

The Plant Automation and Decision Support Conference will have five separate sessions: Process Control, Operator Tools and Effectiveness, Managing the Business – Decision Support, Maintaining and Upgrading the Plant Automation Infrastructure and “The Refinery of the Future”. Each session will have technical presentations and several of the sessions will offer panel discussions.

As always, there will be many opportunities for networking through informal hospitality suites and other social events during the Conference.

Unlike other plant automation and decision support conferences, this Conference is designed by operating companies for operating companies. The NPRA Plant Automation and Decision Support Conference is ideal for those individuals who are responsible for plant automation, process control, planning and scheduling, IT and modeling/simulation.

Wednesday A.M.

Process Control

Presider, *Steve Elwart*, Ergon Refining

Auditing APC Applications for Improved Performance - *James Gunderman*, Staff Process Control Engineer, Chevron Corporation.

A standard Process for auditing Advanced Process Controls (APC) is being implemented at Chevron to improve APC application performance. This presentation will discuss Chevron’s methodology for conducting APC audits, our evolving approach and lessons learned to date.

Identification of Dynamic Inferential Models Using Slow and Irregular Analyzer and Lab Data – *Dr. Yucai Zhu*, Tai-Ji Control, *Jinghua Wang*, & *Qingling Fu*, Sinopec Guangzhou Refinery

Ignoring dynamics in inferential modeling is one of the major causes of inaccuracy. Using a newly developed identification method, we will develop dynamic inferential models of several product qualities (endpoints, flash point) of a crude unit at Sinopec Guangzhou Refinery.

Security and Data Access – Striking the Right Balance - *Rick Kaun*, Collaborative Production Management, Marikon, Inc.; *Donovan Tindill*, Supervisor, CPM Network Services, Matrikon, Inc. Industry continues to put pressure on technology in two strong and counterintuitive directions: increased need for connectivity and access to remote data sources; and the need for information security. More connections generally mean more security risks or holes, and OPC has traditionally been good for connecting to data, but not for securing it. As this need increases, we come to rely more and more on products like OPC drivers to connect applications and ultimately users to the data, and a strong need for accountability and controlling who accesses the data; logging user access goes a long way towards increasing both security and accountability.

Securing Control Systems in the Oil and Gas Infrastructure: The I3P SCADA Security Research Project – *Dr. Ulf Lindqvist*, Program Director, SRI International & *Ben Cook*, Research Staff, Sandia National Laboratories.

The Institute for Information Infrastructure Protection (I3P) is funding a team consisting of ten research institutions to undertake a two-year R&D effort to improve the cyber security of control systems in the oil and gas industry. This presentation will identify some cyber security concerns for the industry, provide an overview of the research program, and highlight some specific tools and technologies under development by the I3P team.

Reduction of “Bad Actor” Nuisance Process Control Alarms - *Douglas Rothenberg*, D-RoTH, Inc., *Probir Shah*, ConocoPhillips

Upstream petroleum processing and downstream refining plants have recognized the importance of understanding the performance of their DCS alarm systems and the vital nature of its role in overall

production effectiveness. Without intervention and redesign of their alarm capabilities, enterprises can expect to face abnormal operating situations without the essential information and guidance alarm systems are supposed to provide. This paper reviews the current best practices in DCS alarm management and provides insight into how effective an early program can be in reducing nuisance alarm activations. Typical results show a 10-15 % initial reduction of alarms through a program of data capture, analysis and pruning and tuning of alarms. The analysis and results provide important motivation for continuing the alarm redesign process to overcome the challenges and meet the performance goals of managing alarm flood conditions in the next phase.

Wednesday P.M.

Operator Tools and Effectiveness
Presider, *Steve Venner*, Honeywell

Ensure Safe Production and Achieve Economic Targets through Improved Work Processes and Increased Collaboration - *George Pohle*, Shell, *Bart Winters*, Honeywell

Establishing Operator Performance Improvements and Economic Benefit for an ASM[®] Operator Interface - *Dal Vernon Reising*, Principal Research Scientist, Honeywell, *Jamie Errington*, Senior Partner, *Peter Bullemer*, Senior Partner & *Time SeMaere*, Partner, Human Centered Solutions, LLP.
A controlled comparison of an Abnormal Situation Management operator interface to that of a traditional DCS interface was conducted with 21 professional operators. The results indicated that operators using the ASM[®] interface completed fault scenarios 41% faster and were 26% more successful. A Monte Carlo simulation using these results estimated the economic benefit at \$870,000 USD per year for a plant of comparable size.

Operator Situation Awareness - *Ian Nimmo*, President, User Centered Design Services LLC
Alarm Management, Human Interface Design, Control Room Ergonomics are all important topics for today's plant operations, however, if they are done in isolation they will be unsuccessful. The paper will introduce Operator Situation Awareness and how each of these disciplines can impact the operator's ability to respond to abnormal situations; how modifying the alarm system can be supported by enhancement to the graphics; how the graphics can be improved by human factors and ergonomic design of the operating console and how the console communications can be improved by ergonomic design of the control room.

Improved Operation Performance Delivers Better Plant Reliability - *Sanjeev L. Mullick*, Aspen Technology, Inc.

Today, oil companies are focusing on increasing production to improve profitability with historically high margins. Running more barrels through the refinery at top capacity introduces a whole new set of issues related to safe reliable operation. Plant reliability and safety initiatives can help minimize the potential for disruptions. Equipment reliability through condition-based monitoring and reliability centered maintenance is one way to ensure plant uptime. Another important approach for overall plant reliability is business process improvement and execution. This includes critical processes in planning, scheduling, feedstock selection, blending, oil movements, control, and performance tracking in all of these areas. Performance tracking covers a range of capabilities from empowering field operations with handhelds for data capture, processing rounds, and troubleshooting guidelines; through displaying a hierarchy of Key Performance Indicators (KPIs) via a role-based portal, enabled by a robust information integration infrastructure. This paper will focus on the best practices in business processes and performance management for better plant reliability. Industry examples and case studies will be highlighted.

Panel Session to Discuss Alarm Management

- Peter Jofriet – Honeywell
- Douglas Rothenburg – D-RoTH, Inc.
- Frank Woolfrey – Yokogawa Corporation of America

Thursday A.M.

Managing the Business – Decision Support

Prsider, *Jack Davis*, Aspen Technologies

Planning & Optimization Best Practices - *Michael Hileman*, Vice President, Solomon Associates
Operations Planning is the short-term plan used to guide the purchase of feedstocks, set refinery process unit conditions, and determine product marketing plans. Solomon Associates has developed Best Practices as what we have observed as common work practices, routines, or procedures in Pacesetter refinery/petrochemicals facilities. This paper is an overview of Planning and Optimization best practices including use of LP models to help planners unlock the potential for increased margin generation for their operations.

Supply Chain Decision Support for a Multi-Site Refining Company - Honeywell

Crude Supply and Inventory Management: Tools and Techniques - *Darrell Rangnow*, Director, Invensys

It may seem to some people that the process of having the right crude at the right place at the right time for the right price would be straight forward, but for those in the industry that are trying to do just that it is anything but straight forward. The decisions made by these individuals have a large impact on the overall refining downstream enterprise profitability and must be made with large uncertainties in demand, product prices, crude quality, logistics, and refinery operating capabilities/capacities. As a result of these risks and incentives many companies have focused significant effort on developing tools and techniques to maximize the value gained and reduce the uncertainties. This paper describes some of these innovative approaches, characterizes the effectiveness of these practices, the various business strategies employed, and provides industry examples.

Better Decisions, Less Effort, via Scheduling Technologies - *Craig Acuff*, Valero Energy Corporation
Plant scheduling tools have evolved significantly over the past five years. Several vendors are addressing issues such as cost benefits, complexity, functionality, and integration. Better decisions are made with less effort using integrated scheduling tools. This presentation presents an overview from an operating company perspective on how today's technologies have overcome legacy issues and provide the basis for making better decisions.

Intelligent Information Management - *Tom Porritt*, Operating Engineer, Tesoro Alaska Refinery, & *Ken Johnson*, Account Manager, Matrikon

Movement Management is a key area in the refinery, and typically the focus of the Oil Accountants. All refineries have a Movement Management system of one sort or another, whether it is in the form of a logbook, a spreadsheet, an Access database or an automated system provided by DCS vendors. If information is gathered at the source, how can we use this information in a more efficient way to create significantly more value through highly efficient business processes? This presentation will discuss how one refinery has optimized their information management by changing their business processes and adding additional applications without putting any additional data collection or management burden on operations.

Panel Session on Cutting Edge Technology in Decision Support

- Basil Joffe – Aspen Technologies
- Pat Kennedy – OSIsoft
- Dean Trierwiler – Haverly Systems

Thursday P.M.

Maintaining and Upgrading the Plant Automation Infrastructure

Prsident, *Blake Larsen*, Western Refining

2006 Industry Comparative Performance Analysis to Drive Automation Upgrades - *John Havener*, Senior Consultant, Solomon Associates.

There is significant interest in upgrading the automation systems which in the refining industry average 15 years. This presentation will describe the areas presently targeted in the study and describe how the study results will be targeted to help drive automation upgrades. The first step will be comparative performance analysis, followed by analysis to identify gaps to the best performers. Quantification of the financial impact provides a springboard to determine if upgrades are justified; define the projects and returns; and implement change.

Integration of Wireless Technologies into Operational Work Practices - *Stephane Lauzon*, Honeywell

Wireless technologies are becoming pervasive and surround us in our daily lives. Individuals are now installing wireless hubs and switches at home, work and connect to the Internet at their favorite neighborhood coffee house, and find various "hotspots" in locations throughout many metropolitan areas. Wireless technology in an industrial setting while not yet as commonplace, is also growing. An industrial setting however brings a different set of challenges unique to its environment. Not only are robustness, reliability and security of the wireless network paramount in its design and deployment, but also a rethinking of how this technology can be best integrated to improve day-to-day work practices. The purpose of this paper will be to review the current "state-of-the-art" in wireless technologies and provide an example with guidelines for their appropriate integration into work practices at an industrial plant. First will be a review of existing wireless technologies and standards. Following this, an operations scenario from one of Honeywell's operating facilities will be presented and discussed. In this particular case, the challenges of bringing board and multiple field operators together in a common work flow can be overcome by the appropriate application of technology. Finally, there will be a look ahead at future technological developments in this area and their potential implications.

A Future Vision of IT-based Systemized Control Room Operation - *Tetsuji Tani*, Engineering Consultant & *Fumitaka Higuchi*, Chief Engineer of Idemitsu Kosan Co.

Since the year 2000, over 30 ISCS /AMS systems have been applied at the oil/petrochemical refineries operated by Idemitsu Kosan in Japan. As a result, the following have already been achieved : 1) manual operation time has been reduced by 98% through the application of ISCS to the grade change operation; 2) monitoring time has been reduced by 85% through the application of AMS to the grade change operation; 3) the expert's know-how and operational knowledge have been partially systematized by ISCS and AMS to help automate start-up and shutdown operations; and 4) ISCS and AMS have contributed to know-how sharing and to the dissemination of operational skill.

Application of Automated Step Testing and Modeling on a FCC Unit at the Hovensa St. Croix Refinery - *Phil Celaya*, Senior Applications Engineer, *Jasna Zekic*, Process Engineer, *Zul Bandali*, Applications Developer, & *Rohit Pantwardhan*, Advanced Control Engineer of Matrikon.

With Advanced Control Systems common in the refining industry, there is strong focus on sustaining these applications. Technology that facilitates automated monitoring and maintenance of MPC applications is critical. The Hovensa St. Croix refinery is a 500,000 bpd facility that has several MPC applications. These applications were originally commissioned, on average, 5-7 years ago. This paper describes the MPC maintenance efforts on the FCC application, following a unit turnaround based on automated, closed loop, multivariable step testing and modeling technology.

Managing Security for Open Control Systems -*Johan Nye*, ExxonMobil Corporation

What is an open control system? Management considerations, technical considerations, window for process control.

Technical Forum on the trend of “Normalization of Deviation”

Friday A.M.

“The Refinery of the Future”
President, *Anne Keller*, Jacobs Consultancy

Keynote: “Plant Automation as Seen by a Plant Manager” *Wouter Raemdonck*, TOTAL
Petrochemicals

Keynote “A Refinery of The Future” *Mike Sarli*, ExxonMobil Corporation

Panel Discussion on “The Refinery of the Future”

- Jay Atkins – BearingPoint
- Wendy Foslien – Honeywell
- Johnny Martin - BP
- Mike Sarli – ExxonMobil