

Injection Moulding cooling solution for Tools and Hydraulics

Project

ICS were tasked with providing a cooling solution for the tools and hydraulics of 17 injection moulding machines and although the cooling system was for a new factory extension, a competitor had supply and service agreements in place with the end user.

The client wanted a solution that gave both environmental and running cost benefits, but still remained commercially viable with a capital payback within a two-year time frame.

Our suggested solution meant a separation of the tool and hydraulic circuits due to the different supply water temperatures required to each circuit. With the customer providing details relating to material types, throughputs, cycle times and installed hydraulic motor capacities, calculations were made using PMMDA guidelines for enthalpy of materials which equated to the following duties:

- Tool Cooling – 332kW with a chilled water supply temperature of 12 °C.
- Hydraulic Cooling – 421kW with a chilled water supply temperature of 25 °C.

Equipment Supplied

The product selected for the tool cooling was a Climaveneta 2x HRAT FC – 0524, each rated at 166kW and integrated with free cooling. This was chosen as the installation of the moulding machines was to be staged and independent free cooling coils at these duties and supply temperatures would take longer than two years to pay back the benefits in running cost and take too much floor space.



The HRAT FC 0524 unit being installed

The product selected for the hydraulic circuits was ICS TAFW / H –235, a 421kW adiabatic air-blast cooler. This was chosen as more than one unit would have increased both commercial cost and impacted on the overall foot print needed.



ICS provided cooling for 17 injection moulding machines

ICS Solution

Having made our selections our next task was to prove the benefits of the introduction of the free cooling coils to the tool cooling circuit. This was done using a specially formulated program that identifies the power consumption of a given chiller or free cooling system at varying ambient and load conditions, thus equating its overall running cost across a 12 month period. This exercise provided ICS with the ideal platform to show the benefits of installing our equipment to that available from other suppliers. Not only were we able to offer equipment at a commercially attractive price and smaller footprint than our competitors the chillers offered by ICS are registered on the Governments Enhanced Capital Allowance and also had a better year on year running cost against the competition.

By identifying the running cost benefits of installing the ICS solution to others currently available in the market place, Whatmore UK Ltd, were able to apply successfully to The Carbon Trust for funding of approximately £100K via an interest free loan spread over a 5 year period.

In addition to the supply and selection of the equipment through our in-house contracts division, ICS handled the full turnkey installation inclusive of:

- Mechanical pipework services
- Pump and tank assemblies
- Thermal Insulation
- Field wiring
- Crane lift