High Pressure Water De-Burring: Is it for You?

High pressure de-burring utilizes water jet streams from 3,000 on past 7,500 psi to knock unwanted burrs from finished parts. By processing cast, cut or bored parts through a high pressure system, companies are able to create high quality, consistently finished parts each time with no possibility of diminished effectiveness. High pressure deburring operations though, do have limited applications.

Not all metal cutters leave the same types of burrs in the same location every time. In these cases of inconsistent burr removal, brushes and media tumblers are a better choice for the company. The following paragraphs outline some other deburring options and explain why particular method is suited for different

Depending on a variety of factors such as casting condition, substrate thickness and cutting tool condition, unacceptable burrs can be left in parts. These can be removed via high pressure spray stream, power brushes, media in tumble units, or hydraulically controlled, probing brushes. Media and brushes can deliver acceptable results, but they do carry some negative characteristics.

Tumble deburr systems require the parts to be unloaded and dropped into a media filled tumble unit. They are dumped, retrieved, and delivered to the next manufacturing stage via bins. If this process delivers satisfactory deburring results for the manufacturer then the only thing left to do is to remove the media residue from the parts. In order to do that, a washer must be placed after the tumbler to sufficiently clean any soil created in the media tumbling process.

Although media tumbling units are relatively inexpensive, multiple part handling locations mean more operators are required to run the manufacturing cell. In addition, media residue must be washed off of the parts and a low pressure parts washer will be required to complete this task. In addition, this media tumbling assumes each part can handle rough part on part contact. Any part that cannot is not permitted to consider this method of deburring parts.

Complex parts can contain intermittent and inconsistent burrs. Surface brushes used to deburr extended rough faces are appropriate for these parts. An electrically energized brush is used to attack the part. This is an effective tool for cleaning parts that do not always have burrs in the same location. Brush wear in this process is tough to predict. The more the brush wears the less effective the deburring becomes. This makes it critical to schedule brush replacement prior to reaching the level of acceptable finish. Although, this method relies upon diligent maintenance, this remains the ideal system for removing a wide range of burr sizes from an extended surface area.

Probing brushes are similar to surface brushes in their applications and limitations. These brushes are directed into the holes created by the tooling while the casting was bored. Like the surface brushes, probing brushes are most appropriate for parts that have inconsistent burr patterns. As is the case with surface brushes, these brushes are unpredictable in their wear and it is impossible to predict when they will need replacement.

The difficulty of knowing when to replace surface and probing brushes can give manufacturers headaches. Often, an inadequate brush is not detected until a customer complains to the manufacturer about unacceptable leftover burrs. Unfortunately for the company, by the time they receive the complaint from the customer; many shipments of

unacceptable parts may have been shipped. Internal quality checks can help to schedule brush maintenance, but the time and labor involved with this maintenance can be prohibitive.

Methods of de-burring can be described through a simple analogy. Imagine the burrs as cans sitting atop a wall. Removing the burrs with a powered brush is analogous to removing the cans with a hand grenade. You will remove all the cans, but there is a possibility of damage to the wall itself. Removing burrs with tumbling media is like clearing a mountainside with a landslide. The rough patches are removed, but so is the beauty. The hydro system is a sharpshooter, knocking the burrs off with accuracy and leaving the wall, mountainside or part untouched.

Therefore, if a part has consistent placement of burrs, a high-pressure direct spray system is appropriate. An example of this can be found in an automotive transmission plant. An aluminum valve body, once milled, is left with a consistent roll over bore in the spool bore. A power brush cannot access the hole where the spur is located. A probing brush may be able to access the burr, but there is the chance that it will damage the machined surface of the part and render it scrap.

A high-pressure water stream can shoot into the hole and knock the bore off with precision. It can then flush the burr out, and do no damage to the machined surface. Assuming the burr is formed in the correct spot in the prior stages, the high-pressure water system will deliver the best quality possible every time.

Before committing to a hydro deburring system, a company must make sure it will work for their part. If it does, then they must determine if the money they will make from delivering a high-quality end product is worth the cost of the machine.