

Essential Cooling for Injection Moulding Processes

When essential cooling is required for your business' processes, who can provide you with urgent equipment to maintain productivity for your application?

ITW Delfast experienced this exact difficulty, but when they contacted ICS Industrial Cooling; an immediate solution was provided.

ITW has over 40 years experience in developing and refining plastic parts for the automotive industry. The UK site, located in the South near Basingstoke produces over 95,000 plastic parts per day and without temperature control assistance, their processes simply wouldn't work. With 14 machines including robotic applications producing over 230 different parts every 1.25 seconds; heating and cooling is essential in order to maintain a smooth injection moulding procedure.

Urgent Plastics Cooling

John Burt, ITW's Business Manager contacted ICS when one of their machines required urgent cooling assistance for a new application involving the solidification of plastic inside a mould. ICS was a first choice for John, having worked with them in the past.

Speaking with John, he explained: *"there is a fine balance of temperature needed within an injection moulding process. If this balance becomes uneven, we have a problem on our hands; therefore temperature is key."*

Having liaised with John about the urgency of this project, ICS' Applications Engineer, Will Coles supplied a 3.8kW TAE 015 evo chiller within 3 days of quoting for the project. This allowed John and his team to maintain productivity as quickly as possible.



Temperature is Key

ITW uses a standard yet efficient injection moulding method using plastic pellets. These begin the process in a tank at a temperature of around 80°C which dries them out; removing any moisture.

The pellets are then gravity fed into a rotating screw and barrel. As it rotates, the pitch on the screw shortens which compresses the material and generates heat. This is helped along its way by four band heaters on the screw; allowing the plastic to reach a temperature of approximately 285°C. Once at this temperature, it is injected into the mould.



The molten plastic is injected into eight cavities of the mould. This then needs to solidify very quickly in order for the process to be completed within the desired 1.25 seconds. The TAE 015 evo chiller steps in and pumps a chilled water/glycol mix around the mould at a temperature of -10°C.



The chiller's purpose is significant within the latter stages of the manufacturing process. The air cooled chiller uses a simple process to ensure the correct temperature is being achieved within the mould. The chiller removes heat from the water/glycol circuit by compressing the refrigerant, R407C and circulating it through a condenser. This then cools the gas and sends it on to an expansion valve; forcing it through to the heat exchanger. This is the point where cold temperatures are transferred from gas to liquid which then pumps out cold water/glycol into the mould.

Once the mould opens the parts are picked from the cavity and are examined by a specialist camera, which measures their colour contrasts. The camera will decide if the part should be rejected or saved, with each one being examined in 0.05 of a second.

The Perfect Cooling Solution

Thanks to the TAE's quick - release water and power connections, the unit is specifically designed for a fast installation and start-up which is ideal for ITW's needs. The unit was chosen for this particular application, because it can manage a wide range of temperatures from +20°C to -0°C; catering for ITW's various machines.



Commenting on the unit and installation, John Burt said:

"The unit provides us with critical cooling; enabling our processes to continue smoothly and keep up with demands from our customers. Will Coles worked closely with us to ensure the

chiller was installed quickly; completing the project to our timeframe."

Nationwide Cooling Specialists

ICS Industrial Cooling are UK specialists in providing cooling equipment and services to a vast range of industries nationwide. ICS can provide standard and bespoke units; catering for any individual application. If you are unsure of what unit your process requires, a qualified, nationwide engineer can visit your site and provide a free site survey. For further information on ICS' products and services, call free on **0800 169 3861** or email info@icstemp.com

