

5501878**PROCESS FOR REDUCING THE
CARBONIZATION OF HEAT
EXCHANGE SURFACES**

Barendregt Simo; Zimmermann Gerhard; Bach Grete VR Rhoon, NETHERLANDS assigned to Mannesmann Aktiengesellschaft; KTI Group B

A process for reducing the carbonization of the heat exchange surfaces in a tubular heat exchanger of boiler steel which, in particular, within a unit for the thermal cracking of hydrocarbons to alkenes and while producing steam, carries out the rapid cooling of the cracking products after they leave the cracking furnace. After the tubular heat exchanger is cleaned and before it is returned to service, the sides of the heat exchange surfaces which come into contact with the cracking products are treated under reducing conditions until the greatest possible reduction of the Fe_2O_3 on the surface to Fe_3O_4 has taken place, without submicron Fe powder being formed.

5503222**CAROUSEL HEAT EXCHANGER
FOR SORPTION COOLING
PROCESS**

Dunne Stephen Bethel, CT, UNITED STATES assigned to UOP

A carousel heat exchanger is provided for air conditioning or waste heat recovery applications. The carousel heat exchanger includes a plurality of heater tubes disposed radially about a rotational axis. Each of the heater tubes is sealed and has a hollow bore which is uniformly lined with a solid adsorbent and contains a refrigerant. A baffle is disposed about the rotational axis such that to the heater tubes extend transversely therethrough. The baffle defines an outer zone to the outside of the baffle and an inner zone to the inside of the baffle and divides the heater tubes into a first internal zone of the heater tubes located in the outer zone and a second internal zone of the heater tubes located in the inner zone. A plurality of vanes is disposed radially along the rotational axis. The

vanes extend transversely from both sides of the baffle, defining a plurality of axial flow segments that subdivide the inner and outer zones. A manifold moving a flow of a heat carrier into a portion of the axial flow segments in the outer and the inner zones is provided. Using the carousel heat exchanger of the present invention, particularly with an adsorbent selected from the group consisting of zeolite Y-54, zeolite Y-85, calcined low cerium rare earth exchanged zeolite Y-84 and calcined rare earth exchanged LZ-210, can result in significant improvements in cooling and waste heat recovery system power per unit-mass of sorbent, and can simplify the manufacture of sorption cooling systems.

5503821**METHODS FOR RECOVERING
HIGH GRADE PROCESS ENERGY
FROM A CONTACT SULFURIC
ACID PROCESS**

McAlister Donald; Schneider Daniel Ballwin, MO, UNITED STATES assigned to Monsanto Co

An improved process for the recovery of high grade energy from a contact sulfuric acid manufacturing process. Improvements include: injection of steam between an intermediate catalyst stage and a heat recovery absorption tower and/or a heat exchanger for transfer of heat from conversion gas to high pressure boiler feed water; use of a condensing economizer for recovery of the vapor phase energy of formation of sulfuric acid from a wet conversion gas; and use of heat recovery system absorption acid for preheating air to a sulfur burner, the heat transferred to the combustion air being recovered at high pressure and temperature in a waste heat boiler.

5505255**HEAT EXCHANGER FOR
ARRANGEMENT BEHIND THE
COMBUSTION CHAMBER OF A
HEATING BOILER**

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