2 mm Aerogel Insulation Cuts Surface Temperature of Reactor in Half

Working conditions near reactor improve, energy consumption drops

CASE STUDY

Installation Partner: Agosti Isolazioni
Location: Italy

Challenges

- Insulate the external part of a reactor that has a process temperature of 120°C (248°F).
- The insulation objectives were to:
  1. Eliminate heat dispersion from the reactor into the surrounding room.
  2. Allow operators to unscrew the bolts without removing or damaging the insulation.
  3. Achieve a safe surface touch temperature minimum insulation thickness.
  4. Provide a finished surface that didn’t require metallic cladding.
  5. Allow mounting/dismounting operations without losing time.

Solutions

- Agosti Isolazioni Termiche installed an aerogel solution of Pyrogel® 2250 (2 mm) using a specifically chosen adhesive that was tested prior to installation.
- The external surface was covered with layers of varnish that were tested prior to installation. The end user chose from seven colors for the external surface.

Benefits

- The end user observed a reduction by almost half of the external surface temperature with only a 2 mm insulation thickness.
- The insulation was applied directly on the reactor, saving valuable time during numerous mounting and dismounting of the reactor.
- The insulation noticeably improved operator working conditions near the reactor and reduced energy consumption significantly.

Safe surface touch temperature after 2 mm Pyrogel 2250 applied
An additional layer of EPDM rubber was applied to protect the insulation where the pneumatic gun was used.

The 2 mm insulation thickness was the maximum that could be used given the space required to screw the bolts using a pneumatic gun.

The finished surface protects the insulation during standard operations with no metallic cladding required.