Punching & laser cutting - the perfect combo

ToolCell changes the game for SYSPAL

Hol-Mac bumps up production with Phoenix FL

“Eliminate production boundaries”

DOMINIC AND FRANZ WÖSS, WÖSS
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Editorial Note: Let us know what you think of this issue of *Discovery*. Share your thoughts at marketing@lvd.be or connect with us on social media. For information about products you see in this issue or to find your local LVD contact, head to www.lvdgroup.com.

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"LVD was the only company willing to guarantee ± 0.3 degrees accuracy on the bend angle."
Dear reader,

Let us help you achieve your full production potential – through advanced equipment, automation and process integration.

In Discovery, we share how we’ve made more potential possible for SYSPAL and Brückner using high-precision press brakes. Hol-Mac Corp, DelwiGroenink and Franz Wöss have upgraded their capabilities with the latest fiber lasers tied to automation. All these companies have in some way integrated digital technology and our CADMAN® solution.

We also shed new light on fiber laser technology, present our energy-efficient punch press, and unveil the Strippit PL Punch-Laser combination.

For a second year, LVD has been recognised by Deloitte as one of Belgium’s Best Managed Companies.

We’re proud to be realising our potential and to put you on the best course to do the same.

Carl Dewulf
President & Managing Director

“The ToolCells are a game changer for our business. Super accurate and consistent.”

“S2 and S3 are huge success stories. This is something we can all be proud of.”
Salespeople from around the world - 90 participants from 30 countries - gathered for the international sales meeting. At LVD headquarters, they caught up on company news, new product developments and a series of marketing tools and activities. Besides the varied agenda, the international team had time to share their experiences, exchange ideas and connect one-on-one.

Delivering Smart Technology

LVD is helping sheet metalworking companies make their data-driven transformation real. Through Smart Technology Live events and Smart Factory/Art 2 Part seminars hosted at our Experience Centers and demonstration facilities around the world, we're bringing you closer to machinery and software innovations for the modern sheet metalworking shop.

Discover how our Industry 4.0 strategy can add value to your metal fabrication business. Join us at a Smart Technology event in your region. Contact us at marketing@lvd.be.

90 candles

This year, Robert Dewulf blew out 90 candles. As one of LVD’s founding fathers - the “D” in LVD - he made a significant contribution to the success of the company that he helped set up in 1954 alongside Jacques Lefebvre and Marc Vanneste. The three directors complemented each other well, with Mr Dewulf acting as the bridge builder to both government and industry. As a result of his efforts, LVD built a reputation as a respected manufacturer and good employer in the region. We thank Mr Dewulf for his dedication and wish him many more years of good health.
COMPAC S.r.l. becomes part of LVD

To secure a strong future for our automation product line, LVD has acquired COMPAC S.r.l., an innovative manufacturer of industrial automation solutions based in Italy. The company designs and manufactures high-tech product handling, process automation and goods storage systems for a wide variety of industries, including mechanical and iron-and-steel processing.

With COMPAC, LVD adds advanced automation systems for punch press and laser cutting machines to its portfolio. All COMPAC products will continue to be manufactured at its leading-edge 7000 m² production site in Italy.

Style & grace

You may have seen her in a trade journal ad, at an exhibition or in the LVD XP Center: the ballerina in metallic form striking a graceful pose. The elegant figure symbolises the flexibility of our machines and solutions that “Bring Bare Metal to Life.” We’re proud to have this stunning ballerina represent the versatility and creativity of LVD.
The record sales of Hol-Mac’s garbage trucks, knuckle-boom loaders and premium truck accessories required adding a 6 kW Phoenix 4020 fiber laser with a 10-shelf Compact Tower for lights-out operation.
Any family business is a challenge, but Hol-Mac Corporation has been blessed since its founding by Charles B. Holder, Jr. in 1963. Starting as a three-person welding and machine shop, Hol-Mac now employs more than 800 people. It operates five facilities covering more than 55,740 m² of manufacturing space, with headquarters in the small town of Bay Springs, Miss., 104 km southeast of Jackson.

As a result of working with major OEMs in the mining, construction, agricultural and railroad industries, Hol-Mac embraced lean manufacturing principles, including 8 Wastes, 5S, Kaizen, Poka Yoke (mistake-proofing), point-of-use storage, Kanban and advanced product quality planning (APQP). In the late 1990s, Hol-Mac embarked on its own journey to become a world-class manufacturer.

“We wanted to diversify to control our own destiny and grow job opportunities for our employees,” says Jamie Holder, president and COO. “We began developing our Pac-Mac® products for the solid waste and non-hazardous hauling industries in 1996. Then in 2008, some of our employees who enjoyed four-wheeling designed what would become the Hammerhead® line of aftermarket bumpers for trucks and Jeep. These are robust, heavy-duty, premium products, yet our manufacturing efficiencies enable us to offer them at a competitive price.”

30 to 40% productivity increase
To manufacture the Pac-Mac product line, the company acquired a 8746 m² facility on 14 acres, which it now calls Plant 3. The facility initially focused on machining, welding and assembly. Hol-Mac would bring in cut parts with a 4 kW Sirius 3015 Plus CO₂ laser at Anel Corporation, a subsidiary located about 120 miles away. The growth of the Hammerhead line – which has experienced record sales every year since its introduction – required a different strategy, however.

“In the aftermarket industry, customers want something the next day,” says Holder. “For build-to-order products, our maximum lead time is two to three weeks. Outsourcing doesn’t work. We had to have the ability to cut parts in-house, and do it accurately.”

In 2014, the company installed a 4 kW Sirius 3015 CO₂ laser with 10-shelf Compact Tower (CT-L). As demand continued to grow, Hol-Mac decided to add a 6 kW Phoenix 4020 fiber laser, also with a 10-shelf Compact Tower, in 2018. The move would provide a back-up for the 20-year-old LVD Impuls laser at Anel, add a second laser that could cut 4000 x 2000 mm sheets - especially helpful for larger Pac-Mac truck parts - and increase overall productivity at Plant 3.
“Piercing is tremendously faster, we see a 30 to 40 percent productivity increase.”

“As a 6 kW machine, the Phoenix FL-4020 obviously cuts faster than our 4 kW unit,” says Holder. “In addition, the piercing is tremendously faster. On tests using 20 mm steel plate, we see a 30 to 40 percent productivity increase because the piercing is so much faster.”

The Phoenix uses a “pulse piercing” technique that starts with the nozzle almost touching the plate to obtain a reference voltage to calculate distance. The cutting head then moves to piercing height, which could range from 2 to 8 mm depending on plate thickness. The Phoenix cutting head’s “zoom focus” technology sets a focal point to create a crater with a large enough diameter for the molten material to evacuate upward. The initial burst of power penetrates about halfway through the plate, followed by a series of pulses to complete the starter hole. The cutting head then moves closer to the plate and begins cutting. Throughout the entire process, zoom focus automatically optimises beam focus position and diameter to match plate thickness and nozzle-to-plate distance.

“Pulse piercing reliably produces starter holes while minimising the effects of spatter, extending time between cleaning cycles,” says Jerry Benning, an LVD sales engineer who has worked with Hol-Mac since 2006. “The 6 kW Phoenix FL-4020 can pierce 25 mm steel in under three seconds. The entire pierce-to-cutting cycle initiation time is less than seven seconds.”

“Without the LVD lasers, we wouldn’t be able to compete in the markets we’re in today,” states Holder. “Our company growth, part quality and brand wouldn’t be as strong.”

Holder says that all of the company’s lasers deliver superior cut quality and accuracy. Unlike plasma, a laser cut part requires no post-cut edge preparation, so parts can go straight to welding. The precision of laser cutting also produces better fit-up, which decreases weld time because there are no gaps to fill. Precision also enables Hol-Mac’s design engineers to incorporate slot-and-tab technology so that assemblies become self-aligning and self-fixturing. Slot-and-tab design reduces tooling costs and also helps mistake-proof assembly.

“We sell craftsmanship, and customers value the fit-up and finish of our laser-cut bumpers,” says Holder. “We design our aftermarket parts to follow the contours of a vehicle, and we want a consistent gap all the way around. That’s not normal on a lot of bumpers, but it’s expected on the Hammerhead.”
Hol-Mac Corporation

Website: www.hol-mac.com

Since: 1963

Works with:
- A572 Grade 50 steel, A514 (T-1) steel, aluminium and stainless

Industry:
- Proprietary products for the solid waste and non-hazardous hauling industries and aftermarket bumpers for the automotive industry
- Contract manufacturing, heavy custom fabrication and machining for OEM customers in the mining, construction, agricultural and railroad industries

Equipped with:
- Phoenix FL-4020 6 kW with 10-shelf Compact Tower
- Sirius 3015 4 kW CO₂ laser with 10-shelf Compact Tower
- CADMAN®-L

10-shelf towers

Hol-Mac primarily uses A572 Grade 50 steel, as well as some A514 steel, aluminium and stainless. Hol-Mac cuts material from 2.59 mm to 25 mm and annually processes millions of tons of steel. To help manage the load, Hol-Mac has equipped the lasers at Plant 3 with Compact Towers for storage of raw material and finished parts and automated sheet loading and unloading capabilities.

The Compact Towers for the Sirius lasers can handle sheets up to 3050 x 1525 mm, and the Compact Tower for the Phoenix FL-4020 stores sheets up to 4000 x 2000 mm, which is rare according to Holder, as tower construction needs to be especially robust to handle material weights up to 2994 kg.

“The flexibility of the Compact Tower works very well for our operation,” says Holder. “We can load the 10-shelf tower for the Phoenix with up to five different material grades or thicknesses and program the system via the Touch-L control. When it loads the steel from the tower into the machine, it knows what to cut.”

To further streamline cutting efficiency, Hol-Mac integrates CADMAN-L software with its ERP systems. “If parts for Pac-Mac and Hammerhead use the same material grade and thickness, we can nest them together. That improves plate utilisation and makes us more efficient,” says Holder. “Of course, the Compact Towers allow us to run lights-out when we need extra capacity. That helps our business grow without additional labor costs.”
For more than ten years, fiber lasers have been making an impact in the field of laser cutting. Initially best for cutting thin sheet metal at high speeds, today the scope and capability of fiber lasers is so much more.

**Crucial factors**

There are two major factors, the laser power and the use of a variable beam collimator or ‘zoom focus’ as LVD calls it.

High power lasers have existed for more than a decade but only within the last four years has laser head technology caught up, allowing manufacturers to expand the scope of materials and thicknesses that can be cut. An Electra with 10 kW source can now cut 6 mm mild steel at 12,000 mm/min. Even more impressive is the increase in speed when cutting stainless steel and aluminium.

The laser beam that comes from the feed fiber and lens is also critical and not optimal for all material thicknesses. LVD’s Electra and Phoenix fiber lasers use a variable beam collimator or zoom focus head, which allows the focal spot to be expanded when cutting thicker materials and decreased for cutting thinner materials. In this way the density of energy, cutting speed and piercing time are optimised for each material thickness.

### Table: Fiber Lasers Performance

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<tr>
<th>Material</th>
<th>4 kW</th>
<th>6 kW</th>
<th>10 kW</th>
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<tr>
<td>DC01 3 mm</td>
<td>11000 mm/min</td>
<td>18000 mm/min</td>
<td>27000 mm/min</td>
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<tr>
<td></td>
<td>29 sec/pc</td>
<td>18.5 sec/pc</td>
<td>16 sec/pc</td>
</tr>
<tr>
<td></td>
<td>124 pcs/hr</td>
<td>194 pcs/hr</td>
<td>225 pcs/hr</td>
</tr>
<tr>
<td>S235 5 mm</td>
<td>4500 mm/min</td>
<td>9200 mm/min</td>
<td>16000 mm/min</td>
</tr>
<tr>
<td></td>
<td>148 sec/pc</td>
<td>76 sec/pc</td>
<td>58 sec/pc</td>
</tr>
<tr>
<td></td>
<td>24 pcs/hr</td>
<td>47 pcs/hr</td>
<td>62 pcs/hr</td>
</tr>
<tr>
<td>S235 8 mm</td>
<td>2500 mm/min</td>
<td>3800 mm/min</td>
<td>7900 mm/min</td>
</tr>
<tr>
<td></td>
<td>144 sec/pc</td>
<td>110 sec/pc</td>
<td>49 sec/pc</td>
</tr>
<tr>
<td></td>
<td>25 pcs/hr</td>
<td>32 pcs/hr</td>
<td>73 pcs/hr</td>
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Machine dynamics
With the use of higher power sources and zoom focus technology, cutting speeds have increased dramatically. A fiber laser can achieve up to 5G acceleration but these high dynamics can only be harnessed in a machine designed for the job. Basically, if the machine cannot maintain the exact position of the tip of the cutting head at maximum speed and acceleration, you have to slow it down or your parts will go out of shape.

LVD designed its first fiber laser from the ground up, placing the focus on true machine dynamics. Our extremely rigid frame makes it possible to take advantage of higher levels of power and better power sources, maintaining high acceleration even while cutting. This makes the Electra, with its closed, welded frame and cast aluminium gantry, one of the fastest fiber lasers currently on the market.

Improved efficiencies
Reduced maintenance and operating costs are attractive features of fiber laser technology. The wall-plug efficiency (WPE) of the laser source, which is the ratio of power into the source versus power out at the head for cutting, is a core part of these costs. At launch to the market a WPE of 30% was claimed for fiber laser versus just 10% WPE for CO₂ lasers. After carrying out extensive tests over the last five years, LVD can demonstrate a high WPE of up to 40%. This shows that fiber laser cutting is even more efficient than initially thought and a lot higher than 22% WPE for disk lasers.

New cutting technologies
New material types and thicknesses require new application technologies to enhance speed, optimise quality and minimise operating costs. They are implemented in the machine as well as in the programming software CADMAN-L and the Touch-L control. Our latest developments in this field include:
- Piercing routines that dramatically reduce piercing times particularly in thicker materials e.g. 25 mm pierce on a 6 kW fiber laser is completed in 3 seconds compared to 18 seconds on a 6 kW CO₂ machine
- Nozzle designs that increase processing speeds during nitrogen cutting while also reducing nitrogen consumption up to 30%

Automation
As fiber laser cutting productivity rates are significantly higher than those of CO₂ lasers, the focus shifts to partner the right automation solution to suit the user’s needs. We help users maximise productivity and product flow by offering a range of flexible, modular automation options for mid-sized as well as large-format flatbed fiber lasers such as Compact Tower, Flexible Automation and load/unload systems.

Right performance - price
For sheet metalworking companies it’s ultimately about the direct cost per part. At LVD we have a range of fiber laser cutting machines and automation solutions with a blend of features and technologies that enable customers to find the right technical and commercial fit.

Key features
- Fiber laser power ranging from 2 kW to 10 kW
- Cutting head with variable zoom focus
- Extremely rigid frame
- High wall-plug efficiency of up to 40%
- Latest application technologies in Touch-L control and CADMAN-L
- Modular automation options
Eliminate boundaries

“We were no longer able to meet the demand for parts with our outdated laser cutting system in terms of speed and quality,” observes engineer Dominic Wöss, successor to father Franz. Since 2010, Wöss has had the best experience in bending with an LVD press brake provided by Schachermayer, the official sales partner of LVD in Austria. Therefore, it was obvious for Wöss to rely on a laser cutting machine from the same manufacturer: “We are familiar with the software and control of LVD machines and are fond of the simple operation and clear visualisation.”

Efficient and economical cutting

With the Phoenix FL-3015 4 kW fiber laser, Wöss chose a universal all-rounder. “The focus position and focus diameter are automatically regulated by the controller. These features, combined with the capacitive height sensing and collision protection for the cutting head, makes the Phoenix a very flexible fiber laser,” emphasises Robert Langthaler, Product Manager for Sheet Metal Processing at Schachermayer. Dominic Wöss confirms this: “We mainly process sheet thicknesses of up to 5 mm. Should the machine occasionally work with 20 mm thick steel, it also masters this with flying colours.”

Due to an extra demand for processing thin metal sheets for electrical generators, 1000 tons per year, Wöss purchased another fiber laser, a high-speed Electra FL-3015 8 kW.
this time. “A very powerful machine that effortlessly processes both thin materials and stainless steel from 5 to 15 mm at maximum speed. With the two fiber lasers we process about 1600 tons of sheetmetal per year now, for our own products and contract manufacturing. As a result, the capacity has more than doubled.”

Several cutting jobs, in different sheet thicknesses, one after the other without any human intervention.

As the next step in its automation, Wöss added a 6-axis robot to the Electra laser in order to remove finished parts directly from the shuttle tables. The robot is used for large series. The tower handles skeletons. “This saves considerable effort for our personnel when sorting out parts from the unloading pallets,” explains Dominic Wöss.

Error-free production

“In just the production of electrical generator parts, we process up to three tons of material per day with the laser. In order to produce such high quantities of complex parts at such a high quality, two things are needed: Experience, which we’ve gained along the way, and ultra-fast and high-precision fiber laser cutting machines that run absolutely error-free. The LVD Phoenix and Electra are simply so!” concludes Dominic Wöss.

Automation maximises productivity

Various laser orders are processed daily from 6 am to 2 pm by equipment operators. From 2 pm through the night until 6 am the machines run unassisted to process the large quantities of thin sheet. The LVD Compact Towers load the laser cutting machines with material and remove and store finished parts. Dominic Wöss: “With the towers we maximise the productivity of the lasers. Equipped with an automatic nozzle changer, they can perform several cutting jobs, in different sheet thicknesses, one after the other without any human intervention.”

Smart production

Wöss also shows his enthusiasm for the functionality of the database-driven software package CADMAN® Suite. “The software is truly pure luxury. Starting with CADMAN-JOB, the laser cutting software CADMAN-L imports the flawlessly unfolded flat parts from the CADMAN-B bending software and then automatically nests them according to the corresponding work order.” It is, of course, possible to make corrections directly on the touchscreen of the machine control system. For example, the operator can easily add cutting lines for skeletons, change the type and position of the lead-in or create micro-joints, if necessary.
India is a fascinating country full of contrasts. After China, it’s one of the most densely populated and fastest growing economies in the world. In the bustling city of Bangalore, India’s “Silicon Valley”, Niranjan Manjrekar is at the helm of LVD Strippit India. Not exactly a walk in the park, facing further diversification of the Indian market.

The right approach
After engineering jobs with international companies, Niranjan Manjrekar joined LVD ten years ago. “I started in sales, responsible for the Western India market and later became sales director. This year, I was appointed general manager of LVD Strippit India.”

In Bangalore, Niranjan meets his sales team. They go through the cases and establish priorities. “In a competitive market, you need guts to attract new customers and persistence to keep doing it time and time again until they ‘see’ your product. We brainstorm about new approaches and share our experiences which rises the bonding between the team, we help each other out.”

Motivation
“The basic condition for doing your job well is motivation. An important motivational drive for me is product knowledge, by following all developments in sheet metalworking closely. Many Indian customers very much appreciate the added value of technology. When I’m in the Belgian head office, I’m always impressed by the passion with which the product managers and sales talk about our technology. When I return to India, I’m filled with positive energy.”

“In LVD Strippit India too, a customer-friendly, open attitude and professionalism are key qualities. I’ve been working with some customers for a very long time. Maintaining good customer relations also gives me personal satisfaction. We’ve grown together in a way, and the customer relies on our products. I’m very proud of each installation that we sell. Because there’s so much competition and price sensitivity, every order feels like a victory.”
Market evolution
"The customer base has evolved. A number of Indian groups have diversified significantly and there has been an exponential increase of multinationals based here. However, our Chinese, Japanese and European competitors are very much present too. Therefore it is important for LVD to be here too and to distinguish itself with a very strong product."

“Our target customers are aware of what’s on the market and work with the latest types of metals, such as high-strength and wear-resistant steel. Companies operating in the aviation industry, renewable sources and construction like to work with high-quality machines. Our Easy-Form® technology, sheetmetal working machinery and software solutions meet their requirements well.”

Automation is key
"In contrast to the fact that India is one of the main manufacturing hubs in the world, manpower is still one of the most important resources. CNC machines typically require human tending, from loading and unloading machines to supporting finishing operations. However, as business volumes are increasing, industries are attracted to automating repetitive tasks to achieve a better throughput and more consistency."

Technology Days
Smart Manufacturing
"As a top three technology player, we invite companies to LVD technology days to explain our vision of smart manufacturing. This also helps us create more awareness for LVD’s extensive product portfolio. At LVD Strippit India we see automation as an important factor to present ourselves. By offering process integration in line with Industry 4.0 and a broader spectrum of automation solutions, I’m confident that there will be in the near future more and more installations of LVD machines with reliable and affordable automation.”

Monsoon season
"I live in Pune, a lively, industrial city in the west of India where there’s lots to see and do. To escape hectic city life and the heat, my wife and I enjoy going up into the mountains. A three-hour drive from Pune is Mahabaleshwar, a beautiful town in the mountains where you can enjoy lovely walks. The views are breath-taking, particularly during monsoon season when the forests are green and waterfalls are rushing from the mountains.”
The company serves food processing, animal welfare and medical markets and also offers subcontracting under its brands – Syspal, Technik, Technik Medical, Hydro Physio and Manifab.

Staying ahead in a competitive global market, SYSPAL is embracing the fourth industrial revolution with the best possible production equipment and paperless production process.

As Managing Director Chris Truman explains, Industry 4.0 keeps SYSPAL flexible. “Customers want products in relatively small quantities and they want them quickly. With hundreds if not thousands of products and stocking raw materials, we need to process orders and manufacture quickly, efficiently, accurately and cost-effectively.”

**Early adopter**

Since its inception in 1975, SYSPAL has been quick to adopt the most efficient technology and was the first in the UK to install a 220-ton/4-meter ToolCell with integrated automated tool changer in 2014, replacing two manual press brakes. Truman had seen the ToolCell at its EuroBLECH debut, tested the machine and CADMAN®-B software with a particularly challenging part, and then did some homework.

“We worked out in a given day how many times we changed tools and the percentage of time the presses were actually forming metal. It was staggering. We only had about 20 to 25% production time out of an entire shift, the rest of the time was spent changing tools, programming, getting organised and making corrections.”

The ToolCell proved more than twice as efficient as the two press brakes it replaced bending parts (80% of which...
are up to 3 mm thick) around the clock. "If you’re changing tools 10 times a day and it takes you 20 minutes to change the tools, that’s 200 minutes, or more than three hours. With ToolCell, the tools are changed in five minutes, so you’ve got 50 minutes to change the tools, which is a quarter of the time. You’ve freed up 150 minutes for forming and doubled your output."

2 beats 4
In 2018, SYSPAL replaced another two press brakes with a second ToolCell, a 220 Plus, 3-meter machine. The Plus model features extra open height to accept taller tools, giving SYSPAL more flexibility for the many components it forms. The machine is specified to form up to 6 mm thick material, 3 meters long.

"The ToolCells are a game changer for our business. They are super accurate and consistent, resulting in exceptional fit up and more accurate fabrications. We save time welding and finishing."

"LVD and CADMAN-B are a big piece of the jigsaw."

Gone paperless
SYSPAL has 28 CAD designers all working in 3D. In the past, the design process involved trial and error blank development and printed drawings issued to production. Today, CADMAN software seamlessly links to the CAD system in a fully digital process that ensures first part, good part results.

"We produce 3D models in our design department and the job is issued to production in the form of a drawing. The model is the key to the digital process, from it we generate the bill of materials and from there program everything including simulations to validate the process before cutting metal.

"We use an MRP system to manage workload to the machines in the order jobs have to be produced. We have screens all around the shop floor and anyone on the floor can call up the solid models and view them and view the forming simulation before forming the actual part."

SYSPAL also equipped each ToolCell with a barcode reader. "The operator just scans the barcode and the machine sets itself up. It’s just awesome to watch."

A new pre-production department employs four people to handle programming.

"When you invest in sophisticated machinery you don’t want to be programming at the machine, ever. You want the machine running all the time. Pre-production is one of our most important developments because we can simulate everything before we cut metal.

"This is Industry 4.0 in action. It’s linking everything together digitally and removing as much manual intervention as possible. We don’t print drawings anymore. If you have 28 designers and they are spending 10% of their time printing and folding drawings, that’s a massive undertaking. Now it’s as if we have an extra three designers."

All digital
These days SYSPAL is breaking ground on a 50% expansion of its facility to extend its manufacturing space to more than 14,864 m².

As Chris Truman and his staff look to future equipment, digital technology is key. "Your production environment is a jigsaw and trying to piece it together is a challenge – how to quickly and easily get to the finished part is what it’s all about. LVD and CADMAN-B are a big piece of the jigsaw. We can flat pattern the part, cut and form the sheet metal without taking a single dimension."

Watch the SYSPAL testimonial:
USA
No project is too big or too small for **AmeriTex Machine and Fabrication LLC**. The growing fab shop applies world-class technology to produce and deliver quality parts in record time. AmeriTex has doubled its automated bending capacity with the installation of two ToolCell automatic tool-changing press brakes and Easy-Form® Laser adaptive bending system.

France
**FILMAG** designs and manufactures both standard and custom products for retail store display racks and fixtures, shelving systems, wardrobes, merchandise displays, and more. With the purchase of a **Phoenix FL-3015 6 kW**, FILMAG has moved its laser cutting operations inhouse, increasing its capacity and flexibility to serve a broad base of customers.

Italy
At its facility in Campoverde - Aprilia (LT), **Koch-Glitsch** added a **Strippit PX** punch press with FA-P automation, Extended Tool Magazine and bin sort. The automated punching system helps Koch-Glitsch remain a world leader in mass transfer, mist elimination and liquid-liquid coalescing equipment for the refining, chemical, petrochemical, and gas processing industries.
Belgium

The social enterprise **WAAK** offers sustainable employment for people with working disabilities. WAAK balances the need to provide enriching jobs with the requirement to be competitive and deliver quality goods. An investment in a **Phoenix FL-3015 6 kW fiber laser** with 37-pallet double tower lends a new level of flexibility to its manufacturing.

Poland

**Przedsiębiorstwo Produkcyjne HEIZTECHNIK**, produces advanced heating systems, including its GreenLine boilers designed to meet the highest standards for environmental protection and energy efficiency.

Czech Republic

**KONE Corporation** is a global leader in the elevator and escalator industry. To increase production of its elevator components, KONE installed a custom robotic bending cell comprised of an **LVD Easy-Form press brake** and two **Starmatik robots**. The automated bending cell helps KONE deliver consistently high-quality products to fulfill its mission to make people’s journeys safe, convenient and reliable.

New Zealand

A **1000 ton PPEB-H press brake** allows **Vulcan Steel** to bend long parts accurately. The plate processing specialist purchased the custom press brake to deliver value-added products to the transport industry. The **PPEB-H** complements four LVD laser cutting machines and two **Easy-Form press brakes**.

Germany

**Hohmeier Anlagenbau GmbH** designs and builds automotive and general material handling solutions such as special floor conveyors for vehicle processing plants and carwash applications. The company invested in high-precision equipment – a **Phoenix FL-4020 6 kW fiber laser** and **Easy-Form 320-ton, 4-meter press brake** – to more efficiently handle the demand for larger and more powerful installations.
**STRIPPIT PL**

**PUNCH LASER COMBINATION**

Introducing the Strippit PL Punch Laser combination, a machine that combines the punching and forming advantages of a punch press with the speed and versatility of a fiber laser.

**Complete part processing**
Small batches, short lead times, increasingly complex parts drive the need for flexible manufacturing. The Strippit PL Punch Laser offers two technologies in one machine, eliminating processes, reducing production time and material handling, and lowering the cost per part.

The Strippit PL enables you to cut intricate shapes and process materials up to 10 mm, efficiently punch holes up to 6.35 mm and produce forms and bends up to 90 mm in length and 75 mm high.

Automation adds next-level productivity. The optional Compact Tower (CT-P) loads, unloads and stores raw materials, skeletons and finished parts, creating a flexible manufacturing cell able to operate lights out. A Flexible Automation (FA-P) system, available for the Strippit PX-L, offers advanced load/unload capabilities, part picking and a large area for stacking punched parts onto a pallet.

**Technology pioneer**
In 1978, Strippit brought punch-laser technology to the market. Today, a combination machine is more practical than ever.

The solid-state fiber laser has minimal components, high cutting speed and low-maintenance costs making cutting operations faster, more accurate and cost-effective.

The Strippit PX single-head punch press can punch, form, bend and tap, forming flanges up to 75 mm high, countersinking and scribing with top productivity.

The Strippit V features a versatile 48-station turret and four programmable 88.9 mm indexable stations for handling high tonnage.

Integrating these key technologies allows users to choose the most productive manufacturing method for the job at hand.

Strippit PL models include the single-head Strippit PX 1530-L and Strippit V 1530-L in thick and thin turret configurations.
Combined advantages
- Use the punch press for high-speed punching and forming applications
- Use the laser for unique shaped holes or contours, material etching
- Run shorter production applications, cellular manufacturing or full-scale production
- Improve part quality through multiple processing using a single workpiece clamping
- Realise shorter lead times and lower operating costs
- Reduce machinery and maximise floor space utilisation

Key features
- 20 and 30 metric tons of punching force for PX-L and V-L model respectively
- Fanuc 3 kW fiber laser (4 kW option)
- Precitec cutting head featuring auto-focus lens and crash protection
- LVD Touch control
- Rack and pinion drive system
- Large work chute for laser cut parts
- Process 3048 mm x 1524 mm sheets without repositioning
- Compatible with Compact Tower
- PX-model compatible with Flexible Automation
Start with a dream
As a young boy, Daniel Szászi dreamed of becoming a car designer and owning a car factory. When he was older, he realised the root of that desire came from an interest in mechanical engineering and design. After a year’s internship at LVD and upon graduating from the Technical University of Košice, Daniel began his career at LVD S2 as a CNC programmer in 2010. Today, he is the Head of Quality & Engineering for LVD S3, the sister production facility to S2.

Daniel has expanded his scope as LVD S3 has grown into a key production unit with more than 350 employees manufacturing equipment for markets worldwide.

Quality reflects process
S3 and S2 follow World Class Manufacturing principles for lean production and continuous process improvement. The bar is set high for engineering and quality standards.

“Quality is all about your processes. The end quality depends on all the operations along the way. If our processes are correct and well worked out, we can be confident the result will be good.”

Finding the cause of a quality or engineering issue can take some detective work.

“An assembler who recognises a part is not okay goes to the quality guy and he agrees it’s not right but he can’t give you a reason. To be sure it will not happen again, you have to find the root cause and not just fight the fire. Sometimes, it’s like being Columbo.”

Measuring success
For Daniel, the progress of S3 is thanks to the spirit of its workers. He measures success in the advances made by his team of 25 from two Quality departments, Methods, CAM and Process Engineering and CAD designers.

“I am supporting the team so they can do their best job. I consider this a basic management philosophy – it’s not the team that is working for you, it’s you supporting the team.”
Daniel’s group is a mix of departments with different goals, issues and needs. His challenge is to keep in tune with every member of his team.

“It’s important to know your people and their personalities. Some people are not able to perform well under pressure and others do their best under pressure. You need to know how to motivate and communicate, trust your team and handle matters in a human way. The respect has to work both ways.”

**Being creative**
Daniel also uses teambuilding exercises. “If you expect people to think out of the box and be innovative, you have to teach them how. It’s good to have a mentor, to work with someone who has more experience and insight. I would like to believe that I’m helping my team become better.”

Cultivating talent is also key. Like other parts of the world, Eastern Slovakia has a shortage of skilled workers. To overcome this, Daniel helped develop a training program to teach local residents the skills of CNC machining.

“They come to us with zero experience in CNC machines but they are smart and willing to learn. We give them the opportunity to train for a position.”

**Big-picture thinking**
“I believe in continuous improvement not only on the floor and in the processes but also in how I do my job. I’m always open to feedback. Looking at the big picture is one of my basic rules of life. If I feel that I’m evolving, getting better, moving forward, then I feel fulfilled.”

As he gains experience as Head of Quality & Engineering, Daniel sees more opportunity for improvement.

“My first months were about observing and learning. Now I am in the phase where we are delivering results and implementing changes to increase productivity and efficiency. These things are possible because of the spirit of our LVD Slovakia family.”

“S2 and S3 are huge success stories. This is something we can all be proud of. We are in a small country, in a small region and we are producing high-tech machines with high-tech equipment. It’s because of our desire to push the boundaries and to do it right. I believe every single person has their value to add.”

**An artist at heart**
Daniel’s creative outlook stems from his fundamentally artistic nature. After hours, he’s busy pursuing varied interests – from cars to videography to deejaying. Daniel produced the S3 corporate video using drone technology. His latest S3 video also features music he produced.

“Since childhood, I’ve been interested in a lot of different things. The last few years, my most relaxing and re-energising activities are making electronic music and photography.”

Even in his personal life, it’s all about continuous improvement.

“I still really love cars. I have never made it to become a race car driver, but it’s not about being a super star, it’s about doing something you really love – to put your focus and attention into it and become better at it. After a while, all this energy that you have invested will return to you and refuel you.”
Future-proof
In 2015, Johan Delfsma, founder and owner of DelwiGroenink Machinefabriek invested in expanding production and added new disciplines to part of the factory, including laser cutting and an extensive blasting and coating line. In one fell swoop, outsourcing was no longer necessary, costs fell dramatically and capacity doubled. Since the completion in mid-2018, turnover has soared. “We work faster, more efficiently as well as more economically. It was a massive investment, but we are now future-proof.”

Lifting systems
The company grew rapidly, in part through the acquisition of the metalwork company Groenink in 1996. The purchase of a piece of land earlier in 1995 meant a new building, a move and more expansions over the course of the years. In 2018, a healthy company has been established on 2.3 hectares of land with more than 130 employees. The new warehouse is the latest crowning achievement on a quarter of a century of dedicated entrepreneurship.

In house
This rapid development also has disadvantages. “We started to outsource a lot, like blasting and coating the parts. Besides the logistic organisation and costs, outsourcing
also means lost time. At the same time, requirements became more stringent. OEMs expect innovations and more competitive prices. Competition worldwide is tough, so you need to distinguish yourself. The question is how."

For DelwiGroenink the answer is: "Manufacturing and processing everything in house. In 2014, we invested in an Easy-Form press brake with 400 tons of pressing force and we went to LVD for the second press brake too. This time a ToolCell with automatic tool changer. LVD was the only company that was willing to guarantee ± 0.3 degrees accuracy on the bend angle with their Easy-Form® Laser system. Their engineers were also very involved in the total production process and ensure that all the individual systems work together."

"With the CADMAN® suite, everything is connected and we get transparency in the different layers of sheet metal production. The factory operates just as we hoped it would. We now have a super modern production line which enables us to eliminate transport movements and shorten lead times - to the client's great satisfaction."

**Simple**
To the outsider, it seems simple. Every day the laser cutter and press brake are automatically fed with around 20 tons of steel from the two stock towers, driven from the CAD department where the designs are made. The Phoenix fiber laser cuts everything to size, while the ToolCell ensures exact bending. The products are then welded using robots and move to the blasting line, powder coating and then into the oven before finally being assembled.

**Connecting**
Johan Delfsma explains: “Together with LVD, we spent an intensive period organising, assembling, training people and connecting all the systems. The ERP system is connected to LVD’s CADMAN software and sends purchase orders to production. There, most of the bending solutions are calculated automatically and nestings are made for laser cutting.

“On the LVD machine controls, the operators on the work floor can see the information that is relevant to them and implement it. The machine feeds production information back to the system so that management always has access to real-time data. Thanks to this integration, we’ve made huge progress in both production and administration.”

**Sustainable**
The results are gradually becoming visible in the accounts. "We are growing very fast. Fortunately, we attract good people because we offer good terms of employment and we present ourselves as a sustainable and social company. Last year, we covered the entire roof with solar panels, while in the halls everything is lit by a smart and economical LED system. That interests young people. They are keen on sustainability. DelwiGroenink may be a manufacturing company, but it's still high tech with appealing and innovative products. Automated and robotised. Sexy? I think so."

*Jos Cortenraad, BCcommunication*
With the introduction of the Strippit E servo-electric punch press, LVD now offers the most comprehensive line of punching equipment in the industry. The servo-electric press drive delivers precise control of the punch position, high reliability and energy efficiency. Key reasons why this technology is worth considering:

1. **Economics of electric**
   The servo-electric press drive offers the most energy-efficient punching technology currently available. Direct-drive servo motors drive the ram assembly, eliminating the use of hydraulics.

   Servo-electric machines are inherently energy efficient with a low power consumption of approximately 20 kVA. They also have low power usage between punching strokes and while the machine is idle (approximately 0.9 kW idle power consumption). This type of punch press is especially attractive for companies with high electricity usage needs (operating many machines), for those with a maximum amperage limit, or in countries where electricity is at a premium.

2. **Fewer components**
   The servo-electric press drive is a simple, streamlined design
using fewer components than other punching machines. Major components are the motors, ball screw, sun gear and gear boxes. This means fewer points of possible failure and lower maintenance costs.

### 3. Precise ram control
The latest servo motor technology is able to accurately deliver the punch force, stroke and speed required for every stroke. The servo-electric press drive provides the ultimate in ram control, not only on the down stroke, but also on the return stroke.

As a result, the Strippit E offers better control of the punching and forming process – punching at high speeds with high accuracy even in thicker materials, and more accurately controlling the height of a form. Because the ram is driven by servo motors, ram positioning can be held to ± 0.025 mm. The Strippit E punch press delivers 20 metric tons of punching force and punching speeds of up to 350 hits per minute on 25.4 mm centers and marking speeds of up to 800 hits per minute.

### 4. Less noise
The servo-electric punch press generates less noise when punching. Servo-electric punch presses are approximately 15% quieter than traditional hydraulic machines. Controlling noise emissions protects workers and reduces overall noise pollution, a priority for shops embracing green initiatives.

Whatever your punching application, we have a punch press that’s right for you: Servo-electric turret, hydraulic single-head or turret. Let us help you evaluate what each punching technology offers so that you can make the best investment for your business.
Deep in the heart of Bavaria, close to the Alps and Austria, lies the gleaming new production facility of Brückner Textile Technologies. The 25,000 m² state-of-the-art factory has allowed the company to double production capacity thanks to new production equipment including an LVD Easy-Form® tandem press brake.

Brückner Textile Technologies manufactures standard and customised textile drying and finishing lines. It ships these around the world, predominantly to Asia and the Far East but also to Africa and South America as well as Europe. The textiles processed on the line not only include clothing fabrics, but also carpets, industrial textiles, glass fibre, hygiene products and construction materials.

Works Director Manfred Göpperl says: “We will build anything the customer wants, whether that is a standard system, or a special machine designed from scratch, but it is a hard-fought market, with lots of competition from manufacturers in low-wage economies. Customers come to us because we can build them lines that other companies cannot. Made in Germany means something to our customers too - it is about quality and innovation.”

Brückner’s old press brakes could bend up to 5 m, but there was a growing demand from customers for carpet drying lines 5.2 m wide. The working width determines the longest parts that need to be formed, in particular the nozzles that the drying air is blown through.

Emil Huber, who is responsible for procurement in production planning, says: “We had two options: make the nozzle plates in two parts and then join them together, which meant a big extra workload, or subcontract them out. Using a subcontractor added significant manufacturing and logistics costs...
– and there were also problems with delivery times. We weren’t in control of the production process.”

As well as bending capacity, a key consideration when selecting a new machine was accuracy.

The most critical components in the line are the transport rails on which the feed chains run. The textile being processed is picked up on either side by pins or clips which transport it through the line at speeds of up to 300 m/minute. The material is also stretched widthwise to keep it taut so that it does not shrink during drying.

The lines are divided into 3 m bays, and each bay has a pair of chain rails. They have to be accurately aligned with the rails in the next bay to ensure that there are no collisions or rubbing. They must also have a constant tolerance over their whole length to avoid uneven wear.

The rails are made on a press brake from 5 mm steel plate and, according to Emil Huber, the aim is to achieve higher processing accuracy. “Ideally we aim after six bends for plus or minus 0.2 mm along the whole length of the chain rail.

“LVD was the only supplier that could show us the accuracy we were aiming for. LVD really understood the challenge and worked hard to achieve what we wanted.”

He says that when it came to making the decision to buy an LVD machine, all the individual advantages it had over the competition added up to a compelling argument.

“We wanted accuracy, so the Easy-Form® adaptive angle control system was important, so was the quality of the sample parts and the fact that the control and software all came from LVD too. It was clear to me that LVD had been constantly thinking about and developing its bending solution over the past twenty odd years.

This was maybe the most decisive factor for us.”

“We originally planned to buy a single 6 m press brake but talking to LVD we realised the advantages of a tandem machine.”

“Most of our bending work is up to 4.5 m long, which is why we chose two 4.5 m machines. To give us the capacity we need for standard line components we can use them as two separate press brakes, but when we need to bend a longer part for a special line, we’re covered for that too – we have both options in one machine.”
Since its founding more than 40 years ago, Unique has grown to become one of Australia’s largest and most respected manufacturers of high precision metal components and assemblies serving industries, including defence, oil & gas, robotics, marine, construction, architecture, agriculture and general engineering.

Sophisticated engineering and innovative design supported by a commitment to quality are the hallmarks of the business and the foundation for Unique’s success. Their production facility includes a range of LVD laser cutting, bending and punching equipment.

The elegant Arbor Walkway at the new Perth Stadium in Western Australia is one of Unique’s projects. The distinctive architectural design features decorative plates with laser cut patterns that represent Aboriginal art, fixed with wires to parabolic steel arches to create a stunning interplay of light and shadow.
CADMAN® SUITE
Powerful integration software

CADMAN® is a total process integration package for laser cutting, punching and bending. Save time, reduce production costs and increase throughput using individual CADMAN software modules. Combine modules to improve process flow from order to finished part:

- CADMAN-SDI: import 3D-files and display key cost drivers
- CADMAN-B, -L or -P: prepare laser cutting, bending and punching jobs
- Touch controls: get real-time data from the shop floor
- CADMAN-JOB: manage every step of production
- Touch-i4: sort and validate parts for the next operation

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