

Even in the Smallest Workshop there is Enough Space – The Newest Laser Technology in a Compact Package

Industrial plates in general are not very large and there is no need for big machines producing them. But the labeling can be very challenging, and since many signs are made of different materials, their processing can be a challenge as well. Using the example of the “Schilderfabrik Rudolf Klöckner”, this article shows how to successfully combine traditional handcraft with state-of-the-art laser technology for the craft industry. “Schilderfabrik Rudolf Klöckner” therefore mainly relies on the META, a laser-cutting tool from Coherent.

Many different production steps are necessary in manufacturing industrial plates. Labeling can be processed by etching, with negative pressure or by screen printing. Cutting can be carried out before or after labeling, depending on the type and size of the plates. Typically, automation does not pay off with smaller batches, and for small quantities you have to rely on the workmanship of your employees.

“With more than a century of experience we supply top quality products,” says Kai Peter Schmidt, owner of the sign factory “Klöckner”. In his view, the secret of success is a clever combination of traditional manual work and modern manufacturing technology. Klöckner has been using a CNC punching machine for many years.

“Tradition does not oppose further development. We supplement our machine tools to meet the requirements of our customers and to reduce the cost of parts. The CNC punching machine has helped us a lot with metal parts. Signs and stainless steel front panels as well as aluminum parts with standard contours can be manufactured within a single processing step, thereby avoiding post-processing. Many contours still have to be further processed by hand at our presses and punches,” explains Kai Peter Schmidt.

Especially for smaller quantities, punching increases the parts cost substantially. Even basic punching tools cost several hundred Euros and need regular

maintenance. Additional costs are incurred for set-up and storage. Therefore, a flexible production process was needed to allow for the processing of complex contours in one single step while simultaneously reducing part costs.

“Of course I had thought about using a laser cutting machine, but even the common tools for metal cutting are too expensive and too big. Further, we do not need a big operating range for our signs and we simply don’t have enough space. Investment and running costs would have exceeded our budget,” reports Kai Peter Schmidt about his concerns.

However Kai Peter Schmidt was obsessed by the idea of manufacturing complex structures with a laser-processing tool in one production step. In seeking a solution for his idea, he came across the tool from Coherent. “These machines met my requirements exactly: a truly compact tool that’s able to cut metal. This machine perfectly fit into our production floor and complemented our production.”



Coherent’s laser cutting tool “META” has an operating range of 1.25m x 1.25m and can handle half sized medium format plates without any problem. Available laser powers range from 400 to 1000W enabling cutting of up to 3 mm of stainless steel. Employing CO₂ lasers, it is also possible to cut plastics and organics with high precision.

“While visiting the Coherent application center, the camera system for automatic identification of free programmable recording marks was demonstrated. This is an interesting feature for our sign production. Since printing on metals is one of our core competencies, having a machine able to automatically identify the print position could replace the full manual post production process,” Kai Peter Schmidt characterizes his first impressions. After being sure that the cutting and marking results also met his requirements, he decided to buy a META 1000.

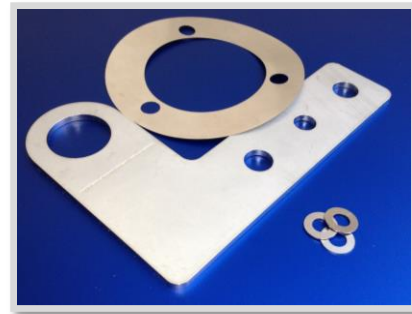


Installation of the META at the production floor was easy. There was no need for expensive foundations and due to its compact dimensions, no crane or other tool was needed. Within a few hours the tool was up and ready for operation.

“During the days following the installation, the Coherent technicians evaluated the correct cutting parameters for our special materials and showed us how to operate the tool.” In the meantime, several months of operation at Schilderfabrik Klöckner took place. Kai Peter Schmidt summarizes his experience with the META 1000 as follows: “The first few weeks were challenging for our coworkers since laser technology was completely new to us. But, thanks to the substantial support of Coherent, we have a good handle of the machine. Operating the machine is pretty easy. Most of our customers send us a CAD file featuring the contours and the layout. With the help of the comprehensive Coherent database, we select the correct cutting parameters.”

Kai Peter Schmidt uses a simple part - a 1 mm stainless steel stripe with two holes and radii at the edges. To describe how economical and useful the operation of META is. “Previously, it took us three processing steps to manufacture this simple part:

cutting with a hydraulic jar, punching the holes and after that, punching of the radii. All together this took us several minutes per part. Today we can cut this part with our META in a few seconds. And because of the superior quality of the cutting edges, no further reworking is required”.



“The META has become the centerpiece of our production. Many of our old punching tools have been disposed of and space freed up.” What holds true for simple parts is also valid for complex parts. “Today we can manufacture signs and front panels in stainless steel, aluminum and lots of other materials with almost every shape and engravings. We were able to increase our customer base by utilizing our META to capacity,” describes Kai Peter Schmidt. “With the current capacity, the META will have paid for itself in one year.”

Being asked what happened with the plastic processing, Kai Peter Schmidt responds: “Well, the plastics... of course we tested it from the beginning and it worked properly. This flexibility allows us to have, as a small enterprise, greater security. You never know what kind of orders you will get. But at the moment we are concentrating our production on metal parts. We are already cutting metal signs with adhesive foils on their backs without any heat affected zones or need for rework.”

“And, because of the META being so compact and gaining a lot of space by putting away the punching tools, we at Schilderfabrik Rudolf Klöckner can envision buying a second machine. Two Coherent META tools still require less space than a typical large format laser cutting machine. In the future we could envision an additional machine only for plastic processing or a META with fiber lasers for the cutting of brass and copper. Coherent is offering a lot of interesting machines...”