

Asia Pacific Refinery Decreases Energy Costs by 1.5%

Visual MESA Energy Real Time Optimizer provides quick win solutions

Key Benefits

- Reduced energy costs by 1.5%
- Optimized site-wide utilities system

Background

- Refinery producing 190,000 bpd
- Looking to increase profit margins

KBC Solution and Results

- Gap Analysis
- Visual MESA Energy Real Time Optimizer and Petro-SIM process simulation software
- Engineer and operator training

Client Challenge

An operator with a refinery in the Asia Pacific region was looking to increase their margins.

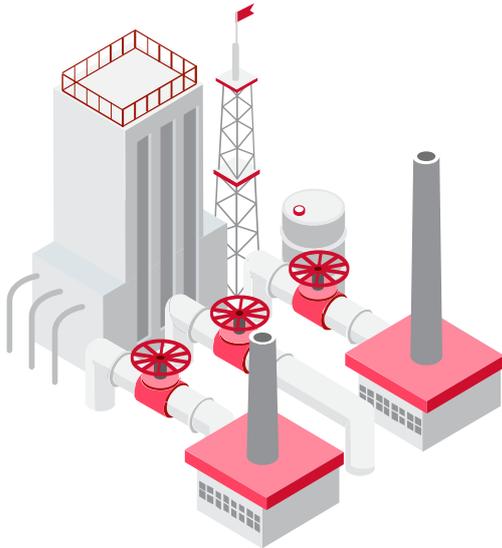
Their plan was to take a two-pronged approach. One program would focus on refinery optimization. This would involve improving unit availability and cracking unit use. The other program would focus on energy optimization.

They teamed up with KBC and Yokogawa to help them achieve their goals.

The Solution

KBC Consulting performed a gap analysis. They identified five areas that had improvement potential: asset portfolio, energy optimization, operating windows, turnaround time, and routine maintenance.

The next step was to rank the projects in terms of quick payback. By using Petro-SIM simulation software and Visual MESA Energy Real Time Optimizer (VM-ERTO), KBC determined the estimated benefits for each proposed project. Based on this information, KBC consulting narrowed down the profit improvement options to four opportunities that promised quick wins. These all focused on utilities.



Using VM-ERTO, KBC implemented a utilities digital twin that runs online. It provides optimization actions for operating the energy system on a site-wide basis at minimum cost.

The digital twin suggested a series of action-items for set point changes for the utility's equipment. This included fired boilers, gas turbine, steam turbine generators, and deaerators. Another area for improvement was the equipment start-stop for swappable pumps driven by steam

turbines and electrical motors.

Later, KBC expanded the VM-ERTO system to add a new optimization solution that considers the hydrogen and fuel systems on a daily shift basis. This includes all the related utilities, such as fuels, electricity, CO₂ production, and steam consumption/production.

KBC also provided the engineers and operator training so they could sustain their efforts with continuous improvement.

Results

During the daily utility operations meeting, the refinery team reviewed the VM-ERTO performance agenda items. They modified the "AS-IS" workflow to add in new steps as necessary and developed a RASCI Matrix for accountability at each step of the workflow.

The project reduced refining costs due to real time optimization provided by VM-ERTO. The result was the operator reducing energy costs by 1.5 %. After developing the RASCI matrix, the operator saved an additional 0.3%.



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