



INDUSTRIAL PROJECTS

Project No.: 04

Industry: Specialty Chemicals

Project Subject:

Energy Consumption Optimization of Formalin & Hexamine Chemical Plant

Challenge:

In this project, a chemical plant that produces Formalin and Hexamine was studied and energy consumption in process units optimized. In Formalin process, energy consumption of two heaters (Super Heater and Calandria) was drastically reduced.

Proposed Solution:

1. The reactor effluent, which is currently exiting from H1103 cooler at 150C, should be sent to a new stainless-steel shell-and-tube heat exchanger (A) in order to preheat air flow up to 90C. So, the reactor effluent will be cooled down to 120C and then enters heat exchanger H1104 to preheat Methanol-Water mixture.
2. Formaldehyde gas and water mixture should then be sent to a new stainless-steel plate-and-fin heat exchanger to be cooled down to 50C.
3. Heat loads on coolers were reduced resulting in a good saving on cooling water as well as fan power consumption in air coolers.
4. Process to process heat transfer was improved and subsequently the overall fuel consumption of the plant reduced.
5. The energy intensity of the overall production plant were reduced which resulted in a lower product cost.
6. GHG's emissions reduced due to less fossil fuel consumption.

Results:

