

Case Studies (FIS-272)

Crude & Vacuum Heaters (B-601/602) Capacity Improvement Study

Furnace Improvements (FIS) was employed by a Refinery to increase the capacity, improve the SCR operation and increase the efficiency of the Crude and Vacuum Heater (B-601 / 602). Crude and Vacuum Heaters have a common convection section and stack. The SCR is installed in the convection section. The heaters were originally designed for 24,917 BPD (Crude Heater), and 13,773 BPD (Vacuum Heater).

ConocoPhillips was having limitations on the capacity increase on these heaters. ID fan was limiting. Vacuum heater did not have independent draft control. FIS analyzed the data and suggested recommendations

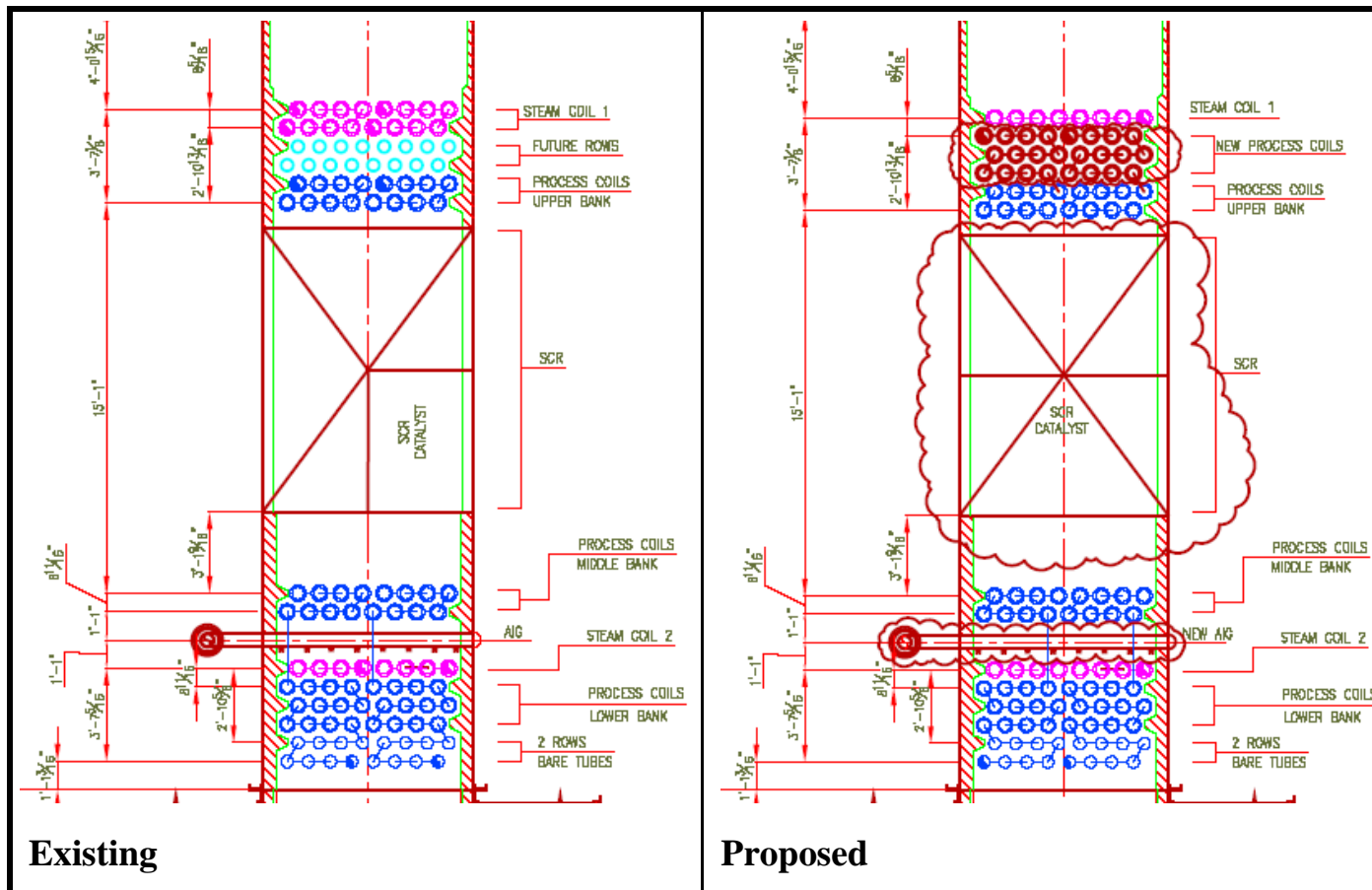
With this recommendations the heater efficiency will be increased by 4% with a payback period of 4.5 years

The following tables show the before/after revamp conditions:

Description	Before Revamp	After Revamp
Total Duty (MMBtu/hr)	61.5	66.5
Flue Gas Entering SCR (°F)	700	750
Outside Fouling Before SCR (ft ² -hr °F/MMBtu)	0.098	0.005
Stack Flue Gas Temperature (°F)	557	525
Excess O ₂ (% Vol. Dry)	3.7	2.99
Thermal Efficiency (%)	85.54	86.7

Furnace Improvements Services
 Clean & Efficient Combustion

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SCR SYSTEM IN CONVECTION SECTION (EXISTING / PROPOSED)