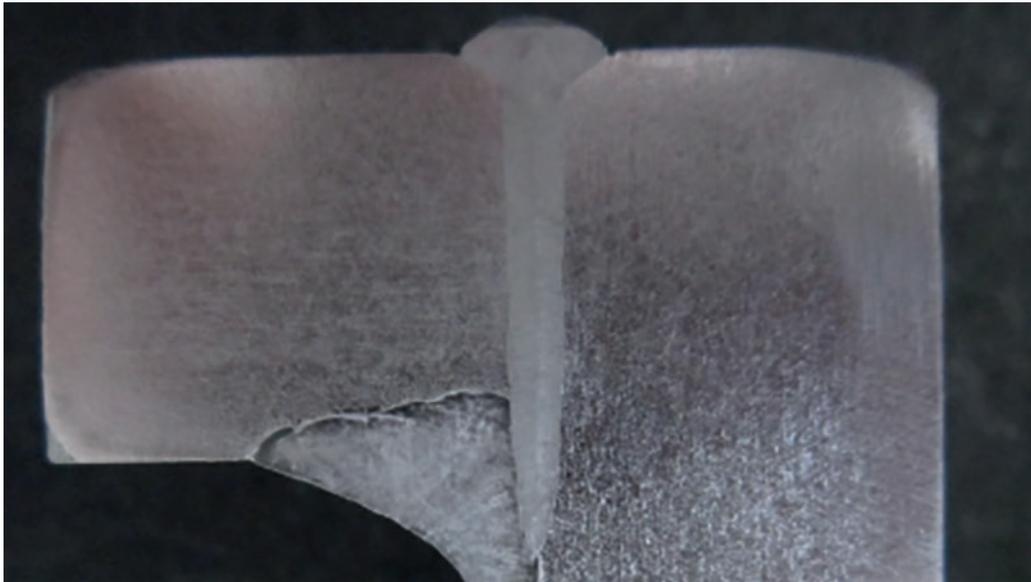




Kelvion Thermal Solutions Experts helping to optimise **welding**

In order to understand the root cause of the cracks found on the welds of new parts made of nickel-based alloy, Kelvion Thermal Solutions asked experts to investigate. After the cause was identified, corrective measures were quickly implemented.



©Kelvion Thermal Solutions

graphic section revealed a certain level of intergranular brittleness. “Thanks to this work, we understood that the lower thickness of our new endplates resulted in a longer cooling time in the area of the weld beads”, explains Olivier Bonin. “This excessively slow cooling then caused cracks in the weld beads. To remedy this situation, we designed, in collaboration with Cetim, a welding procedure which, through a modification of the bevels on the parts, led to a reduction in the energy required for welding. The result is now perfect again”.

OUR CUSTOMER

Corporate name
Kelvion Thermal Solutions

Turnover
75 million euros

Workforce
210 persons

Business activity
Kelvion Thermal Solutions is present all over the world and manufactures heat exchangers (refrigeration systems, dry coolers and air condensers, shell and tube heat exchangers, cooling towers, etc.) for almost all industrial applications.

Welding of nickel-based alloy parts is common practice at Kelvion Thermal Solutions. Hence the surprise when cracks suddenly appeared on the welds of manifolds. “The inlet and outlet manifolds of our dry cooler systems are made of a nickel-based alloy and we have broad experience in the welding of this type of materials”, explains Olivier Bonin, Head of the industrial production, methods and maintenance department. “Hence our surprise when cracks appeared on the weld beads during the joining of new Incoloy 825 plates with an Inconel 625 filler metal”. The company, which performs this type of welds by electron beam welding with preliminary submerged-

arc backing pass, contacted Cetim. Kelvion’s personnel and Cetim’s experts joined forces and used a 5M approach (Ishikawa diagram) to examine all the possible causes of the defects. “We regularly work with Cetim, for training purposes or for assistance or consulting during our welding operations”, continues Olivier Bonin. “Cetim’s expertise in this field is recognised internationally and it is very reassuring for us to know that we can rely on the efficiency and quick response of Cetim’s experts”.

Finding solutions

An analysis of the fracture surface of the parts was carried out using a scanning electron microscope, then the examination of a metallo-

Cetim's asset

Cetim’s broad expertise in welding and know-how in the application of the 5M method are recognised



internationally. This allows companies to quickly find solutions to problems relating to these subjects.