

PRACTICAL FRACTIONATOR SOLUTIONS: SMALLER SIGMA and LARGER MARGINS

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ABSTRACT

A comprehensive package of Advanced Regulatory Control and Optimization strategies has been commissioned at Enterprise's ACT FRAC I facility also known as the Baton Rouge Fractionator (BRF).

Relying entirely on the DCS system for computing and control functions, these strategies simultaneously:

- 1) Improve process stability, decreasing operator workload.
- 2) Reduce variability in compositions significantly (Standard deviation or Sigma reduced by a factor of 3-6), permitting much closer operation to product specifications.
- 3) Maximize targeted setpoints, permitting the plant to increase throughput, yield of higher valued products, or energy efficiency, as economics dictate.

The reduction in variability alone resulted in an estimated payout of less than six months.

The Enterprise Baton Rouge Fractionator in Port Allen, Louisiana is a 60,000-barrel/day NGL facility that came on stream in mid 1999. It incorporates a high degree of heat integration, and processes liquids from several major gas plants along the Gulf Coast.

Enterprise was convinced that additional benefits were achievable by employing advanced composition and separations control. A project was commissioned, and a team assembled consisting of control specialists from Enterprise and from Barry D. Payne & Associates, Inc. The engineered solutions employed included:

- 1) Dynamically compensated model based estimates of product compositions using tray temperatures and tower pressures.
- 2) Control of integrated energy and material balance models.
- 3) Strategies to "push" against multiple constraints, maximizing Inlet Rate, Propane RVP, and Hot Oil system efficiency.

The implementation took place during normal operations with only a limited amount of testing. Operators declared the plant much easier to run with the improved controls. The project yielded reductions in the standard deviation of most product compositions by factors of three to six. The increase in propane yield alone increased product revenues several times the total project cost on an annual basis.

(for further reading on this topic – contact Barry D. Payne & Associates, Inc. – www.bdpayne.com)

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