DIMAC Open House highlights productivity gains through high-pressure coolant

03 March 2011 – Checking out the latest machine tool accessories to achieve productivity gains was among the reasons for more than 60 Melbourne-based manufacturers stopping by the DIMAC office in Mulgrave, VIC, for the company's two day Open House event from 8 to 9 February 2011.

The event was a way for local advanced manufacturers to learn what DIMAC has to offer to make their workshop more productive, innovative and environmentally friendly.

Naturally, all technologies offered by DIMAC were demonstrated, from collet chucks, soft jaws, a coolant evaporator, fixturing and workholding solutions to the Australian-made Swarf Crusher and DIMAC service products.

However, it was the live demonstration of high-pressure coolant that generated the "lion's share" of visitors' interest. To demonstrate the number of benefits to applying high-pressure coolant using the on-demand coolant system made by Cooljet, DIMAC set up a horizontal machining centre, retrofitted with a range of accessories. Apart from the high-pressure coolant, the machine was fitted with a mist extractor, a spin window for clear visibility into the machine, a Renishaw probe, an oil skimmer and the Zebra Oasis coolant maintenance system.

"During the metal cutting processes, significant heat is generated at the tool and workpiece interface, primarily from the effects of friction, which can be detrimental to the tool and the workpiece," DIMAC Director Paul Fowler explains. "With the on-demand Cooljet coolant system cutting fluids are pumped to pressures of 1000psi (70 bar) or more, and are accurately directed to the cutting zone through an appropriate nozzle. The resultant jet stream of coolant is able to penetrate the high temperature cutting zone, delivering vital lubricants to the cut."

"Temperatures are dramatically decreased due to the reduced friction," he goes on to explain. "This is very evident by observing the chips produced which are well formed and are generally not heat discoloured. The coolant system also effectively forces chips away from the cutting area especially in deep-hole drilling or pocket machining."

During the Open House show, DIMAC demonstrated these benefits through live drilling operations. Using a Dormer solid carbide drill, the machining centre was drilling 8mm diameter holes, 75mm deep at 3500revs/min with a 0.26 feed/rev. The whole process only took 6sec, which would normally take around 1.15min, Mr Fowler explains.

"If you are targeting to reduce process cycle times, you will find that your tool life will be significantly extended, and the quality of the cut is considerably increased after applying high-pressure coolant. Its applications are extensive from drilling, grooving, boring, cutting of hard metals which have a high nickel content, to small tooling applications."

In order to deal with the huge amount of oil used and swarf produced during machining processes, DIMAC offers a range of coolant maintenance products, which were demonstrated on the same machining centre on show over the two days.

"We are using an oil skimmer to skim up the surface oil coming from the sideway lubrication system," Mr Fowler says. "It's skimmed on the belt, comes out of the unit into a gravity separator. The oil comes out of the back of the machine while the coolant is returned to the machine. Moreover, we are also using a coolant maintenance system, the Zebra Oasis system, which is connected to the machine via two hoses. Here, we are skimming off the top of the surface, all the oil is picked up by the diaphragm pump, the dirty coolant comes up through a pre-filter into a settling tank, settling the oil out."

"The resultant clean coolant is picked up from the tank, comes through a 5-micron replaceable filter and returns the clean coolant back to the machine," Mr Fowler adds. "This process would typically run about 4 hours at the back of the machine and then move on to the next machine. This way, your coolant is kept in a good condition and can prolong the life of your coolant for up to 3 years!"

DIMAC will continue finding the best solutions, methods and products for its customers to help them improve productivity and maximise their return on investment. The success of the Open House event shows that DIMAC is offering the right and most of all high-quality products to support Australian advanced manufacturers to stay ahead of the game.

For more info please visit www.dimac.com.au

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