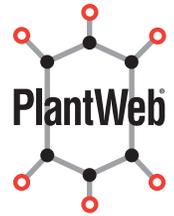# Rompetrol Improves Profitability of Petromidia Refinery Crude Unit with SmartProcess® Fractionator and Heater Solutions

PlantWeb

RESULTS

- Improved recovery of most valuable fuel products worth US$1,890,000 per year

- Audited benefits combined with efficient and cost effective project execution gave payback in 3 months

- Improved heater fuel usage efficiency by more than 0.5%

- Improved process stability to automatically handle process disturbances more effectively

- Significantly reduced operator workload, especially during feed rate changes

APPLICATION
SmartProcess Fractionator and Heater applications have been installed on the Atmospheric and Vacuum fractionators and their associated feed heaters in a Crude Distillation Unit. The applications include the use of PredictPro multivariable predictive control and inferential analysers to predict product initial and final boiling points.

CUSTOMER
Rompetrol, Petromidia Refinery located near Constanţa, Romania.

CHALLENGE
The Petromidia refinery was built in the 1970s and has been owned by the Rompetrol Group since 2001. It is the largest oil refinery in Romania with a rated capacity of 100,00bbl/day. The refinery is located on the Black Sea coast and imports crude oil by sea. Because of the associated shipping costs, it is imperative that the refinery operates as efficiently as possible if the business is to be profitable. The Crude Distillation Unit was recently modernised with a DeltaV system and Rompetrol is leveraging their investment by further exploiting the capability of the DeltaV system.

"Emerson's SmartProcess, which includes DeltaV advanced control technology, PredictPro has given us a significant improvement in the Crude Unit operations, both in terms of improved product value and plant operability."

Gheorghe Oprea
Senior Process Control Engineer,
Rompetrol Refining

DeltaV

For more information:
www.Emerson.com/QBR
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Process Management

Rompetrol's requirements of the advanced control project were to:
- Increase profit by at least US$ 750,000/year
- Increase operational stability
- Improve separation of distillation cuts and yield maximization of the more valuable products (jet fuel and diesel)
- Lower energy and other utilities consumption
- Reduce operator workload
- Maximize throughput

SOLUTION

One of the most important units in Rompetrol's Petromidia Refinery is the Crude Unit which performs the first fractionation of the crude oil feed into products. Rompetrol recognizes that the DeltaV system can provide more than just regulatory process control for their refinery units, and that Emerson offers SmartProcess Fractionator, a suite of preconfigured DeltaV advanced control applications developed specifically for fractionation processes. Emerson was, therefore the natural choice to implement an Advanced Control and Optimization application for the Crude Unit.

Five multivariable control schemes using DeltaV PredictPro were built to control and optimize the atmospheric and vacuum fractionators and their three associated feed heaters. As PredictPro is embedded within the DeltaV system these are able to run in the dual redundant DeltaV controllers every few seconds giving extremely high levels of performance and reliability.

The predictive capability of PredictPro enables improved control stability combined with fast, accurate optimization, maximizing the production rate of the most valuable products and improving heater efficiency.

SmartProcess Fractionator and Heater application calculations are performed in the DeltaV system to calculate important unmeasured internal operating conditions that are used as constraints by the PredictPro optimizer as it maximizes production of valuable products and heater efficiency.

Since being implemented, operators have reported that all of Rompetrol's objectives have been achieved or exceeded including; optimized product recovery, improved heater efficiency, better handling of process disturbances and reduced operator workload.

In addition to the audited refinery performance improvement, use of DeltaV PredictPro advanced control improves the refinery world ranking as benchmarked by Solomon Associates. Emerson has been instrumental in Rompetrol achieving this position.

"Emerson's engineering team are professional and knowledgeable and we would be happy to work with them again."

Radu Iscovici
Head of the Process Control Group, Rompetrol Refining

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