

Press Release

TRUMPF



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Press and Public Relations

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When time is of the essence

Sheet metal structures and the use of lasers can improve many workpieces

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The emphasis will be on sample parts in the TRUMPF booth at EMO this year. The parts were optimized in collaboration with customers and clearly demonstrate the advantages of modern sheet metal processing. Many milled parts can also be manufactured from sheet metal, tubes and profiles. But that's not all. Lasers can often be used to supplement milling and turning and can open up completely new processing possibilities. Ingenious designs lower costs and weight and sometimes eliminate entire production steps.

The machines used by Kronos AG's plants to seal the bottles have to be fast. Weight is crucial. Mounted on a turning plate, the sealers cannot weigh much or they will not be able to rotate rapidly. "Only systems with optimized weight can operate very quickly. TRUMPF technology helped us considerably reduce the weight of our sealers," says Martina Wrede, designer at Kronos. Several turned and milled parts, for example, were replaced by a single sheet metal part that is laser cut and then bent. The improvements resulted in the total number of parts needed for the sealer being reduced almost by half. The consequence was 38 percent less weight and much simpler milling and drilling. Since gaps are not allowed in the food industry for hygiene reasons, lasers are also used for welding, thereby closing the gaps instantaneously with almost no deformation.

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Taking full advantage of the fact that working with sheet metal is relatively inexpensive, Kronas has applied the technology beyond sealers. The side barriers used in transporting the bottles securely are no longer made of milled plastic but rather sheet metal. As there is a wide variety of bottles and no less a variety of customer hall layouts, the parts have to be produced according to a wide array of variables – and all as quickly as possible with little programming effort. Milling has simply not been up to the challenge. Laser-cut guidance plates are the clear winner.

TRUMPF also profits from “thinking sheet metal.” For the TruLaser 5030 housing bracket, two milled components were replaced by one sheet metal part that didn’t need welding, thanks to a simple yet clever design. The part fastens the housing for the energy chain to the cross beam, making the new version 85 percent less expensive than before.

The cross beam was also optimized. As the X axis of the laser flat-bed machine, it supports the Y and Z axes and absorbs the reaction forces that result when the machine accelerates. For this reason, the cross beam must be rigid. Both the rigidity and stability of the cross beam ultimately impact the precision of the laser cutting machine and the parts to be produced. Thanks to a ribbed, sealed box structure, these qualities are not only maintained, but the cross beam is also much lighter. The laser welds the box precisely and with little heat distortion. There is no need for adjusting or cleaning after welding, reducing the processing allowance by 60 percent.

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A laser-cut and laser-brazed hydraulic control block from **Voith Turbo H+L Hydraulic GmbH & Co. KG**, which was manufactured using the multilayer technique, is much smaller than its milled counterpart. The layers are individually laser cut or punched. The brazed block is finished by metal-cutting to obtain the necessary installation fit, screw surfaces and threads. The multilayer design not only reduces the size of the component, but also minimizes the flow resistance of the hydraulic fluid. "The new design enables compact hydraulic solutions that optimize flow. The machine's capacity increased by 25 percent," explains Bert Brahmer, technical director of Voith Turbo H+L Hydraulik GmbH & Co. KG.

And there are many other cases in which designers have discovered and stuck with TRUMPF technologies. Take the company **Heinz Kettler GmbH & Co. KG**. To produce exercise bike frames, it processes tunnel profiles with the 3D laser cutting machine TruLaser Tube. Not only does the end result look good, it saves about 40 percent of the tool cost compared to earlier methods.

And there's the **BMW Group's** manufacturing of axle differentials. The parts previously used screws, but today they are laser welded. As a result, there are no more projecting screws or flanges. Because the individual parts are smaller due to the laser-based design, 7 percent of the installation space is freed up, which is quite a lot when every millimeter counts. And the differential gear is lighter than before – that too is a rather unusual byproduct for the automo-

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tive industry, where weight reductions usually increase costs rather than lowering them. But of course, the “sheet metal alternative” has many faces.



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