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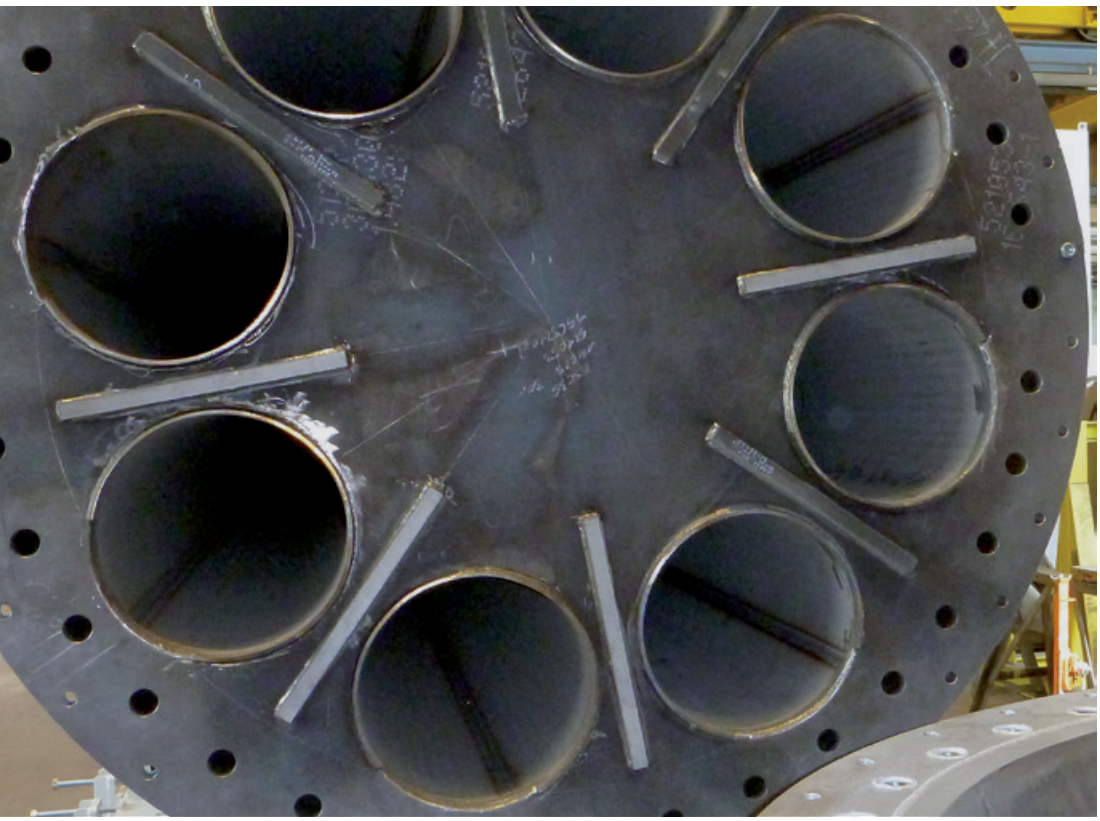
Planetary Dual Tube Cooler | System RK-W

Indirect cooling of hot solids using cooling water



INNOVATION

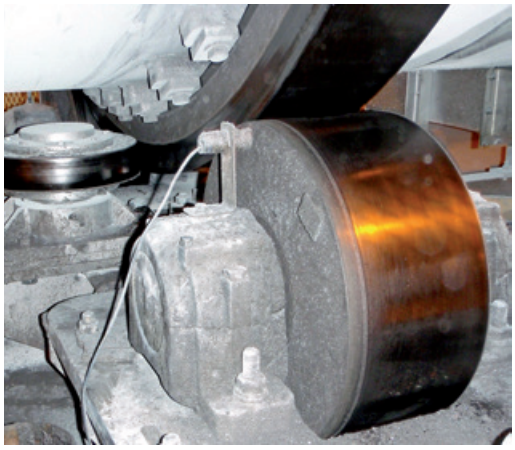
ALLGAIER PROCESS TECHNOLOGY MOGENSEN GOSAG MOZER ALMO

Planetary Dual Tube Cooler System RK-W

Indirect cooling of hot and very hot products

Indirect cooling of hot and very hot bulk materials from industrial furnaces or calcination processes makes cooling possible without the products contaminating the cooling medium or vice versa. In addition, thermal energy contained in the hot products is recovered.

The RK-W Series Planetary Dual Tube Coolers use cooling water as the indirect cooling medium. They supplement the Allgaier Type RKT and KTR Drum Coolers that use ambient air as the cooling medium.



Roller station of a cooler for titanium dioxide in operation

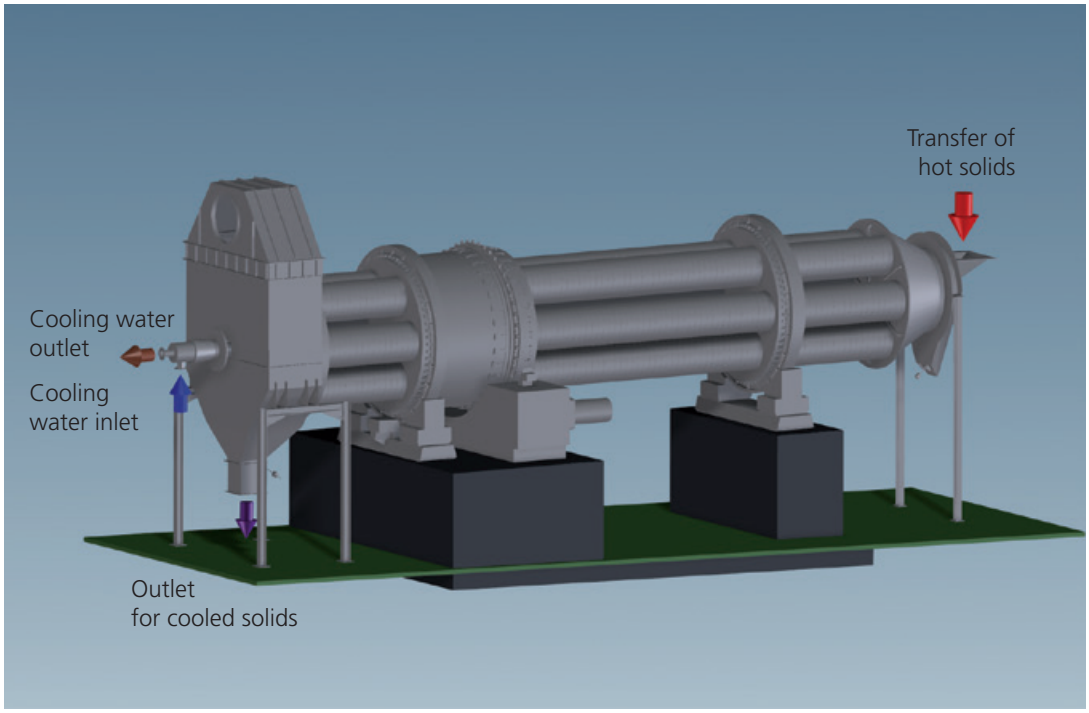
This configuration allows for very high heat transfer capacities in a compact design. Heat is transferred from the hot materials through the tube walls to the cooling water running through the dual tubes.

Bulk materials up to 1200 °C can be handled by the planetary dual tube coolers. Typical output temperatures of the cooled solids range from 50 °C and 150 °C depending on downstream processes such as conveyors or storage facilities.

The special design of the coolers ensures optimum allowances for temperature expansion and thermal stress that have been confirmed using advanced FEM calculations. This minimizes downtimes due to material fatigue or stress cracks.

Typical applications:

Zinc oxide concentrate
Copper calcinate
Aluminum oxide
Iron oxide
Titanium dioxide
Magnesium oxide
Furnace slag
Decontamination processes

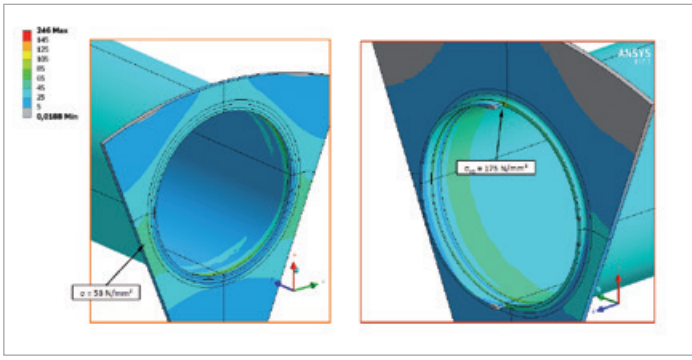


Advantages:

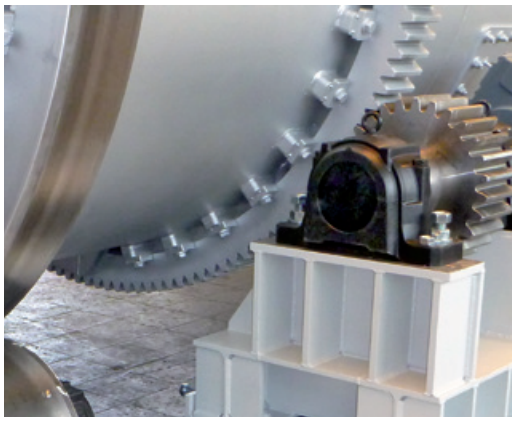
The planetary dual tube coolers, using six or eight dual tubes, are designed to maximize the cooled surface for an efficient heat exchange. Cooling water flows through the complete volume of the annular gaps and therefore covers 100% of the available heat transfer surface.

The solid to be cooled is effectively transported by the rotational motion of the cooler and the slight incline of the system. Trials at Allgaier's Technical Center and DEM simulations of material movement and heat transfer ensure a precise system layout.

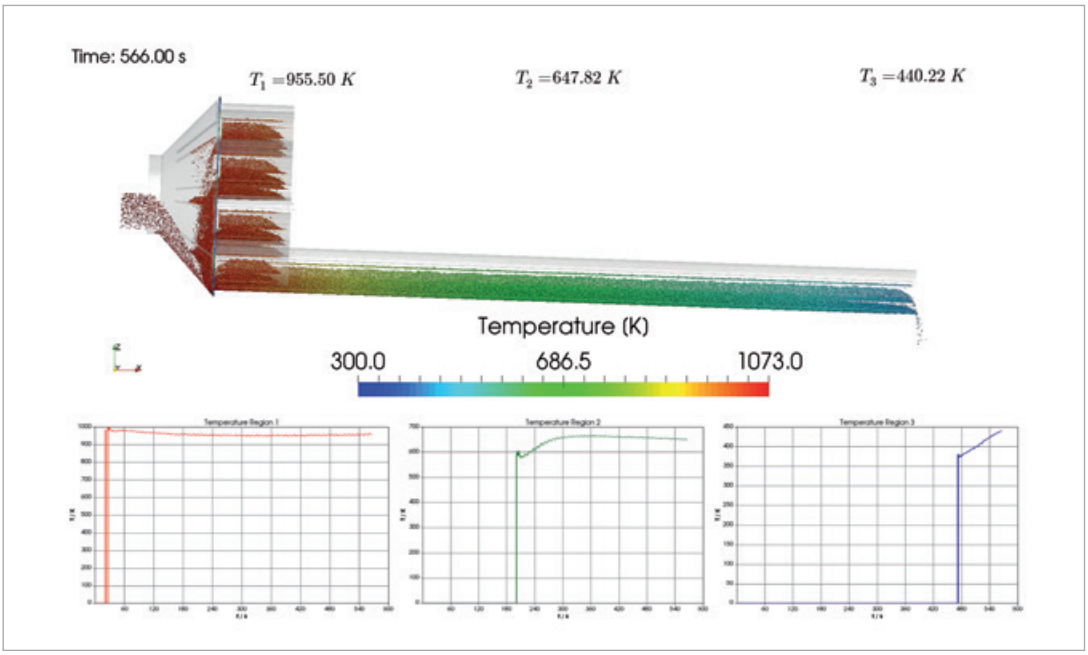
The planetary dual tube cooler is an efficient process contained within a small footprint. In most cases, water from direct or indirect cooling towers can be used as a coolant. Depending on the material to be cooled, corrosion-resistant and temperature-resistant steel is used leading to a long equipment service life.



Results of an FEM strength analysis



Gear rim drive of a rotating tube cooler



DEM computer simulation of cooling and movement of the solids

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Allgaier.PT.TRO.RK-W.EN.08.2017