

MAXIMIZING OUTPUT: DRILLING VS. CUTTING HOLES A TIME COMPARISON



**WHICH PROCESS
BEST SUITS YOUR
PRODUCTION?**

DO YOU KNOW THE IDEAL CONDITIONS FOR DRILLING VS. THERMAL CUTTING HOLES WHEN PRODUCING HOLES IN STEEL?

The time it takes for plasma cutting holes in mild steel is predominantly affected by the thickness of the material and the hole size, while the time to drill holes mainly depends on the machineability and thickness of the material.

Both drilling and cutting are viable processes to create holes and each has certain application ranges where one is faster than the other. Let's go through some examples in mild steel to get an idea of the time difference between drilling and cutting holes. This can help you lean towards one process or the other based on your specific production details.

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SMALL HOLES? DRILLING PREFERRED

There are issues with plasma cutting quality when the hole diameter is smaller than the material thickness, so drilling is almost always preferred. Even from a time perspective, drilling is usually faster than cutting for small holes. For hole diameters smaller than 2x the thickness of the material, the cutting speed needs to be decreased to reduce hole taper to a minimum. Generally speaking, plasma cutting small diameter holes increases processing time, while drilling small diameter holes can decrease the time it takes to produce your parts.



DRILLING VS. CUTTING COMPARISON 14MM AND 22MM HOLE DIAMETERS IN 12MM THICK MATERIAL



12mm | 1/2" - Ø 22mm | 7/8"





00:00:06:21
DRILLING



00:00:09:11
CUTTING



V310
CUTTING

V320
CUTTING AND DRILLING

V325
CUTTING AND DRILLING

THICK MATERIAL? DRILLING PREFERRED

Thick materials need to have very large hole diameters in order for plasma cutting to be better from a time and quality standpoint. You can see from the video below, that time differences appear quite small per hole. However, in large nestings those small seconds can add up to significant time savings over the course of a full day of production. All additional options (such as clamping the plate or height sensing) are also included in the comparison.



It's also important to note that a large number of holes usually means less space between each hole and less height sensing sequences with plasma cutting. The total difference for an entire nest could be less than just the difference between each hole, as the plasma torch can reduce the number of height-sensing probes needed during overall production.



DRILLING VS. CUTTING COMPARISON 26MM AND 32MM HOLE DIAMETERS IN 25MM THICK MATERIAL



25mm | 1" - Ø 32mm | 1-1/4"





00:00:10:10
DRILLING



00:00:15:15
CUTTING

LARGE VARIATIONS IN HOLE DIAMETER? PLASMA CUTTING PREFERRED



There are many reasons companies decide to plasma cut holes instead of drilling. If the part has many different hole diameters to produce, then drilling time increases because of the amount of tool changes required. Every machine also has a maximum number of tools it's able to automatically change out without manual intervention.

The time difference in absolute values are quite small and there is a break-even point where the amount of different diameters and tool changes required counteracts the time savings gained by drilling instead of cutting holes. For example: in 12mm thick material with an average 18mm hole diameter, the break-even point is estimated to be that a tool change is needed for every 10 holes drilled.



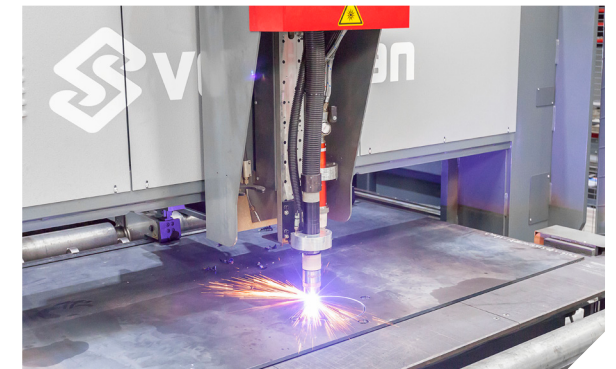
V304
CUTTING



V302
CUTTING

COMPARED TO OLDER TECHNOLOGY

It's important to mention that this is not a full overview of drilling vs. cutting. New technologies like pierce detection, increased average hole speed and reduced initial height sensing are the latest innovations present in **Voortman plasma cutting machines** and have led to reduced cutting time compared to drilling in some cases. Cutting holes with an older plasma model will show increased cutting time over newer models with today's latest plasma technology.



BETTER MACHINE DESIGN = BETTER OUTPUT

These time comparisons are heavily influenced by machine design. A low-end machine will likely have lower feed rates that affect drilling time significantly. Voortman ensures only the best quality components are used in the robust plate processing machine range, so you can drill and cut holes quickly without compromising the quality required for the project. Interested in our combined plate drilling and cutting machine solutions? Take a look at our new **V310** and the **V320** and **V325**. Interested in cutting only? Then the **V302** or **V304** plasma cutting machines might be interesting to explore!

**GET IN TOUCH TO FIND OUT MORE ABOUT WHICH
PROCESS AND SOLUTIONS BEST SUITS YOUR
PRODUCTION!**

GET IN TOUCH!