silos and more advanced material conveying systems," says Bolton.

Peninsula has a separate division called Nova Products that makes plastic goods such as glass case inserts, spools, and hydro components. Storage containers for recyclables are another Nova specialty; it makes 'blue bins' used to store paper and plastic recyclables and 'green bins' used to store kitchen and organic waste, primarily for municipalities. Blue bins include small, five-gallon units that can be fitted under desks, mid-sized stackable containers, and large twenty-two-gallon curbside bins. Green bins range from two-gallon kitchen containers to thirteen-gallon curbside units.





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Nova has developed a brand new product: a thirty-two-gallon, black plastic garbage can, of which the company is particularly proud. "It's light, compact, and made with superior materials, so it won't break. It also has a "better aesthetic design," than other garbage bins, according to Bolton.

The superior materials include impact-modified polypropylene. The garbage bin will be sold by retail outlets such as Home Depot, Home Hardware, and Walmart. The company is working on placing the thirty-two-gallon bin in Canadian Tire as well, he says.

In addition to its Fort Erie facilities, Peninsula uses a 20,000-square-foot, third-party warehouse in Buffalo, New York. This warehouse points to one of its strengths: the ability to ship products to both Canada and the U.S. with ease.

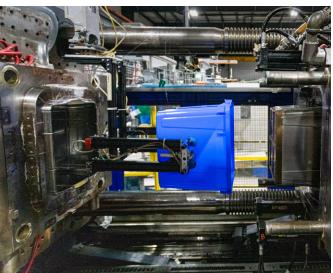
"It's one of the things that sets us apart from other injection moulders. We're literally on the border. The transfer of goods across the border is something we make extremely easy for our customers. We take the headache out of it," Bolton states.

Other things also set the company apart. For a start, it maintains high standards of quality, with ISO and National Sanitation Foundation Institute (NSF) product certification. Based in Michigan, but with an international reach, the NSF offers product certification services in various fields including food equipment.

Peninsula has implemented Health Canada's Good Manufacturing Practices (GMP) program and Critical Control Points (HACCP) system. The GMP program is designed to ensure high standards for packaging material, among other things.







The company has a client-centred business ethos. Customers can approach Peninsula with a vague concept that the company turns into a production-ready product. This process is driven by the use of 3D, computer-aided design software. It sometimes taps into the same skillset to fix problem moulds from other firms.

Peninsula uses 3D printers as well, but only for prototyping. Despite the hype about 3D printing, the process is still too slow and unwieldy to mass produce moulds or parts, says Bolton. "It's not going replace injection moulding in this century. It doesn't compare to the strength of injection moulding or the speed of injection moulding," he points out.

Given this, Peninsula is eager to buy more custom injection machines, preferably bigger ones. At present, the largest machine the company owns has a clamping force of 1800 tons. Within a couple of years, it hopes to add a 2,500-ton machine to its lineup. "We're looking to increase our tonnage. We're looking for a bigger machine," says Bolton.

For all the progress Peninsula is making, the company is still somewhat in recovery following COVID. "2021 was a tornado of a year, but things have been returning back to normal," Bolton reports. >>

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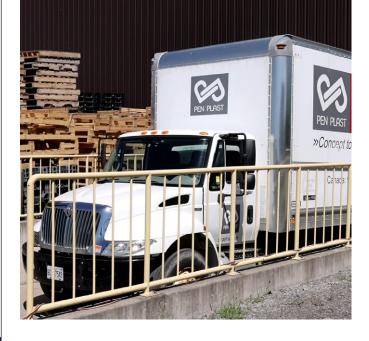


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Certain health protocols remain in place; visitors are still required to sign in, and staff members, in general, are much more vigilant about the prospect of illness. Now that the virus appears to be finally receding, the company has taken to attending in-person trade shows again while continuing to enhance its online presence.

Prior to the pandemic, Peninsula employed 130 workers around the clock. This has been reduced to ninety employees working continuously for five days a week. Bolton hopes that the workforce has been only temporarily downsized.

Meanwhile, the company is striving to streamline its operations to increase efficiency. A few years ago, it acquired an enterprise resource planning software system for its offices. The system has proven its worth and the company is now "working on implementing bar code scanning and the Internet of Things into the workplace," reports Bolton.

Peninsula's human resources department has added new software as well, to track vacation time and other employee data. The software will eventually include online employee portals to help employees access their information faster and easier. The firm uses a fingerprint clock check-in for staff and is looking to expand its machine monitoring capabilities to keep an eye on cycles and production time.

In addition to software, the company has introduced robotic systems on its plant floor. Robots enhance both productivity and worker safety by taking on potentially dangerous tasks once performed by employees such as reaching into machines to remove parts.

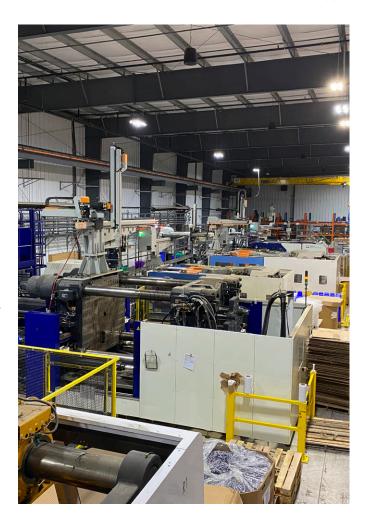
For all the technological software and robotic solutions, Peninsula is fully aware of the importance of human relationships. The company builds employee loyalty. Staff members are eligible for a variety of benefits, including dental coverage and a registered savings program. Peninsula emphasizes internal promotions and likes to match experienced staff with new hires for intensive, hands-on training.

It tries to encourage a family-like work culture, which makes sense given its heritage. The company originated as a small custom injection moulding shop with a handful of machines and employees in Georgetown, Ontario. It was purchased by Jake Bolton's grandfather in 1976 and moved to Fort Erie. Fred changed the name to Peninsula Plastics and expanded the operation. Craig took over in 1989, and now his two sons are heading the business.

Going forward, the plan is to keep Peninsula within the family and expand operations through moulding larger products. There is also talk about entering new product categories such as the home organization market. "We're working on that now," says Bolton.

There have also been discussions about setting up new branches in different cities. "Especially with shipping costs, we could definitely see ourselves branching out—trying to cover more of North America," he says.

Content Developed by Taylor Dunne | Designed by Ashley Dowling



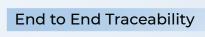
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around for decades. Founded in 2017, Prime Automation has grown into an enthusiastic team of experienced designers,

programmers, technicians, and electricians.



→ Tapping into talent

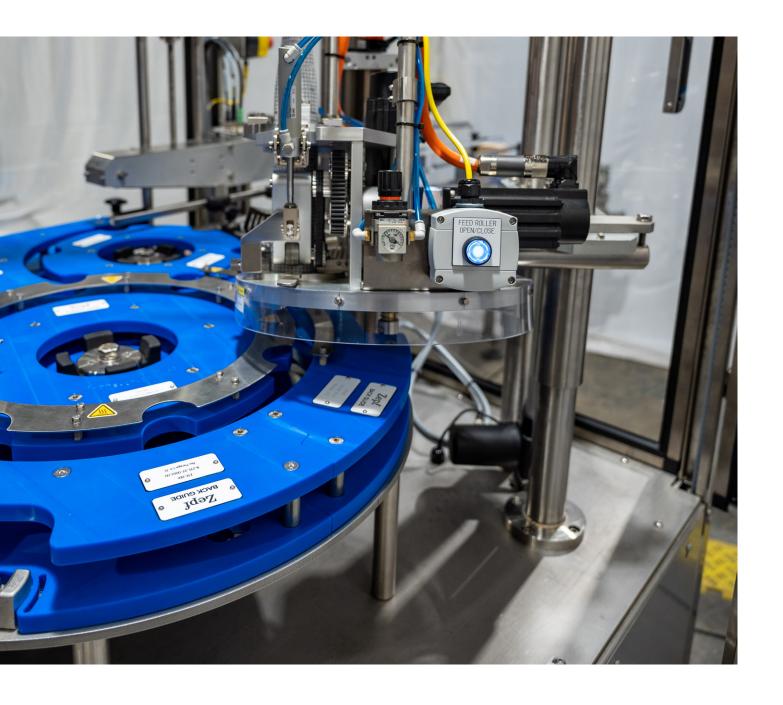
Headquartered in Waterloo, Ontario—renowned for hundreds of tech businesses and world-class universities and colleges—privately held Prime Automation is home to some of Canada's best and brightest. With two locations in Waterloo and a third in Clearwater, Florida, Prime serves customers in Canada, the United States, and abroad. For all customers, many advantages come from working with Prime.

"Our focus is to build people up...
This grows the opportunities for everyone. We promote from within."

"With offices in Canada and the United States, we are building teams that are able to service our customers as efficiently as possible from either side of the border," says Director Mike Taub. "Combining our local support with our team's ability to provide remote support, we can provide our customers with quality service in a shorter timeframe."

Prime's way is to tap into the Kitchener/Waterloo talent pool by working with co-op programs and building its team through internal development and opportunities. Over the years, the company has nurtured relationships with Conestoga College. One of Canada's fastest-growing colleges and a leading polytechnic institution, Conestoga is a source of co-op students for the company.

Prime hired many recent talented graduates from Conestoga's robotics program and has been previously named Employer of





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the Year (Cooperative Education). Often, team members introduce their friends and new grads to the company because of its dynamic and successful relationship with Conestoga College.

"Our focus is to build people up from junior, entry-level positions," says Director Chad Harrison, "and help them develop into a role of seniority rather than hiring for those types of positions. This grows the opportunities for everyone when we promote from within. We are also focusing on team-building events and team bonding, and don't want to have just a 9 to 5 place where you work with acquaintances."

The company believes that being innovative and providing cutting-edge solutions in markets like food and beverage, pharmaceutical, and automotive plays a key role in its success. By building and maintaining a great work environment, Prime can keep its team enthusiastic.

Known for its positive and encouraging environment, Prime's perks for its people include paid training, paid travel, competitive wages, benefit packages, and great opportunity for growth. "This includes flexibility, supporting the junior team with the senior team—always being there for them—and creating an environment of mentorship for new graduates," says Director Paul Puttick.









Value for customers

Seeking to "shake up the automation industry, challenge convention, and make the impossible possible," Prime remains focused on providing superior automation solutions and outstanding customer service.

"Known for its positive and encouraging environment, Prime's perks for its people include paid training, paid travel, competitive wages, benefit packages, and great opportunity for growth."

From food and beverage to packaging and palletizing, water treatment, life sciences, consumer goods, metal forming, and transportation, Prime's strength is creating fresh and innovative ways to deliver real performance, peak efficiency, and cost-effectiveness.

Handling design, installation, industrial programming (including programmable logic control [PLC], human machine interface [HMI], and supervisory control and data acquisition

[SCADA]), Prime provides everything needed to get automation systems up and running.

The company is skilled at picking up the ball at different stages, coming on board at the design stage of a new facility; when it's already under construction; or even when completed. "We have opportunities where we're working with customers at a greenfield level on a new plant and discussing automation at that stage, or on a retrofit plant that's been operating for the last 50 years," says Director of Automation Ryan Bauml.

Prime is also adept at performing decommissioning and modernization—when a system is old or no longer meets safety requirements—and offers remote support based on customer needs. "We are actively creating remote support systems," adds Bauml.

Although Prime doesn't advertise itself as a 24/7 breakdown business, it has programmers and electricians on staff who can get to customer sites at short notice. "If we get the call and we can do it, we'll support it."



Future-focused

Guided by a vision and values that include providing optimal designs, exceptional value, and support for the Canadian economy, Prime Automation is also deeply committed to making new team members feel welcome and creating an open, teaching-oriented workplace.

Believing in getting the next generation of potential employees interested in automation, the company has established several initiatives. These include a facility tour promoting the trades to new and low-income Canadians with the Waterloo Region business and educational partnership, and the Ontario Youth Apprenticeship Program (OYAP), a school-to-work transition program. Prime is also supporting local outdoor recreation programs, and sponsoring the 35 km long Hydrocut trail system, one of Ontario's premier mountain bike riding destinations.

Prime is also active with the PAC Program out of Conestoga College's Program Advisory Committee, an educational and industry collaborative initiative to develop better-trained and qualified skilled workers for the future.

Industry-wide, Prime Automation's stellar reputation keeps growing. This includes being featured in the Waterloo EDC Automation ecosystem. In 2021, on the back of a 296 percent three-year growth in revenue, Prime made the *Globe & Mail's* Report on Business list of Canada's Top Growing Companies, ranking 149 out of 448.

Says Harrison: "We want to be as big as possible without sacrificing what we've got: a good work environment, a strong team, and quality work."

Content Developed by Lily Mitchell



PRESERVING A LEGACY



Written by Jessica Ferlaino

albert Manufacturing, Inc. was founded in 1938 by Austin Talbert, a man who brought innovation and customer service to the forefront of the heavy haul trucking industry by addressing the needs of his customers time and again. By manufacturing trailers and equipment that set the standard for safety and performance, the name Talbert became synonymous with quality.

These same values continue to fuel the longevity of the Talbert Manufacturing brand in the present. The company, now celebrating 85 years in operation, has the next generation of leadership but the same commitment to building exceptional equipment and relationships with its customers in mission-critical sectors, as well as the dealer network that supports them.

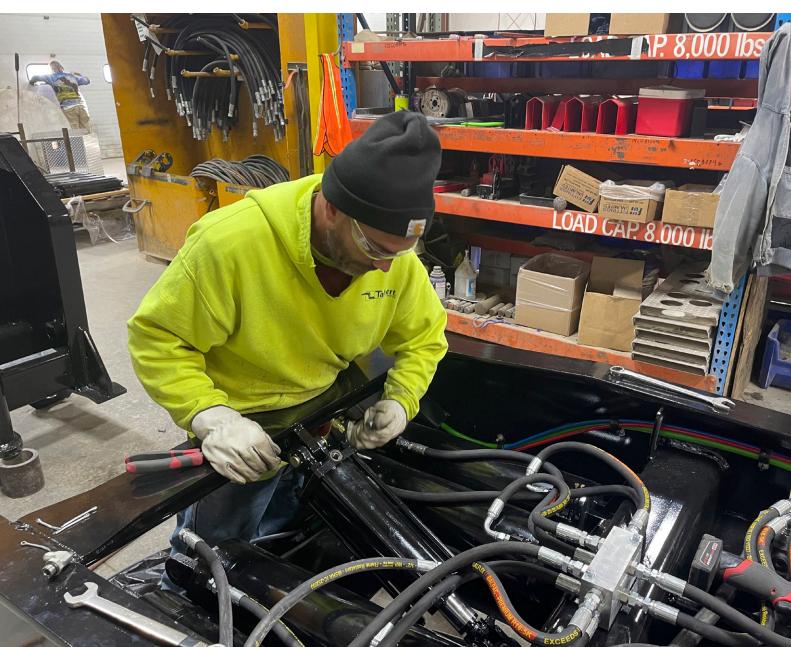




Setting the standard for 75 years

Talbert Manufacturing has numerous well-engineered trailer designs to its name, many of which were industry firsts, but it is the removable gooseneck trailer that remains its crowning achievement. This year, the removable gooseneck trailer is celebrating 75 years of protecting equipment and saving lives and it continues to be a source of pride.

Troy Geisler, Vice President of Sales and Marketing at Talbert explains, "The removable gooseneck changed the landscape of heavy haul for the best." This lightweight, simple, yet durable trailer design improved safety for the equipment, the cargo, and the operator, which set the industry on a new trajectory.



The removable gooseneck was the start, but Talbert didn't stop there. The design evolved throughout the years with the nonground bearing hydraulic detachable gooseneck introduced in 1962, an innovation that would improve clearance and stability, and thus safety, when loading and unloading. Previously, the trailer would sit upwards of fifty inches off the ground for rear loading, but this angle was steep and risked tipping without warning. Talbert's travelling axle and hydraulic tail series decks can be lowered to ground height or raised to shipping dock height to mitigate these risks.

In 1970, Talbert raised the bar with its new, patented Hydroneck design that offers greater customization options to balance weight distribution without having to rely on pre-set weight and height limits. The Hydroneck is featured on both the double drop series and the lowboy series. Alternatively, end users rely on Talbert's ratchet neck design which includes safety pins to secure the gooseneck. This model boasts five or seven pre-set heights that are customizable to any application's requirements and lend to improved ease of loading and unloading.

"The team continues to find new ways to address the needs of customers while improving the safety and efficiency of a trucker's day-to-day activities through innovative trailer design and exceptional performance."

Twenty years later, Talbert designed and patented its mechanical removable gooseneck trailer, a lighter weight option to the hydraulic model that is ideal for double drop trailers and longer-distance trucking routes where the load is on the truck for several days until it is unloaded on a smooth, flat surface.

From the mechanical detachable removable gooseneck to the hydraulic detachable and non-ground bearing iterations that were developed throughout the years, to being the first to use high-strength heat-treated (T1) steel and the first to design and incorporate air suspensions, self-steering axles and load-dampening spreader bars, Talbert Manufacturing's trailers and equipment have continued to push the limits in size, strength and performance.

"When it comes to our trailers, there's so much to consider outside of the type of neck or trailer weight capacity. That's why each trailer is built to the needs of the operator," Geisler explains. "Each trailer we build and each innovation we come up with focuses on balancing operators' needs when it comes to productivity and safety."



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▶85 reasons to celebrate

A business surviving for 85 years is no accident. What makes it possible at Talbert is the wealth of expertise contained within its ranks. Some employees have been with the company for upwards of 40 years, which offers a depth of industry knowledge of the trucking industry and the continuously evolving regulatory structures that vary state to state and country to country.

"It's a great honor to work for Talbert Manufacturing because of how we are received out in the marketplace, how proven our trailer is, the design, how reliable it is, and then also the longevity of Talbert staff," says Geisler. "It's not easy work; it's not without its challenges but it's nice to work for a company that puts its best foot forward."

Behind Talbert Manufacturing's talent and experience, upholding and reinforcing its success is a reliable network of dealers to which Talbert provides support to ensure the needs of its end users and the industry are being met. What is more, despite its

longevity and success, Talbert Manufacturing does not rest on its laurels. The team continues to find new ways to address the needs of customers while improving the safety and efficiency of a trucker's day-to-day activities through innovative trailer design and exceptional performance.

"The company, now celebrating 85 years in operation, has the next generation of leadership but the same commitment to building exceptional equipment and relationships."

"We try to put them in the best possible fit for their needs," says Geisler, and out of this desire to meet the customer's needs comes innovation which supports the ultimate goal: "To preserve Austin Talbert's legacy."







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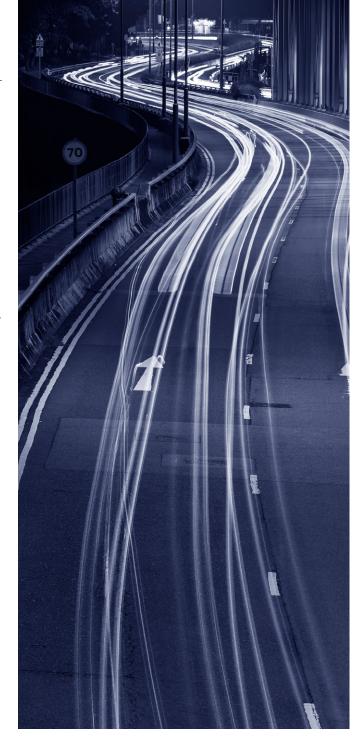
It is clear that Talbert Manufacturing, like its equipment, is built to last. In the past eight decades the company has faced countless challenges, chiefly the recent pandemic, yet it continues to overcome to fulfill orders. It does so by keeping one foot in the past and one foot in the present to preserve the Talbert legacy while modernizing and growing the company.

"We find a happy medium: we listen to the voice of the customer and adapt to those changes, all the while just keeping it simple and preserving how Austin Talbert created Talbert—all of the innovations that have come from Talbert, including the safety standards," explains Geisler.

As to the 'current normal,' and what the future holds for Talbert, he says, "We don't subscribe to the fact that this is what the world is going to manifest to. We're going to go back [to the way things were]—maybe not 100 percent, but we are ready for this current normal to evaporate and get back to work."

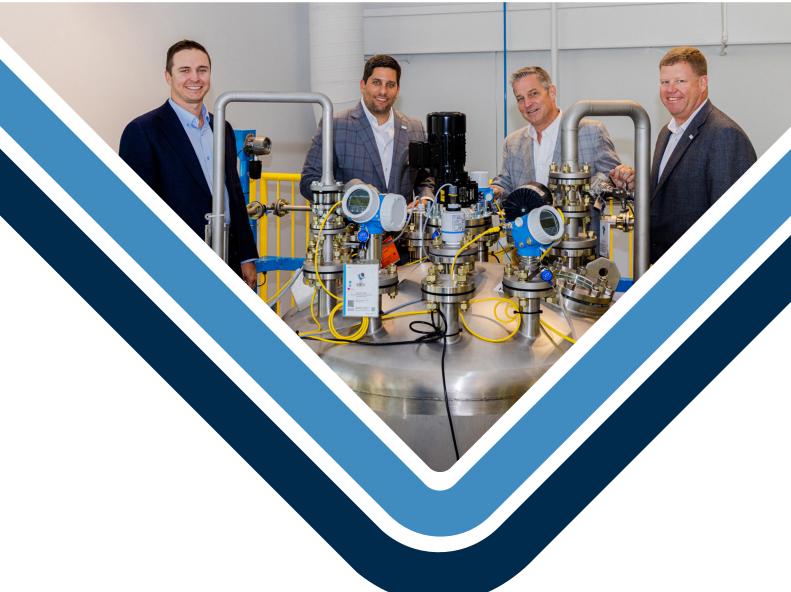
For Talbert, the pandemic served as an opportunity to grow from the inside. The last two years have been dedicated to self-improvement and capacity-building at its two locations in Indiana and North Carolina to ensure that when the market returns to strength it can compete with other major players from around the world, for parts, customers, and market share.

The plan moving forward is to grow whenever possible, but for now Talbert Manufacturing continues to identify ways to improve, ensuring that it continues to design and manufacture the best solutions for its customers to remain competitive as a North American leader in specialized heavy-haul solutions.



Content Developed by Wendy Hood-Morris







Boudreaux investigated the possibility of combining companies in the Texas, Oklahoma, New Mexico, Missouri, and Kansas markets and achieved enough outside financing to purchase six companies to combine them into one entity. He admits that there were multiple identities and cultures and every company wanted to be at the forefront. Thankfully, all were able to rally around a singular brand and identity, and within the first few years, the new brand and model proved to be effective.

This would become Vector CAG, and although how the entity as originally designed was not the original goal, it has become central to the company's success, culture, and identity.



In determining what they would do differently in the market, the team aligned with key manufacturing partners like Endress+Hauser, and sought to identify as a business that understands technical multi-industry applications. More than that, they sought to establish themselves as "a team of problem-solvers," as Boudreaux defines it, filled with skilled engineers committed to a solutions and service mindset.

Service became and has become a key aspect of Vector's identity and an area marked for growth; beginning with only one service engineer in the original six companies, the company now sports closer to thirty.

Over the past decade, Vector has aligned with over thirty industry partners. Endress+Hauser stands as both the flagship brand and the genesis of the company, being that it is the business that helped start the company. Both companies now reside on the same Houston campus.

In 2013, the company began with over one hundred manufacturing partners, which was a practice that Boudreaux realized was not sustainable. The first twenty-four to

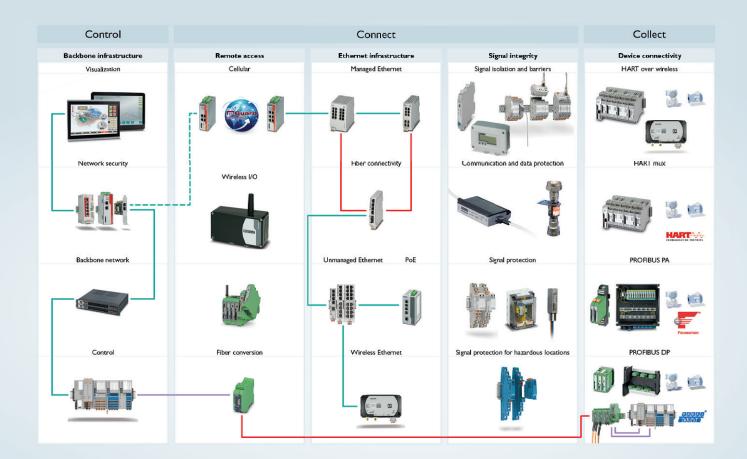
thirty-six months became about getting behind manufacturers that aligned with the Vector brand and saw growth opportunities within it; from there, the company was able to narrow the focus and move forward with both short- and long-term strategies.

As Vector continued with mergers and acquisitions early in its lifecycle, the team found power in communicating its story through both word-of-mouth and social media. The company, Boudreaux remembers, "didn't have the horse-power of a corporate brand at the time," as a hub company usually has a marketing department to help mergers happen smoothly but was able to tell its story through face-to-face client relations and now has grown to the point that it has adopted an effective engine for marketing.

He credits partners like Process Level Technology, Phoenix Contact, Brooks Instruments, Smith Analytical, and Endress+Hauser for staying aligned with Vector, as these relationships have made a difference to customers, establishing the company's marketplace identity and inspiring confidence. These relationships are important to its continued success.

"Without diversification, we can't go forward or grow."









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• Boudreaux feels that a lot of companies can get wrapped up in only one industry or with a few specific customers. "Without diversification," he notes, "we can't go forward or grow," so focusing on this in the last three to four years and making investments toward that goal has been of great importance so as not to simply rise and fall with the market's tide.

"Our people make the difference during uncertain times."

Vector works with some core industries like oil and gas, food, water, and chemical, but is also investigating investing in emerging ones. Industries can be volatile, with large- and small-scale economic pressures and global implications, so the company focuses on what it can control. The industry is constantly growing, with consumer demand being a primary driver. Boudreaux explains that market share growth will be another constant focus, regardless of any kind of industry flux.

He indicates three major, regular challenges for the company: growth during uncertain times, adaptation to the speed of a customer's business, and supply chain and labor constraints. Each of these areas has its unique aspects and are always being actively managed. The company is keen to focus on its diversification and market share, and most importantly, on selling its value-added services to take care of the lifecycle of a product or solution.

Boudreaux believes that the better Vector is at onboarding new people, the better it will be at having workers that understand every tool available to them. "Our people make the difference during uncertain times."

Vector is still small enough to be flexible, meaning it does not take long for it to get a feel for or react to its customers' needs. This became especially helpful in the initial year of the pandemic when many of its customers' businesses were forced to fluctuate. By showing its flexibility, it earned the trust of its clients. >>



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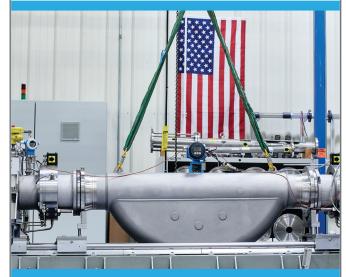
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As for market constraints, the company stays in touch with its manufacturers and customers to understand the business climate and to avoid supply chain complications. Many manufacturers appreciated the approach of adjusting to client positions and to where the supply is, which allowed Vector to do unique things like order ahead of time without formal purchase orders. This led to better market share and further business, as its competitors were not able to pivot as well as it did.

"Vector prioritizes work-life balance for its employees, especially after a fraught time in the industry like the one resulting from the pandemic."

Boudreaux cites the company winning the Top Workplaces – Houston for 2022 distinction in its fifth straight win in the category as personally meaningful, as it is an external signifier of a strong internal culture. One practice the company sticks by to benefit its workers is excluding non-compete contracts. "With non-compete agreements, we stop competing for our employees. We took a different approach and began to make ourselves more attractive as an employer to recruit and retain the best talent." Vector also prioritizes work-life balance for its employees, especially after a fraught time in the industry like the one resulting from the pandemic.

He recalls how the team taught him a lot during that time about rallying around the common goal of survival and about the resilience and grit of the organization. "We treat team members like we treat our customers: respectful, sincere, flexible, and [encouraging] healthy challenges," he says.

With respect to these healthy challenges, the company has gained a reputation both internally and with its partners

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for encouraging one another to constantly mark areas for growth and improvement. In the last few years, it has introduced a new pool of people to its veteran engineers and has put together a strong and efficient and rigorous onboarding process that has narrowed the typical settling-in window for new workers from two to three years down to three to six months. This has created an environment wherein, given the right tools, talented people can be generated to take on new positions while improving their skills and the output of the company.

As for the common customer question, 'What else can you do for me?' once Vector earns a customer's business, their questions become more complex and the bar for the level of support is raised. This means that Vector must continue to raise its processes, infrastructure, and knowledge to further increase its value.

For the upcoming two to three years, the company will be focusing on its processes and infrastructure investments, with 2023 marked for adapting to incoming economic pressures.

This year marks the company's tenth anniversary, and Boudreaux reveals that a banquet is planned in celebration.

"When we have those functions," he says, "It's not about an entity or brand, it's [about] celebrating the people... our people make the difference... individually, we're good, but together, we can be great." He forecasts that his team will come out with another record year and that big things are on the horizon for Vector CAG's second decade.

Content Developed by Lily Mitchell | Designed by Ashley Dowling









Written by Nate Hendley

hings are booming at Samuel Automation Solutions Group (Samuel ASG) of Waterloo, Ontario. "We've gotten stronger. We have a greater reach and expertise. Being part of a much larger organization demonstrates stability that the smaller independents don't always have," states President Robert Lague. Until recently, he worked exclusively for Systematix, a company that custom-designed and built automation systems for manufacturers. In 2021, it was acquired by Samuel, Son & Co. a 'leading metals and industrial products manufacturer, processor and distributor,' in its own words. Founded in 1855 and based in Oakville, Ontario, it boasts a global presence. Samuel joined



Systematix with CAID Automation and RAMP, two other automation and technology companies it owned, and the group was born.

Custom design work remains the norm at the new company. "Our customer always brings the process they want done and, typically, provides some form of user requirement specification. We call it a URS. Some customers leave it up to us to specify the hardware," says Lague.

Samuel ASG's automation systems are used for testing, inspecting, components assembly, packaging, and robotic handling. Solutions often contain camera systems or vision sensors as well as data collection tools. Automation solutions developed by the company are

intended to increase productivity, streamline operations, and identify flawed parts. Some solutions also feature remote monitoring capability, so clients can scrutinize the performance of their systems.

Most of its work is self-performed although the company does buy equipment from outside companies, including robotics from FANUC, ABB, and other original equipment manufacturers. Its main markets range from automotive and transportation to life sciences and consumer products. Within these categories are specific sub-markets; life sciences, for example, includes medical devices and pharmaceutical wares, while consumer products include window and door automation solutions.

As far as Lague is concerned, the creation of Samuel ASG has been a boon for everyone involved.

"Across our business units, we have financial stability, processes, and expertise that is similar to the largest automation companies in the world."

"Prior to being acquired by Samuel, Systematix had been in business for just over thirty years providing complex assembly solutions to a wide variety of customers. We had a very high percentage of repeat customers, and our customer base was relatively stable. Samuel gave us visibility to a larger customer base, and

at the same time, the Samuel brand has created some additional exposure in the marketplace we didn't have before," he asserts.

Mutual assistance is one of the benefits of being under the Samuel, Son, and Co. umbrella. "We've begun working with the different Samuel companies, helping them find automation opportunities to improve their quality, production throughput, that sort of thing. So, we've done a number of smaller projects, >>>

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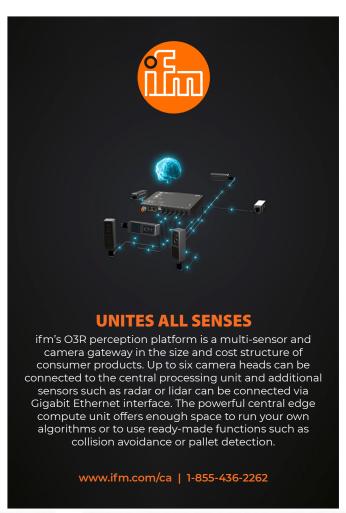
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▶ and we've got one bigger line for a plant about an hour away from us here," says Lague.

"We've capitalized on the companies' ability to work with each other. For example, CAID Automation has engaged in design efforts for Systematix on a project where we needed extra resources. CAID has also helped on an installation in the U.S. for RAMP. They had people who were local they could send in and help with that install at the customer's site."

Sales teams for the three companies "now have a larger range of capabilities that they can sell to customers," he adds.

Customers have also benefitted. Whereas in the past, a client might have had to work with several automation firms to complete a project, the entire assignment can now be handled by Samuel ASG depending on the skill sets involved.

While the individual companies within the group have become stronger, the company remains nimble and quick on its feet. "Across our business units, we have financial stability, processes, and expertise that is similar to the largest automation companies in the world, but we're more agile and can provide lower cost solutions because we don't have the overhead some of these really big companies have. We operate three independent companies that communicate well," Lague states.







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Samuel ASG has roughly two hundred employees. Experience is preferred in new hires, but it appreciates other traits as well. "Seasoned automation professionals are one of the things we're always on the lookout for. We want self-starting, team-oriented individuals—people who like to problem solve and work with technology. Someone who likes to learn would fit very well into our organization because we're constantly doing new stuff. We hire from both streams as far as college or university are concerned. We also have apprenticeship programs in different areas of our business. We can intake team members at all sorts of different areas," he says.

"We want self-starting, team-oriented individuals—people who like to problem solve and work with technology."

In fitting with this innovative culture, it has a strong online presence, with profiles on social media platforms, but this is augmented by old-school promotion. The company regularly attends trade shows such as the upcoming Automate conference in Detroit this May.

In addition to innovation, Systematix and its sister companies have a reputation for doing quality work. >>



Systematix is ISO-certified and Samuel ASG has developed business best practices for "all areas: project management, shop floor, and design. These have been established and rolled out to each of the business units. As we grow and we add a new company, we compare our current standards with what the new company brings, and then we'll try to make everything better. This has all been done in collaboration with the three businesses, and as we grow, we're going to see if we can continue to improve our processes," Lague explains.

company tried to encourage remote work but discovered this model was not a good fit.

"Because a lot of our work is based on innovation, we like people being closer together so they can talk when they have ideas... We're a workforce of problem-solvers. Our people are curious about team things. They thrive in the team environment that we need to complete our systems," says Lague.

When it comes to noteworthy projects, he mentions a jumbo-sized assignment involving an assembly line for truck transmissions. "The finished product was over seven

"As we grow and we add a new company, we compare our current standards with what the new company brings, and then we'll try to make everything better."

and testing devices so it was "actually very busy during COVID," he recalls. Still, it has

The company's bottom line

was not battered by COVID

as some of the clients with

which it works supply masks

thousand pounds when completed," he notes, adding that the solution was shipped before the Christmas holidays.

experienced virus-related supply chain woes.

As with every industry in North America, Samuel ASG had to cope with COVID. When the virus spread in early 2020, the company went into action. Desks were separated, and an employee temperature check-in system was established. The

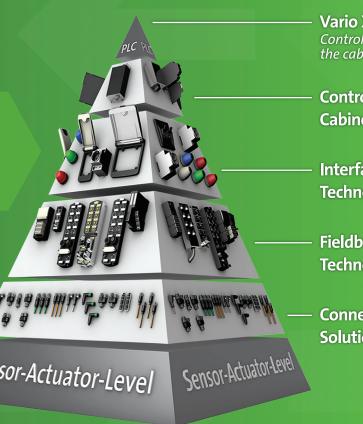
"The stuff you're hearing about all over is happening to us too. The chip shortage has caused us a lot of problems. The backlogs, because of the shutdowns in China that are affecting everybody's supply chains and the components that we buy, that's really affected our deliveries," he says.





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The company has been known to improvise in the face of supply chain delays. If commercial semiconductor chips are not available, a lift-locate unit might be fabricated in-house as a temporary stand-in for testing during the construction of a conveyor system.

Not counting COVID, Lague says hiring is the biggest challenge. "Finding talented people with a thirst for knowledge and experience in our field, it's tough to do. We're always looking. We've got postings on LinkedIn and Indeed. We attend college and university recruiting fairs. We host job fairs where we open up our facilities and invite candidates to come in and see what we do."

In the future, growth, new services, and a continued emphasis on innovation are all on the agenda. The company has hired a new service manager to create "some new after-sales service offerings," and is participating in pilot projects involving artificial intelligence (Al), says Lague. These projects were started by the parent company before the birth of the ASG.

"Now that we're working with them, we're going to do two or three test projects this year to actually put [AI] on equipment we build for Samuel and then be able to run it in-house so we can learn what it does, what its capabilities are, what the worth is to our customers, and ultimately, get out of that something we can offer to the marketplace," he explains.

While each location within Samuel ASG is growing organically, the company is also keeping an eye out for "strategic acquisitions that can give us more of a technical capability and greater regional support throughout North America," he continues.

Moving forward, "We are actively planning the Samuel ASG to have more business units in it and for these to be in regions mostly in the U.S. [That's] where we're looking to grow and to gain more technical know-how in the process," Lague adds.

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