



The latest mould temperature control technologies aim to ensure processors get the maximum from their cooling system investments by improving performance and monitoring

Moulders keep their cool

Mould cooling is critical in achieving optimum moulding cycle times and part quality. However, many would argue it has not seen the same level of focus on system performance and monitoring as has been seen in other areas of the injection moulding process. That, however, is now changing and the latest developments in the area of mould temperature control are aimed at ensuring that processors get the maximum from their cooling system investments.

Italian firm Aquatech, a wholly owned subsidiary of Piovan set up at the beginning of this year to focus exclusively on industrial water cooling systems, believes that bringing the source of chilled water to the moulding machine is the optimum solution for most plastic injection moulding plants. "This is a solution for customers that need flexibility in their process and that need to reduce cycle times and increase quality of production, says Stefano Pavanello, Aquatech sales manager for western Europe.

Pavanello says the company's approach is to have a centralised source of process cooling water running at a temperature of around 30°C, which can typically be produced using free cooling technology, and take this to the moulding machine where a dedicated Digitemp temperature controller is used to produce chilled water and to manage circulation around the mould.

The Digitemp unit comprises an integrated chiller and thermoregulator that can maintain two different temperatures in two pumped circuits, important to

allow moulders the flexibility to run the fixed and moving mould halves at different temperatures if required. The units can maintain temperatures of between -5 and +90°C, sufficient to cover most moulding applications, according to Pavanello.

"In this system we have a dedicated flow of water in each circuit. This is important because the higher the rate of water flow the higher the rate of heat extraction," he says. "With a conventional centralised system you only have one pump that has to transport the water to all the moulding machines. This could be more than 100m away and there can be big losses of energy."

Pavanello says producing chilled water beside the moulding machine has a number of benefits, including the ability to reduce cycle times due to the improved cooling water flow rate and to improve process stability due to more precise coolant temperatures (Digitemp units maintain temperatures to within $\pm 0.3^\circ\text{C}$). Energy efficiency is also improved due to the use of an energy efficient Copeland digital compressor and automatic switching to free cooling mode when the cooling water temperature is above the main process water setting level.

He says the system is also highly flexible both in



Above:
Aquatech says
dedicated
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scale and in scope. For companies faced with growing capacity demands, he says it is very easy to add additional chilling capacity as each new machine is installed.