Case story #8

INDUSTRY	PHOSPHORIC CHEMISTRY
MEDIA – CONDITIONS	POLYPHOSPHORIC ACID, RED PHOSPHOROUS, water 300°C
MATERIALS	GT CARB+
EQUIPMENT	REACTOR
YEAR	2015

A Chinese company produce phosphorous chemical products for high value end products.

At one stage of the process, polyphosphoric acid is generated at around 300°C. A reactor of 0.5 m3 receive the chemical reactants which are maintained at process temperature using an external heat exchanger with circulation. Polyphosphoric acid is extremely corrosive. Glass is corroded and glass lined reactor is not possible to use. Even Tantalum is not adapted for such process.

GT proposed to adopt grade GT-CARB+, a fine grain graphite impregnated with carbon material. This grade is able to withstand temperature up to 450°C in air and up to 1500°C without oxygen. With high thermal shock resistance and exceptional corrosion resistance.

Sample of corrosion were tested by the customer in laboratory during 60 days. The samples showed a slight decrease of weight of 0.5% during first 400 hours of test and then stabilization without any further evolution. No sign of corrosion or permeability was observed and the material was selected as material of construction for the reactor. GT provided the reactor in a very short time.

Customer is now also willing to adopt GT-CARB+ for the external heater for the new line of production.

Customer also adopted GT-CARB+ in their laboratory for the labware instead of glassware which were destroyed in short period of time with this chemical media.

Reactor in GT-CARB+

Labware in GT-CARB+

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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