Texas Industrial Energy Management Forum

“Award Winning Technologies, Projects and Programs”
March 3, 2005
Brady’s Landing
8505 Cypress St.
Houston, Texas

Program, 4:00 to 6:00 pm

STS-AIChE Welcome

Moderator

Terry Welch, Technology Director, The Dow Chemical Company

Presentations

Applications and Benefits of the Dzyacky Flooding Predictor
J. Christopher Lewis, Separations Research Program,
University of Texas at Austin

This technology was recognized as one of the “World's Best Technologies 2002”. The capacity of a distillation tower depends on the column diameter, contacting internals, feed composition, liquid and vapor rates, physical properties of the system and ambient conditions. Routine changes in the feed composition, feed rates and ambient conditions can affect the column’s capacity or flood point. The Dzyacky Flooding Predictor evaluates time derivatives of typical process variables to predict when the column will flood. Thus computer software is utilized to increase the column capacity. The Dzyacky Predictor offers the distinct advantage of not requiring a process shutdown for its implementation. The Separations Research Program (SRP) has tested the Dzacky Flooding Predictor method using a computer controlled 18-inch diameter column and has demonstrated a 6-7% increase in capacity. This presentation will include a description of the Flooding Predictor and a presentation of the experimental results recently obtained at the SRP.

ExxonMobil’s Global Energy Management System
Phil Stallman, ExxonMobil Refining and Supply Co.
In 1998, ExxonMobil developed and started implementing its Global Energy Management System (GEMS), which utilizes international best practices and benchmarking to identify energy efficiencies at each of its manufacturing plants. Thus far, they have identified opportunities to improve the energy efficiency of their refineries and chemical plants by 15 to 20 percent from their 1998 baseline. At full implementation, savings are expected to total between $500 million and $1 billion per year – depending on energy price – with an associated reduction in carbon dioxide emissions of about 10 million tonnes per year.

**BOP 2003 Energy Project**  
Jim Myers, ExxonMobil, Baytown

ExxonMobil's Global Energy Management System (G-EMS) was initiated at Baytown in 2000 with three core objectives: operate existing facilities more efficiently through improved work practices; identify investment opportunities to employ new facilities and technology; and, sustain results through focused measurement, accountability and support. Steam cracking is an energy intensive process. This project aimed to reduce fuel consumption and resulting emissions per unit of production. Specific improvements completed included the following: 1. Replacement of a large compressor with a state-of-the-art high-efficiency model. 2. Replacement of a high-pressure boiler feed water preheater with a new design to eliminate fouling and improve energy efficiency. Since the bundle replacement, energy losses to plant cooling water and air fin exchangers have also been significantly reduced. 3. Installation of new facilities to allow on-line cleaning of steam turbine drivers to reduce efficiency losses from steam-side fouling. 4. Replacement of a 54" check valve in the propylene refrigeration circuit with a lower pressure drop design to reduce compression energy requirements. 5. Retrofit of a large 1500#/600# steam letdown station to eliminate steam leaks and reduce inefficient steam letdown losses resulting from desuperheat spray water leak-by. In addition, a Baytown team led a pilot study at the plant and developed a new method to analyze and review energy consumption. This new methodology has improved the understanding of energy usage at the facility and will lead to continued efficiency improvements. To share this Best Practice, the team developed a standardized tool called the Steam Cracking Energy Efficiency Measure that is now being adopted by all ExxonMobil Chemical steam crackers around the world. The Baytown Plant has been internally recognized for leading the development of this tool. Baytown's annualized energy savings from these activities are 4% per unit of production, equivalent to 1,138,000 MM Btu, with associated CO2 emissions reductions of 66,000 tons. ExxonMobil Chemical Company’s Baytown Olefins Plant won an ACC Energy Award of Exceptional Merit in the Significant Improvement in Manufacturing-Project category.

**Energy Management at Alcoa**  
Garry Goehring, Alcoa Engineered Products, Cressona, Pennsylvania

As the world’s leading producer of aluminum, Alcoa’s long-term strategy for remaining competitive includes goals for using energy more efficiently. By performing plant-wide assessments, conducting employee training and using DOE software tools and technical resources, Alcoa has successfully identified more than $80 million in savings opportunities, and has reduced its operating costs by more than $20 million.

**Questions & Answers**
**Networking**, 6:00 to 7:00 pm
Following the Networking event, you are invited to attend the South Texas Section’s dinner meeting.

There is no cost for attending the Energy Forum; however, please pre-register for it on the STS_AICHe website at [http://www.sts-aiche.org/](http://www.sts-aiche.org/) so we can provide adequate facilities.

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