



AIRSIDE REVAMP — GAS PLANT CASE STUDY

OVER HEAD CONDENSER



In 2018, Kelvion Thermal Services completed an airside revamp of an Overhead Condenser (OVHD) in a Gas Processing Plant in Middle East. The air-cooler has 10 induced fans, and the process is mainly composed of Methane (85%) and Propane (5%).

The OVHD Condenser was facing cooling capacity issues due to high ambient temperatures (52.0°C in summer) that were far above the original design (46.0°C). Process flow rate was limited to 367.2 t/h @ 49.5°C to ensure outlet process temperature is still below 62.5°C,

The actual performance was measured and the following was observed by Kelvion :

- Airflow was found to at 81 % of design,

Kelvion completed the installation and upgrade of the Propane Condenser with the following parts:

- ◆ New fan shaft with top and bottom bearings,
- ◆ New fans,

Results :

This condenser was the main bottleneck of the plant, limiting the process flow rate. After upgrading the fin fan unit, new site measurements showed that airflow was increased by 53% and process flow rate was increased to 380.2 t/h @ 49.5°C with a lower outlet process temperature giving more flexibility to operate the unit during higher ambient temperatures.

End-user was fully satisfied with the revamp.

Key figures :

	Before revamp	After revamp
Process flow rate	367.2 t/h	380.8 t/h
Outlet process temperature	62.0 °C	59.1 °C
Airflow	97.5 m³/s	149.0 m³/s
Ambient temperature	49.5°C	49.5°C