

ACT IMMERSION HEATERS: IMPROVED PERFORMANCE FOR FOUNDRY AND ALUMINIUM INDUSTRY CUSTOMERS



An important item of equipment for a wide range of customers in the metal industry is the immersion heater, which must be uniquely designed for the demanding application of direct immersion into molten metal baths. The heater is used to control heat distribution and metal temperature efficiently and consistently in holding vessels containing molten aluminium, magnesium or zinc.

Through a licensing agreement with French manufacturer, Lethiguel, Pyrotek now offers the ACT (aluminium compact thermal) immersion heater as a key piece to complement our other equipment and materials for customers in high temperature metals processing.

The ACT immersion heater is essentially a high wattage density electric resistance heater, embedded in a high-performance insulating material. This type of product requires some particular properties for demanding applications. The lightweight unit is constructed with an outer Sialon sheath (special high-performance and insulating technical ceramic) and three internal heating elements. The Sialon sheath offers excellent resistance to corrosion by molten aluminium and its alloys, as well as good thermal conductivity and high mechanical strength. The heating wires of the device are embedded in ceramic, which provides both electrical insulation and ability to efficiently transfer heat, resulting in improved heat transfer to the melt.

It is important to note that a PAE patent prevents competing manufacturers of degassing equipment from using more than one miniature immersion heater per chamber in the design of degassing equipment. The PAE patent does not prevent the sale of ACT miniature immersion heaters as a replacement part for using ALPUR or Alcoa 622 and 1022 units equipped with miniature immersion heaters.

The ACT heater offers a range of attractive technical features and advantages, including the following.

- No sensitivity to thermal shocks
- High mechanical resistance
- Good thermal conductivity
- Excellent resistance to corrosion
- High level of safety in operation
- Quick to install and maintain
- Easy to handle and dismantle due to its slim profile and lightweight design
- Energy efficiency rate close to 100%
- Provides evenly distributed heat throughout the depth of the bath
- Offers maximum isolation from smoke and heat radiation due to efficient heat distribution
- Can be immersed in molten aluminium without preheating
- Can be used as a portable heater and convenient auxiliary heat source
- Sheath diameters from 20–55 mm
- Sheath length from 500–1500 mm
- Heater immersed length can be up to 1000 mm if required by the depth of the bath
- Connecting voltage from 45–600V, mono or tri phase, delivering up to 40 kW



Molten metal transfer ladle application



The heater finds applications in both the aluminium and foundry sectors

PROCESS APPLICATIONS

ACT immersion heaters can be used in support of the following processes.

In aluminium casthouses:

- With in-line degassing systems to maintain molten metal temperature and ensure uniformity during processing, such as with the Alpur SX series
- As a portable auxiliary in-line heat source for molten metal in continuous casting

In foundry and diecasting:

- With melting and holding furnaces (for aluminium, zinc, magnesium) the heaters provide a 30% increase in melting capacity
- Low-pressure die casting furnaces
- Dosing furnaces
- Ladle degassing stations
- Transfer ladles
- Holding ladle
- For supplementary heating—can be used effectively as a portable auxiliary molten metal heat source



NEW DISTRIBUTION AGREEMENT

In June last year, Pyrotek entered into a global distribution agreement with French company, Lethiguel for the Sialon-sheathed, unitised, miniature ACT immersion heaters the company manufactures.

www.pyrotek.info