DISCOVERY

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Diamond Anniversary
60 YEARS OF INNOVATION

ToolCell: Press brake automation redefined
A complete laser systems line
The L, V, D behind LVD
Custom fab shop fuels business with automation
Large capacity laser keeps it competitive for South Korean shop
Editorial Notes:

Keep in tune with the latest products and advancements designed to help you reap higher yields, streamline efficiency, and reduce setup and scrap. Sign up for our monthly e-newsletter at lvdgroup.com.

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Perfecting the Process

From humble beginnings in West Flanders, Belgium to a global company represented in more than 45 countries, our path has always been one of growth spurred by innovation, as Chairman Jean-Pierre Lefebvre, part of LVD’s second generation management team, explains in our feature article.

We continue perfecting the process of metalworking with products designed to solve your fabrication challenges.

This issue spotlights one of our most innovative products yet. After independently surveying the needs of press brake users around the world, we engineered a solution to the problem of streamlining press brake set up time. The result is our ToolCell automatic tool changing press brake to be unveiled at EuroBLECH in Hanover, Germany. ToolCell optimizes the non-productive process of tool loading/unloading to provide the highest bending throughput possible.

Our new Electra fiber laser is also about perfecting the process by offering more choice in laser systems to better suit your application. The Electra is fast, compact, does not require mirrors or gases and is ideal for processing thin materials, particularly highly reflective and non-ferrous metals.

In this issue we also highlight three customers – a job shop in Korea, a road building machinery maker in Germany, and a custom fab shop in the U.S. – who have perfected their fabrication processes with LVD laser cutting and bending equipment. All three companies have dramatically changed their productivity and added to their profitability by evaluating their application needs and sourcing the appropriate technology.

As we reflect on our diamond anniversary in business, we reaffirm our commitment to this industry and to perfecting the fabrication process.

Join us for the celebration.

Matthew Fowles
Group Marketing Manager

“We continue perfecting the process of metalworking with products designed to solve your fabrication challenges.”
Reducing press brake set up is a universal challenge. LVD independently surveyed press brake users from around the world and no matter the size or complexity of the bending application, tool setup time was the most significant impediment to bending productivity. In fact, a large number of shops surveyed reported handling in excess of six tool changes per day, per machine.

The trend toward reduced batch sizes and shortened lead times, as well as the need to reduce stock levels and manufacture the exact quantity just in time for the production line drive the requirement to frequently change tools.

While press brake manufacturers have continued to optimize the operation of the machine with faster hydraulic or electric drives, improved back gauges, easier to use, more powerful CNC controls and offline programming, fundamental to improving bending productivity is optimizing tool setup.
ToolCell is a press brake with integrated storage of a library of top and bottom tooling housed within a “tooling stadium” located behind the machine’s backgauge. An innovative gripper design built into the machine’s backgauge finger allows the backgauge to serve as the tool changer mechanism.

As the operator prepares for the next job, the press brake automatically changes the top and bottom tooling as required. Tools are all held within the machine, significantly minimizing tool changeover time.

ToolCell features LVD’s patented Easy-Form® Laser in process angle monitoring and correction technology ensuring first part, good part accuracy. Easy-Form Laser transmits angle measurement data in real time to the CNC control unit to obtain the correct angle every time.

ToolCell is equipped with LVD’s latest generation 19” touch screen control, Touch™-B. Touch-B features intuitive graphical icons used to control all parameters of the machine, ensuring fast and efficient operation.

ToolCell is available in 135, 170 or 220-ton bending forces and in bend length configurations of 3060 or 4080 mm.

Introducing ...

... press brake automation specifically designed to reduce tool set ups

- Are you changing tool setups on your press brake more than 6 times a day?
- Do your parts require complex/multiple bend stations?
- When your operator sets up, do they ever incorrectly position the required tooling sets?
- Are you constantly looking for tools that are being used on another machine?
- Is your operator constantly walking to the tool cabinet for their next set of tools?

Is your throughput suffering as a direct result?

LVD has the solution....ToolCell

- Automated tool load/unloading while your operator is preparing the next job
- All tools are precisely positioned in the machine and verified by ToolCell
- No small adjustment of tool sets is required
- Large library of tools held within the ToolCell ensures maximum flexibility

The result.....More productivity and throughput!
ELECTRA FL

Fiber Laser Cutting System Is Fast, Flexible

LVD now offers more choice in laser processing technology with Electra FL. High speed thin sheet processing, low operating cost and the ability to process a wide range of ferrous and non-ferrous materials make Electra FL both flexible and cost effective.

Powered by a high efficiency solid-state doped fiber laser source, Electra FL provides fast, accurate processing of traditional sheet metal materials such as mild steel, stainless steel and aluminium with the added versatility to efficiently process metals such as copper and brass. Increased beam absorption of the laser light by the fiber laser source provides processing speeds up to 50% faster than CO₂ laser sources.

A compact, modern design, Electra FL maximizes uptime with an integrated shuttle table system that allows one table to be loaded while the machine is cutting on the other table. Table change time is a mere 30 seconds.
LVD’s latest touch screen control and user interface, Touch™-L, make Electra FL easy to use and operate. Touch-L employs a 19” touch screen and graphical user interface to efficiently and effortlessly guide the user through all necessary man-machine interactions.

Touch-L also incorporates a part programming and nesting feature allowing users to import parts directly to the control, applying cutting technology and nesting sheets at the machine.

Modular automation options further increase the productivity of Electra FL. Choose from a basic automatic load/unload system or compact material warehousing tower (CT-L). The CT-L system provides full capabilities for loading and unloading and includes a shelving unit for storing raw material and finished parts.

What Source Is Best?

LVD Laser Product Manager Kurt Van Collie helps put the fiber vs. CO₂ question into perspective.

Why offer a fiber laser choice?

Many of our customers process thin sheet metal, not only mild or stainless steel, but also aluminium, copper and brass. Considering the benefit of better absorption of the 1µm wave length especially in these thin sheets, offering a fiber laser is a logical addition to the LVD laser product portfolio.

Is a fiber source better than a more traditional CO₂ laser for most flat sheet cutting applications?

There has been much talk in the industry about fiber lasers being able to process pretty much everything. The fact of the matter remains that for a subcontractor or OEM looking for a flexible machine to cut from thin to thick material with a good finish, the CO₂ still remains the best option. If the customer is primarily cutting thin sheets, then a fiber laser offers considerable processing speed advantages when cutting with Nitrogen.

What are the key considerations for a fiber system?

When considering a fiber or CO₂ laser, the first question you need to ask yourself is what materials will I process and in what thicknesses. If the answer is mainly thin sheets, then a fiber laser is a good potential choice due to the higher processing speed capabilities. Two other important advantages of a fiber laser are the much better wall plug efficiency of fiber compared to CO₂ and the minimal maintenance costs. However, it is important to note that the efficiency of the latest generation CO₂ lasers has improved with power saving features and significantly prolonged maintenance intervals.
Something to CELEBRATE

As LVD celebrates 60 years in business, Discovery asks the current generation of the founding families what makes LVD the company it is – and what lies ahead in the next 60 years.
Established in 1952, the entrepreneurial spirit of founders Jacques Lefebvre, Marc Vanneste and Robert Dewulf remains alive at LVD today. Many of the fundamental principles and philosophy of business cultivated by LVD’s founding fathers and pivotal to the company’s success, drive the current management team.

For LVD’s Chairman Jean-Pierre Lefebvre, the anniversary is a source of pride: “We’re not ego-driven people, but when you look at other family businesses in the area and in the industry, it’s quite an accomplishment to not only survive but to keep growing for such a long period.

“When I look at our history I realize how many economic crises we have lived through – the oil shocks in the ’70s, high inflation in the ’80s, the deep recessions of the ’90s and the last decade. I feel that if we can survive all that, we can survive pretty much anything if we stick to our values and the company keeps its culture.”

President and Managing Director Carl Dewulf agrees: “Sixty years is a long time in business for any company, and in an industry such as ours, which is quickly consolidating and which is very cyclical, it is very important for a company to have strong roots, a sound business strategy and a good relationship with its people.”

Underlying this success is the ability to take a long-term view that comes from still being owned and managed by the founding families.

Francis Vanneste, Managing Director of LVD Benelux, says: “One of the most important things that makes LVD unique and special is that we are a family business. The families make decisions together with a long-term view of what is good for the business.

“I think the family values are still today one of the most important things in the company – and I think it will stay that way. Carl Dewulf, Jean-Pierre Lefebvre and I have all agreed that we will keep it a family business.”

This stability has helped preserve a company culture that underlies its activities.

“There is quite a social spirit here in the company,” says Mr. Dewulf. “We try as much as possible to work together as teams. We like people to have success together instead of doing it on their own.

“I think we create an atmosphere and an environment where people can be entrepreneurial, they can take some risks and maybe make some mistakes. We look at the numbers on a regular basis of course we wouldn’t survive, but it is important to get the right mix.

“We foster that through platforms such as our EML (Engineering, Marketing and Logistics) meetings where people from different areas of the company with different perspectives come together to talk about what they think the next priority or opportunity for LVD might be.

“I think that perhaps the most unique thing we have in LVD is this spirit of creativity and openness towards the world. I think we are truly a learning organisation. We are willing to admit to each other that we don’t know everything, we are willing to explore collaborations and we are willing to listen.”

Mr. Lefebvre adds: “Many people who join LVD and attend the EML meetings say that they would be impossible, unthinkable in their previous organizations. The meetings aren’t always easy, but that ability to work across departments is a key ingredient in what makes LVD unique.

“We rely a lot on the creativity and the initiative of the management and we give them a lot of freedom. There’s always a new idea popping up somewhere.

“We are always looking for what the next step might be and are constantly looking for ways to move forward through acquisition, through partnerships, through opening of new markets, introductions of new products and expanding market share in existing markets.”

**Business milestones**

Two factors that helped shape the business were the recognition that LVD needed to compete in international markets and the decision to adopt a focused product strategy.

“One of the biggest challenges for LVD was that we were too big for the Belgian market. So we looked to international markets almost from the start,” says Carl Dewulf.

“It’s almost as if the milestones are marked by the decades,” says Jean-Pierre Lefebvre.
“I think the first milestone was the decision to establish our own sales and service subsidiaries in France and Germany in the ’60s. That was very early in the company history but has had an impact on everything we’ve done since. It gave us an extremely strong motivation to always have control of our own destiny.”

That is something that Mr. Dewulf senior deserves a lot of credit for doing, and actually having the nerve and the audacity at the time to do it.

In the ’70s the company spread its wings further afield, setting up the LVD Corporation in the USA (Connecticut) and LVD Far East in Singapore.

“Again, we did it right from the start with our own sales and service organizations, whereas most companies our size would have looked for an importer,” says Mr. Lefebvre.

Then in the ’90s the third milestone was the pioneering move to take the next step in China with the license agreement with HD.

“The agreement was signed more than 30 years ago, at a time when no one could ever guess how important it would turn out to be many years later,” says Mr. Lefebvre. “It was the foundation for everything we’ve been able to do in China.”

For Carl Dewulf, the crucial strategic decision taken by the second generation was the move to a focused product portfolio.

“The philosophy used to be one of diversification, so that if one industry was down another would be up. But in the early 1990s we decided to spin off our deep drawing press activity and move to a more focused strategy. This is probably one of the most fundamental changes we made in the history of the company.

“It was simply impossible for a medium-sized group like LVD to be active in every market, so we made a choice, and we believe it was the right choice, to have a very coherent group of products focused on sheet metal working.

“With all the steps in the production process in our portfolio – shearing, punching or laser cutting and bending, integrated with the software – we could supply our whole range to the same customer base.”

LVD had moved into punching machines in the ’80s, first working with, and then acquiring Shape UK. In the ’90s it developed its own laser products in conjunction with Fanuc and in the last decade ramped up its punching portfolio with the acquisition of Strippit.

Most recently, it has further developed its punching capabilities through a partnership with Pullmax.

Milestones in technical innovation

From a technical perspective, Jean-Pierre Lefebvre identifies two extremely significant innovations. The first was the development and introduction of the MNC 8000 control in the early ’80s.

“We were the first company with that level of CNC technology on a press brake. That really paved the way for major developments such as multi-axis back gauges and crowning systems. It was a critical move that laid the groundwork for 30 years’ effort in gaining a better understanding of the bending process.”

The fact that the MNC was developed in-house was, “a very significant and a critical move, and again a critical decision made by Mr. Dewulf senior,” says Jean-Pierre Lefebvre. “In a similar fashion with the establishment of LVD Germany and LVD France, he did it partially because of frustrations of dealing with CNC control suppliers at the time. They were treating other press brake manufacturers better than they were treating us. I suppose because they saw a better future with those companies than with us. It really prompted him to look for our own way and develop our own CNC control.”

“LVD has never been hampered in the development of its press brakes by having to rely on someone else’s control technology, whereas all the other manufacturers were completely in the hands of an external supplier. We couldn’t afford to work like that because we wanted to press ahead faster.”
Many of the developments that LVD made in refining its bending technology and applications know-how were only possible because of that early decision to make its own controls.

"Once you design your own control and your own software, you gain a much deeper understanding of the processes the machine is supposed to execute," says Jean-Pierre Lefebvre. "If you only integrate someone else's control that understanding is limited."

There is a direct commercial benefit too, says Francis Vanneste: "Having a proprietary control sets us apart from our competitors. All our knowledge and experience from the last 60 years is built into our software. And this also gives us a major benefit in after sales service – we have all the knowledge in-house."

It was this expertise that allowed LVD to make its second technological breakthrough, the development of its patented Easy-Form® adaptive forming system.

"Without the experience of designing a control, we would have never been able to develop an adaptive bending system," says Jean-Pierre Lefebvre. "It is these innovations that have given us the lead in press brake technology over such a long period."

Francis Vanneste underlines the importance of this deep understanding of the bending process: "When I talk to customers who understand technology they understand why LVD offers them a better system. They understand why they need our machines."

"Innovation has always been important to LVD. I think we have a very good team, and now a young team, that is creating innovative machines, controls and software. It is very important that we have developed our technology in-house and that we continue to do so."

Looking ahead, Jean-Pierre Lefebvre sees development helping customers do more with the equipment they have.

“They will be asking, ‘How can I improve my productivity? How can I reduce my cost per part? How can I produce more without investing more? How can I do things differently?’ This is where a lot of the new CADMAN software will be so important. Using CADMAN-OEE, for example, to analyse and optimize the productivity of their equipment, and giving them ways to do things differently with products like CADMAN-Job."

And it is customers that have driven, and will continue to drive, LVD’s success.

Says Jean-Pierre Lefebvre: “When I reflect on what the company has achieved over the past 60 years it makes me very grateful to the thousands and thousands of customers who kept us alive and growing buying our products. Some of those relationships are pretty much as old as the company."

Francis Vanneste concludes: "We don't just sell machines, we sell solutions. We don't just walk away when we have sold a machine; we build a relationship with the customer and continue to support them. If they have a problem, we are there."
Unattended OPERATION

Lights-out manufacturing with an automated laser system helps boost productivity for Anel Corp.
In 2011, Anel Corp. achieved 48 percent growth while maintaining 99 percent on-time deliveries to its customers, a feat achieved in part by incorporating lights-out laser manufacturing at its Winona, Miss., facility.

The custom fab shop produces parts for a variety of OEM customers but has been seeing a lot of growth recently in its hydraulic-tank and fuel-tank business. The growth helped drive the purchase of a Sirius 3015 Plus laser-cutting machine with a 10-shelf Compact Tower automation system for material handling from LVD Strippit Inc., says Randy Watkins, Anel’s general manager. Anel purchased its first LVD laser, a 3 kW shuttle table system, in 1997. The new machine is a 4 kW CO₂ laser.

“The tank business is a very competitive market,” says Watkins. “We felt we needed to be able to cut parts at the lowest cost possible. By running lights-out, that offered us the ability to reduce the cost on our laser-cut parts,” he says.

What Anel wanted to achieve with its second LVD laser was unattended operation, says Stefan Colle, laser product sales manager at Akron, N.Y.-based LVD Strippit. With the laser, the company purchased LVD’s Compact Tower with an integrated load/unload system. It fits vertically over the Sirius shuttle table system with a footprint not more than 10.67 m long and 7.62 m wide, says Colle. The tower system is available in four, six and 10-shelf models. It can handle sheets as large as 3050 mm by 1525 mm and material thicknesses up to 20 mm with a maximum load/unload pallet storage capacity of 3000 kg.

Anel works with a variety of material thicknesses, which is why the company chose the 10-shelf tower to accompany its Sirius laser, says Ardy Reed, Anel production manager. “All 10 shelves can’t be load shelves. Some have to be unload shelves. If you go with a smaller tower like a six-shelf or four-shelf, you’ve limited yourselves to the number of different material thicknesses or sizes you could cut,” he says.

One of the largest production challenges Anel had was getting material to and from the machine, says Watkins. “With the addition of the compact tower, we saw where we could make one or two deliveries a day to that machine and then provide the programming and it’s done the way it’s supposed to be,” he says. “You could have hours and hours of uninterrupted run time,” he says, noting he has seen the machine run in excess of 20 hours at a time.

More fabricators are looking into purchasing lasers with material-handling equipment that allow them to run the laser unattended during the weekend, notes Colle. “Being able to cut 100 extra days a year makes a lot of sense for a lot of people,” he says. “They’re all looking for better efficiency. That’s the answer.”
Introducing unattended operation to the company led to additional changes, says Watkins. “Having the 10-shelf tower being able to run like that caused us to look at how we were nesting, how we were running our production altogether,” he says. “It has definitely increased the number of hours that we cut and increased our productivity numbers in our cut department.”

The company’s older laser is a two table system. The most sheets operators can run at any time is two unassisted, which keeps jobs small, says Reed. “We would have two or three sheet nests that we would send out there so a guy could run those three, get the job complete, sort the parts out, then send them to production,” he says.

Being able to run lights-out changed the way Anel approached its job sizing. “Once we got the tower and were able to run unassisted, it made more sense to us to increase the number of jobs we put out to that particular machine,” says Reed. The existing laser can run an eight-hour shift and might receive eight small jobs to complete because it is reliant on workers to load and unload material, he says. The new laser, however, might receive only one or two very large jobs and run considerably longer.

“It boils down to they are able to take on bigger orders, bigger batches of parts with the same amount of people that they have,” says Colle.

The system takes raw material out of the tower, processes it and the cut parts go back into the tower, says Colle. “For instance, if you start on a Friday with a full tower of material, on Monday you can walk in the building and your tower can be full of finished parts,” he says. The more nests an operator enters into the job list, the more work the laser can accomplish without interruption.

The laser is simple to understand and operate, notes Reed. An employee generates a program and takes it to the machine during the day shift, loads it into the controller and starts the laser, he says. The system then runs into the second shift where an operator checks on it once or twice a night. The machine will run for 14 or 16 hours and then a worker sorts parts from the machine and distributes them throughout the plant for secondary processing, he says.

When it’s time to remove finished parts from the tower, the operator uses the touch screen controller that comes with the Compact Tower to communicate with it, says Colle. “He does not even have to interrupt the laser, he can just order the Compact Tower to bring out finished parts and, if necessary, at the same time order the tower to accept new raw material,” he says.

When comparing the company’s first laser with the latest LVD machine, Reed notes that the company “automated a lot of things that were operator dependent on this newer piece of equipment.” The largest change was the user interface, he says.
The laser is equipped with LVD Strippit’s 15" Touch-L controller, a new touch screen controller with an improved graphic user interface, says Colle. “There’s a lot that can be done now at the machine in terms of programming. The machine itself is loaded with features to avoid operator intervention or operator checks,” he says. “In the past, laser operators needed to clean nozzles, calibrate lenses. Now all of these things are basically automated.”

Training on the machine took less than two days in part because of Anel’s workers’ experience with the existing LVD laser, says Reed. “Our learning curve was a lot shorter. The only thing that we really had to understand was where the buttons were now,” he says.

Although they are more than a decade apart, both of Anel’s LVD lasers are working well for the company.

“We are very, very happy with it and happy with the service,” says Watkins. “That [first] machine, in service since 1997 and still running full production, weighed very heavily with the decision to go back to LVD” for a second laser, he says.

“Over the course of the years, we’ve developed a very good working relationship,” says Reed. “We’re on a first-name basis with those guys. We think of them as part of the family.”

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Hungary
SBS Kft, Erdotelek, has added a custom Easy-Form® 640/45 press brake with special tooling to its precision fabrication shop. The company manufactures components for crane industry booms up to 8000 mm as well as railway cars for the rail transport industry.

India
Solidus Hi-Tech Products Pvt. Ltd., South Bangalore, has installed a Strippit M-1225 turret punch press and Sirius 3015 4 kW laser cutting system for its precision sheet metal manufacturing operations. The high-capacity 47-station turret featured on the Strippit M-Series machine and the high-speed processing provided by the Sirius will further enhance the company’s production capabilities.

Italy
SMI, San Giovanni Bianco, has installed an Axel L 3015 with 4 kW laser source as well as a Strippit VX-1525 punch press with Pick-Sort material handling system at one of its production facilities. SMI Group is one of the world’s largest producers of packaging machines. The company designs and manufactures high technology bottling and packaging systems, up to 36000 bottles per hour, supplying major food and beverage corporations around the world.

Korea
DAE HWA Laser, Chung Joo, has purchased an Easy-Form® 400/40 tandem press brake for the manufacture of large booms for crane trucks. The two heavy-duty press brakes which comprise the tandem configuration can also be used independently for increased flexibility.

Malaysia
Leon Fuat Hardware Sdn. Bhd., Klang Valley, has installed a heavy-duty Impuls 6020 6 kW laser cutting system to complement its existing Axel S 3015 Linear 4 kW machine. Leon Fuat provides cutting, shearing and distribution of steel structures, sections, flat sheet, prime and secondary material with emphasis on stainless steel.

The Netherlands
Van Wamel B.V., Beneden-Leeuwen, has equipped its shop with an Easy-Form® 220/4000 press brake featuring T-axes supports for the production of parts used in the manufacture of its rotary mowers, flail mowers and grading machines. Van Wamel’s agricultural equipment is designed for professional use by fruit and vegetable growers.

Poland
Zakład Wykonastwa Urządzen Precyzyjnych NARZEDZIOWNIA Sp. z o.o., Łódź, has added a Sirius 3015 4 kW laser cutting system to its existing LVD laser cutting, punching and bending equipment. A principal subcontractor for ABB, the company has the capacity to perform a full range of cutting, bending, punching, rolling, welding, laser burning of sheet metal to a thickness of 20 mm.

Spain
Wittur Elevator Components S.A., Zaragoza, has installed a total of three LVD precision press brakes, including an Easy-Form® and two PPEC-5 press brakes, at its 42000 m² production facility. The company is part of the Wittur Group, the world’s leading independent supplier of components for the lift industry. The Group’s core products include doors, safety components and gearless drives, as well as cars, slings, counterweight frames and hydraulic drives.

U.S.A.
Altec, Roanoke, Virginia has added a large table Impuls 12530 4 kW laser cutting system to its production facility. Altec is a leading provider of products and services to the electric utility, telecommunications and contractor markets. The laser cutting system is designed for heavy plate fabrication with the capacity to accommodate up to sixteen 3 x 1.5 m sheets. The ability to load multiple workpieces increases Altec’s cutting time and reduces material handling.
SMI Group is one of the world’s largest producers of packaging machinery. The company designs and manufactures high technology bottling and packaging systems, including shrinkwrappers, cardboard sleeve multipackers and wrap-around casepackers for major food and beverage companies.
COMPETING ON A LARGE SCALE
On the coast of South Korea, in a landscape cluttered with precision subcontractors, flat plate sheet metal fabrication is a fiercely competitive business.

Jeong Woo Lee, owner of Ulsan-based Jeong Woo Tech, knows this all too well. In a move to raise the bar and so differentiate his shop from the many, Mr. Lee recently installed an LVD Impuls 8030, a high-power 6 kW CO₂ laser cutting system with the largest sheet carrying capacity in the industry.

“The 3 meter width of the cutting area is a key advantage of the machine,” comments Mr. Lee. “It gives us the edge in processing large, heavy duty plate. We can truly provide our customers with one-stop laser cutting services.”

A Large Advantage

The wide bed Impuls laser gives Jeong Woo Tech large capacity to handle heavy plate fabricating work for the ship building, oil refining and chemical industries; big jobs that despite its existing 3 x 1.5 meter and 4 x 2 meter laser cutting systems Jeong Woo Tech could not have processed with any degree of efficiency and accuracy.

Today, the 1900 square meter job shop employing 26, processes sheet sizes up to 8 x 3.1 meter and can load as many as sixteen 3 x 1.5 meter sheets at one time on the laser bed. The ability to load multiple workpieces increases the cutting to material handling ratio and allows for unmanned production of more standard size components. Using larger material sizes also improves the company’s sheet utilization and nesting efficiency.

A Change Of Course

Jeong Woo Tech was established in 1989 as a fabricator of valves for the chemical industry and later turned its focus to the production of refrigerated containers.

After more than 20 years, as competition steadily intensified and its work producing refrigerated containers came to a close, Mr. Lee made the bold decision to change course and transform his company into a service center oriented laser job shop.

As the shop’s laser expertise grew, Mr. Lee looked to larger opportunities and discovered a need for the processing of long, wide, thick parts in the heavily industrialized Ulsan area of the country. Adding a third laser cutting system would aid Mr. Lee in securing this work and would further define his niche, but Mr. Lee wanted a system that would give Jeong Woo Tech a bigger edge.

In his search for an additional laser machine, he made contact with LVD Korea, LVD’s Korean subsidiary based in Seoul. Following discussions with Managing Director Mr. DH Lee, and a visit to LVD’s manufacturing facility in Belgium, Mr. Lee found his solution in the Impuls.

The Impuls system provides a number of benefits for Jeong Woo Tech.

“The laser’s unique design gives us the technical advantage of a wide 3 meter bed and the relocation table change technology allows us to be more productive,” explains Mr. Lee.

Flat plates can be processed while the table is being loaded.

The laser’s flexibility is coupled with precision cutting capabilities. Jeong Woo Tech is able to process up to 25 mm mild steel, 15 mm aluminum, and 20 mm stainless steel. Sixty percent of its work is in mild steel in thicknesses from 12 to 20 mm. The remaining 40 percent of its jobs are stainless, many in thicker material gauges.

Superior Cut Quality

“The cut quality, especially in stainless up to 20 mm, is much better than what we’ve experienced with our other lasers,” reports Mr. Lee.

In most laser systems, the divergence of a laser beam is usually compensated by use of a telescope or adaptive optics. With these designs a variation in cut quality over
the cutting area can occur because of a change in the focal position or focal spot size.

Jeong Woo Tech’s Impuls system applies a unique constant beam length system which eliminates the divergence of the laser beam, ensuring identical results over the entire cutting area, at optimal speeds, with superior edge quality. The edge function feature facilitates cutting sharp corners, particularly in thicker plate, another advantage for the shop.

The machine’s integrated control, laser source and motor drive system make it easy for the company’s workers to operate and maintain the system.

The Bar Is Raised

As the first 3 meter large bed laser in the area, Jeong Woo Tech’s Impuls system provides distinct advantages for the small shop. As Mr. Lee works to target key vertical markets that require large plate fabricated components, he has also set his sites on new markets such as wind power turbines.

Mr. Lee concludes: “The Korea market is a very condensed market. The question is always, how can I be smarter than my competitor?

“We have a typical job shop culture,” says Mr. Lee. “But, we are all competing for the same business. I want to dominate the laser orders and I don’t want my customers going elsewhere. That is my main focus.”

For precision flat plate laser processing, Jeong Woo Tech has raised bar.
China Demonstration Centre Opened

Hubei Tri-Ring Metalforming Equipment Co., Ltd. (HD) in partnership with LVD Company nv has recently opened a new technology centre based at the company’s new 200000 square meter factory in Huangshi city, Hubei province China.

Located within HD’s new production complex, the 720 square meter demonstration and technology centre features a fully-equipped demonstration area, training room and meeting facilities.

The technology centre offers visitors easy access to LVD’s most advanced sheet metalworking equipment, including an Orion and Sirius Series high performance CO₂ laser cutting systems; precision press brakes ranging from an entry-level PPS model, mid-level PPEC to the advanced Easy-Form® Series featuring LVD’s patented Easy-Form® Laser adaptive forming technology. Also included is a Strippit P-Series CNC punch press, as well as LVD’s complete suite of CADMAN® offline programming software solutions.

LVD Increases Capacity to Generate Renewable Power

LVD Company has begun the second phase of solar panel installation for its production facilities as part of ongoing efforts to reduce the company’s energy costs and offset its carbon footprint.

Solar electrical cells have been installed on its production/assembly buildings as well as five other associated structures. Including phase one operations, a total space of 32500 square meters has been fitted with solar cells which will capture energy from sunlight. Once complete, the solar panel installation will enable LVD to generate more than 30% of its yearly electricity from a renewable energy source.

In addition to decreasing LVD’s power consumption, the solar cell installation also feeds renewable source power back to Belgium’s national grid during weekends and holidays. “We consider it a priority to reduce dependency on carbon generated power, reduce our energy costs and act in an environmentally responsible manner by minimizing the environmental impact of our production facilities,” said Carl Dewulf, President and Managing Director of the LVD Group.

LVD has partnered with Netherlands-based energy solutions provider Linea-Trovata and investment firm Sun Invest III to complete the project.

LVD Secures Multiple Machine Order From Xizi Otis

LVD Shanghai has secured a multiple machine order from Shanghai-based Xizi Otis, a joint venture company between Xizi, a China-based company, and Otis, an American elevator manufacturer.

An extensive review and justification process led to the order for 10 LVD machines, which includes a Sirius CO₂ laser cutting machine, two Strippit VX-Series punch presses, five PPEB series CNC press brakes and two MVS Series shears. The equipment will be installed at a new factory being constructed by Xizi Otis in the southwest city of Chongqin.

“Our project team worked closely and extensively with the Xizi Otis staff to carefully identify their sheet metalworking machinery needs, both from a technical and commercial standpoint,” explained John Zhao, general manager of LVD Shanghai. “We secured the order because we were able to demonstrate our expertise and advanced technology as well as our energy saving designs in the disciplines of punching, bending and laser cutting.”
The international construction equipment manufacturer Ammann has installed an LVD PPEB H 800t 8,1m Easy-Form press brake at its manufacturing site in Alfeld, Germany. The new machine, supplied through LVD’s local representative, Rainer Steinwedel of Friedrich-Karl Hoffman KG, will help the company achieve significant reductions in manufacturing costs by ensuring right-first-time accuracy, improving fit-up for automated welding and allowing larger components to be produced in one piece.

The Alfeld site manufactures complete asphalt mixing plants that are shipped all over the world. From weighing and drying the various aggregate components in carefully controlled proportions, to mixing the ingredients with bitumen and delivering the hot asphalt to waiting lorries or holding vessels, the plant is a self-contained unit that can produce hundreds of tonnes of asphalt an hour. Designs range from fixed plants that can provide the asphalt requirements for a whole region to smaller mobile units that can help create new infrastructure in developing regions.

Each plant can require around 200 fabricated modules, which in turn creates the need for as many as 1500 cut and formed plate components. New investments in the pre-fabrication shop at Alfeld, including the LVD press brake, will help to significantly reduce the number of components that need to be produced.

The LVD machine increases the maximum bending capacity from 3m wide to over 7m wide, so larger parts can now be produced in one piece rather than split into two parts and welded together. This means that as well as reducing the number of parts that need to be blanked and formed it also reduces the amount of welding required, cutting costs and shortening lead times.

Ralf Knopf, production manager at the Alfeld plant, says: “We didn’t just look at this as a case of investing in a replacement press brake; we wanted to optimise the whole of our pre-fabrication department. So as well as the press brake, that included an automatic sawing and drilling line, high bay storage and an automated robot welding cell.

“It is all about minimising manufacturing costs. The press brake is good in its own right, but the real benefits will come when we integrate it with our other processes and optimise our designs.”

He says that the basic requirement for the new press brake was that it was a large robust machine that could bend large-
format plates in thicker materials and adds: “Compared to its competitors, LVD offered innovative solutions, production efficiency and customer service combined with a good price-performance ratio.”

On the press brake that the LVD machine replaced, a lot of time was taken up in angle correction, so the Easy-Form adaptive bending system was another important plus point.

Most parts are formed from SC37 and SC52 hot rolled steel, with components nested on the plate to give maximum material utilisation. This means that the orientation of the blanks relative to the rolling direction can vary from part to part – which in turn gives variations in material properties that can affect the bend angle. The Easy-Form system measures the bend angle and corrects for any variations during the bending process so that every bend is formed to the correct angle – with no need for re-work or multiple trial bends.

“This makes for a faster production process and higher bend precision,” says Mr. Knopf. “And the benefits of that really become apparent in the downstream operations, such as the automated welding, where it gives us much better process stability.”

The machine is now working two shifts, which has allowed Ammann to bring work back in-house that was formerly outsourced. Mr. Knopf says this allows it to add more value in its own operations as well as making work flow better and simpler.

Batch sizes range from one-offs to production runs of around 200 stock parts, with plate thicknesses ranging from 3mm to 15mm. The smallest parts produced on the LVD press brake would be parts such as brackets and reinforcing plates that might measure around 150mm by 200, while the largest would make use of its full bending capacity.

So far Ammann has been using the new LVD press brake on a like-for-like basis – making the parts in the same way, and using the same designs, as they were made on the old machine.

“In the first six months since its installation, the LVD press brake has given us noticeably better quality and output. The bend angles and component dimensions are right, with no need for rework, and the parts go together much more easily and accurately for fabrication, so we can already see the benefits,” says Mr. Knopf.

He says that Ammann has now embarked on the process of optimising the design of the components to take full advantage of its new capabilities.

On one component, for example, a four chamber outlet hopper, the trapezoidal side plates were previously made from two formed plates welded together but will now be made in one piece. For each hopper that will save 4m of weld preparation and weld seam and 8m of laser cutting. Manufacturing time will be reduced by 2.5 hours per hopper and production costs by 150€ per hopper – adding up to 9750€ a year on just one fabricated assembly.

Another fabrication, an 8m-long elevator shaft, used to be made up of eight 2m-long formed parts with five flanges. Now it can be made from four 4m-long parts and only two flanges. The combination of Easy-Form bending, automated welding and an optimised design will give a cost saving per shaft of 486€ – equivalent to 85000€ a year across three sizes of shaft.

Mr. Knopf says: “It is still early days, but stage by stage we are refining the way we do things. We are using larger format plate, making large parts from one plate rather than welding two parts together, reducing handling, reducing the need for weld preparations, reducing amount of welding and increasing our bend lengths.

“It is very satisfying when you start off with a concept in your mind and everything comes together to prove that it was the right thing to do.”
Over the years manufacturers have looked to continually optimise the operation of press brakes. Smoother and faster hydraulics or electric drives, faster back gauges, easier to use and more powerful CNC controls, offline programming, robot automation part manipulation and the list goes on.

The fact of the matter remains that one of the biggest factors that affects the productivity and throughput of all press brakes or bending departments is the number of set ups carried out during each shift.

What’s the answer? Look inside this issue of Discovery.

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