

TRUMPF

MAGAZINE FOR SHEET METAL PROCESSING IN NORTH AMERICA 2/16

# Express

**SPECIAL**  
FABTECH BUYERS' GUIDE

**NEW YORK TOUGH:**

Rebounding with high technology and lean manufacturing

**HOLY GRAIL:**

TRYPSTAR is unmatched in delivering power and performance

# TACKLING THE OBSTACLES

*The Rogers Group meets the challenges of an ever-changing business head-on*



# Express 2/16

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Hard work and reliable technologies have carried this shop through the tough times.

**SPECIAL**  
FABTECH BUYERS' GUIDE

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## FIRST AND TEN

The Rogers Group tackles big jobs with flexible manufacturing.



# How will we get connected?



Over the last few years, TRUMPF has been preparing for the next big change in manufacturing – a transformation that revolves around the digitization and use of big data. In such a dynamic manufacturing environment, our focus is on implementing technologies to enable our sheet metal fabrication customers to use it effectively and harness its potential.

Data analytics have become a key topic and major area of investment for big tech companies, as well as for TRUMPF. The goal is to use data to provide a more transparent view of the bigger picture than what any one user can achieve on its own. It leads to statistical relevance which can then be applied in the field. With years of extensive machine data, for example, TRUMPF can identify signals of an impending problem and then use this information to help customers resolve an issue before it occurs. Data also comes from the use of remote technologies, such as augmented reality “Smart” glasses. TRUMPF is pioneering the benefits of this new technology through our technical service group. These are all pieces of the puzzle in the new connected manufacturing world.

Collecting and making sense of big data is a complicated challenge but TRUMPF is working to provide you with a suite of products to bring structure to the chaos. Instead of handling fragmented pieces of information, our solutions will be comprehensive, interactive and paperless. They are designed to provide you the right information when and where you need it to enable you to stay in control. At FABTECH we invite you to experience TruConnect where we bring this concept to reality through the customized production of a stainless steel Jeep. As each mini Jeep travels through the production process, our industry-leading products and services will be gathering data and working together in the background to deliver a stream of live production updates to your mobile hand-held device. This paperless production environment is the next step in manufacturing and in achieving the ultimate goal of nearly automatic “one piece” flow.

It will be a long journey before we come close to realizing this vision of an autonomous factory. Look to embark on this journey with partners that have the foresight and stamina to remain at the forefront of their respective fields. The strength of each individual link in the sheet metal fabrication chain is more important than ever. Getting connected with the right partners will be the key to success.



A handwritten signature in black ink that reads "Peter Hoecklin". The signature is fluid and cursive, written in a professional style.

Peter Hoecklin,  
President and CEO

# PANORAMA

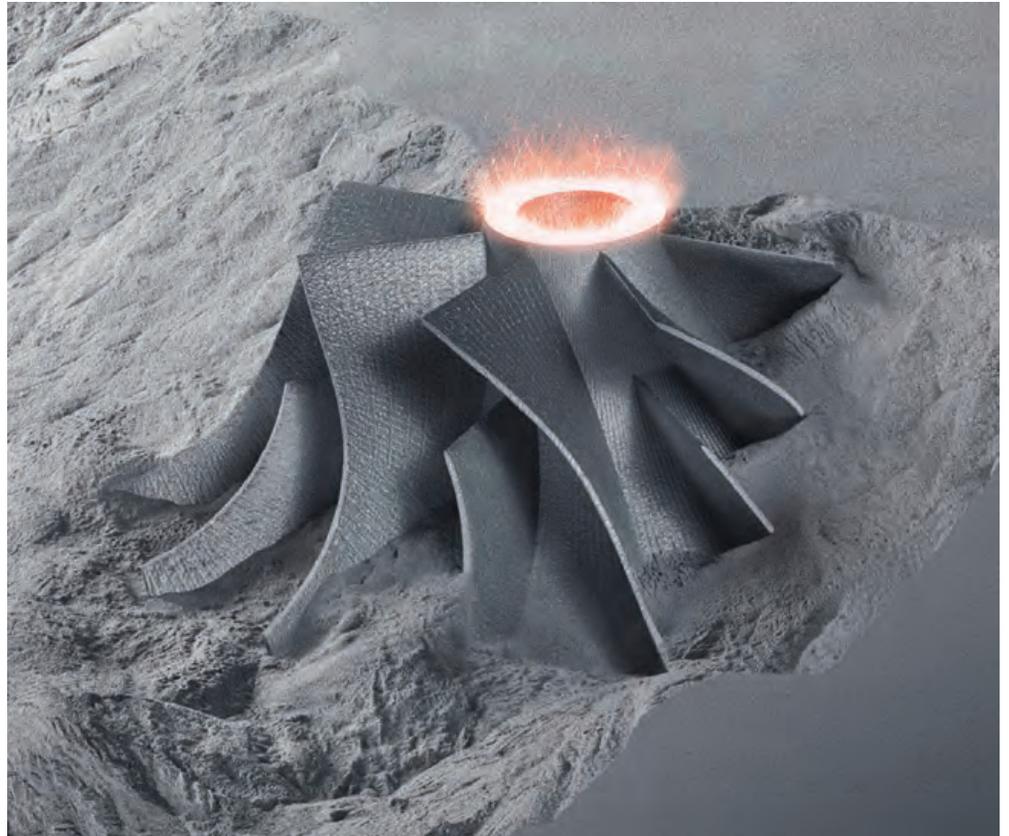
The U.S. federal government invested \$30 million to establish the National Additive Manufacturing Innovation Institute in Youngstown, Ohio.

## 30 million

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This process is ideal for producing complex parts with difficult features, such as internal channels and hollow spaces, dental and medical applications...

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## 3D PRINTING

With the new TruPrint 1000 fabricators are able to build metal 3D components, layer by layer, with laser metal fusion (LMF). This process is ideal for producing complex parts with difficult features, such as internal channels and hollow spaces, dental and medical applications, as well as for economical production of individual parts or short production runs for R&D and additive manufacturing job shops. Stainless

steel, aluminum or any laser weldable metal in powdered form can be used for the build. A layer of this powder is applied to a substrate plate and then a 200W laser fuses the cross section of the geometry to the plate. After the exposure the plate is lowered and the next layer of powder is applied. This procedure repeats until the part is finished. Fabricators are also able to reduce the build volume, for example when processing precious metals.

The touch screen control steps the operator intuitively through the individual phases of the process, and all components, including the laser, optics, process enclosure, filter unit and control cabinet, are integrated into a single, compact enclosure. Its high quality, functional design and layout, combined with ease of operation and cleaning, make it a perfect choice for customers looking for a compact industrial 3D metal printer.



## 3D PRINTING

# 60%

The percentage of 3D printing revenues which come from mid-range printers (\$30,000 - \$300,000). These 3D printers are primarily used for prototyping.

# 20 billion

According to Wohlers Report 2014, the 3D printing industry is expected to exceed \$20 billion US dollars in revenue worldwide by 2020.

# 1983

The first form of 3D printing, stereolithography, was invented by Charles Hull.

### TRULASER TUBE 5000 FIBER

The new TruLaser Tube 5000 fiber is the fastest and most precise machine of its kind. Innovative functions such as RapidCut combined with enhanced machine dynamics result in four times the acceleration rate compared to a traditional machine. Its robust self-centering clamping method requires no setup between tube sizes for maximum precision and efficiency when cutting. Easy access around the machine

facilitates material loading or unloading with a crane. The open machine design and intelligent beam guard enables operators to safely unload tubes while the machine is in motion. Whether bevel cutting up to 45 degrees in mild steel or processing tubes up to 8mm (or 5/16") thick, the TruLaser Tube 5000 fiber with TRUMPF TruDisk laser guarantees exceptional performance.



### START YOUR ENGINES

The TRUMPF #27 car races in the IMSA Continental Tire SportsCar Challenge. The ten race NASCAR endurance sportscar series competes across the United States and in Canada on North America's most challenging road race circuits. In June, TRUMPF employees had the chance to see "their car" in action when it raced at Connecticut's historic Lime Rock Park.

Each race of the 2016 series is 2 ½ hours long and features a driver change approximately halfway through the race. The TRUMPF #27 car, driven by Britt Casey, Jr. and Danny Bender, is one of three Mazda MX-5s making up the Freedom Autosport Team. Based in Atlanta, Georgia, Freedom Autosport is designed to pay tribute to the men and women of the U.S. Armed Forces.

Randy Robson, Plant Manager at Abatement Technologies in Ontario, Canada

"The savings with the TruLaser 2030 fiber were absolutely dramatic. We reduced loading times by 80% and doubled our productivity through unattended lights-out operation."



# First and ten

*Challenging production requirements are no match for the Rogers Group. This Michigan-based company is always poised and ready for the next set of downs.*

As the Great Depression left many struggling to support their families, Orley Rogers applied his skills as a shoe cobbler to repair damaged football equipment throughout Michigan. This ingenuity ultimately formed the foundation for the Rogers Group, a family business that is now the holding company of six businesses – many of which relate back to Rogers’ athletic roots. StageRight, the largest business division, designs and manufactures risers, staging and performance products for professional stadiums, arenas, theaters and other venues while the second largest, Rogers Athletics, supplies strength training equipment, football training sleds and practice dummies found in many of the same locations. Orley Rogers’ grandson, David Rogers, the creative mind behind many of its products, still serves as CEO while four of his great grandsons, including company president Nathan Rogers and facilities manager Paul Rogers, are most active in the daily operations. In addition to its family history, Rogers Group businesses all have one more thing in common: they all use parts that have touched a TRUMPF machine.

## *RISING TO THE CHALLENGE*

StageRight’s highly customized builds, for example a servo-driven and laser guided retractable seating structure for the new T-Mobile arena in Las Vegas, is often one of its biggest challenges in production. “We invest a great deal of time in engineering which often leaves little time left over for production,” explains Paul Rogers. The company chooses to manufacture almost all of the components internally to reduce lead time. This decision also enables StageRight and Rogers Athletics to best support football programs at every level, including most of the NFL. The University of Notre Dame, for instance, recently received four high-speed remote controlled tackling dummies designed to reduce injuries at practice. The base structure and aluminum sides were laser cut and bent using TRUMPF equipment. “Since football is seasonal, these businesses tend to peak at the same time which presents another unique challenge to production. In order to ship a majority of a year’s worth of sales within the four to six week window leading up to the season, we build production throughout



Facilities Manager Paul Rogers takes a robotic tackling dummy for a test run around the Rogers Group showroom.



Left top: StageRight's TruBend 7036 cut cycle time in half and doubled the speed of bending small parts. Left bottom: Fabrication Manager Shawn Swartz meets with Paul Rogers. Above: StageRight was able to reclaim floor space by positioning the laser, chiller and dust collect above the machine.

the year," explains Fabrication Manager Shawn Swartz. It also leads to a bit of mischief around the shop. "We regularly see tackling dummies running around the shop. It's hilarious, especially moving at almost 20 mph!"

**REACHING HIGHER** To support its manufacturing needs, the Rogers Group purchased two tube laser cutting machines, a press brake and a 2D laser cutting machine from TRUMPF in 2001. "That changed everything," asserts Rogers, who especially remembers the tube laser's drastic influence. "Our design engineers adapted to it very quickly, adding in slots and fixtures to help with assembly and error-proof designs." Since then one tube laser has been replaced by a new TruLaser Tube 7000. "We process roughly 3 million pounds of tube a year," emphasizes Swartz, "and with an average batch size of less than thirty parts, we really utilize the TruLaser Tube 7000's fast set-up and conveyor system to handle the changeover. Our biggest limitation is in getting the material to the machine fast enough."

StageRight recently purchased a new 8kW TruLaser 5030 fiber—the most powerful laser cutting system on

the market. "We wanted a fiber laser for the reduced maintenance costs but laughed at the thought of that much power – until we saw the time study. Not only was it the fastest machine, it was the cheapest in operating costs by far," Rogers explains. "It is unmatched by any other system both in speed and the available options –the smart nozzle changer, BrightLine fiber, CoolLine fiber, and the Drag&Drop function –they are all very impressive." In replacing its older TruLaser 3030 with a CO2 laser, Swartz explained the company actually expected to take a hit when cutting thicker materials but with BrightLine fiber he claims a win/win situation. "We cut 0.75 inch material and it's the best cut we have ever had." Since the TruLaser 5030 fiber requires limited maintenance, StageRight designed a mezzanine to position the chiller, dust collector and laser resonator above the machine and added overhead lighting. The reclaimed floor space made way for its new TruStore 3030 storage tower which, at twenty-seven foot tall, is the largest TruStore in the country. "The combined performance of the storage system and the smart nozzle changer is amazing. We can run ten sheets of 0.25 inch material and then switch

to fourteen gauge automatically. We estimate a 30% increase in cut time, and instead of 24/7 production, we run a single shift five days a week," he asserts. In addition, the machine operators take advantage of the TruLaser 5030 fiber's mobile control app to remotely monitor the cutting process while bending parts at a press brake fifty feet away.

While researching its new laser, StageRight noticed a bottleneck in bending as well as the waste associated with bending small parts on its ten foot TruBend press brake. "By adding a small, electric TruBend 7036, we cut cycle time in half and doubled the speed when bending small parts. This machine enabled the high level of production we achieved last year," Rogers asserts. Swartz also noted, "Man power is in such high demand that finding experienced operators can be difficult. The press brake takes some of the skill out of forming which we have found to be a real benefit."

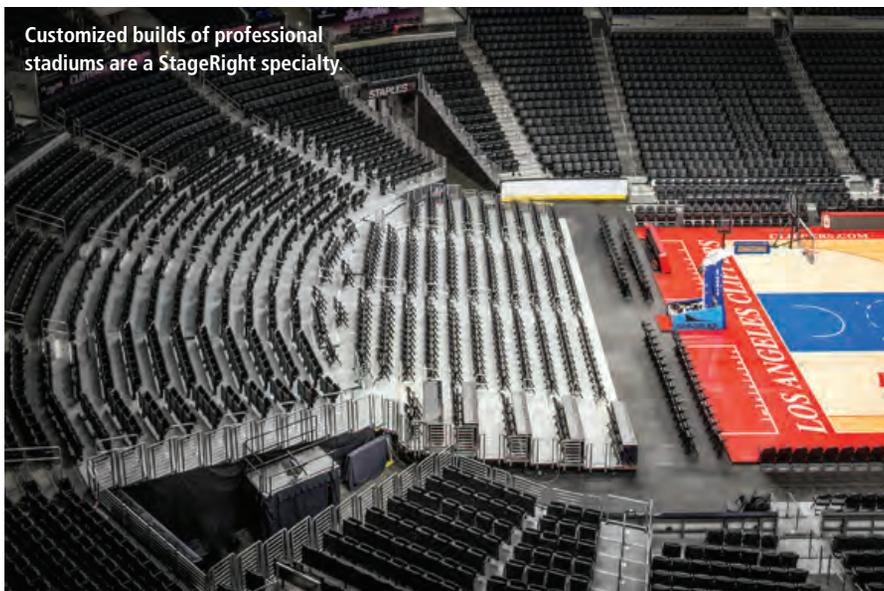
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*"It is unmatched by any other system both in speed and the available options."*

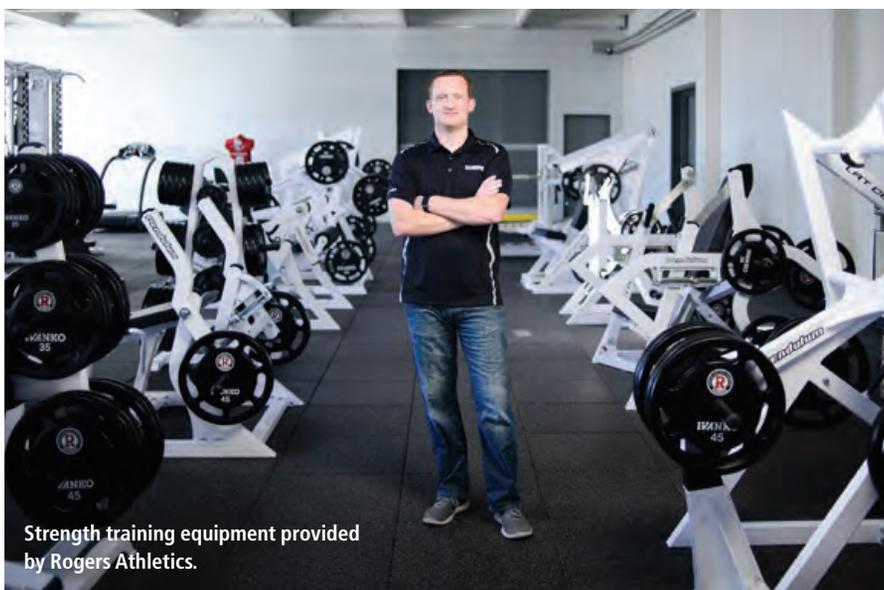
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Paul Rogers,  
The Rogers Group

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Customized builds of professional stadiums are a StageRight specialty.



Strength training equipment provided by Rogers Athletics.



*A STRONG BUILD* With the latest fabricating equipment, the Rogers Group is well prepared for the future. Each business segment is strong, including its youngest enterprise, Tranquil Systems, which has been supplying demountable office walls since 2013. “The more we grow, the more we recognize the need to organize operations so we can function efficiently,” says Rogers. This led them to reach out to TRUMPF’s SYNCHRO team. The series of 5S workshops commenced this summer with visual management upgrades and departmental organization and are set to continue through 2016. “At first we noticed some hesitancy in the shop, but Nathan and I could attest to what we saw in TRUMPF’s factory here and abroad. We knew that if we could emulate it, we should.” With everyone involved and onboard, the company is excited to see how TruTops Monitor will impact the shop. “We are very much looking forward to monitoring our entire process to see what takes us the most time,” says Swartz. Above all, the Rogers Group keeps an eye on the big picture. “In every business segment, we require the flexibility to adapt to new products quickly and to handle custom jobs, and we can definitely say TRUMPF supports us in this need.” □

➤ PLEASE DIRECT YOUR QUESTIONS TO:

- Laser: [Mark.Bronski@us.trumpf.com](mailto:Mark.Bronski@us.trumpf.com)
- Press brake: [Tom.Bailey@us.trumpf.com](mailto:Tom.Bailey@us.trumpf.com)
- Automation: [Tobias.Reuther@us.trumpf.com](mailto:Tobias.Reuther@us.trumpf.com)

**PRO PERFORMANCE**

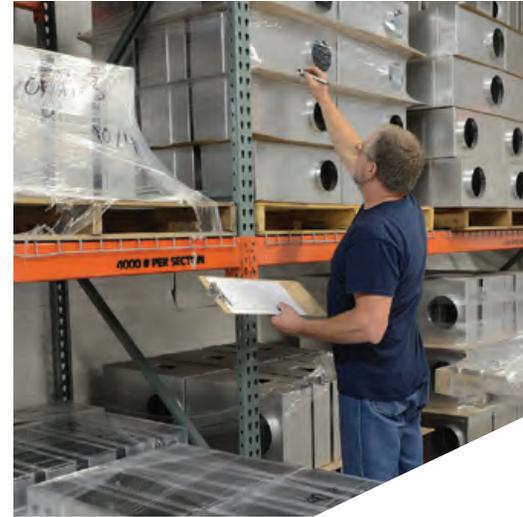
- WHO: *The Rogers Group. Clare, MI.  
[www.therogersgroup.com](http://www.therogersgroup.com)*
- WHAT: *Six business divisions include: StageRight’s large scale audience risers, event staging and performance products and Rogers Athletics’ strength training equipment, football training aids, tackling dummies and field equipment.*
- HOW: *TruLaser 5030 fiber (TruDisk 8001) with TruStore 3030, TruLaser Tube 7000, TUBEMATIC, TruBend 7036, TruBend V230X*

Family ties: Metal Solutions CEO Cathy Thiaville and her brother president Joe Cattadoris Jr. (center) built on their father's business. Now Joe's son Jason is learning the ropes.



# Back on the fab track

*Metal Solutions exemplifies what it means to be New York tough.*



Joe Cattadoris Sr. was a young sheet metal apprentice in Upstate New York when he enlisted in the Army Air Corps in 1942. His training at the Embry-Riddle Aviation School prepared him to lead his “flying sheet metal shop”, stationed in India, on several trips over the Himalayas during WWII. After the war Joe Sr. applied these skills and, with his partner, founded New Hartford Sheet Metal Works to provide process-related projects and services for the broad array of industry in the Mohawk

Valley. By the time Joe Jr. joined the business in 1983, the region had begun to decline as a manufacturing powerhouse and business was bleak. As a result, Joe Jr. branched out into low volume production, until a unique opportunity changed the company’s course.

#### FICKLE FABRICATION

“In 1995, a transit bus manufacturer needed a local fabricator to support its immediate production needs following an acquisition, and

we worked day and night to fulfill them,” recalls President Joe Cattadoris Jr. Optimistic about the potential work of a job shop, he took a big chance and bought the company’s first TRUMPF punching machine just a few months later. Five more machines quickly followed and business grew –until the dot-com crash and 9/11 brought everything to a screeching halt. “Fortunately, our investment in TRUMPF technology in the ‘90s

was like money in the bank,” Cattadoris asserts. “The reliability of the machines we purchased then carried us through the rough waters to where we could start reinvesting. Had we not chosen to build our business with TRUMPF machines, I believe we would not be here to talk about it.”

Cathy Thiaville, Joe’s sister and part owner of the firm, also came on board at this time to help the organization get back on track. “By alleviating some of the managerial burden Joe was faced with, I knew we could restructure, reorganize and recover,” says Cathy Thiaville, CEO. As a CPA and former CFO of a large environmental engineering firm, she brought great value to the business. In addition to her financial savvy, she has helped implement an MRP system and scheduling system based on lean manufacturing principles. Applying the Theory of Constraints, the company began to schedule jobs around press brake capacity and displayed the highly visual schedule so all could track the work that needed to be done. They also developed a hybrid kanban system that enabled the shop to react quickly to customers with short lead-times and low quantity parts. Although the big name customers had left the area, smaller factions specializing in customized and highly engineered HVAC systems had been left behind. By focusing on the hardest tasks, they quickly became the go-to source for these customers as well as those in mass transit.

During this period of revival, the company purchased two new machines including a TruLaser 2030. “We recognized the clear advantage of automation even in our volatile

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*“Our investment in TRUMPF technology in the ‘90s was like money in the bank.”*

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*Joe Cattadoris Jr.,  
President*

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world, and the TruLaser 2030 was the right machine at the right price. It was a game changer, and now, with our increasingly dynamic mix of products, it is often the only choice for processing all the new parts we see every week,” says Cattadoris.

**THE DAWN OF METAL SOLUTIONS** The final step in the company’s new beginning was a new name. “We had transitioned from the old sheet metal house to the modern sheet metal fabrication shop and felt Metal Solutions, Inc. would better reflect our new image,” he explains. While the company continued to move forward, many others did not, and in 2012 after years of tepid sales, Metal Solutions saw another major customer close its doors. “Faced with a make-or-break situation, we again worked to expand our reach and improve our quality system. With this focus we really began to gain some traction,” explains Cattadoris. Metal Solutions now handles hundreds of small to mid-size orders and up to eighty new parts or revision changes each week. “We built our workflow management systems around our customers’ needs and we continue to adapt as new customers, projects and challenges come along,” says Cattadoris. “We have always recognized the value in serving customers with challenging requirements and dynamic product lines because it creates loyalty and reduces competition.”

This most recent growth spurt also led to new investments in capital equipment. A TruBend 7036 press brake was recently brought in to increase capacity and efficiency in bending. According to Cattadoris, “It certainly has the highest dollar per cubic inch return on investment of any machine in our factory.” As the company continues on its positive path, new laser cutting technology is on the horizon as well. “Our next move will be to add a higher speed fiber laser cutting system. We realize it will vastly increase our capacity, and to keep up with a machine that produces parts

at that speed requires our ability to handle them in real time. Automated loading and unloading will be paramount,” he says.

**PROUD TO BE WNYSBE** In 2015 with Thiaville at the helm for more than a decade, Metal Solutions was officially recognized as a woman-owned business by the State of New York. “The certification was not easy, but she had been operating in that capacity for quite some time and we wanted to finally recognize what she brings to our family business,” says Cattadoris. Although this is an exciting accomplishment, the attribute Metal Solutions is most proud of is its customer service. Whether it is “work all night” or “work all weekend” Metal Solutions’ employees are willing to do everything necessary to deliver. This has fostered great loyalty with major customers – some for almost thirty years. “This success is directly attributable to our dedicated employees,” says Cattadoris. “I think our region has a great work ethic, but our employees consistently go above and beyond.” □

➤ **PLEASE DIRECT YOUR QUESTIONS TO:**

- Laser: Mark.Bronski@us.trumpf.com
- Punch: Brian.Welz@us.trumpf.com
- Press brake: Tom.Bailey@us.trumpf.com

**TOUGH AS STEEL**

- WHO: *Metal Solutions Inc. Utica, NY. Founded 1954. [www.metalsolutionsinc.com](http://www.metalsolutionsinc.com)*
- WHAT: *A full service sheet metal manufacturer focused on quality and service.*
- HOW: *TRUMATIC 190, TRUMATIC 200, TRUMABEND V85, 2 x TRUMABEND V130, 2 x TRUMATIC 500-1600, TruLaser 2030, TruBend 7036*

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# Get Connected

## TRUMPF at FABTECH 2016

TRUMPF is leading the way in the development of innovative solutions to keep information and processes connected like never before. As a visitor to the TRUMPF booth at FABTECH, you will be introduced to TruConnect through the customized production of a stainless steel Jeep. Using production process notifications to track each Jeep as it travels through the various fabrication steps, we will demonstrate how our industry-leading products and services work together. With AXOOM as a part of this process, you will also learn ways to connect your standard sheet metal production with the supportive functions and services you need to keep your business running smoothly. As an open digital business platform founded by TRUMPF, AXOOM spans the value chain by connecting the various manufacturers, logistics and service providers together. Get Connected with TRUMPF to define your competitive edge now and in the future.

Booth C35041 / [www.us.trumpf.com](http://www.us.trumpf.com)



# TRUMPF at FABTECH 2016

Booth C35041 / [www.us.trumpf.com](http://www.us.trumpf.com)



## TruMatic 1000 fiber

The new TruMatic 1000 fiber is the first entry-level punch laser combination machine from TRUMPF with a solid-state laser. The machine is revolutionary in its modular design, offering users the ability to add to it as business grows. The patented Delta Drive moves both the electric punching head and the laser along the Y-axis while the sheet moves in the other direction. This feature not only increases machine dynamics, productivity and process stability, it also enables a significantly compact footprint and the ability to connect with innovative material handling options, including the SheetMaster Compact, to further increase production. The machine's protective housing, a requirement for safe laser processing, is integrated into the system. It automatically moves out of the way when the machine is punching to give operators maximum visibility and accessibility. The TruMatic 1000 fiber will be on display at FABTECH with a 3kW TruDisk laser which offers fabricators the added flexibility of laser networking.

## TruPrint 1000

The new TruPrint 1000 for additive manufacturing enables users to build metal components, layer by layer, using the process of laser metal fusion (LMF). Any laser weldable metal in powdered form can be used for the build. The compact TruPrint is ideal for building complex parts, such as those with internal channels and hollow spaces, and for manufacturing individual parts or short production runs economically. Its user interface with touch screen control steps the operator intuitively through the process. All components, including the laser, optics, process enclosure, filter unit and control cabinet, are integrated within a compact housing making it a perfect fit for a job shop, medical or dental customer, or a R&D lab.



## TruLaser Cell 3000

The TruLaser Cell 3000 5-axis laser machine is available with up to 8kW of laser power. The system was designed for fine laser cutting, precision welding and additive manufacturing and can easily switch between these processes for maximum flexibility. It will be shown at FABTECH with the new laser metal deposition (LMD) technology package which uses the laser in conjunction with metallic powder to for cladding or to add volume and structures to existing parts. The TruLaser Cell's versatility and ability to switch between welding and cutting applications without changing the focusing optics makes it an ideal system for job shops, automotive subcontractors, medical device manufacturers and others.



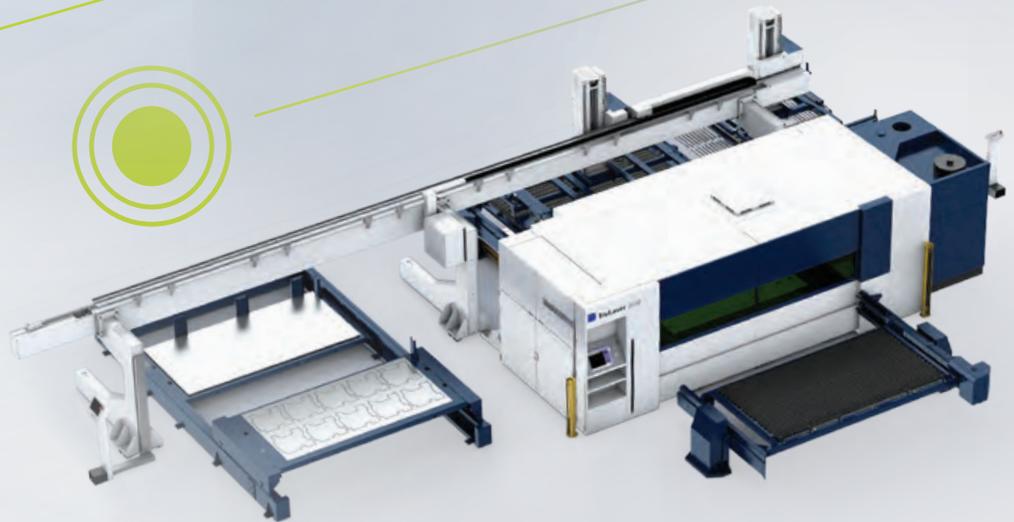
## TruLaser 3030 fiber with LiftMaster Compact and PartMaster

As a highly flexible and productive 2D laser cutting machine, the TruLaser 3030 fiber easily processes a wide variety of material types and thicknesses, including highly reflective materials. With the included BrightLine fiber and Productivity Package, cutting capabilities are enhanced even further enabling fabricators to cut stainless steel and aluminum up to 1in with exceptional quality. The machine will be shown at FABTECH as part of a productive laser cutting system featuring a 6kW TruDisk solid-state laser, the LiftMaster Compact for loading and unloading, and the PartMaster, which enables an operator to remove parts from a processed sheet quickly and with minimal fatigue or wasted motion.



## TruLaser 2030 fiber with LiftMaster Shuttle

The TruLaser 2030 fiber cuts thick to thin materials with high accuracy, speed and cut quality. Shown at FABTECH equipped with a 4kW TruDisk laser prepared for laser networking and BrightLine fiber, the machine also features a single cutting head strategy with collision protection and an automatic nozzle changer. While a pallet changer is perfect for shorter runs, the machine can also be equipped with the LiftMaster Shuttle loading and unloading automation solution for the added flexibility of longer runs or lights-out production. With a variety of layouts available, the LiftMaster Shuttle is the most flexible automation solution in the industry.



## TruLaser Robot 5020

The TruLaser Robot 5020 provides for cost-effective entry into laser welding yet it is designed to support both high volume and high mix production. Conduction or deep penetration welding, long seams or corner connections are all easily achieved. The machine's modular system easily clamps components of different sizes and shapes and several components can be joined in a single process step, depending on the size of the part. An optional automatic rotational turntable further boosts productivity by enabling set up while the laser is active. The TruLaser Robot 5020 is also capable of a laser network configuration which maximizes the laser's beam on time while reducing investment costs overall.





### TruBend 7036

As the most ergonomic press brake on the market, the compact TruBend 7036 is ideal for producing small bent parts up to 40 inches. The electric press brake features impressive working speeds and accelerations, a 6-axis lightweight carbon fiber backgauge, BendGuard safety system and hydraulic upper and lower tool clamping. Programming can be performed offline using TruTops Bend or at the machine control for maximum productivity.

### TruBend 5130

The TruBend 5130 is the ultimate solution for bending even the most complicated parts with precision and ease. The I-Axis enables the machine to shift the die bed from one position to the next for hemming, multiple radius tools, or multiple height tools all in one setup. The patented automatically controlled bending (ACB) allows operators to measure the angle on the fly as the machine is bending, and holds an accuracy of 0.3 degrees. The LED positioning aids facilitate quick set-up, greater uptime, and simplifies the bending sequence for the operator. The 6-axis back gauge with cutout "fingers" provides maximum flexibility and precision when bending complicated geometries.



### TruBend Cell 7000

The TruBend Cell 7000 is an automated bending system specifically designed for extreme productivity in small part forming operations. Featuring a press force of 40 tons and an electric torque motor for high speed acceleration, this machine is fast and highly functional. One robot prepares and load blanks and a second robot handles blanks during bending and the unloading process. The robots are extremely dynamic and designed specifically to work in conjunction with the TruBend 7036 Cell Edition electric press brake. Available with an automatic tool changer and conveyor unloading options, the TruBend Cell 7000 is both fast and flexible.



## TruMark 5020

The fast and flexible TruMark 5020 fiber marking laser features high pulse frequencies and superior pulse-to-pulse stability. In metal, it shows special strength in delivering high quality customized marking or engraving in short processing times. The laser can be perfectly adapted to any application in metals or plastics, and with high speed and superior edge quality the TruMark 5020 excels in any application. It will be shown at FABTECH in a TruMark Station 5000, an ergonomic workstation which can be operated while standing or sitting.

## Power Tools

TRUMPF's full range portable power tools for cutting, fastening, beveling and deburring sheet metal will be on display at FABTECH. For sheet metal weld preparation, the extremely light TruTool TKF 700 beveller easily makes K, V, X, and Y shaped bevel preparations on flat sheet as well as pipes. Adjustments for bevel size and sheet thickness are easily set without tools. It can be used in any direction, including overhead or in a workstation. It functions without emitting any gas, vapor or dust, it produces no noticeable heat-affected zone, causes no chemical process nor any micro-structural changes in the metal.

The TruTool TSC 100 slat cleaner is a unique tool specially designed for use by a single operator to remove slag build-up on support slats without interrupting production. With impressive speed, it automatically adapts to the thickness of the slag and proves to be a simple and cost-efficient alternative to manual slag removal or complete slat replacement. The tool now also features an LED indicator light for even easier maintenance.



## Software

Smart programming is all about reducing manual interaction and that means automated, intuitive and integrated programming. With all design and programming steps integrated into one solution, TruTops Boost takes a user from drawings to NC code faster than ever before. It features a highly intuitive interface and smart automation routines to increase productivity and it works with your shop floor system for seamless data transfer.

With TruTops Fab, users connect with the shop floor like never before. Rather than controlling each system individually, hardware and software work together, as well as with your ERP system, to provide information about the current sheet metal production status. Connecting machines in this way leads to greater efficiencies and helps you maintain control over the entire operation.

The Metamotion software platform is a fully detailed, powerful and easy to use sheet metal CAD CAM solution. It offers bi-directional 2D/ 3D CAD for design or importing, offline bending, tooling, nesting and the flagship "Enterprise" data management and automation software. Metamotion actively supports multiple machine brands, models and styles offering users with a comprehensive sheet metal CAD CAM solution.



# TruServices



## Financial services

TRUMPF Finance professionals are sheet metal fabrication experts and understand the need for flexible and productive equipment for your business to be successful. TRUMPF Finance offers a wide range of financing solutions tailored to the unique needs of fabricators and makes them easy to understand. We know that our customers will be profitable with the right technologies and this trust enables us to provide more flexibility than anyone else in the market as well as fast decisions and high approval rates. Our supportive team will be at FABTECH ready to help you get connected with all the right fabricating solutions for your shop.



## Training and after-sales services

TRUMPF offers the most extensive after-sales support of any machine tool manufacturer. When you have a job but aren't sure how to approach it, TRUMPF application engineers apply their technical expertise relative to your machine and its capabilities to help optimize your process. As an International Association for Continuing Education and Training (IACET) accredited training program, we also offer extensive training courses in machine programming, operation and maintenance to help you take full advantage of your machine. At FABTECH, our experienced training instructors will be available to tell you all about our classes in the U.S. and Mexico. We will also demonstrate our next step in providing customers with the best in technical service, including remote instruction using the latest technologies in augmented reality glasses to get you connected with TRUMPF on a level unmatched by any other machine tool manufacturer.



## TRUMPF spare parts, consumables & tooling

To achieve the highest level of productivity, performance and profitability it's essential to have the best tools for the job. High-quality equipment from TRUMPF is the first step but it is critical to maintain your investment with the highest quality consumables and tooling. TRUMPF develops tooling and consumables specifically for your machine and its unique capabilities. When you buy directly from TRUMPF you know it's a perfect fit and will yield the best performance so your machine can reach its full potential and benefit your business in ways third-party suppliers cannot.

## Service agreements

To achieve the long service life TRUMPF machines are designed to provide, regular quality maintenance is required. Service records for our installed base show significantly less spare part and repair costs when regular preventive maintenance is performed by TRUMPF certified technicians. This results in more uptime and higher machine resale value for you. To help you best maintain your existing equipment and give you maximum access to TRUMPF, we offer four different Service Agreements including an entry level plan, preventive maintenance plans, or a comprehensive package including a flat rate for genuine parts and labor— and soon remote service instruction via augmented reality glasses.



(1) Cédric, Christine and Frédéric Demarche (left to right) started Dcoup Laser in 2010. (2) The demand for laser tube cutting continues to grow. (3) Fully automatic setup and minimal downtime make cutting tubes and profiles easier. (4) The TruTops Tube software simplifies cutting calculations and difficult tasks.

# A smooth road

*Belgian job shop Dcoup Laser joined the world of laser tube cutting with a TruLaser 3040 with RotoLas. By the time they welcomed a TruLaser Tube 7000 just a year later, they were tube processing specialists.*

In the Belgian town of Florennes, brothers Frédéric and Cédric Demarche, and their mother Christine, founded Dcoup Laser in 2010. The trio started with a TruLaser 3030 but soon added a TruBend 5230 and a TruLaser 3040 with the RotoLas option – and with this, formed the foundation for laser processing tubes. “Up to that point we had no experience processing tubes and profiles,” Christine recalls. “But through training with TRUMPF we quickly learned the ropes and soon everything was running perfectly.” The RotoLas option, purchased in 2013, gave Dcoup Laser the flexibility to process tubes while eliminating additional processing steps such as sawing, drilling, and deburring. “Using the TruLaser 3040 and the RotoLas let us, in the shortest time imaginable, make the leap into another, very versatile field of manufacturing. With it we have been able to expand our spectrum of services considerably,” reports Frédéric.

Dcoup Laser eventually met the production limits of the machine when it received a large order to manufacture bars for prison cells. “The RotoLas was in use all the time and, despite three-shift operations, we encountered massive capacity bottlenecks. Since we had already recognized the great potential of pipe and tube work, we decided to invest in a laser tube cutting machine,” explains Christine. The company purchased a TruLaser Tube 7000 – a decision Frédéric says he has never regretted.

The TruLaser Tube 7000 enabled Dcoup Laser to meet much greater demands, including bevel cuts up to 45 degrees in stainless steel up to 6mm thick. The focus now is on teaching customers about these new manufacturing opportunities, such as designs to reduce the total number of parts in an assembly, or cut-outs and tabs used as positioning aids. “And all is done on a single machine,” notes Frédéric with enthusiasm. “Laser cutting tubes offers massive opportunities and we intend to make use of them.”

With such success, Dcoup Laser is already thinking of the next step. They recently built a 3400 m<sup>2</sup> (36,600 ft<sup>2</sup>) two story building which will hold a new TruLaser 5060 with LiftMaster and a Stopa compact storage system, a TruBend 3100 and a TruMark, and planned the building for a TruPunch and a second laser for cutting 4 m plates. “We hope these new investments will further increase our production capabilities as well as our ability to deliver finished products in the fastest time possible,” says Frédéric Demarche. “And we thank TRUMPF and Vac, our sales representative for the high-value services and prompt reply to any issues.” □

➤ **MORE ABOUT DCOUP LASER:**  
[www.mastersofsheetmetal.com/dcoup](http://www.mastersofsheetmetal.com/dcoup)

LEARN MORE AT: [WWW.MASTERSOFSHEETMETAL.COM](http://WWW.MASTERSOFSHEETMETAL.COM)



# Open for business

*CornellCookson has what it takes to secure business*

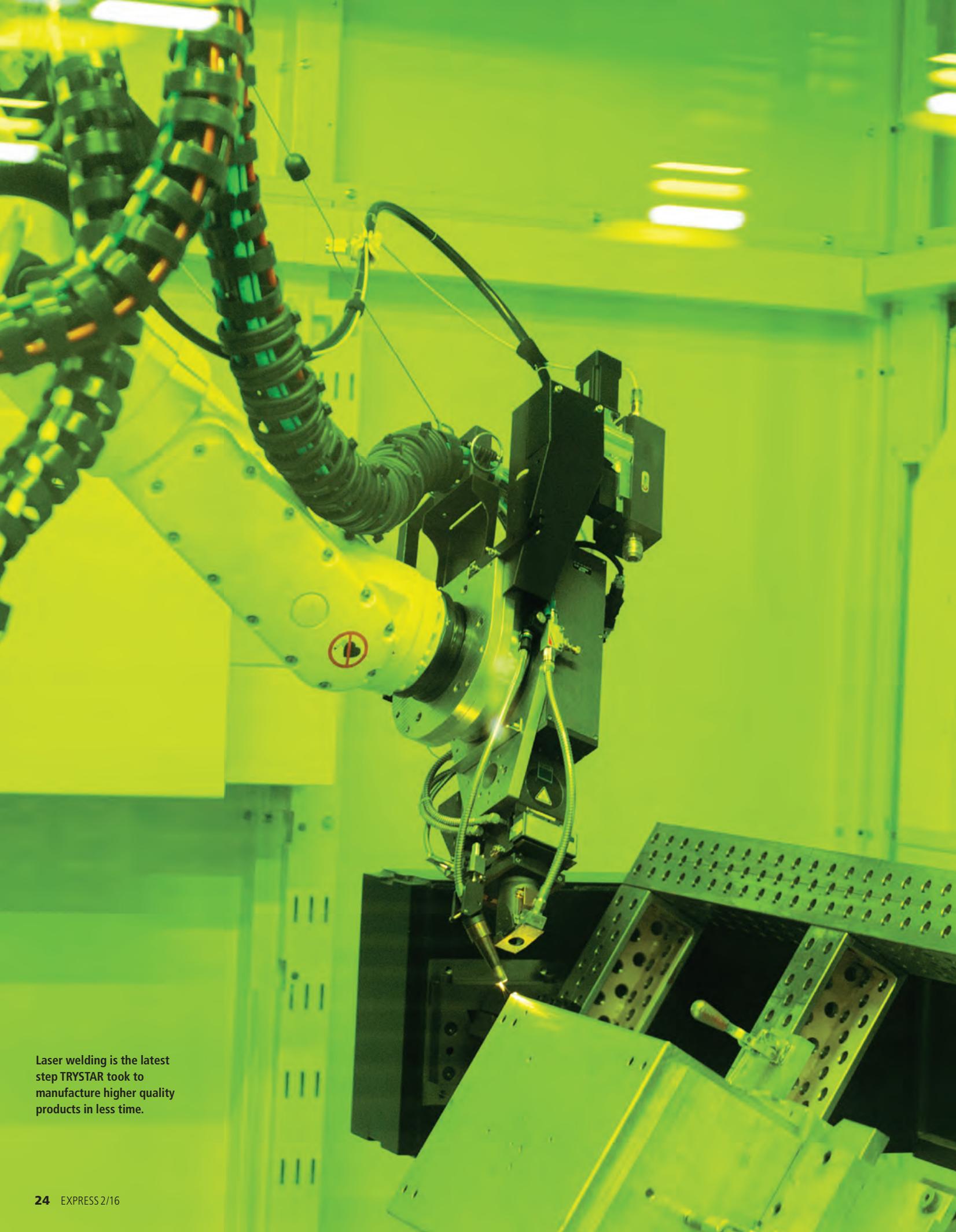
Community infrastructures form the foundation of a strong neighborhood, and CornellCookson has been supporting these and other establishments for generations. The company's portfolio of overhead rolling steel service doors, security grills, counter shutters, and TranZform side folding accordion partitions are designed to fit any application – from shopping malls and sports stadiums to hospitals and educational institutions. Manufactured in Mountaintop, PA, Gastonia, NC, or at Cornell's impressive new state-of-the-art facility in Goodyear, AZ, these products are precisely built to withstand even the most tenacious vandal, fire or force of Mother Nature.



Whether an installation will ultimately secure a national monument or a small concession stand, Dave Moon, CornellCookson's Director of Continuous Improvement and Quality, is able to break down the manufacturing process into a few simple steps. "Depending on the application, the curtain or slat of the rolling steel service doors are roll-formed steel, stainless steel, aluminum or anodized aluminum," he explains. A steel hood is designed and manufactured to cover this curtain roll. For maximum precision and an aesthetic look, the company uses a TruBend 5320 press brake to precisely bend the hood. "The guides for the curtain, primarily designed in 0.375 inch steel, aluminum, or stainless steel, are also bent on the TRUMPF

press brakes." Finally, as Moon explains, "Components such as the cover guides or internal brackets – basically the parts which cannot be seen but are essential in making the door function – are cut by our TruLaser 3040 laser machine before they are bent on the TruBend 5320." Once manufactured, these high quality doors are packaged, shipped and installed in locations across North and South America, and internationally as far as the Middle East.

With CornellCookson's precision lasers and press brakes keeping its doors and shutters operating smoothly, the company can continue its commitment to provide customers with superior products as it has been since 1828. □ [www.cornellcookson.com](http://www.cornellcookson.com)



Laser welding is the latest step TRYSTAR took to manufacture higher quality products in less time.

# Powering up the world

*TRYSSTAR has found its niche and the Holy Grail in manufacturing.*

Sheet metal fabrication is relatively new for Rick Dahl, CEO of TRYSSTAR Incorporated in Faribault, MN, but thanks to his vision and investment in people and technology, the company is already fabricating state of the art products. To escape the seasonal variability of the retail fashion industry, Dahl switched careers in the mid-nineties and began selling electrical wire and industrial cables. “The business appealed to me because it was steady. I could establish customers and build,” he says. The Australian cable supplier Dahl represented eventually sold him its inventory and from there he built TRYSSTAR into a leading supplier of electrical enclosures for temporary and portable power solutions worldwide.

Although TRYSSTAR has been manufacturing cables for nearly two decades, sheet metal fabrication came about just eight years ago when Dahl and his son Chris Dahl, TRYSSTAR’s President, first used a saber saw to build conductor cable boxes. “Our very early involvement in the temporary power industry led us to make product improvements because we saw the definite demand,” Dahl explains. Success with the skill saw ultimately led to the purchase of an old turret which sat dormant until TRYSSTAR figured out how to use it. Just two years later it was running 24 hours a day.



Jim Koberg, VP of Factory Operations



Rick Dahl, CEO



Brian Amacher, Director of Purchasing & Sourcing

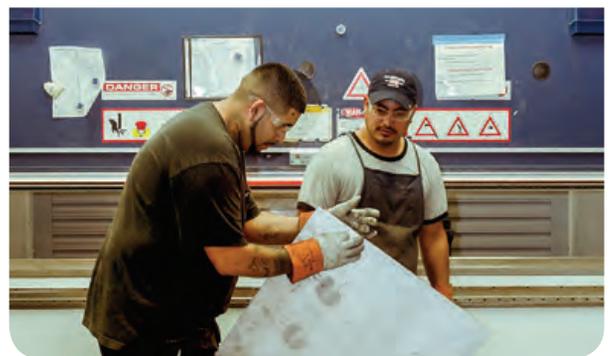
As business matured, TRYSTAR's fabricating equipment quickly became greatly undersized. "We had met the capabilities and life cycle of the old equipment while also growing our product lines and the physical size of our boxes. We had to invest," explains Jim Koberg, Vice President of Factory Operations. At fourteen times the capacity, a TruPunch 5000 with SheetMaster seemed excessive but engineering presented a compelling argument. "They felt they had reached their ability to create new products with our old technology but that the TRUMPF machine would enable them to achieve the next level of creativity," says Dahl. The new TruPunch 5000 gave voice and form to TRYSTAR's talent in engineering and production who went to work adding louvers and knockouts, tapped holes, new-style venting, hinges and roller ribs for reinforcement. "All the elements other manufacturers were struggling to provide," stresses Koberg. Now, just four years later, the TruPunch is already approaching its capacity running twenty hours each weekday and a shift on weekends.

**THE HOLY GRAIL OF MANUFACTURING** Dahl's philosophy is to invest in manufacturing technology ahead of customer demand. If a piece of equipment reaches more than 50% of capacity, he invests in new equipment, so when a customer needs quick turnaround TRYSTAR has the capacity to deliver. TRYSTAR's goal is to always create value for its customers that competitors can't emulate, and for Dahl, customization and speed to market are key factors. "If we can deliver quickly we know will earn business, but if we can do

that while also offering a better product at a competitive price – well then we have achieved the Holy Grail in manufacturing," says Dahl, who credits his TRUMPF equipment for helping to achieve just that. The evolution of TRYSTAR's "spider panel", a product used to split power from a generator into 120V lines, helps to illustrate his point. Applying the capabilities of the TruPunch 5000 and a TruBend 5170 press brake purchased in 2014, TRYSTAR redesigned the spider panel's four piece assembly to a Swiss cross design. As Dahl explains, "With these precision technologies the seams met so closely that

we no longer needed jigs. This allowed us to manufacture the part in fifteen minutes instead of an hour." The press brake also proved to be a perfect match for large panels, deep wall boxes, angled or specialty bends found throughout TRYSTAR products.

The company then replaced its old wire feed robotic welder with a TruLaser Robot 5020 laser welding cell. "The old way was inaccurate, costly and only suitable for mild steel products," explains Brian Amacher, Director of Purchasing and Sourcing. "We are now twenty times faster and achieving much higher quality." Welding the spider panel part takes just three and a



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*"We are now twenty times faster and achieving much higher quality."*

*Brian Amacher,  
Director of Purchasing and Sourcing*

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*“We build a higher quality, custom product with greater efficiency and deliver it within a day or two.”*

*Rick Dahl,  
CEO*

half minutes instead of an hour. “We used to produce eight spider panels in an eight hour shift. With our combined technologies, we make five hundred units in same time span using our TRUMPF technologies, and sales have grown along with our capabilities because of our speed to market,” asserts Dahl. “We build a higher quality, custom product with greater efficiency and deliver it within a day or two. Nobody can compete with that overseas.”

The quality is especially noticeable in products such as TRYSTAR’s small portable panels which are often moved and handled by a lot of people. “Much like a rental car, they tend to be poorly cared for but the laser produces a stronger and better weld which results in no cracking or fatigue even in tough environments,” says Koberg. It has also changed TRYSTAR’s mentality on how its products come together. “For many years we focused on eliminating welds but now we reverse that mindset. A simpler design might add part numbers but the weld is so perfect

that we can avoid grinding,” Koberg explains. Since large and small runs are completed with equal efficiency, TRYSTAR can easily customize orders on the fly and still meet production requirements. “In the electrical world, everyone’s gear is a little different –from the style of connectors, the receptacles, inputs and outputs to whether the application requires an aluminum, mild steel or stainless steel box – and our customization is right down to corporate colors and branding,” asserts Amacher.

**UNMATCHED PERFORMANCE** Delivering high quality, customized products with a quick turnaround is something TRYSTAR customers clearly appreciate. Its products can be found almost anywhere from supporting Aggreko in providing temporary power generation at large events like the Ryder Cup to delivering backup power generation for airlines, gas stations, banks and hospitals.

Flood victims in Baton Rouge rely on TRYSTAR’s portal power solutions as do those recovering from natural disasters, such as wild fires, hurricanes and tornados. “These varied demands require the type of creativity, faster production and flexible delivery our TRUMPF machines enable us to achieve,” Amacher explains “and the consistent machine platforms and TruTops software help link these technologies together for the best results.”

According to Dahl, “We bought TRUMPF equipment because we felt our business was such that we could expand into it, but the hidden benefit was in purchasing only TRUMPF equipment was that we naturally achieved a seamless production line because the systems are designed to easily integrate and run together.” The latest machine technologies prove to be a morale booster as well. “Our entire staff takes great pride in operating the finest machinery in the world.” □

▶ **PLEASE DIRECT YOUR QUESTIONS TO:**

- Laser: Mark.Bronski@us.trumpf.com
- Punch: Brian.Welz@us.trumpf.com
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**DELIVERING POWER**

- WHO: *TRYSTAR. Faribault, MN. Founded in 1991. [www.trystar.com](http://www.trystar.com)*
- WHAT: *Manufacturer and distributor of portable and permanent power solutions, industrial cables, and power accessories for worldwide use.*
- HOW: *TruLaser Cell Robot 5020 (TruDisk 4002), TruBend 5170, TruPunch 5000 with SheetMaster and STOPA storage system*

TRYSTAR products are fully customized based on the customer’s requirements - from the material used to the colors and branding.





*"What an athlete hopes to do on the blade tell us how it should be prepared and maintained."*

*Dr. Kelly Lockwood*

# Taking to the ice

*Dr. Kelly Lockwood combines theoretical research and practical application to help on-ice athletes achieve their potential.*

Through her initial research in the mechanics of skating, applied sport scientist Dr. Kelly Lockwood was well aware of the role equipment played in an athlete's performance. As she questioned how one might alter this equipment to take the body further, her research began to extend beyond the human factor to include working with industry in equipment design and engineering, and how to best harness physical and technical preparedness through sport equipment. In addition to her role as associate professor at Brock University in St. Catharines, ON, Dr. Lockwood consults and advises local, provincial and national hockey organizations, on-ice sport equipment manufacturers, and is the founder and president of The Skating Lab Inc., a commercial spin off from research conducted at Brock University.

A topic that affects all of these affiliations is how a steel blade impacts on-ice athletic performance. "Whether the blade is attached to a skate boot, a sled or other sliding device, the science behind its design, material properties, and function is important to that sport. Furthermore, what an athlete hopes to do on the blade tell us how it should be prepared and maintained," Dr. Lockwood explains. Briefly stated, a speed skater requires a long thin blade to facilitate maximum speed while a figure skater needs a short radius to maneuver. "The hockey player wants it all – to stop, start, and pivot but also approach these movements at maximum speed – and here becomes the challenge of developing the best recipe for optimal blade-ice interaction."

Four variables impact how a steel hockey blade will perform on ice. The radius of contour or, the shape of the blade longitudinally, dictates the amount of blade-ice contact and can vary along the length of the blade. A shorter contour enables agility while a longer contour facilitates higher speeds. Exactly where these contours are placed along the length of the blade has the potential of enhancing a combination of performance aspects. "Most advanced hockey players use two or three contours placed strategically along the blade with minute adjustments based on their position," Lockwood explains. For example, a short contour on the front half and a longer contour on the back half of the blade can facilitate both agility

and speed. The second variable is the radius of hollow or groove along the width of the blade that facilitates bite angle and glide. "With this variable we consider the depth of the cut. A deep cut will grip the ice for quick starts and stops but this also creates resistance. A shallower cut increases glide capabilities on the ice surface." Young athletes may perform best with a deeper hollow until they develop the skills, weight and strength to control a shallower one. On the other hand, more technically advanced athletes that weigh significantly more, perform best and are more efficient on a more shallow hollow.

The balance point, or pitch of the skate, also impacts the lie on the blade and essentially the movement potential of the athlete. Dr. Lockwood explains, "The contemporary game of hockey is all about quick starts and speed. Similar to sprinters, developed athletes may want to be pitched slightly forward and ready to accelerate, but young kids will fall on their noses!" While these variables impact performance, the last variable, levelness of the edges, provides quality control. "The primary concern is for the outside and inside edges to be level. Without level edges the athlete is essentially unbalanced. Other quality controls include, the amount of steel removed or height of the blades and quality of the edge itself. "Experienced hockey players are very intuitive and will notice even the smallest disparity," Dr. Lockwood asserts.

With such a unique background in research and application it is no wonder Dr. Lockwood is such a strong advocate of the link between science and practice. Her end goal is always to build the athlete's technique, confidence and consistency to help them do their job. "When you look at the specific sharpening variables individually the theories are robust, but as you combine them and add in preferences and superstitions of the athlete, it becomes somewhat complicated. Sometimes no matter how much science is behind it, if a player has a really good game, it becomes the new standard! □

## TELL US, DR LOCKWOOD...

**...Does your research apply to young athletes as well as the pros?**

Absolutely, but perhaps in a different way. Young children often learn to skate in second hand or hand-me-down equipment. Skates that fit and properly sharpened blades can be the difference between success and failure throughout their development. There are so many variables that affect all levels of performance however providing the athlete with a strong foundation of technique and equipment is essential.

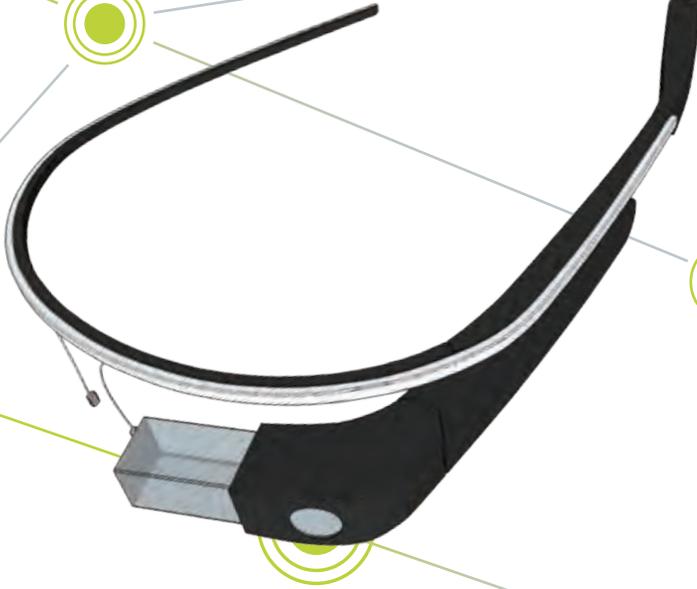
**...What's up next for the hockey blade?**

Evolution of blade runners has been significant; research has focused on design and material properties that will best prepare steel for longevity and performance. Designs that facilitate quick release blades have provided a fast and efficient remedy to replacing broken blades or blades that need sharpening. Material properties including after market processing and coatings have enhance the longevity of edge quality. The maintenance or sharpening process has received much less attention.

**...What do you love about this area of your research?**

There are many ways to climb a mountain – athletes can be physically fit, technical astute and mentally ready, but that does not always result in success. Closing the gap between how they preform versus how they 'could' perform is what I find intriguing. The contribution of equipment; or in this case, skate blades is the bottom line.





## GET CONNECTED WITH AUGMENTED REALITY

Augmented reality (AR) blends virtual interaction with the real world and TRUMPF is leading the way in using this technology to deliver a new level of remote technical service support. With a 4G or Wi-Fi connection and a pair of AR display (smart) glasses, you will soon be able to connect directly with the TRUMPF technical service team for interactive support. This will provide you with a new level of independence while significantly reducing the overall repair time. TRUMPF is the first machine tool provider in the world to offer such an innovation and through this we hope to bring you closer to TRUMPF whenever you may need us.



Your AR experience begins at TRUMPF. Included with select maintenance level training classes you will be provided with a pair of TRUMPF specific, AR glasses and trained properly on how to operate them in connection with our product experts. You will return to your shop equipped and prepared for any issues that might arise. Once protocol has been established simply switch on your glasses and begin an exchange with a TRUMPF service technician who will be able to see and hear exactly what you see at your machine. Together, we will work to resolve it with minimal downtime while eliminating travel.

Your AR glasses provide a real time connection to a live technical service engineer from TRUMPF. Our experienced technicians will walk you through the problem while interacting with you and the live image you share. With a range of virtual information including drawings, schematics, videos and other tools at our fingertips, we are able to share our accumulated expertise as we direct you in your physical world to solve the problem together.



Visit us in the TRUMPF booth C35041 at FABTECH to experience AR glasses for yourself. We will show you the way of the future for technical service by explaining how the right TRUMPF service agreement can secure unlimited AR connections to save you time and money. Get connected.

TRUMPF SERVICE: ALWAYS ADVANCING

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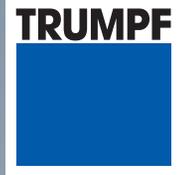
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# GET CONNECTED

## Your Smart Factory

Maximum productivity starts with equipment that performs quickly, accurately and efficiently, but that's just the beginning. In today's short-run environment, information flow is as critical as equipment performance. TRUMPF is leading the way with innovative solutions that keep information and processes connected like never before. At FABTECH, we will demonstrate how connected processes and information flow can work together. While you are visiting the TRUMPF booth, reviewing our industry-leading products and services, order a customized product that you can follow throughout each step of production. We are confident you will be convinced that getting connected will provide you with the competitive edge you need.

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