



# MAINTENANCE SOLUTIONS

A PRACTICAL TRAINING SEMINAR



## ABOUT THE PROGRAM

The AIST Maintenance & Reliability Technology Committee, AIST Lubrication & Hydraulics Technology Committee, and industry leaders have joined together for the 2015 Maintenance Solutions — A Practical Training Seminar.

This workshop-based training seminar will provide attendees with hands-on instruction, tools, and the best available technologies for mechanical, electrical, lubrication, hydraulics, management system maintenance and reliability solutions. In addition, maintenance and outage planning, system design, maintenance troubleshooting and techniques will all be covered. Manufacturing reliability is an integral part of sustainability in the metals industry. Improvement in reliability is essential to assuring manufacturing results at the lowest cost. Both operations and maintenance personnel must understand the direction their organizations need to take with respect to improving and managing their equipment maintenance programs.

**20-23 SEPTEMBER 2015**  
**INDIANAPOLIS, IND., USA**  
THE WESTIN INDIANAPOLIS

## SCHEDULE OF EVENTS

### SUNDAY, 20 SEPTEMBER 2015

4-6 p.m.

Registration

5-6 p.m.

Welcome Reception

### MONDAY, 21 SEPTEMBER 2015

ALL:

7 a.m.

Registration and Continental Breakfast

8 a.m.

Welcome

8:05 a.m.

CONFERENCE OVERVIEW AND JEOPARDY TEAM SETUP

MORE INFORMATION AT  
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EVENT SPONSORS



8:50 a.m.

Break

9 a.m.

## RELIABILITY ACHIEVEMENT AWARD INTRODUCTION

9:10 a.m.

## RELIABILITY ACHIEVEMENT AWARD BRONZE PRESENTATION: LIFE PREDICTION IN INDUSTRIAL EQUIPMENT

*GEORGE CINGLE, UNITED STATES STEEL CORPORATION, AND BIN WU, PURDUE UNIVERSITY CALUMET*

Many industrial facilities use equipment that was designed in the past without the benefit of computational techniques such as finite element analysis (FEA). This manual design method continues to impact the operation and maintenance of such equipment. FEA is now frequently used to improve new equipment by optimizing individual structures within an equipment assembly. This paper proposes a six-step methodology to analyze stress and fatigue levels in manually designed equipment.

9:50 a.m.

Break

10 a.m.

## WHY RELIABILITY?

*IAN MCKINNON, RELIABILITY SOLUTIONS LLC*

In recent years, the term “reliability” has become quite a buzzword in industry. Many companies have started to focus on reliability as a new profit center. Several have rallied around the thought, “It may be our largest available area to compete against lower cost producers.” But what is the best way to build a reliable and predictable plant? What are the key programs and/or processes that will truly deliver improved equipment reliability and process uptime, and how do we implement them in a way that will build sustainability? Many organizations view building a reliability program with an “a la carte” approach: selecting one of these, one of those and taking a leap of faith that they will be implemented in a way that will produce and sustain the desired results. More often than not, this ends with frustrated plant employees who don’t clearly understand the vision and subsequently build walls to protect themselves. Some employees end up feeling that reliability is just another “program of the month.” So how do we break this cycle of failed starts and stops and move forward with sustainable results and measured performance gains?

Noon

Lunch

### TRACK 1:

1 p.m.

## MITIGATING PROBLEMS ASSOCIATED WITH VFD-DRIVEN FANS

*STEVE KAUFMAN AND VERN MARTIN, FLOWCARE ENGINEERING INC.*

Variable frequency drive (VFD) use is very common in industry but are often installed without due consideration of their potential negative impact. Detailed engineering analyses must be completed before VFD installation to prevent possible significant machinery damage. This presentation will address electrical-mechanical conditions that can compromise equipment driven by VFD-controlled motors as well as discuss practices that can protect new and existing equipment.

1:50 p.m.

Break

2 p.m.

## MITIGATING PROBLEMS ASSOCIATED WITH VFD-DRIVEN FANS (CONT'D)

*STEVE KAUFMAN AND VERN MARTIN, FLOWCARE ENGINEERING INC.*

2:50 p.m.

Break

3 p.m.

## GEAR DRIVE MAINTENANCE AND RELIABILITY

*TIM CANALEY, FALK RENEW*

This presentation covers topics such as gearing nomenclature and failure modes, troubleshooting, installation and life cycle management.

3:50 p.m.

Break

4 p.m.

## GEAR DRIVE MAINTENANCE AND RELIABILITY (CONT'D)

*TIM CANALEY, FALK RENEW*

### TRACK 2:

1 p.m.

## FUNDAMENTALS OF LUBRICATION

*JOHN HASPERT, CASTROL INDUSTRIAL N.A. INC.*

Learn about the basic building blocks for lubricants and their usage. The science of friction, wear and lubrication will be discussed in everyday terms to provide attendees with working knowledge that can be applied to their daily jobs.

1:50 p.m.

Break

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2 p.m.

### **UNDERSTANDING GREASES**

*JIM SIDOW, FUCHS LUBRICANTS CO.*

Review of the primary tests greases and lubricants are subjected to and referenced on product data sheets.

2:50 p.m.

Break

3 p.m.

### **AUTOMATIC LUBRICATION**

*MATTHEW BREECE, BIJUR DELIMON INTERNATIONAL*

This presentation will discuss the features and benefits of implementing an automatic lubrication system in steel mills.

3:50 p.m.

Break

4 p.m.

### **BEARING FAILURES**

*WALT KUSNIER, MESSINGER BEARINGS – A KINGSBURY BRAND*

Inspecting failed bearings is an important part of maintenance. The majority of bearings fail prematurely and do not make it to their design life. Inspecting bearing and equipment can determine the causes of bearing damage. Correcting the problem is an important part of good maintenance practices. The goal is to prevent the replacement bearing from failing again for the same reasons, which will improve machine life and reliability.

## **TUESDAY, 22 SEPTEMBER 2015**

7 a.m.

Continental Breakfast

#### **TRACK 1:**

8 a.m.

### **INSTALLATION ACCEPTANCE PRACTICES**

*IAN MCKINNON, RELIABILITY SOLUTIONS LLC*

The condition monitoring industry has seen many changes over the last few decades. Many of these changes are incredibly positive and certainly required in today's industry. However, there are times when these innovations have resulted in poorer analysis and machinery life extension. Many condition monitoring programs focus almost exclusively on the early identification of machinery defects, with little emphasis on identifying underlying causes or improvements. In essence, many condition programs still utilize a reactive, failure-based approach: "What have we really achieved?" and "If we are to move forward, how do we step

up a gear?" This session uses vibration analysis as an example to explain how we got here and provides ideas as to how we move asset life extension and process improvement forward.

8:50 a.m.

Break

9 a.m.

### **INSTALLATION PRACTICES (CONT'D)**

*IAN MCKINNON, RELIABILITY SOLUTIONS LLC*

9:50 a.m.

Break

10 a.m.

### **BOLTING**

*JAY PALMER, VALLEY FORGE & BOLT MANUFACTURING CO.*

10:50 a.m.

Break

11 a.m.

### **BEARING INSTALLATION**

*JEFF OROS AND ALEX HUNT, NTN USA*

On the surface, bolting projects may seem simple enough, but many factors can cause joint tightness to stray far from the equipment designer's intent. Common methods of controlling joint tightness will be discussed, along with other factors that influence initial bolt preload as well as residual preload.

#### **TRACK 2:**

8 a.m.

### **NEW HYDRAULIC SYSTEM COMMISSIONING**

*JOHN AUGUSTINOVICH, EAGLE SERVICES CORP.*

This presentation covers what the owner should expect from contractors to commission a newly installed hydraulic system. The presentation will discuss chemical cleaning and hydraulic oil flushing of hydraulic piping. The owner can use this information to analyze and choose prospective contractors to perform this work.

8:50 a.m.

Break

9 a.m.

### **FIRE-RESISTANT FLUIDS – PAST AND PRESENT**

*JOHN SCHLOBOHM, AMERICAN CHEMICAL TECHNOLOGIES*

The development of fire-resistant hydraulic fluids starting in the mid-20th century to present, including advantages and disadvantages.

9:50 a.m.

Break

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10 a.m.

### USING VFD FOR HYDRAULIC PUMP CONTROL

*RASHID AIDUN, PARKER HANNIFIN CORP.*

Using variable speed drive to improve efficiency and performance of hydraulic power units.

10:50 a.m.

Break

11 a.m.

### HYDRAULIC SYSTEMS – FLUID CONNECTOR TECHNOLOGY

*BRIAN SMITH AND YINDONG GE, PARKER HANNIFIN CORP.*

A training on best practices in fluid connector technology, including the practical application and uses of fluid power system threaded fittings, piping systems and hoses. Fluid connector routing and safety will also be discussed.

ALL:

Noon

Lunch

1 p.m.

### RELIABILITY ACHIEVEMENT AWARD SILVER PRESENTATION: REFINING THE PRACTICE OF HOT MILL SPINDLE DISASSEMBLY, INSPECTION AND ASSEMBLY

In 2009, California Steel Industries' machine shop took on the task of evaluating the condition of its hot mill finishing spindles. The challenge led to the development of practices and devices that made the job safer, more practical and ultimately more efficient.

1:30 p.m.

### STEEL DYNAMICS INC. – ENGINEERED BAR PRODUCTS DIV. FACILITY OVERVIEW

*KYLE GLASS, STEEL DYNAMICS INC.*

1:45 p.m.

### PLANT TOUR: STEEL DYNAMICS INC. – ENGINEERED BAR PRODUCTS DIV.



5:30 p.m.

Reception

## WEDNESDAY, 23 SEPTEMBER 2015

7 a.m.

Continental Breakfast

TRACK 1:

8 a.m.

### ASSET MANAGEMENT AND EMP REVIEW AT ARCELORMITTAL DOFASCO INC.

*ADRIAN CASSA, ARCELORMITTAL DOFASCO INC.*

Knowledge transfer strategies for proactive asset management in today's steel economy. ArcelorMittal Dofasco uses asset prioritization, current inspection implementation methods and equipment maintenance program reviews to continually update work to achieve minimal levels of maintenance in a fluid operating context. Key performance indicator reviews and presentations to all employees keep goals visible and engage everyone equally.

8:50 a.m.

Break

9 a.m.

### IN THE TRENCHES WITH ISO 55,000

*BILL BARTO, LIFE CYCLE ENGINEERING*

In this presentation, the new asset management standard (ISO 55000) will be put into practical terms, and the implementation of an asset management plan will be discussed. Attendees will leave with a better understanding of the standard and examples of how to implement better asset management.

9:50 a.m.

Break

10 a.m.

### VIBRATION ANALYSIS – STARTING OFF ON THE RIGHT FOOT

*BOB MILLER, IVC TECHNOLOGIES*

The basis for vibration analysis or any other condition based monitoring (CBM) technology is getting "good data." In order to get good data, there are many things a person in the field needs to be aware of before he/she actually starts to gather data. The purpose of this presentation is to cover key items such as proper sensor placement, equipment calibrations, machine inspection and others areas that CBM professionals should take into consideration each and every time they go into the field.

10:50 a.m.

Break

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11 a.m.

### **MAKE SURE THE METHODS MATCH THE MACHINE**

*MARK SPEASE, THE ITR CO.*

When something is complicated, human nature (and pragmatism) encourages us to simplify it so we can better understand its nature and communicate information to others. While this approach is sound, vibration analysts must be careful to make certain that in the process of simplifying, valuable information is not lost.

*TRACK 2:*

8 a.m.

### **APPLYING FILTRATION TECHNOLOGY TO SOLVE CRITICAL APPLICATION REQUIREMENTS**

*MRINAL MAHAPATRO, PALL CORP.*

This presentation will provide an overview of filtration technology and how filters are constructed and rated. Contamination-related challenges prevalent in key applications in the metals market will be highlighted. Selection and utilization of appropriate filtration technologies to address these issues will be discussed.

8:50 a.m.

Break

9 a.m.

### **BEARING LUBRICATION SYSTEMS**

*KEVIN MARTHALER, SKF LUBRICATION SYSTEMS USA*

The session will cover bearing lubrication systems of multiple types: single line, dual line and spray grease systems, to total loss and recirculating oil systems. System type selection advantages and limitations will be highlighted with emphasis on asset reliability.

9:50 a.m.

Break

10 a.m.

### **HYDRAULIC PUMPS AND CONTROLS**

*GREG RAE, AVADAL INC.*

An overview of hydraulic pumps and the associated controls for flow, pressure and horsepower. Pump selection, maintenance and troubleshooting issues will be covered as well.

10:50 a.m.

Break

11 a.m.

### **HYDRAULIC PUMPS AND CONTROLS (CONT'D)**

*GREG RAE, AVADAL INC.*

*ALL:*

Noon

Lunch

1 p.m.

### **RELIABILITY ACHIEVEMENT AWARD GOLD PRESENTATION: MILL STAND IMPROVEMENT**

*JERRY HERMANN, NUCOR STEEL-BERKELEY*

Mill spring improvements to improve quality and repeatability of mill stands.

1:40 p.m.

### **SUSTAINABILITY – MAKING IT STICK**

*CHUCK KOOISTRA, GP STRATEGIES*

So you enjoyed the conference and learned a lot. What's next? What are you going to do with that information? This presentation focuses on implementation and, just as important, how to sustain the momentum and gains after initial implementation. More than two-thirds of improvement initiatives fail to achieve the desired outcome due to poor implementation and change management. This session offers tips and tricks to successful implementation and sustainability. The author has more than 40 years of implementation experience across a variety of industries, including all major North American steel producers.

2:30 p.m.

Break

2:40 p.m.

### **JEOPARDY**

4 p.m.

Conference Adjourn

## **REGISTRATION FEES**

Advance registration by 9 August 2015: Member US\$795, Non-member US\$1,010. Registration after 9 August 2015: Member US\$895, Non-member US\$1,110. Registration fees include continental breakfasts, lunches and continuous breaks Monday through Wednesday, reception Sunday and Tuesday, plant tour, and a course workbook or flash drive including presentations.

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