



BEST PRACTICES (HONOURABLE MENTION)



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 integrated manufacturing site in Singapore, comprising the Singapore Chemical Plant and the Singapore Refinery, is ExxonMobil's largest in the world. The Singapore Chemical Plant, which was commissioned in 2001 and further expanded to more than double its ethylene production capacity to 1.9KTA in 2013, is also ExxonMobil Chemical's largest integrated petrochemical complex globally. The world-scale petrochemical complex employs proprietary technologies to manufacture high performance products including olefins, polymers, specialty elastomers, aromatics and oxo alcohol for today's competitive global chemicals market. For more information, visit www.exxonmobil.com.sg or follow us on Twitter www.twitter.com/exxonmobil_sg.

Project Description

ExxonMobil Singapore Chemical Plant (SCP) Energy Optimization using Model Predictive Control (MPC)

Model predictive control (MPC) is an advanced controls technology that allows adjustments of multiple variables under different operating constraints.

The ExxonMobil Singapore Chemical Plant has deployed MPC in various operations to optimize the use of energy in the complex.

- Olefins: Use of MPC to optimize propylene and ethylene refrigeration systems, thereby reducing the steam requirements for product recovery.
- Aromatics: Use of MPC in extractive distillation operation, reducing the steam consumption via automation of key energy variables using multi-constraint optimization.
- Polymer: Application of MPC to propylene refrigeration system and refrigeration compressor operation resulted in reduction of energy consumption

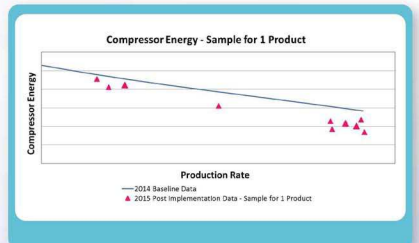
Results

Estimated energy reduction is around 99GWh per year.

- Olefins: 70GWh reduction with 8.1% energy savings per year



- Polymer: 3GWh reduction with 3.6% energy savings per year



- Aromatics: 26GWh reduction with 5.4% energy savings per year

