

Case Studies (FIS-248)

Platformer Heater Capacity Improvement Project

Furnace Improvements Services (FIS) was employed by a refinery in California to perform a capacity improvement on a Platformer Heater (H-70-01/02/03).

The heater was originally built in 1979. It was designed for 12 MBPD and rated for 135.58 MMBtu/hr of heat duty and 84.03 MMBtu/hr of process heat duty. The heater was running at 13,000 to 15,000 BPD charge rate.

They were seeking to revamp the heater for 18 MBPD and total process heat duty of 113.01 MMBtu/hr and 160.86 MMBtu/hr of the total heat duty.



The design thermal efficiency of the heater was ~ 88% and was operating at 80- 81%. The stack temperature was almost 300°F higher than the design temperature.

The conventional revamp option was to extend the existing radiant cells. Extending the radiant cells has the following disadvantages:

- Space limitations
- Higher firing rates
- Very high cost (requires radiant tubes and new manifolds)

FIS' recommended increasing the capacity of the heater using our patented "*Split Flow Technology*".

Furnace Improvements Services

Clean & Efficient Combustion

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Advantages of revamped design based on split flow are as follows:

- Lower heat flux
- Lower firing rates
- No radiant section modification
- No civil works

Heater Section	Design Heat Duty	Revamp Heat Duty	Extra Duty Required	Re-Rated Radiant Duty	Convection Duty
	MMBtu/hr				
70-H-1	27.68	37.47	9.79	29.01	8.46
70-H-2	33.42	44.66	11.24	34.45	10.21
70-H-3	22.93	30.88	7.95	24.35	6.53
Steam Generation	51.58	47.85	-	-	47.85
Total Process Duty	84.03	113.01	28.08	87.81	25.2

The overall heater efficiency was improved by 9%. There was an increase in the heat duty by 28.08 MMBtu/hr, which was about 33% more than the original design values. The firing rate was well within the original firing rate.

FIS carried out the entire scope of activities from conceptualization to commissioning of this heater revamp. The heater was successfully commissioned in February 2008.