



# ALTA PROCESS SOLUTIONS

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## INDUSTRIAL PROJECTS

**Project No.:** 07

**Industry:** Petrochemicals

**Project Subject:**

**Retrofitting of HEN and Cooling Systems in Petrochemical Complex**

### Challenge:

This project consists of retrofitting of heat exchangers network and cooling system in a petrochemical refinery. By using the combination of most advanced Pinch and Exergy technologies, 518,700 (\$/yr.) energy saving was realized.

### Proposed Solution:

1. Reduced fuel consumption in cracking furnaces and therefore reduced total fuel consumption in the complex.
2. Reduced fuel consumption in boilers and therefore reduced total water consumption of the complex.
3. Decreased load of coolers and therefore reduced cool water and electricity consumption.
4. Decreased energy intensity or in other words, the fuel consumption per unit of production decreased in the company and therefore energy efficiency in the company raised.
5. Lower energy intensity in production processes and therefore lower product cost, because less fuel per unit of production consumed.
6. Less emission of gases, produced by combustion, in the atmosphere, and thus environmental problems such as the greenhouse effect is controlled.
7. Increased heat transfer between hot and cold flows in the network and thus decreased required boilers utility and load in network which led to upgraded reliability and safety of system.
8. Less use of fossil fuel resources.

Section 1: Energy Conservation in exchangers' network:

Energy Saving: 5637 KW, Additional Area: 978.1 m2, Investment: 275,948 \$, Payback Period: 10 months

Section 2: Energy Conservation in Cooling System, Energy Saving: 5637 KW, Additional Area: 1783 m2, Investment: 349,250 \$, Payback Period: 22 months

### Results:

|                                                                                     |                                                                                     |                                                                                     |                                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|  |  |  |  |
| Energy Saving<br>(%)                                                                | OPEX Saving<br>(\$/yr)                                                              | Investment<br>(\$)                                                                  | Payback Period<br>(month)                                                             |
| 22                                                                                  | 518,700                                                                             | 627,000                                                                             | 15                                                                                    |