Tooling Application Story

HORN DM SAVES OPERATIONS ON DIFFICULT DRILLING

Cast 316 stainless steel is a difficult material to machine. Moreover, achieving a clean entry on any material when drilling into an angled or curved surface is an awkward proposition. When these challenges are combined the potential for generating scrap or breaking the tooling is much increased.

At one subcontract machine shop in the UK the difficulties attendant on this type of job have been solved by using a Horn DM Series twin bladed replaceable tip slot milling cutter in plunge/drilling mode.

The high stability of the DM tool allows a 10 mm diameter counter bore to be plunge cut straight into a curved as-cast surface. Cutting data is 100 m/min with feed of 0.05 mm/rev. This machines flat bottom bores for subsequent centre drilling and 6 mm drilling operations. The route provides a 30 per cent time saving compared with previous methods. As well as being faster, tooling cost is lower than before.

Before the Horn tool was made available the end user had, of necessity, adopted a 'safe' machining process requiring five steps. A 6 mm slot drill was followed with a centre drill. This then provided stable positioning and guidance for a 6 mm drill. The 10 mm counter bore was then produced in a roughing and finishing operation by interpolating with a 6 mm ripping cutter followed by a 6 mm end mill.

Both the machining process and the CNC programming requirement are much simpler using Horn DM, whilst the machining cycle time, cut from nearly 9 minutes to just over 6 minutes, offers a significant advantage.

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