



Texas Industries of the Future

**Texas Industrial Energy Management Forum
Presented at the
2013 AIChE Southwest Process Technology Conference**

Oct. 3, 2013 9:30 am - Noon

Moody Gardens Convention Center, Galveston, Texas

Registration open at <http://www.aiche.org/conferences/regional-process-technology-conference/2013>

Title Presenters	Abstract
BASF Corporate Energy Management Process Ty Geiger Director, Energy and Verbund Management NC/S Site and Infrastructure Development BASF	BASF Corporation has an established energy management process that has been applied to its manufacturing sites for many years. BASF management has continued to focus on sustainable improvement by raising previously set global targets to now increase energy efficiency in production by 35% and reduce specific greenhouse gas emissions by 40% by the year 2020, compared with 2002. To advance toward this goal in North America, annual targets have been set and tracked since 2008. BASF has been recognized by the American Chemistry Council with the Responsible Care [®] Energy Efficiency Award for its corporate energy management process each year since 2008, four times with exceptional merit. Key features of the process are obtaining management support and commitment, establishing a corporate and global organization, setting clear goals and objectives, maintaining the focus on continuous improvement, communication of best practices and technologies, and recognition. Numerous projects have been implemented at multiple manufacturing sites using a wide range of improvements, including:

	<ul style="list-style-type: none"> • Energy KPI visualization and other LEAN practices • Heat recovery and integration • Process modifications • Advanced process controls • General conservation practices • Motor and transformer efficiency increases • Flare system improvements • Condensate recovery • Distillation pressure optimizations
<p>Using Statistical Analysis to Optimize Production within Energy Constraints</p> <p>Sirisha Chada Senior Process Engineer TPC Group</p> <p>Cary D. Young Senior Staff Process Engineer TPC Group</p>	<p>Forecasting and evaluation of demand vs. capacity for utilities is a standard procedure for major petrochemical companies that allows them to manage costs around utilities more effectively.</p> <p>Recently, unavailability of full steam generation capability provided an opportunity for TPC to gather data in a set of operating conditions that were atypical but desirable for long term operations, as well as allowing TPC to meet its energy consumption reduction targets.</p> <p>This presentation describes how statistical analysis tools and concepts were used within an overall site energy optimization program to optimize production of core petrochemical products of this facility within the specific utility, reliability and environmental constraints while at the same time maximizing profitability and minimizing capital investment.</p> <p>Base site steam consumption is driven by two main products and the analysis focused on these two products. Steam consumption for maximum production limits of the two core products was evaluated to specify the operating boundaries of the plant within the constraints of maximum steam production for the on-line energy systems (boilers and power production).</p>
<p>Driving Sustainable Savings in Utility Operations through a Site-wide Energy Model</p> <p>Tyler Reitmeier Soteica Visual MESA LLC</p>	<p>Sustainable savings are routinely captured by utility system operators at industrial facilities through regular implementation of real-time recommendations of a site-wide energy model solution. We will describe an approach through which utility “Best Practices” are developed using the framework offered by the site-wide model. This approach is the result of 25 years of continuous development specifically focused on utility operations improvement and has been implemented at over 50 sites worldwide.</p>

	<p>A client case study will be used to illustrate the methodology leading to the proven benefits delivered at CEPSA's San Roque, Spain chemical facility. CEPSA operates a complex steam, fuel gas and hot oil network at its chemical complex producing Purified Terephthalic Acid (PTA) and related chemical products at San Roque. CEPSA contracts with neighboring third party sites for steam and fuel gas purchase and sale. The complexity of the utility system operation at San Roque presents a significant challenge to the operators responsible to controlling the operational cost at the site.</p> <p>The structured approach employed at San Roque illuminated particular "handles" available to the CEPSA operators through which they implement changes to utility system operation required to maintain reliable, cost-effective, real-time operation. These included the manipulation of boiler steam production, the export and import of steam, fuel gas import, and the management of hot oil/steam trade-off for process heating.</p> <p>The sheer number of available "handles" at the operators' disposal introduces enormous complexity to the task of achieving the lowest cost real-time operating mode for the utilities. An online model which considers plant control strategies and system reaction to changes in the utilities was developed and deployed in order to give the operators specific, real-time recommendations for needed changes to "handles" that would result in lowest cost, real-time operation of the utility system, resulting in significant energy cost savings as a result.</p>
<p>Implementation Experiences in Energy Retrofit of Crude Units Using an Alternative Technology</p> <p>Miguel Bagajewicz Professor School of Chemical, Biological and Materials Engineering University of Oklahoma</p> <p>Independent Consultant, OK-Solutions</p>	<p>OK-Solutions is implementing a newly developed heat integration and retrofit method (HIT; heat integration Transportation model) in Asian refineries. Pinch Technology (PT) has not been popular with crude unit managers because of its limitations. This methodology is superior when applied to crude units, not only because it avoids several splitting-merging problems that PT suggests for crude units, but also because it offers much better economic performance. We will show an example where these advantages as well as the Pinch Technology problems are highlighted and where the profitability is far larger when HIT is used.</p> <p>Because most of the crude units are badly integrated (lack of heat exchange area and bad allocation of the existing area), there are very profitable opportunities (15 - 25% savings, and ROI > 20%, sometimes close to 40%). One of our examples is a 200,000 bpd unit which exhibited a 25% reduction in energy consumption with a</p>

return larger than 30% (the retrofit is underway). Other projects we undertook also exhibit similar profitability.

We will also address other practical issues that we had to deal with: a) retrofit has to be conducted such that several different crudes can be processed, b) fouling, hydraulics and leak issues need attention, b) layout and lack of space to add area was always a problem, c) the use of compact and/or twisted tube exchangers was explored and compact exchangers (Alfa Laval Compablocs in our case) were adopted, not only because of better economics but also because available space would not allow traditional S&T exchangers. We will show how we sorted these problems out in our industrial projects.