Tooling Application Story

- Large Diameter Thread Cutting

HORN THREAD MILLING TAPS INTO PRODUCTIVITY AND QUALITY ON LARGE DIAMETER THREADS

Thread milling tooling supplied by Horn UK has provided TM Specialist Engineers Ltd., Kingswinford, with a high productivity method for machining large diameter threads in carbon steel. So successful did this initial project prove to be that TM subsequently commissioned CBN-tipped Horn thread milling tools for machining high toughness material.

The project was concerned with manufacture of large shielding blocks required for the £140 million ISIS particle accelerator second target station project at the Rutherford Appleton Laboratory, Oxford. These components each needed a number of lifting point locations, demanding generation of M36 x 4mm blind threads to a depth of 70 mm. In all, around 830 threads needed to be generated.

TM Specialist Engineers has nearly 60 years experience of heavy fabrication, large component machining and custom machine building. The company specialises in combining large size with high precision for the benefit of power generation, aerospace, defence and large scale scientific applications.

Though it is feasible to produce this size of thread by manual tapping, the number required, the fact that they were blind and the need for consistent quality led TM Specialist Engineers to consider CNC thread milling as a means of optimising both quality and productivity.

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Machine shop manager Martyn Crompton observed. “Manual tapping would have been fairly slow and interrupted the flow of work. In addition tapping carried a risk of thread damage due to broken or worn taps and there was also a possibility of tap breakage.”

TM had not previously been a user of Horn tooling. However one of the company’s employees had prior experience of using the Horn thread milling system and recommended that contact be made with Horn UK.

“The response from Horn UK was immediate,” Mr Crompton recalled. “We were able to conduct trials prior to starting manufacture of the blocks which then allowed production to flow smoothly. The Horn UK applications engineer gave us complete support in respect of tooling selection, CNC programming for the threading cycle and cutting data.”

A standard Type 328 three tooth threading insert mounted on an M328 shank was used for the trial Cutting speed of 220 m/min and feedrate of 470 mm/min combined with 2.5 mm depth of cut provided a cycle time of less than two minutes per thread.

“Using the Horn tooling provided us with a very high quality thread in a fraction of the time that would have been necessary for tapping.” Mr Crompton remarked. “The method also provides us with peace of mind as the process is much more controlled. This has encouraged us to look to use Horn’s tooling and applications expertise on other projects.”

Further information is available from:

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