MANIFOLDS AND THE BURR CONDITION

As manufacturing processes continue to become more and more demanding, a greater focus is put on burrs and their removal from parts. Regardless if a manifold exists in the market of automotive, aerospace, energy, etc. the presence of burrs can be the difference between securing a contract or part failure and a missed opportunity. As always though the counter to more stringent practices, is minimizing increasing costs to keep parts affordable in an ever-competitive market.

Currently, one of the most used methods of deburring is still a manual process. Plucking / picking, brushing, etc. are all still methods commonly employed to remove these burrs. However, these methods are costly and time consuming due to each part needing to be physically reviewed, deburred, and checked by hand and also opens a new door of headaches. Not enough people and it creates a bottle neck of part turn around, too many and it increases the cost per part too much to be competitive.

Not only this, but with as many cross holes that can be present in a manifold, it allows room for human error during visual inspections for burrs to be missed or not fully removed.

This is where THERMAL ENERGY METHOD (or TEM for short) may be able to help.

WHAT IS TEM HOW DOES TEM WORK?

In its simplest form, TEM is a contained, and controlled, ignition. This ignition flashes away loose particles and burrs in a matter of seconds. Leaving you with a burr free or nearly burr free part. Often, multiple parts can be processed at once as well.

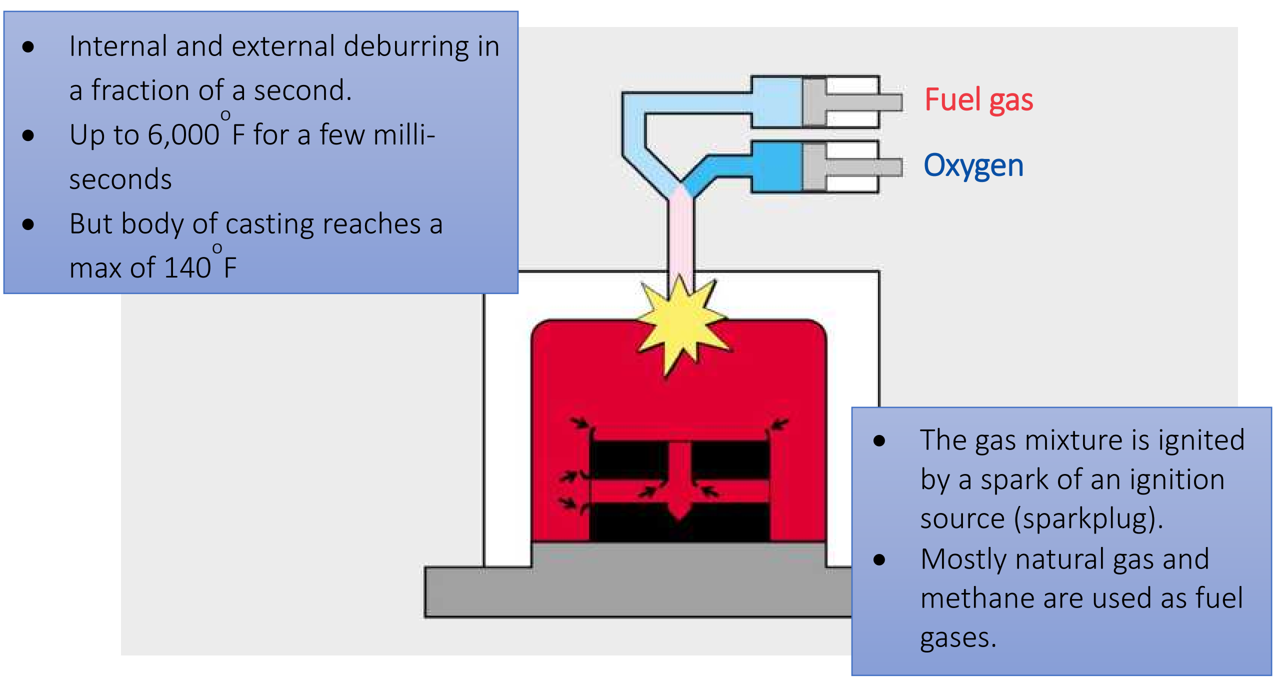
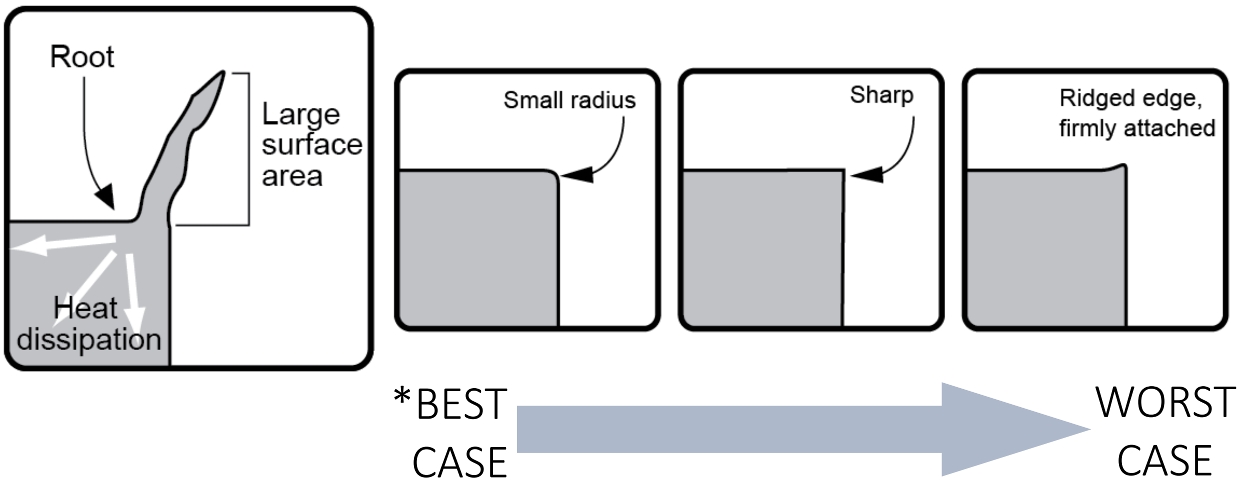


Figure 1: Depiction and Details of the TEM Method at Work

WHAT KINDS OF BURRS CAN TEM REMOVE?

The level of burr removal is dependent on the overall size and incoming condition of the burr. In the example below, depending on the root thickness of the burr, your edge may fall somewhere on the spectrum shown (between a small radius or a ridged edge).



***NOTE:** Defined edge radiusing is not feasible

Figure 2: Spectrum of edge cases after TEM

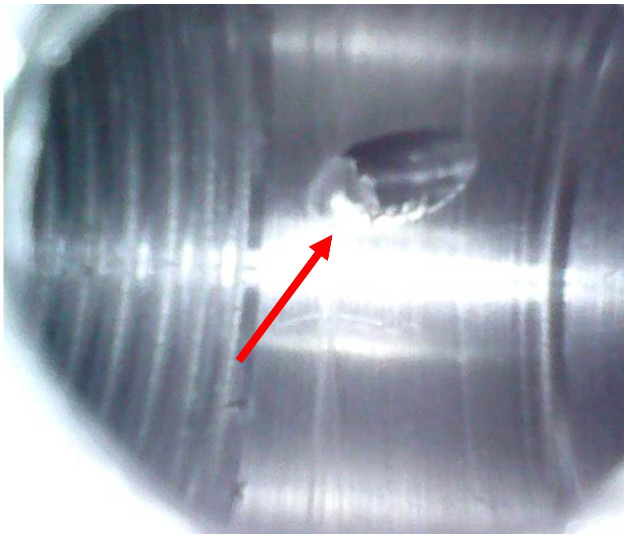
It is important to reiterate that the effectiveness of TEM is dependent on the thickness and size of the burr and that the size of a burr is often a direct correlation to the quality and age of the tooling used to produce manifolds and other various parts. If a burr is too large, the result could be splatter remnants left on the part. If the burr root is too thick, as shown above, the result may be a ridged, firmly attached, edge.

However, regardless if these conditions may be the case, by either implementing a more proactive tooling cycle change or using minimal labor efforts (or a combination of both), in conjunction with TEM significant cycle time improvement and cost savings can still be seen. For cases showing more predictable burr sizes, manual labor processes may even be able to be completely removed for maximum cost savings. Ensuring manufacturers parts are always competitively priced.

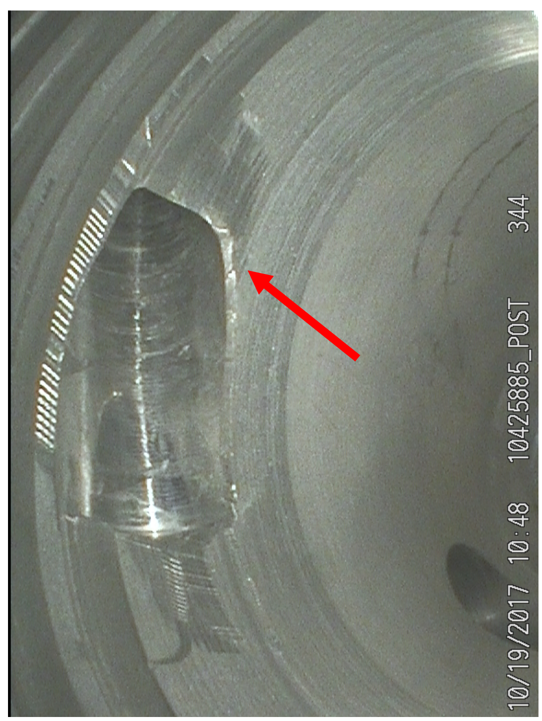
Reference the below images for examples of these such cases.

Before **After**

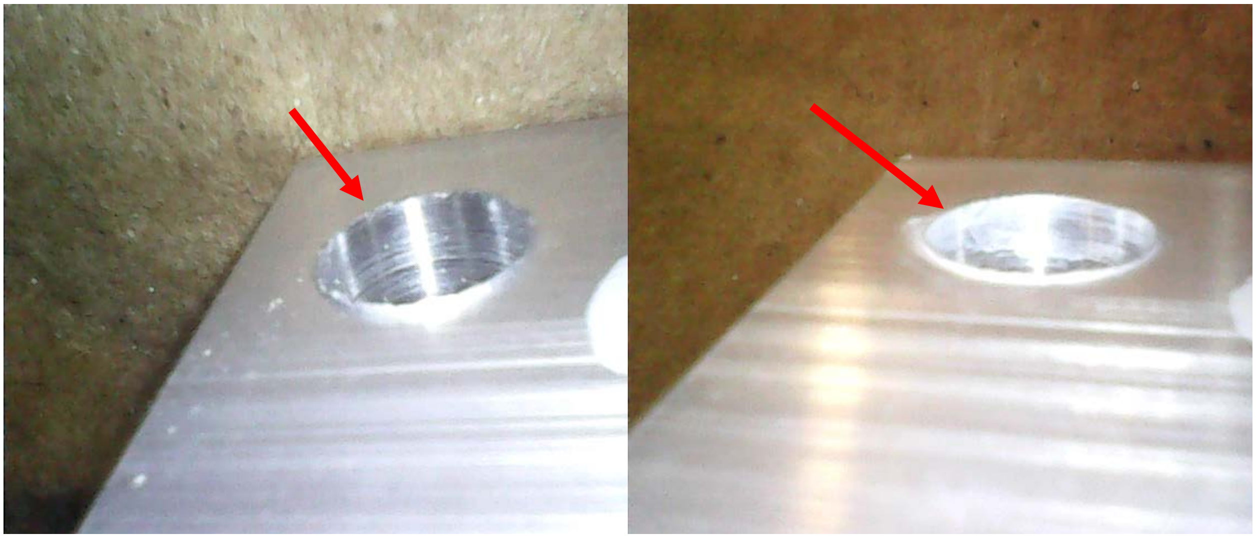
Example of a thin, flake like burr being removed from TEM.



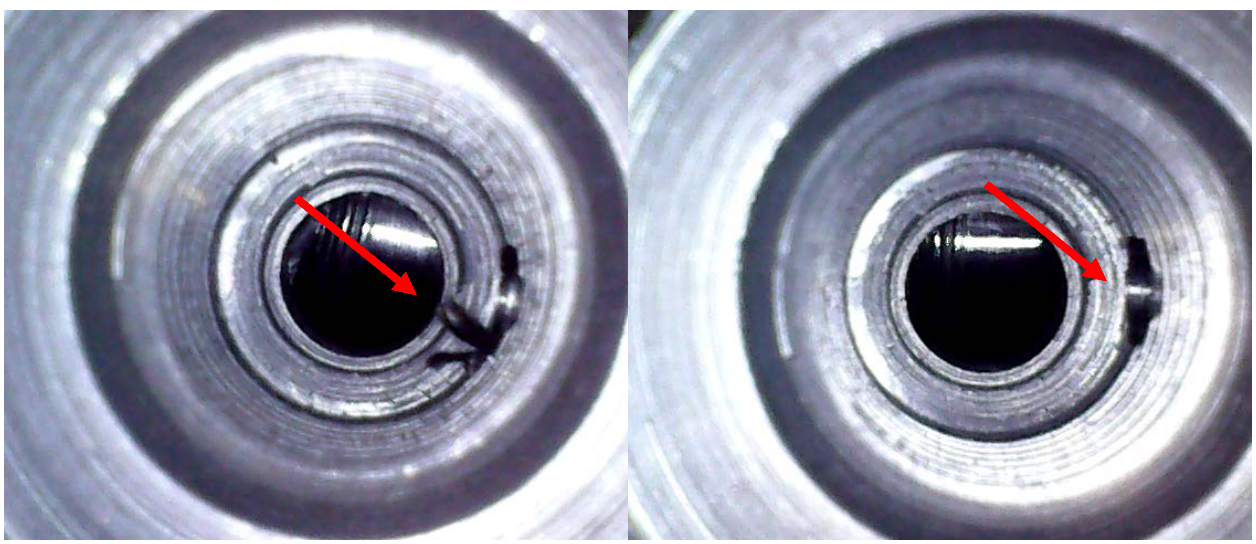
Example of a rough, broken burr being removed from TEM.



Example of a thick root burr being brought down to a rough, ridged, edge from TEM.



Example of a feathered / sliver type burr being removed by TEM.



Examples of unprocessable incoming burr conditions. Would still require removal.