

Wrexham based plastic injection mould tool maker Associated Toolmakers Ltd re-evaluates Toolox 44 after new machining trials

3 ½ years ago Associated Toolmakers Ltd were asked to make a very high precision plastic injection mould tool for the oil industry. The tool required 1,400 holes which were 7 mm diameter and had to have very tight tolerances, the plastic component was a zig zag shape which when moulded formed a filter system which had to stack on top of each other in perfect alignment.

Because of the complex geometry and close tolerances of the design, using a conventional tool steel was not the preferred choice, the mould needed to be strong and hard wearing but trying to keep to the tight tolerances due to distortion after heat treatment was a major issue. Toolox 44 was the chosen material because its delivery condition was 45 HRC and required no further processes and it is extremely stable after machining.

Unfortunately at that time we were still researching and testing the machining properties on this relatively new grade of material and because the required data was not yet available it proved extremely difficult to produce this complex tool. Using standard carbide drills it took well over 100 hours to drill all the holes and ream them for the tight tolerance, they could not drill more than 10 - 15 holes per drill before they were damaged beyond repair. The time factor and the costs made the job a nightmare but due to Associated Toolmakers skill and determination the mould was finished accurately and has given excellent performance for the last three years.

Their customer now has a new design of a similar mould he would like Associated to make so I was contacted for some guidance. Fortunately we have just produced our new machining brochure which we have worked extensively on over the last couple of years and it includes all the machining parameters for drilling, tapping, milling and recommends speeds and feeds for different size cutters etc. Also recommended are the different types of carbide drills and taps along with which type of tips to use for milling along with photos and examples of the tool life achieved in our tests in Sweden for all the Toolox grades.

After discussions I organised a test piece of Toolox 44 from our agent Carrs Tool Steels to be sent to Associated and they carried out in house machining tests for milling, drilling and reaming following our recommendations in the brochure. The results were amazing, they drilled 356 holes very quickly and easily with just one drill which shows no real sign of wear and should easily drill a lot more holes. They also milled the piece to our recommendations and found it machined much easier and quicker than before giving them the confidence that the new tool will be a much easier and pleasant experience this time.

A very important aspect of this trial is that now they have the confidence and knowledge of how to machine Toolox 44 successfully and they are very happy and interested to look at new applications where Toolox could be the perfect solution giving some major benefits.

Toolox 44 Test Piece

