SALES AND RENTAL OF HEAT TREATMENT EQUIPMENT

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RAPID HEAT RHS SYSTEMS

SHRINK FIT APPLICATIONS

Customer: **KNPC**

Job Description: Our task was to help remove two tube bundles from two heat exchangers. Due to the imbalance of pressure during process in the heat exchanger the internal tube bundles had become damaged and stuck and needed removing for repair. Our task was to apply heat to expand the outer shell, facilitate the removing of the tube plates and attached tube bundles.

Job Location: Shuaibah Refinery
Kuwait

Job Date: 9th to 11th July 2008

Equipment: 1 x 35kw RHS Induction Heating Machine
1 x 50ft Induction Heating Extension Cable
1 x 80ft Liquid Cooled Heating Cable
1 x 140ft Liquid Cooled Heating Cable

Results Vessel 1: We set up a four coils configuration positioned directly on the outer shell adjacent to the internal tube plate and heated as instructed by KNPC Engineers. Heating range: from ambient to 700F.
KNPC used various methods, including tube pulley and a 60ton crane to pull the tube plate and extract the tube bundle from the heat exchanger. The bundle was removed approximately 30 hours after first heating.

Results Vessel 2: This vessel proved to be more stuck that the first. After many hours of trying unsuccessfully to pull the tube plate out using the same methods as the first vessel, we were allowed to apply our method of extraction. We first attached the tube extraction plate via four extended rods to the tube plate between the outershell and the tube plate. Between the outershell and the tube extraction plate we fitted 4off 30ton hydraulic jacks. These jacks were then pressurised to lock in position. We cooled the tube plate to approx 108F by spraying with soda water. Next we attached air conditioning to the tube plate to help keep it cool again. Via four coils positioned directly on the outershell adjacent to the internal tube plate we heated the outershell to 450F. Whilst still heating we instructed the jacks to be pressurised more.
As the heat increased the tube plate popped out.
Time taken approx 4 hours.