Case story #4

INDUSTRY	MINERAL CHEMICAL
MEDIA – COND	SULFURIC ACID 85% - 160°C
MATERIALS	GT KELITE+ & GT FLON
EQUIPMENT	LIQUID COOLER
YEAR	2014

A manufacturer of sulfuric acid in Taiwan was looking for a cooler of sulfuric acid at 85% conc. From 160°C to 60°C by gravity flow.

For such concentration and temperature, usual equipment manufactured with graphite face corrosion issue. Phenolic impregnated grade can be use with temperature below 130°C.

Use of Tantalum equipment was the only possibility. GT proposed to use GT-FLON grade , real PTFE impregnation which can withstand sulfuric acid up to 180°C, 90% conc.

To reduce capital cost, it was proposed to use simultaneously GT-FLON grade and GT-KELITE+ grade. The top of the heat exchanger will be made of GT-FLON grade. Once the acid is cooled down to 120°C, the material at bottom will be GT-KELITE+ which can resist corrosion at this temperature.

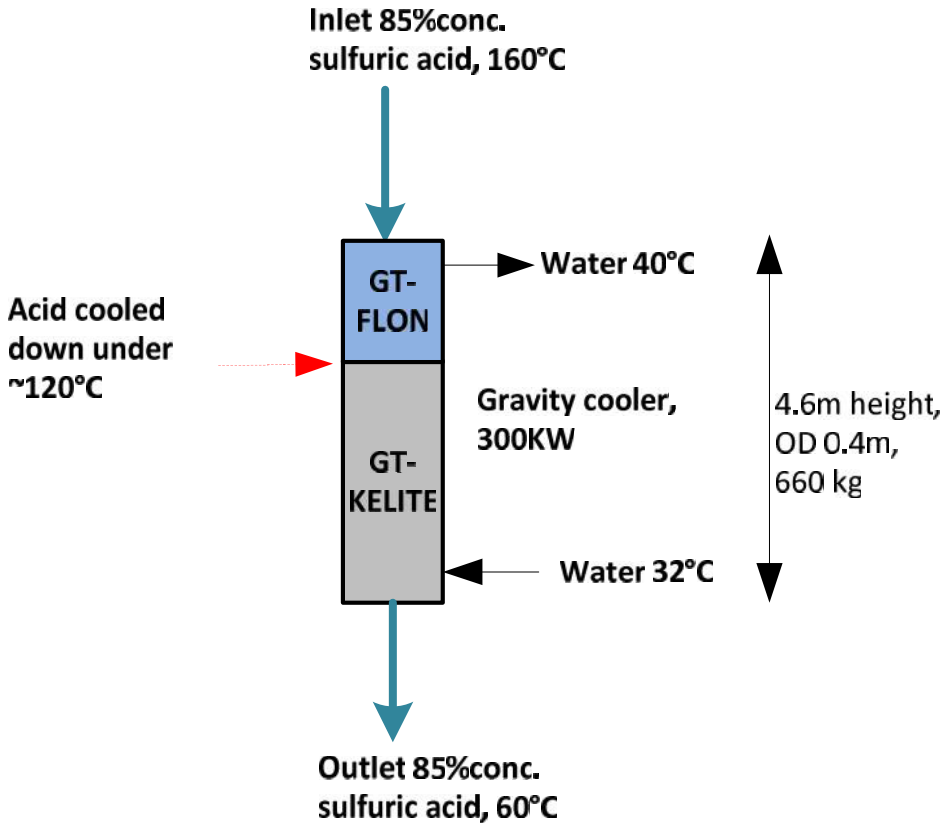
GT design equipment with 12 blocks of graphite. 2 top blocks made of GT-FLON and 10 blocks made of GT-KELITE+. In between these blocks, a distribution element made of GT-FLON grade to create a 5 passes flow on top of equipment to guarantee a reduction of temperature under 120°C once the media arrive in contact with GT-KELITE+ grade.

The process section through blocks was carefully designed so that acid can flow by gravity even with high viscosity of 85% conc. sulfuric acid at 60°C.

Customer saved an important capital cost by choosing heat exchanger in GT FLON + GT-KELITE+ material instead of Tantalum.

The 2 coolers in GT-FLON + GT-KELITE+ grade

Sketch principle



Graphite Technology manufactures a wide range of equipment with a wide range of graphite materials for all chemical processes industries.

Heat exchangers, column, reactors, piping & fittings, fuel cells,…adapted to pressure, highest corrosion and wide temperature range up to 1500°C (2730°F).

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