



Press Release

Laser welding saves time and money

Laser welding produces high-quality seams // reduces the need for finishing work // enables efficient processing of small batch sizes

Düsseldorf, September 29, 2017 – One of TRUMPF's goals at the 'Schweißen und Schneiden' welding trade fair in Düsseldorf is to demonstrate how lasers can facilitate the welding process. "Laser welding may not be able to replace every MAG weld seam, but it offers plenty of advantages in the cases where it can," says Thomas Rupp, Head of Sheet Metal Laser Welding at TRUMPF. The ongoing trend towards greater product customization poses a challenge to companies as they seek ways to produce small batches more efficiently. Cost per part is a key factor – and one way to reduce it is by minimizing throughput time. Joining is one of the steps that offers particular potential in this regard. Depending on the quality requirements in each case, parts often require several minutes of finishing work to grind down beads on conventional weld seams. That's where laser welding can make a real difference: whatever the batch size, a laser can reduce the need for post-processing and accelerate the joining process. Investments in this technology quickly pay for themselves, even with small batch sizes. "In many cases you can cut costs by 50 percent or more," says Rupp.

Less finishing work required

Deciding which laser welding method is the most economical choice depends on the type of part you are processing.

Heat conduction welding joins together thin-walled parts and produces seams of very high surface quality. In many cases, this eliminates the need for any subsequent grinding and polishing of the joint, which is why this method is particularly suitable for parts that need an aesthetically superior finish. Another advantage of heat conduction welding is its low heat input, which means that less heat enters the part during machining. This reduces deformation and cuts the cost of subsequent straightening. Overall, this method requires considerably less post-processing, which significantly reduces the cost per part. In the case of a hood made from mild steel 1.5 millimeters thick, for example, the use of a laser has been shown to reduce machining time by 90 percent for a weld seam 122



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centimeters long. Savings potential of a similar magnitude has also been harnessed by the sheet metal processing company Schink Blechbearbeitung und Metallbau GmbH & Co. KG in the German town of Bad Rodach. This company managed to reduce the machining time required to weld together a flour duster for bakeries from approximately 110 minutes to approximately 10 minutes, including pre- and post-processing.

Fast welding, new opportunities

Deep penetration welding produces deep, narrow, high-strength weld seams. It can be used with both thin and thick-walled metal sheets, and it gets the job done fast. For example, the 600 centimeters of seams required to weld together a water tank made from stainless steel three millimeters thick can be handled by a laser at welding speeds of up to 5.4 meters a minute. At that rate, it takes less than 2.5 minutes to weld together the entire tank. Processing times as short as these drive down part costs. What's more, lasers enable users to open up new avenues of business. This flexible tool can handle a multitude of new joint types and geometries, even if the area to be welded is only accessible from one side. Examples of the challenges lasers can tackle include lap seams, concealed T-joints, and even materials of different thicknesses.

Boost capacity to boost earnings

Heat conduction and deep penetration methods offer the best quality when it comes to laser welding, though to achieve this the part should normally be subject to the tightest possible tolerance levels. The new FusionLine joining technique can be used to join parts, even when this involves the bridging of gaps. It smooths out any unevenness during the welding process and closes gaps up to one millimeter wide. That makes it possible to use the laser on many parts that were originally designed for conventional welding methods. As a result, FusionLine provides an easy introduction to the world of laser welding, enabling users to boost the capacity of their machines. The system can easily switch between FusionLine and other laser welding methods without retooling, even when it is halfway through processing a part.

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The plug-and-play integration of the TruLaser Weld 5000

The TruLaser Weld 5000 machine is designed for sheet metal manufacturers who are keen to enter the realm of laser welding. This automated laser welding system can handle heat conduction welding, deep penetration welding, and the FusionLine process. The system offers a range of loading and unloading solutions, including the possibility to load the next parts while welding is still taking place. The TRUMPF LaserNetwork system gives sheet metal manufacturers an economical way to gain a foothold in this new technology. It allows the welding machine to use a beam source from an existing machine, eliminating the price of the laser from the investment in the new system.

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Thomas Rupp

Thomas Rupp, Head of Sheet Metal Laser Welding at TRUMPF.



TruLaser Weld 5000

The TruLaser Weld 5000 automated laser welding system can handle heat conduction and deep penetration welding as well as the new FusionLine process.

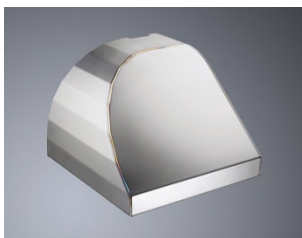


FusionLine

FusionLine can close gaps up to one millimeter wide. As a result, even components not optimized for laser welding can be processed profitably.

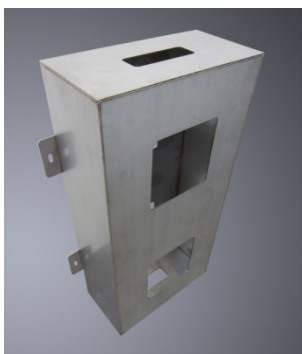


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Hood

Welding together a hood made from mild steel 1.5 millimeters thick using a laser has been shown to reduce machining time by 90 percent for a weld seam that is 122 centimeters long.



Water tank

Thanks to deep penetration welding, the 600 centimeters of weld seams required to produce a water tank can be processed in less than 2.5 minutes.



About TRUMPF

The high-technology company TRUMPF offers production solutions in the machine tool and laser sectors. It is driving digital connectivity in manufacturing industry through consulting, platform and software offers. TRUMPF is the world technological and market leader for machine tools used in flexible sheet metal processing, and also for industrial lasers.

In 2016/17, the TRUMPF Group – which has about 12,000 employees – achieved sales of 3.1 billion euros. With over 70 subsidiaries, it is represented in nearly all the countries of Europe, North and South America, and Asia. It has production facilities in Germany, France, Great Britain, Italy, Austria, Switzerland, Poland, the Czech Republic, the USA, Mexico, China and Japan.

For more information about TRUMPF go to www.trumpf.com

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