EENP AWARDS 2016

BEST PRACTICES

ExxonMobil

Background of Company

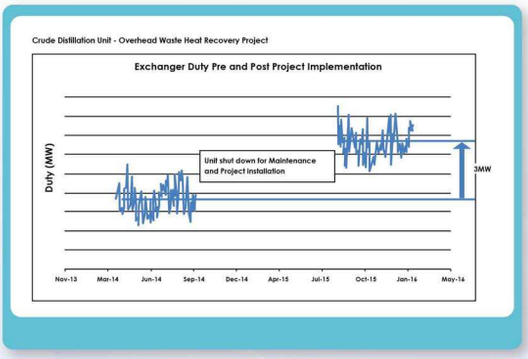
ExxonMobil in Singapore is today a manufacturing and marketing business with over US$15 billion in fixed asset investments and a diverse workforce of over 3,300 employees. The ExxonMobil Singapore Refinery and Singapore Chemical Plant form the largest integrated ExxonMobil manufacturing site in the world. The world-scale refining complex has a crude distillation capacity of 592KBD, producing fuels, lubricant basestock and Chemicals feedstock for its customers and sister plants, as well as industrial and automotive lubricants and aromatics. For more information, visit **www.exxonmobil.com.sg** or follow us on Twitter **www.twitter.com/exxonmobil_sg**.

Project Description

Recovery of Overhead Waste Heat at the ExxonMobil Singapore Refinery

The project saw the replacement of three existing shell and tube (S&T) heat exchangers with two welded plate heat exchangers (WPHE). This opportunity was identified through pinch analysis studies as part of regular energy performance assessment reviews, which highlighted that 75% of pipestill overhead condenser duty was lost through fin fan coolers. The installation of WPHE allowed ExxonMobil to maximise heat recovery to the pipestill crude stream because the WPHE has a compact design with very high surface area. This enabled much lower approach temperatures between the pipestill overhead and crude feed, thereby increasing overhead waste heat recovery to the pipestill crude feed stream. With the increase in pipestill furnace inlet temperature, fuel gas firing in the furnace was reduced, leading to improvements in energy efficiencies.

Results



The WPHE duty is 3 MW higher than the original S&T duty. This translates to 21GWh of annual fuel savings, which is 8.7% of the crude distillation unit's energy consumption.