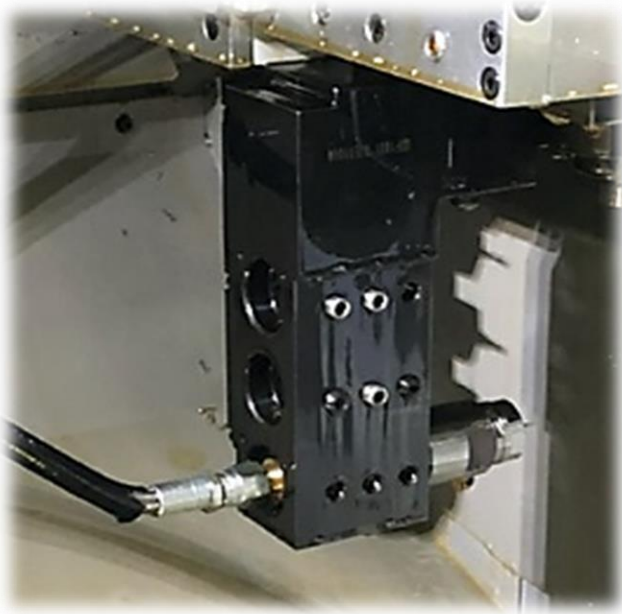


20 Hour ROI with new Coolant Driven High Speed Spindles

By Teddy Jaffe, WTO

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“When an interim job turns into a major contract you have to cut cost, and we had to cut cost in half,” says Yaron Wolf of Ar El Automatic and CNC Machining Ltd. This particular part was originally processed on a Citizen Cincom L32, using the machine’s 6,000 RPM spindle units. Yaron had heard of WTO’s CoolSpeed® spindles, and decided that this was the right time to try one.



The first step included measuring the actual oil/coolant pressure at the tool block where the CoolSpeed® unit would be attached to. The result was 22 bars (319 psi), which would drive the CoolSpeed® unit at 55,000 rpm. That is 9 times faster than the machine spindle unit.

The CoolSpeed® mini EX4 model CM-CE-R016-046-4-A is able to deliver up to 75,000 rpm. This model uses a 16 mm shank and was selected for this application.



CM-CE-R016-046-4-A (TBE1304.16)

The micro tool used for this task was an M.A. Ford® TuffCut® GP 2 Flute End Mill with dia. 0.5 mm and shaft dia. 3 mm.

The biggest challenge with the new process was to achieve the accuracy required in a timely manner, and cut down on tool breakage. With 4 microns dynamic run-out and ultra-high rotation speed of 55,000 rpm, CoolSpeed® exceeded the expectations. Yaron ended up using two end mills for the entire lot of 1,600 pieces. Problem solved!



6061 T6 Aluminum plate used in an electronics assembly. US dime as size reference.

Cost Savings Calculation:

Original cycle time using the machine drive (6,000 rpm):	15 mins
New cycle time using CoolSpeed® (55,000 rpm):	2 mins
Machine hour rate:	\$ 60/hour*
Number of shifts:	2*
Hours per shift:	8 hours
Working days:	295*
Tool life improvement:	400%
Productivity improvement:	750%
ROI:	< 20 hours
Saving per part in USD:	\$13.20
Annual saving in USD:	\$1,401,840

*estimate for use in calculation

Ar-El is a leading principal supplier of CNC Swiss machining, precision turning/milling of components & assemblies in high volume production since 1970. They serve multiple industries segments, such as dental, medical, aerospace, irrigation and Hi-Tech.

For more information contact:

www.ar-el.co.il

www.coolspeed.com