

Case Studies (FIS-242)

NHT and Platformer Heater Capacity Increase Project

Furnace Improvements (FIS) was employed to develop the best capacity improvement scheme for its #2 Platformer Heater and NHT Heaters.

The Platformer Heater (H-20/21/22) was originally designed for 12,000 BPD operation and rated for 119.6 MMBtu/hr process heat duty. The design thermal efficiency of the heater is ~ 88% and is currently operating at 80 – 81%.



There are three vertical Cylindrical Heaters along with the Platformer Heaters, which share a common convection section and a stack. They are the Hydrotreater Charge Heater (H-18), Hydrotreater Stripper Reboiler (H-19) and Depropaniser Reboiler (H-23).

The heaters were running at a charge rate ranging from 13,000 to 15,000 BPD. They wished to revamp the heaters to 18,000 BPD capacity.

The conventional revamp option was to extend the existing radiant cells. The other option was to install a new heater for extra duty required. Extending radiant cells has the following disadvantages:

- Space limitation
- Higher firing rates
- Very high cost

Heater	Existing Heat Duty	Revamped Duty	Extra Duty
H-18	11.97	13.50	1.53
H-19	18.45	23.50	5.05
H-20	27.29	42.50	15.21
H-21	25.10	30.90	5.30
H-22	21.70	23.10	1.40
H-23	15.15	17.40	2.25
Total	119.7	150.40	30.74

Furnace Improvements Services

Clean & Efficient Combustion

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FIS' recommendation was to increase the capacity of the heater based on our patented "Split Flow Technology". The heaters were revamped for an 18,000 BPD capacity and a design heat duty of 150.4 MMBtu/hr. The revamp cost was one-fourth the cost of the alternate design. The heater firing was limited to the design firing rate. The thermal efficiency of the heaters was increased from 80% to 89%. The heater was revamped not only for increased capacity, but also for improved thermal efficiency and improved reliability. In addition to this the Platformer Heater burners were replaced with new Ultra Low NO_x flat flame burners.

