

## Overview: The most important automated deburring methods

These days, being able to deliver deburred parts is a sign of quality for sheet metal fabricators and is a must for remaining competitive in the industry. In comparison to manual deburring (hand grinding), automated deburring machines guarantee burr-free parts which can be seamlessly introduced into the downstream processes. We will give you an overview of the most important deburring processes and methods:

### Slag/dross removal

Particularly large ridges or melt residue is often described as slag or dross. It is often the byproduct created via plasma and oxyfuel-cutting. Removing slag by hand grinding is a disproportionately slow and costly process. A simple solution is to break the slag off with the help of a chisel. This is just one way of how the slag can be removed from the edges of the part. There are similar machine processes, which mimic the work of manual deslagging. An additional benefit of this machine process includes consumable cost savings in subsequent deburring and edge rounding processes. Whether or not you need a secondary operation for removing slag can be determined by a professional evaluation by one of our deburring experts of your parts.

### Initial deburring

Punching, laser and flame cutting parts often results in razor-sharp edges. Not only that, but sheet metal processing leaves behind melt residue, splatters and a burr on the edge of the part. Grinding units are mostly utilized for removing that burr. They utilize a wide belt to guide the abrasive consumable over two rollers. One of the rollers functions as a method of transport, and the other as a contact roller which pushes the abrasive consumable against the material. These kinds of wide belt units, however, have the disadvantage of leaving behind a secondary burr as a result of the grinding process. This can then potentially damage the abrasive consumable. To solve this problem, ARKU offers a grinding drum which is backed up by a soft rubber backing. The rubber backing is especially good at removing even tough dross since it allows the grinding drum to conform around the edge of the material.

## Removing the oxide layer

Oxygen cutting, such as traditional CO2 laser cutting, can leave behind an oxide layer along the cutting edges, which can cause problems in subsequent processes. If the parts are then welded or painted, the oxide layer may flake off along with the coating, resulting in corrosion. Therefore, before any further processing of the parts, you should remove the oxide layer. When processing a heavy plate, the preferred method is to use an annealing or shot blast furnace. The right kind of deburring machine can process even thin materials. Additionally, the machinery can be used to automate the oxide removal process. However, with the introduction of the fiber laser, removing oxide is slowly becoming less important. If you only work with stainless steel or aluminum, using an automated machine to remove the oxide layer is not necessary at all.

## Edge-rounding

After grinding, the problem of sharp edges left behind by cutting and punching persists. Not only can these edges lead to injury, but they can also cause paint, zinc or other coatings not to adhere to the part for very long. For this reason, many customers are increasingly demanding rounded edges from their suppliers. Edge rounding tools such as grinding drums, sanding and wire brushes are now common processing medias used in modern automated deburring machines. A generally accepted "best practice" does not exist. The problem to be solved is ultimately to decide which method works best in terms of both functionality and cost-savings. Laser shop jobs often receive their orders with specifications for the edge radius. The most commonly used radii are between 0.2 to 0.5 mm (.008" - .020").

## The final step

Many customers expect that their deburring machines can supply a specific surface finish. Almost all types of deburring processes produce a certain kind of surface texture by default. You should consider whether it makes sense to include surface finishing in the deburring process, since most parts will undergo further downstream processing which can result in surface scratches or damage. Therefore, it may be better to hold off on the surface finish until after the deburring process.