

2019 Reliability & Maintenance Conference Sessions

Wednesday, May 22

Maintenance Track

Improving Maintenance Work Management Process Through Operationalizing Wrench Time Studies

Chevron U.S.A. Inc.

This presentation will address the components of successfully operationalizing wrench time studies with support from the workforce and leadership to improve the organization's maintenance performance. While wrench time studies have historically proven to be onerous, this discussion will highlight that while also providing a fit-for-purpose approach, that can be completed efficiently with available resources.

Impact of Performance Improvement of the Machinery/Reliability Group on Plant Performance

Becht Engineering Co., Inc.

This presentation will discuss the case study of a facility which achieved \$135MM/yr profit improvement by implementing a "common sense" program in which a unionized facility running at a 31% direct work activity rate, and an outside group assessed that 51% direct work activity was likely the best that could be achieved given the work force and existing work environment. The plant went to work and achieved 56+% direct work activity in 2 years. Program development and results will be discussed.

Digital Technology for Managing Scaffolding Projects

Brock Enterprises, Inc.

Brock Group

For project planning, 3D site or equipment models can be used to quickly develop scaffold designs that offer precise visualization and increased estimate accuracy. Detailed drawings and bills of material can be generated for the site crew to pull the pieces and quantities of scaffold material needed, then efficiently build the structure. For facilities without existing 3D models, laser technology can scan a structure or site to create an accurate 3D model. By using this approach, the need for modifications and rework can be mitigated, and savings in labor and materials can be achieved. This presentation will include an overview of smart devices, along with relevant examples of applications and results.

Flawless Execution: Applying the Plan, Brief, Execute, Debrief Strategy

Afterburner Inc.

What can Maintenance organizations learn from fighter pilots that can improve production, safety and operational discipline? Fighter pilots start every mission, simple or complex, with a clear, measurable mission objective: "What does success look like for our job today?"

CPCHEM Cedar Bayou and Afterburner partnered to deploy a customized and tailored tool set to drive both production success and safety performance across the entire plant's maintenance operation. This presentation will explore the tools and results of this innovative approach to improved production, safety and operational discipline.

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Reliability Track

Increasing Human Reliability with Enhanced Reality Simulation at BASF-Geismar, Louisiana

BASF has a site-wide initiative to reduce unplanned events and increase operational discipline by utilizing new tools to enhance its training strategy. Enhanced reality simulators are one of the tools BASF is implementing to achieve their goals. A key part of any reliability strategy is the human component: the field operator.

PM Optimization – Using Data Analytics to Optimize PM Activities

Chevron Products Company

This presentation will discuss the use of Microsoft Power BI to create a software tool that integrates asset performance, maintenance, and cost data into an interactive dashboard that helps users identify opportunities to optimize Preventive (PM) and Predictive (PdM) Maintenance task frequencies and scope and make the best use of maintenance dollars.

Digitization of the AIMS Program

MISTRAS Group Inc.

Technological advances now are contributing to the quality and efficiency of the Asset Integrity Management programs. Data is now electronically collected and transferred for analysis from field to engineering/analyst personnel. This presentation will discuss three important topics:

- Better quality and efficiency with advances in inspection and testing data gathering and reporting
- How predictive data analysis is used with large data sets to identify trends affecting asset life
- How data analysis is contributing to predictive MI programs.

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Mechanical Integrity Track

Critical Check Valve Process at Gallup Refinery

Marathon Petroleum Corporation

Critical Check Valves (CCV) are typically identified as safety related components integral to various core systems in refinery operations. The care, inspection, replacement and/or repair of the CCV's are essential elements of a successful CCV program. This presentation will describe the process Gallup Refining created to control the identification, evaluation, installation, inspection and maintenance of CCVs.

The Role of CCDs, IOWs and Digital Platforms in Delivering Best in Class Turnaround Outcomes

Quest Integrity

During the past twenty years, the adoption by the refining sector of structured pressure equipment integrity management (PEIM) programs has delivered a measurable reduction in incidents that lead to harm to people and the environment, loss of hydrocarbon containment and equipment reliability. The implementation of Risk Based Inspection programs and the development of Integrity Operating Widows and use of Corrosion Control Documents have been a key element of these programs. However, despite the adoption of these initiatives, significant incidents still occur and turnaround durations and costs are routinely negatively impacted by unexpected and unplanned emergent work scope. In this presentation we provide some examples of how best-in-class turnaround performance, which in turn will lead to improved pressure equipment integrity, can be delivered by ensuring all elements of a pressure equipment integrity management program combine holistically to facilitate optimum turnaround planning, contingency management and effective workscope execution. Specifically, by using case studies we will demonstrate how a fully integrated, multidisciplinary approach to PEIM leads to excellence in turnaround execution.

Minimizing LOC with High Consequence Pump Operation

Chevron U.S.A. Inc.

Industry data indicates that the second most frequent and third most costly loss of containment (LOC) events in refineries are associated with pumps in high consequence service. Bearing failures are the most common cause of these significant LOC events. Pumps in high consequence service are those in API 570 Class 1 piping circuits containing:

- flammables above their auto-ignition temperature,
- pressurized flammables that could rapidly vaporize and form an explosive or toxic mixture during a release (such as anhydrous NH₃, C₂, C₃, and C₄ streams), and
- toxics (such as hydrogen sulfide greater than 3 % weight in a gaseous stream, HF acid and anhydrous hydrogen chloride).

A centrally funded, locally resourced project was started in 2016 to install vibration protection systems on in-scope pumps at seven refineries. The target for completion was year-end 2018. Key observations and lessons learned from the project will be discussed.

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Turnaround Track

Making Turnarounds Work Better Through Simulation

Business Laboratory LLC

Plant turnarounds are an inevitable feature of process manufacturing. It is an expensive proposition, and surprisingly few accomplish all of the goals that were planned. Moreover, process plant operators report to us that a majority of their lost time accidents occur during turnarounds. A recent solution proposed increasing the planning time to a minimum of two years before the event. In our view that is going the wrong direction. Markets and feedstocks can change completely in less than two years' time.

A better solution may be to practice. The idea is to capture the work of the turnaround in a simulation model. The model can be run backwards and forwards at 10x real time speeds indicating how the turnaround will unfold, introducing disruptions like accidents, delays in equipment delivery, and weather to see how these elements might impact the planning.

This presentation will show an example of just such a simulation model.

Turnaround Management of Critical Flanges

PK Technology

This presentation will provide the AFPM membership a detailed description of the alkylation unit mobilized critical flange inspection process. Using a mobility approach to this effort will provide significant benefit. It enables the turnaround team utilizing PK Technology's inspectors and its intelliSPEC™ tool to save a significant amount of time and money in this aspect of turnaround work execution. This detailed work process also assures the owner that all critical alkylation flanges have been properly inspected, repaired and torqued placing them back into service and providing a safe, environmentally sound and reliable operation.

Vendor Panel Discussion on Craft Productivity

Nooter Construction

Repcon, Inc.

Turner Industries

Universal Plant Services

Panel will answer prepared questions on craft productivity and open the remainder of the session to Q&A and discussion.

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Maintenance Track

Roundtable Discussion: Lessons Learned and Practice Sharing on Plumber's Plug Incidents

HollyFrontier Corporation

This roundtable will be a discussion of several incidents or near misses involving the installation and use of plumber plugs and what sites and companies are doing to prevent similar incidents.

Current Research on Selected Elements Affecting Bolted Joint Integrity

BP Petrochemicals (retired)

This presentation will touch on three areas of activity that affect bolted joint integrity.

1. The condition of flange face sealing surfaces;
2. Comparing different tightening tools in terms of accuracy, repeatability, and assembly time;
3. Single Stud Replacement (Hot Bolting) as a repair procedure.

Each topic will focus on guidelines, applicability and successful execution along with useful insights.

What KPIs; When?

IDCON INC

Schedule compliance, Maintenance cost, Preventive Maintenance compliance, Backlog hours, and Availability are common KPIs used in measuring Work Management. There is nothing wrong in these KPIs but when you look deeper into how they are produced and how they are used by the organization you often find they are not used at all to drive performance or they are based on very poor input information. This presentation will discuss

- How to divide indicators into groups
- How many KPIs should be used at a time
- How to match KPIs with improvement initiatives
- What KPIs a reactive organization should not waste time on

Reliance Industries, Ltd. Jamnagar Journey to Reliability and Maintenance Excellence

Foundation for Industrial Maintenance Excellence

The presentation of the North American Maintenance Excellence Award to Reliance Industries, Ltd. Jamnagar, India site and their journey to award winning reliability and maintenance excellence.

Hidden Risk: The Danger of Dated Maintenance Strategies

ARMS Reliability

World class execution of a poor strategy won't deliver on operational objectives in a predictable consistent way. Many organizations are executing inconsistent or dated strategies, leading to variable results, continued under-performance, and significant failures and outages. This presentation will review why strategies aren't typically reviewed, false perceptions regarding strategy review, the setbacks that follow dated maintenance strategies, and ways to optimize your approach to maintenance strategies. Attendees will learn ways to overcome the common causes, including:

- Setting up formal triggers to drive strategy review
- Formalizing a process to manage the review and evolution of strategies and content
- Metrics to successfully review or benchmark strategy performance and identify key areas for review
- Changing perceptions that following OEM recommendations is the best strategy

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- Overcoming a reactive maintenance culture and ways it hinders strategy review
- How to fix under-performance, failures and outages with a formal strategy review process

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Reliability Track

AFPM EMpower: Engaging Industry Employees

American Fuel & Petrochemical Manufacturers

Just Add Firewater, LLC

Join us for an interactive discussion about our employee engagement program (AFPM EMpower), plus what we learned during the pilot program, what we built as a result, and how we will work together to harness our workforce as powerful advocates for our industries.

Learning from Predictive Analytics Pilots

LyondellBasell Industries

Open Forum: The Plant of the Future

An open discussion to establish a vision of what we think new plant facilities will look like in 10 years and where we can take our existing assets. This includes equipment design and technology as well as other enablement of technology.

Open Forum: Conference Presentations

An open forum to discuss presentations made during the conference. A panel of conference speakers will be on hand for discussion and comments.

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Mechanical Integrity Track

Advances in Mechanical Leak Repair

Team Industrial Services, Inc.

This presentation is aimed at providing maintenance, reliability and integrity engineers with an update on the outcomes of research into Stress Corrosion Cracking (SCC) in repaired flange sets and degradation in piping repairs. This research represents a significant step forward in plant safety and reliability. Attendees will receive a non-commercial overview of the technology, information on typical safety considerations and details of failure mode analysis techniques.

Roundtable Discussion: Lessons Learned and Practice Sharing on Deadlegs and Pressure Relief Valves

Ethos Mechanical Integrity Solutions, LLC

Intertek/Moody

This roundtable will discuss several incidents or near misses involving deadlegs and pressure relief valves and what standards and practices may prevent future incidents.

Understanding, Inspecting, and Maintaining Aluminum in Petrochemical Plants

Trinity Consultants

Aluminum – the other white metal – has many uses in petrochemical plants. Aluminum fixed dome roofs and floating roofs are regularly used on storage tanks, and tanks storing certain corrosive substances are even made entirely of aluminum, as well as jackets for insulated tanks. This presentation addresses practical issues with the use of aluminum in petrochemical plants both as a material and as it's used in products that are unique to this industry.

Cybersecurity

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Turnaround Track

Operating Company Panel Discussion on Craft Productivity

Chevron U.S.A. Inc.
Flint Hills Resources LLP
Valero Energy Corporation

Panel will answer prepared questions on craft productivity and open the remainder of the session to Q&A and discussion.

Risk Based Work Selection – Optimizing Work Scopes to Improve Turnaround Performance

Becht Engineering Co., Inc.
HollyFrontier Corporation

Methodology for assessing risks can vary from qualitative to quantitative. A semi-quantitative approach provides teams with a structured process that produces consistent results without too burdensome an amount of data required. The use of specialized software eases data collection, facilitation of RBWS workshops, B/C calculation, documentation and reporting of results. When risk levels are assigned to each item it allows owner-operators to make informed decisions on what is “in” and what is “out” of the turnaround Scope. The work product of an RBWS is a justified worklist that will help the organization meet its turnaround and reliability goals.

Equipment Standardization

RAM Analytics

Contrary to the assumption inherent in engineering standards, not all “or equal” equipment performs the same. Manufacturers have lost billions of dollars due to inferior lower cost equipment and materials. Equipment reliability has become a competitive advantage in the global marketplace, those focused on reliability recognize that not all equipment is equally reliable. Equipment standardization has the added potential to improve purchase price, to reduce working capital and to minimize operating expense. With standardization spare parts, equipment repair procedures and technician training will also become much less onerous. This seminar reviews the basic process for equipment standardization and highlights the benefits to be derived.

Maintenance Work Sampling

RAM Analytics

The process industry in the U.S. is in the midst of a critical skilled labor shortage with no relief in sight. Although the shortage was expected, plants were unprepared and now find themselves reacting to this new reality. While they cannot change the past, they can change their future. More importantly, they can take action now that will provide immediate relief using their existing resources. Rather than focus primarily on getting more skilled workers, maintenance managers should focus on leveraging their existing resources. This seminar will define maintenance work sampling and share how it can be used to identify and eliminate non-value-added work.

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Using WorkFace Planning & Advanced Work Packaging to Save Time and Money In Refinery Turnarounds

BrandSafway

WorkFace Planning (WFP) organizes the execution of a construction project to deliver the right services to the right people at the right time. An Advanced Work Package (AWP) contains highly-detailed small plans used onsite by the field crew to perform work in alignment with the WFP.

This presentation will demonstrate how to utilize WFP/AWP to optimize access in a refinery setting to impact three key areas in refinery turnarounds, maintenance and repair: strategy/constructability, WFP/planning and construction management/execution. Possible savings in these key areas are 5 – 10%, 10 – 20% and 5 – 10%, respectively, and are delivered through better productivity, smaller crews and fewer project interruptions.

A case study will be presented that demonstrates how to create a baseline plan, including the use of laser scanning, 3D surveys and point clouds to create 3D models for virtual planning. Sample work packages will show enhanced scopes for scaffold in the WorkFace, location in the plant, material data and design data. Finally, attendees will learn how tag management best practices benefit the build, dismantle, modify and inspection stages.

Friday, May 24

Ethics for Engineers

The ethics workshop will review engineers' roles and responsibilities in applying professional engineering ethics to their professional conduct. The discussion will begin with a definition of ethics and then discuss situations where ethics are brought to bear. This workshop is intended to provide the training needed to maintain a professional engineer's license in those states that require one hour of training per renewal period. AFPM will provide certificates of attendance to those who attend.

Turnaround Track

Roundtable Discussion:

Challenges We Face Impacting Time-on-Tools in TAR's