MOLTEN SALT PUMPS & SYSTEMS

AURO

Molten Salts have been used as a medium of heat transfer since many years in the Chemical, Metal refining, Glass, Nuclear and Solar Energy sectors. Molten salts are usually a eutectic mixture of sodium, potassium, lithium or chloride based salts. A eutectic mixture is a mixture of two or more components which usually do not interact to form a new chemical compound but, which at certain ratios, form a system having a lower melting point than that of either of the components.

The range of application of molten salts in heat transfer technology ranges from 200 deg.C up to 1000 deg.C depending up on the constituents of the eutectic mixture. For applications requiring a heat transfer fluid temperature above 350 deg.C molten salt is the preferred medium. Water has been found to be uneconomical above 200 deg.C due to high pressure while organic and synthetic oils start degrading above 350 deg.C. These organic or synthetic oils also pose the problem of carbon formation and high vapor pressure, both of which are absent in the case of molten salts.

The pumping of molten salts is a highly critical & extremely challenging application as the pumps need to be designed to operate at high temperatures and often in highly corrosive environments as well. A high degree of technical knowledge is required to design these pumps and AURO PUMPS has developed an expertise in pumping molten salt.

MOLTEN SALT PUMPS

• Vertically submerged extended shaft pumps designed to handle molten salt at temperatures ranging from 200 deg.C to 1000 deg.C.

• Specially developed and engineered bush bearings for optimum shaft alignment and excellent adaptation to thermal expansion.

• Separate discharge line design which eliminates the need for costly mechanical seals which face frequent failures and require extensive maintenance.

Capacity – 1 m3/h to 1000 m3/h

Head – up to 180 meters

Pump length – up to 17 meter (immersion)

Material of construction – High-temperature Alloy steels and Advanced Technical Ceramics.

Vertically submerged extended shaft multistage molten salt pumps for higher discharge pressure requirements with constructions possible up to 3 stages

MOLTEN SALT SYSTEMS & LOOPS

• Specially designed autonomous system with pumped Molten Salt for research & development and chemical experiments. An integrated melting and pumping unit provides a one-stop solution to all the molten salt process requirements of our clients.

• The system's operating temperature ranges from 200 deg.C to 1000 deg.C, making it an invaluable platform for developing new processes or carrying out both endothermic and exothermic chemical reactions in the same setup.

• AURO's molten salt loops include a salt storage & melting module, molten salt pump, reactor module (Heat exchanger or sample chamber), cooling module (if required), valves, temperature sensors, pressure sensors (for blanket gas), etc.

• Every molten salt loop comes with an automated control panel consisting of digital data display and data acquisition features.

• Gravity drain design of entire system to prevent the molten salt from setting in the pipeline and other equipment when the pump is not in operation.

• Molten salt systems with single point electric heating or dual point steam plus coal/gas/electric heating options available.

• Available in a lab scale portable loop, modular design pilot scale loop and full scale production loop.

• Molten salt systems available for Nitrate-Nitrite salts, Fluoride and Chloride Salts for Nuclear sector,, Chemical sector & Solar Power sector.

Pilot scale loop for the development of new chemical processes supplied to Jubilant Life Sciences Ltd.

Pilot scale loop for research & development studies for solar thermal storage to IISc Bangalore.

Production scale loop for speciality chemicals manufacturing to Aarti Industries Ltd.

SPECIALLY DEVELOPED CANTILEVER MOLTEN SALT PUMPS FOR NUCLEAR APPLICATIONS

- Suitable for temperatures up to 1000 deg.C
- Cantilever design eliminates the problems of bush and sleeve arrangement at elevated temperatures.
- Specially designed cooling arrangement for extended bearing and pump life.
- Designed for operating in the extremely corrosive environments of Flouride & Chloride based molten salts.
- Available in Inconel 625, Inconel 800, Incoloy 800HT, Hastelloy N, and advanced technical ceramics.

AURO PUMPS PVT. LTD.

Estb. 1984 in Technology Transfer from Pompe Vergani SpA of Italy

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