

MainTrain

Saskatoon 2017

Connect, Learn, Contribute

CONFERENCE PROGRAM

SEPTEMBER 25 TO 28

Maintenance, Reliability and Asset Management



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Welcome to MainTrain 2017

Message from PEMAC President **Sue Lubell**

On behalf of the PEMAC Board of Directors and the PEMAC organization, I would like to extend a warm welcome to the 2017 MainTrain Conference here in Saskatoon - the bridge city in the land of the living skies! We hope that you enjoy not only the conference, with its extensive technical programs and exhibits, but also all that this wonderful city has to offer. MainTrain addresses a wide range of Asset Management, Reliability and Maintenance topics through presenters, sponsors and attendees' involvement. In keeping with this year's theme of "Connect, Learn and Contribute", we encourage you to learn and contribute to the content of the conference, while connecting with national and international colleagues. Thank you to the presenters and attendees for your contributions to the conference, to our colleagues on the MainTrain organizing committee, and to our sponsors and exhibitors who have helped to make this conference possible.



*Sue Lubell, President, **PEMAC***

About PEMAC

Vision

PEMAC is a national not for profit association providing global leadership, education and certification in maintenance, reliability and asset management practices.

Mission

PEMAC's mission is to improve its members' professionalism, safety, performance, and outside recognition, by providing specialized education and certification, undertaking research, providing forums for the exchange of information and acting as a public voice for its members and the profession.

PEMAC's membership is comprised of over 1500 maintenance, reliability and asset management practitioners. For more information about PEMAC, visit www.pemac.org. Be sure to follow us on LinkedIn, Facebook and Twitter @PEMACexec for the latest updates as well



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Message from PEMAC Executive Director **Cindy Snedden**

Welcome to MainTrain 2017!

PEMAC is very excited to be hosting its annual conference for the first time in Saskatoon, Saskatchewan. The response has exceeded our expectations and set a new record for attendance. Thank you to the Saskatchewan delegates for your overwhelming response to our efforts to bring this conference to Saskatoon.

I recognized the dire need for better managed maintenance at my first Engineering position in Battleford, Saskatchewan in 1988! So it is exciting for me to be part of an event like this that is bringing experts from many sectors across Canada and around the world together for four days to "Connect, Learn and Contribute" to the advancement in Maintenance, Reliability and Asset Management.

PEMAC is honoured to have been a contributing member of the Global Forum on Maintenance and Asset Management since the spring of 2011 and MainTrain 2017 will be the second time we've had the privilege of hosting this group in Canada. Their presence will create a great opportunity for the exchange of information about what is happening in the field internationally and to move forward on identified areas of collaboration between the global not-for-profit associations.

On behalf of the Board of Directors, the MainTrain Committee, the staff and PEMAC members, thank you all for your participation! We hope you take great advantage of this opportunity to Connect, Learn and Contribute.

Sincerely,

Cindy Snedden, PEng

PEMAC Executive Director

The advertisement features a close-up of the 4Cast device, a silver metal box with four black cables plugged into the front. Above the device is a blue umbrella icon with the text "WE'VE GOT YOU COVERED". The 4Cast logo is on the top right of the device. Below the device, the text "24/7" is in large blue font, followed by "ULTRASOUND BEARING CONDITION MONITORING" in bold white font. Underneath that, it says "Records Sounds and Data". At the bottom, there are three icons: a trend line, a warning triangle, and a document with a checkmark, labeled "TREND", "ALARM", and "REPORT" respectively. The UE Systems Inc. logo is at the very bottom, with the tagline "The ultrasound approach".

WE'VE GOT YOU COVERED

4Cast

24/7

ULTRASOUND BEARING CONDITION MONITORING

Records Sounds and Data

TREND ALARM REPORT

ue
SYSTEMS INC.
The ultrasound approach

Message from the conference chair, **Sridhar Ramakrishnan, P.Eng., MMP**

On behalf of PEMAC and the MainTrain conference committee, I welcome you to MainTrain 2017 in Saskatoon, Saskatchewan. Saskatoon, also known as the 'Paris of the Prairies', lies at the centre of a vibrant economy fuelled by the (physical) assets intensive resources sector - agriculture, livestock, oil and gas, potash, uranium, gold, diamond, coal and their spin off industries. Therefore many of the things that will be shared and discussed in MainTrain 2017 are being implemented in the various industries in this region.

In his most recent book 'Thank you for being late', the Pulitzer Prize winning author Thomas Friedman calls the current times as the 'Age of Accelerations' where he has identified the three largest forces on the planet - technology, globalization, and climate change, to be all accelerating at the same time. This is reshaping many aspects of our societies and that includes our workplace too. Organizations are having to adapt to these accelerating forces. This makes it imperative that all of us in the profession of Maintenance, Reliability and Asset Management remain ahead of the curve all the time. Conferences like MainTrain play a small, but significant role in enabling us in this regard. The conference theme of Connect, Learn and Contribute is very much aligned to this need. Forging effective collaborations, forming new partnerships, creating new synergies (Connect); sharing and learning about new ideas, technologies, methodologies, processes, and even failures (Learn); and contributing to the current and newer bodies of knowledge (Contribute) are the things we seek to offer in these four days - all of which are significant in this age of accelerations.

Therefore, we have designed the four days of conference to provide maximum value around the theme through a good mix of keynotes, sessions, workshops, tours and activities. I hope that your participation at MainTrain 2017 would put you on the path to survive and thrive in this age of accelerations.

I would like to thank you for taking time off your busy schedules to participate in this conference, and I wish you a safe and enjoyable stay in Saskatoon.

Sridhar Ramakrishnan, P.Eng., MMP

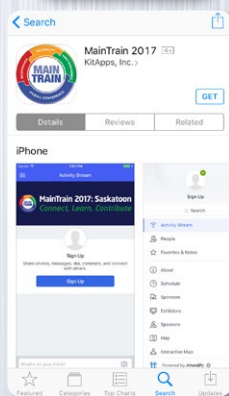


Get the App!

PEMAC is excited to offer a MainTrain 2017 Event App again this year! Get all the latest details about the conference, the speakers, the sessions and an interactive map. You can even complete your surveys online - all from the ease of your phone or tablet.

- Create your own personal schedule by marking the sessions you want to attend as favourites
- Complete session surveys online, easily and quickly!
- See what the world is saying about MainTrain in the news feed and join the conversation

If you haven't already installed the App be sure to do so now. Visit your App Store and search for **MainTrain 2017**. Once installed launch the app and create an account for yourself by simply typing in your first and last name. Now you are ready to go and discover all there is to know about the conference!



Save the date for **MainTrain 2018**

MainTrain 2018 is coming to Ottawa

Next year's MainTrain conference will be held in the vibrant city of Ottawa, Ontario. We are thrilled to be hosting PEMAC's annual conference in Canada's capital city! This conference will be held in Ottawa's West end conveniently located 20 minutes from the downtown core. PEMAC and the Ottawa Chapter are very excited to be hosting MainTrain 2018 at the Brookstreet Hotel on September 24 to 27, 2018. Mark your calendars now and be sure to join us again next year!

More information will be available shortly at www.maintrain.ca or email events@pemac.org.

Follow us soon @MainTrain2018 for all the latest information!



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CNAM is the association of public infrastructure asset management in Canada. Our government and private sector members develop policy, tools and technologies which improve the level of service for public infrastructure assets in every province and territory. CNAM shares that knowledge with other members and stakeholders through our CNAMpedia online resource, the annual conference and various committees and events. Click here to join CNAM and advance the practice of asset management in your organization. www.cnam.ca



The International Council for Machinery Lubrication (ICML) is a NFP organization founded to facilitate growth and development of machinery lubrication as a technical field of endeavor. ICML's Machine Lubrication Technician (MLT), Machine Lubricant Analyst (MLA) and Laboratory Lubricant Analyst (LLA), offered global since 2001, are internationally recognized and adopted by ISO as 18436-4 & 18436-5, respectively. www.lubecouncil.org



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- Asset performance review
- Inventory management
- Work planning and scheduling
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- Defect elimination
- Lubrication management

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Our Exhibitors



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The Global Forum on Maintenance and Asset Management (GFMAM) is an association of professional maintenance and asset management societies formed for the purpose of knowledge creation and sharing and for information exchange among our member societies. To affiliate with GFMAM, a professional society must be a non-profit organization, controlled by the whole membership, legally formed within its region of operations, have significant membership representing a broad base from within the industries it represents, and be willing to actively participate in the GFMAM Council and other GFMAM activities. www.gfmam.org



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Conference Tours

PEMAC is pleased to be offering two tours at this year's conference. These off-site tours are a great way to see behind the scenes and learn more about how these organizations are managing their maintenance, reliability and asset management strategies. To sign up for any of these tours please visit the registration desk.

PotashCorp - Cory Mine Tour

Embark on an adventure underground and visit the world's largest fertilizer company by capacity, producing the three primary crop nutrients utilized for plant growth, livestock feed and industrial goods.

Safety equipment is provided onsite. A waiver must also be signed onsite.

Date: Monday, September 25

Departure Time: 7:00 am

Return Time: 12:00 pm

Canadian Light Source Synchrotron Tour

A synchrotron is a large machine (about the size of a football field) that accelerates electrons to almost the speed of light. Visit the brightest light in Canada just across the river on the University of Saskatchewan Campus.

Date: Tuesday, September 26

Departure Time: 1:30 pm

Return Time: 15:30 pm

MainTrain Exhibitor Showcase

PEMAC is very excited to welcome a wide range of organizations who will be participating in our exhibitor showcase this year. Be sure to drop by and visit each of them in the Adam Foyer, and gain some valuable insight for your own organization.

NETWORKING RECEPTION: Join us for this year's networking reception in the exhibitor showcase on Wednesday, September 27 from 17:30 to 18:30 to meet and mingle with fellow delegates, sponsors and exhibitors. Refreshments will be served.

EXHIBITOR WALKING TOUR: Join us for a walking tour of the exhibits during the welcome reception. Small groups of participants will be guided through the exhibitor showcase, stopping at each exhibit for two minutes to learn more. Listen for the bell to signal your transition to the next exhibit.

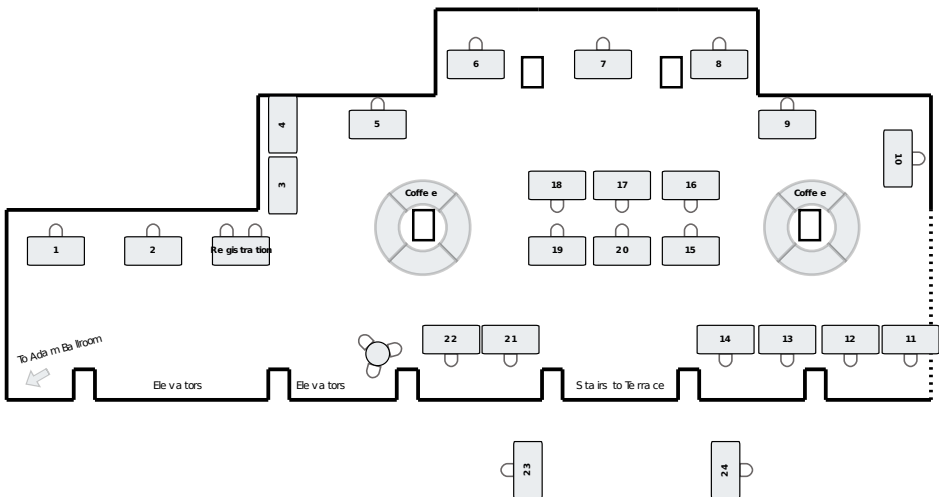
Exhibitor Showcase Hours:

Wednesday, September 27 - 7:15 am to 6:30 pm

Thursday, September 28 - 7:15 am to 1:30 pm

Conference Floor Plan

ARMS Reliability	Booth 2	MRO Magazine	Booth 14
Black & McDonald	Booth 12	Northern Lakes College	Booth 21
Clear Stream	Booth 10	PEMAC	Booth 3
Coast Lubricants	Booth 7	Potash	Booth 22
Cool Air Rentals	Booth 24	Pruftechnik	Booth 6
DIMO Maint	Booth 17	SDT Ultrasound	Booth 11
Fleet Complete	Booth 23	Shermco	Booth 16
GFMAM	Booth 4	Shift Management	Booth 5
HP Reliability	Booth 9	SKF	Booth 1
HubHead	Booth 15	Team Power Solutions	Booth 13
Irving Paper	Booth 19	UE Systems	Booth 20
Leading Edge Sales	Booth 8	Viziya Corp.	Booth 18



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AUTHOR'S CORNER

PEMAC welcomes a number of authors to MainTrain conference and invites conference participants to join each of them one on one in our Author's Corner featured in the exhibitor showcase. Come visit each of these authors at the dedicated time.

Wednesday, September 27

10:00 to 10:20	Dharmen Dhaliyah
12:15 to 1:15	John Hardwick & JR Lafraia
16:00 to 16:30	Cliff Williams
17:30 to 18:00	James Reyes-Picknell & Jesus Sifonte
18:30 to 19:00	Susan Lubell

Thursday, September 28

7:15 to 8:00	James Reyes-Picknell & Jesus Sifonte
10:00 to 10:20	John Hardwick & João Lafraia
12:30 to 1:00	Cliff Williams
1:00 to 1:30	Sue Lubell

Conference Schedule at-a-Glance

Monday September 25, 2017 (Workshops)

0715 - 0800	Registration & Breakfast Adam Ballroom				
0800 - 0845	Welcome and Opening Keynote: Susan Lubell, PEMAC - President Adam Ballroom				Mine tour participants meet in lobby at 6:55 am PotashCorp Cory Mine Tour
0900 - 1000	Managing Change The most forgotten and abused tool Cliff Williams William Pascoe Room	Reliability Centered Maintenance - Re-engineered James Reyes-Picknell and Jesus Sifonte Salon Batoche Room	Vibration 101- A Supervisor's Primer A Supervisor's Primer Ron Newman Terrace Lounge	MMP Module 1 "An Integrated Strategy for Maintenance Management" Day One Len Middleton & Al Johnson Kelsey & Saskatchewan Room	
1000 - 1015	Break				
1015 - 1200	Managing Change The most forgotten and abused tool Cliff Williams William Pascoe Room	Reliability Centered Maintenance - Re-engineered James Reyes-Picknell and Jesus Sifonte Salon Batoche Room	Vibration 101 - A Supervisor's Primer Ron Newman Terrace Lounge	MMP Module 1 "An Integrated Strategy for Maintenance Management" Day One Len Middleton & Al Johnson Kelsey & Saskatchewan Room	
1200 - 1300	Lunch				
1300 - 1430	Organizational Alignment Jay Winkelmans William Pascoe Room	Uptime - Moving to Excellence in Maintenance Management James Reyes-Picknell Salon Batoche Room	Management of Electrical Power Assets Kerry Heid Terrace Lounge	MMP Module 1 "An Integrated Strategy for Maintenance Management" Day One Len Middleton & Al Johnson Kelsey & Saskatchewan Room	
1430 - 1445	Break				
1445 - 1630	Organizational Alignment Jay Winkelmans William Pascoe Room	Uptime - Moving to Excellence in Maintenance Management James Reyes-Picknell Salon Batoche Room	Management of Electrical Power Assets Kerry Heid Terrace Lounge	MMP Module 1 "An Integrated Strategy for Maintenance Management" Day One Len Middleton & Al Johnson Kelsey & Saskatchewan Room	
1700	Dine-Around				
1830 - 2130	Certification Exams:	Becoming a Certified Asset Management Assessor (Workshop Part I) Dharmen Dhaliyah and Suzane Greeman The CAMA Exam will be held on Wednesday night. This workshop is being held as a preparation opportunity. William Pascoe Room	Certified Maintenance and Reliability Professional (CMRP) Exam Society of Reliability and Maintenance Professionals Spadina Room	ICML Exam Salon Batoche Room	

Tuesday September 26, 2017 (Workshops)

0715 - 0800	Registration & Breakfast <i>Adam Ballroom</i>				
0800 - 0845	Opening Keynote Tina Markovic, BHP - Head of Production (Potash) <i>Adam Ballroom</i>				
0900 - 1000	Becoming a Certified Asset Management Assessor (Part II) <i>Preparation workshop for the CAMA Exam</i> Dharmen Dhaliyah and Suzane Greeman <i>William Pascoe Room</i>	KT Analysis A systematic approach to finding the root cause of problems Jeff Robinson and Michael Curran <i>Salon Batoche Room</i>	Optimizing Maintenance Decisions with Failure Data Analysis Jesus Sifonte <i>Terrace Lounge</i>	MMP Module 1 “An Integrated Strategy for Maintenance Management” Day Two Len Middleton & Al Johnson <i>Kelsey & Saskatchewan Room</i>	
1000 - 1015	Break				
1015 - 1200	Becoming a Certified Asset Management Assessor <i>Preparation workshop for the CAMA Exam</i> <i>William Pascoe Room</i>	KT Analysis A systematic approach to finding the root cause of problems Jeff Robinson and Michael Curran <i>Salon Batoche Room</i>	Optimizing Maintenance Decisions with Failure Data Analysis Jesus Sifonte <i>Terrace Lounge</i>	MMP Module 1 “An Integrated Strategy for Maintenance Management” Day Two (continued) Len Middleton & Al Johnson <i>Kelsey & Saskatchewan Room</i>	
1200 - 1300	Lunch				
1300 - 1430	Becoming a Certified Asset Management Assessor <i>Preparation workshop for the CAMA Exam</i> Suzane Greeman and Dharmen Dhaliyah <i>William Pascoe Room</i>	Developing a Leadership Mindset: The Journey from Operations to Supervisor Thinking Marie Gervais <i>Salon Batoche Room</i>	How to Build a Maintenance System that Delivers Predictable Performance Jason Ballentine <i>Terrace Lounge</i>	MMP Module 1 “An Integrated Strategy for Maintenance Management” Day Two (continued) Len Middleton & Al Johnson <i>Kelsey & Saskatchewan Room</i>	Canadian Light Source Synchrotron Meet at 1330 Tour runs from 1400 - 1500
1430 - 1445	Break				
1445 - 1630	Becoming a Certified Asset Management Assessor <i>Preparation workshop for the CAMA Exam</i> Suzane Greeman and Dharmen Dhaliyah <i>William Pascoe Room</i>	Developing a Leadership Mindset: The Journey from Operations to Supervisor Thinking Marie Gervais <i>Salon Batoche Room</i>	How to Build a Maintenance System that Delivers Predictable Performance Jason Ballentine <i>Terrace Lounge</i>	MMP Module 1 “An Integrated Strategy for Maintenance Management” Day Two Len Middleton & Al Johnson <i>Kelsey & Saskatchewan Room</i>	
1630 - 1730	Break <i>Attending the Banquet? Meet in the lobby at 1730. Buses will depart for the Banquet at 1745.</i>				
1815 - 2030	PEMAC Annual Awards Banquet <i>Offsite at the Western Development Museum</i>				

Wednesday September 27, 2017 (Sessions)

0715 - 0800	Registration, Breakfast, Exhibitor Showcase Opens <i>Adam Ballroom</i>		
0800 - 0845	Opening Keynote		
0900 - 1000	Asset Decision Framework for Optimal Value Nigel D'Souza <i>William Pascoe Room</i>	Predictive Pattern Recognition at NSPI and Its Role in Maintenance Strategies Warren Rodgers <i>Salon Batoche Room</i>	Building the Business Case for Maintenance Improvement Susan Lubell <i>Terrace Lounge</i>
1000 - 1020	Break with Exhibitors & Author's Corner		
1020 - 1120	An Open Letter to our Future Senior Leaders Paul Daoust <i>William Pascoe Room</i>	Reliability Centered Maintenance Re-Engineered: An Introduction James Reyes Picknell and Jesus Sifonte <i>Salon Batoche Room</i>	Key Components of Electrical Power System Maintenance Paul Baker <i>Terrace Lounge</i>
1130 - 1230	Setting up For Success Cliff Williams <i>William Pascoe Room</i>	Electrical Asset Condition-based Reliability Management System John Hodson and Dr. Prodipto Ghosh <i>Salon Batoche Room</i>	Case Study: Mobile Devices in a Mining Environment Doug Stretton <i>Terrace Lounge</i>
1230 - 1315	Lunch and Exhibitor Showcase & Author's Corner		
1315 - 1445	MRO Roundtable		
1500 - 1600	Asset Management related Value Improvement Practices for Major Projects Dave Daines GFAM Speaker (Asset Management Council - Australia) <i>William Pascoe Room</i>	IIoT, Smart Industry and Artificial Intelligence for Manufacturing Blair Fraser <i>Salon Batoche Room</i>	PM Optimization - Integrating "Lean" Into Your Maintenance Strategy James Kovacevic <i>Terrace Lounge</i>
1600 - 1630	Break and Exhibitor Showcase & Author's Corner		
1630 - 1730	Asset Management - Alignment between Financial and Operational Edmea Adell GFAM Speaker (IFRAMI - France) <i>William Pascoe Room</i>	Case Study: Lean Six Sigma in Maintenance Optimization Gustavo Moreno <i>Salon Batoche Room</i>	Debunking Risk Resiliency by Implementing a Risk... Suzane Greeman <i>Terrace Lounge</i>
1730 - 1830	Networking Reception		
1900 - 2030	PEMAC Members' Meeting CAMA Exam Sitting		

Thursday, September 28, 2017 (Sessions)

0715 - 0800	Breakfast, Exhibitor Showcase & Author's Corner <i>Adam Ballroom</i>		
0800 - 0845	Opening Keynote - John Hardwick, Roads and Maritime Services NSW (Australia), Executive Director GFMAM Speaker (Asset Management Council - Australia) <i>Adam Ballroom</i>		
0900 - 1000	Managing Assets in the Context of Asset Management David McKeown GFMAM Speaker (Institute of Asset Management) <i>William Pascoe Room</i>	Evidence-Based Asset Management for Signals and Communication Systems Martins Efemuai <i>Salon Batoche Room</i>	Creation of Failure Codes and how to Leverage KPI Reporting for Failure Analysis Kevin Vick <i>Terrace Lounge</i>
1000 - 1020	Break with Exhibitors & Author's Corner <i>Ambrosia Foyer</i>		
1020 - 1120	Case Study: Digital Asset Management Palak Patel <i>William Pascoe Room</i>	The Journey Towards Maintenance & Reliability Excellence Nezar Shamasi GFMAM Speaker (Gulf Society of Maintenance and Reliability) <i>Salon Batoche Room</i>	Kettles Hill Windfarm - Drive Train Condition Monitoring System Edwin Fung and Marius Stoian <i>Terrace Lounge</i>
1130 - 1230	Implementing Business Process for Capital Investment Using Asset Analytics Ashley Alex and Kurt Ersser <i>William Pascoe Room</i>	Tactics to Sustain and Improve Your Reliability Program Vlad Bacalu GFMAM Speaker (SMRP - USA) <i>Salon Batoche Room</i>	Case Study: Implementing a Lubrication Program, Cameco Cigar Lake Operation Brad Owen <i>Terrace Lounge</i>
1230 - 1330	Lunch and Exhibitor Showcase Closing		
1330-1430	A Case Study in Business Improvement Using Asset Management Maturity Principles Sally Nugent <i>William Pascoe Room</i>	Operational Reliability Case Study of an RCM Analysis and the Unexpected Results J.-P. Pascoli and Richard Overman <i>Salon Batoche Room</i>	Maintenance Management Professional Capstone Award Winning Presentations 1 - Business (Winner TBA) 2 - Technical (Winner TBA) <i>Terrace Lounge</i>
1445-1545	Senior Executive Panel <i>Adam Ballroom</i>		
1545 - 1600	Closing Comments & Grand Prize Draw		

PEMAC reserves the right to make changes to the conference schedule right up until the day of the event.

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Speakers & Presenters

KEYNOTE PRESENTERS

Susan Lubell - PEMAC President

Welcoming and Opening Keynote

Susan specializes in operational excellence with a strong focus on asset management and reliability strategy, cost effective lean maintenance programs, and continuous improvement. She brings over 20 years of practical experience to drive asset management, operations and maintenance business improvement opportunities. Susan currently serves as a National President for the Plant Engineering Maintenance Association of Canada (PEMAC) and teaches for the Maintenance Management Professional (MMP) certification program



OPENING KEYNOTE: Monday September 25th at 8:00am

LOCATION: Adam Ballroom

Tina Markovic - Head of Production, Potash, BHP Billiton Canada Inc

Tina is the Head of Production for the Potash business based in Saskatoon, Saskatchewan. Tina is responsible for leading the Operational Readiness and Resource Geology functions. Prior to moving to this position in February 2017, she was the Head of Integrated Operations at Escondida Mine in Chile, and prior to Escondida, Tina worked as the GM, Yarrlie Mine in the Western Australia Iron Ore business. She holds a Bachelor of Applied Science, Mining and Process Engineering from the University of British Columbia in 1994 and an MBA from Athabasca University in 2002.



OPENING KEYNOTE: Tuesday September 26th at 8:00am

LOCATION: Adam Ballroom

**John Hardwick - Executive Director, Sydney,
Roads and Maritime Services NSW**

John is also Director Hardwick Hall & Associates and provides executive consulting services with a focus on improving business value through the implementation of asset and investment management frameworks.

John is Chair of the World Partners in Asset Management (WPiAM) which is a worldwide partnership that develops, assesses and recognises competence in Asset Management. He is the Past Chair of the Global Forum on Maintenance and Asset Management (GFMAM) which is an association of professional maintenance and asset management societies formed for knowledge creation and sharing and for information exchange among our member societies.

With extensive Executive Management and Board experience and a background over the past 30 years in asset management within the electricity distribution business John is a leader of organisational improvement in asset and operational risk management, and has implemented world class risk management strategies. John is co-author of Living Asset Management.

OPENING KEYNOTE: Thursday September 28th at 8:00am

LOCATION: Adam Ballroom



Special Features:

TAKE THE TEST

PEMAC is offering three exams during MainTrain. It is a great opportunity to become accredited while you're in Saskatoon.

ICML Exam

The ICML Exam will be available to take during the conference. Pre-registration of the exam is required.

Sep 25, 6:30 - 9:30 pm

To register go to <https://www.pemac.org/civicism/event/info?reset=1&id=183>



CMRP Exam

The Certified Maintenance & Reliability Professional (CMRP) exam will be available to take at MainTrain. Managed by the Society for Maintenance and Reliability Professionals (SMRP) the CMRP is accredited by the American National Standards Institute (ANSI), which follows ISO standards for its accreditation and processes.

Sep 25, 6:30 - 9:30 pm

To register go to <https://www.pemac.org/civicism/event/info?reset=1&id=214>



Certified Asset Management Assessor Exam

The CAMA Exam was developed by leading not-for-profit asset management organizations* and has been verified through rigorous technical and psychometric testing. The exam complies with the GFMAM's Competency Specification for an ISO 55001 Asset Management Auditor/Assessor, ensuring that successful applicants have the minimum required knowledge to be an ISO 55001 assessor.

Sep 27, 7 - 9 pm

To register go to <https://www.pemac.org/civicism/event/info?reset=1&id=225>

* AMC, ABRAMAN, IFRAMI, PEMAC, SMRP



PEMAC General Meeting

A PEMAC General Members Meeting will be held onsite at the conference. All PEMAC members are invited to attend.

Wednesday, September 27th from 19:00 to 20:30

LOCATION: Adam Ballroom



PEMAC AWARDS BANQUET: WESTERN DEVELOPMENT MUSEUM

Join PEMAC for our annual awards banquet sponsored by Cameco taking place offsite at the beautiful Western Development Museum on Tuesday, September 26. Guests will arrive via shuttle for an evening of networking, fun and honouring of some inspiring people in asset management, maintenance and reliability. Guests depart the conference hotel at 5:30 pm and return at 10:00 pm. Dinner and Transportation from the conference hotel is included for conference participants. Extra Tickets for guests can be purchased for \$68.00 at the registration desk or by going to <https://www.pemac.org/civicrm/event/info?reset=1&id=212>.

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Job Board

Did you know that PEMAC has a job posting service? Did you know that corporate and allied members receive complimentary job postings? To showcase some of the great career opportunities available, PEMAC is hosting a job board for conference participants to visit. Be sure to stop by and visit the job board near the registration desk to see the kind of great opportunities that are available every day on www.pemac.org. For more information about posting your career opportunities email Melanie Mangion at admin@pemac.org or call (905) 823-7255 ext 2.



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2017 Content

As shown in the schedule, Monday and Tuesday are 1/2 Day Workshops; Wednesday and Thursday are 45 minute sessions.

Monday, September 25, 2017 - 08:00

Keynote Address

Susan Lubell - Senior Consultant, Steppe Consulting

A successful and fulfilling career as an asset management, reliability and maintenance professional is based on a foundation of lifelong learning. This session will discuss taking an active role in your career management and progressive competency development through a combination of on-the-job active learning, structured education, and peer networking.

Monday, September 25, 2017 - 09:00

MMP Module 1 - An Integrated Strategy for Maintenance Management

Alan Johnson - Maintenance Management Consultant, CLEARPASS Inc

with Len Middleton - Senior Manager, Deloitte Canada

PEMAC's Maintenance Management Professional (MMP) program provides training and accreditation to those aspiring to, or already in, maintenance management or supervisory positions. Certified MMPs are qualified to provide cost effective management of a business's physical assets. There are eight modules to the MMP program. Module 1 is being offered as a workshop at MainTrain over a two day period.

Based on the course text, Uptime, Module 1 develops the framework for thinking about a strategic approach to maintenance management that is integrated with the business. Draining on the elements presented in the "Maintenance Excellence Pyramid" of Uptime, participant in Module 1 will learn how strategy, people, basic care, materials management, performance management, work management, support systems, and tools such as RCM (Reliability Centered Maintenance) and RCFA (Root Cause Failure Analysis) can work together to build a culture of excellence.

The Most Forgotten or Abused Tool of All - Managing Change!

Cliff Williams - Operations Manager, Erco Worldwide

In this workshop Cliff Williams will share the 9 steps necessary to implement change in a sustainable fashion and allow your improvement initiatives to move forward with greater success. These include: Explain why- show why there is a need for change; Educate what - explain what is about to change and how it will change; Engage them in the change process; Empower them to make decisions wherever possible; Encourage more participation - involve people in the change invite them to pilot change; Everyone benefits - show them how things will be different, better.

In today's global market place, change is the only constant and not only will attendees learn the 9 steps necessary but Cliff will share stories on what has succeeded and what has failed from his experiences of working with numerous organizations. Attendees will take away a 'template' for sustainable change and be able to use this approach not only on future initiatives but retroactively on those they are struggling with.

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MACHINERY AND EQUIPMENT

MRO

Reliability Centered Maintenance - Re-Engineered Workshop

James Reyes-Picknell - Managing Consultant, Conscious Group Inc.

with Jesus Sifonte - President, Condition Monitoring and Maintenance Institute

Practical Optimization of the Reliability Centered Maintenance (RCM) Process with RCM-R® provides an optimized approach to a well-established and highly successful method used for determining failure management policies for physical assets. It makes the original method, which was developed to enhance flight safety, far more useful in a broad range of industries where asset criticality ranges from high to low.

RCM-R® is focused on the science of failures and what must be done to enable long-term sustainably reliable operations. If used correctly, RCM-R® is the first step in delivering fewer breakdowns, more productive capacity, lower costs, safer operations and improved environmental performance.

Maintenance has a huge impact on most businesses whether its presence is felt or not. RCM-R® ensures that the right work is done to guarantee there are as few nasty surprises as possible that can harm the business in any way. RCM-R® was developed to leverage on RCM's original success at delivering that effectiveness while addressing the concerns of the industrial market.

Vibration 101: A Supervisor's Primer

Ron Newman - Sales & Technical Support, Pruftechnik Canada

Vibration monitoring is at the heart of Condition Based Maintenance (CBM), and companies that have embraced this technology are reaping substantial rewards in terms of machinery uptime, reduced maintenance costs, and uninterrupted production. These same companies employ skilled vibration analysts on-site who provide valuable machine condition information. While the practice and terminology of vibration measurement is an integral part of analysts' vocabulary, it often seems quite foreign to supervisory staff! Therefore, a better understanding of "what is going on" in the department will ensure the success of the program and lead to even greater "victories" in the future.

Monday, September 25, 2017 - 13:00

Implementing UPTIME - Moving to Excellence in Maintenance Management

James Reyes-Picknell - Managing Consultant, Conscious Group Inc.

"Uptime - Strategies for Excellence in Maintenance Management", 3rd edition, 2015 is one of the world's leading texts on the subject of managing maintenance. Co-authored by John D Campbell (d) and James Reyes-Picknell, the book describes a comprehensive model of excellence with 3 tiers and 10 main subject areas, each representing a major area of activity in maintenance. Those areas are somewhat inter-dependent - they all build on each other into a holistic approach. Implementing one without the others will often lead to disappointing results that fail to achieve the full potential in your organization. Often there's more missing than you might imagine and projects stall.

The book contains a new chapter on implementing "Uptime" and this workshop will focus on what is needed to do just that. This workshop, led by the author, will delve into implementing those 10 areas and what is required for success. After a brief refresher on the Uptime model, James will present implementation tips and considerations. During the workshop, participants will be asked for their maintenance excellence challenges. Workshop participants will be facilitated through problem solving exercises aimed at helping participants determine how to resolve their challenges using their own examples.

Management of Electrical Power Assets

Kerry Heid - President & CEO, Shermco Industries Canada

Mechanical and process assets are widely analyzed for reliability amongst industrial users. Electrical power system assets have been widely analyzed by electrical utility companies for health index, risk profiles and financial impact assessments. However, very little work has been done to fully analyze the parameters of electrical power systems assets in industrial environments such as mining, petrochemical, manufacturing, pipelines, etc. Electrical assets such as transformers, cables and circuit breakers are critical to uptime as almost all processes are reliant on stable electrical power. Yet most non-utilities don't perform in-depth assessments on their power distribution equipment, even though they are critical to plant reliability and sustainability.

This workshop is broken into two parts. First, it examines maintenance requirements and what types of tests and inspections can be performed to evaluate the condition of critical power system equipment. These field diagnostics are based on the NETA (International Electrical Testing Association) specifications for maintenance testing of electrical power systems and equipment. The elements of a comprehensive electrical maintenance program and a quality management system based on the latest edition of the CSA Z463 Maintenance of Electrical Systems will also be discussed. Second, the workshop participants will learn how this maintenance data is used to perform a comprehensive evaluation of the installed power systems assets. Areas covered will be failure mode and failure curves analysis, health index formulation, current condition and risk matrix, consequence cost / risk profile and lastly how to approach the cost of ownership and capital program development. This directly integrates the work that's been done in utilities with the opportunity in the industrial sector.

Organizational Alignment

Jay Winkelmans - Director, JCW Consulting Ltd.

Effective maintenance plays a crucial role in today's business. In order to manage costs, organizations attempt to get the most from their people and assets. Effective alignment between departments can dramatically improve asset reliability, reduce operation and maintenance costs and improve the effectiveness of the workforce.

This presentation is intended to provide participants with the information and awareness they need to manage assets effectively. The need of cooperation between the operations and maintenance departments, as well as other departments such as supply chain will be discussed. Employees require more than high level principles; they must understand their role and how effective cooperation at all levels will provide value to the on-going operations, thereby allowing the business to remain profitable. Further, the presentation will examine the concept of Operational Excellence as the beginning of a transformation to a planned culture throughout the entire organization. Key to this topic is confirming who is in charge. Is the asset dictating how things should be done or are the people running it in charge?

Asset management professionals often find themselves challenged by competing priorities in an effort to keep the system running. This session follows how maintenance tasks are initiated with work prioritization being a key element. Various roles will be discussed as well as the importance of scheduling and getting everyone on board with the schedule. Potential subtopics tailored to time restrictions: (1) Why do planned maintenance? (2) Cost of a break-in event, (3) Risk-based work selection, (4) Screening and approval of work, (5) Operators role in maintenance, (6) Operations, maintenance and supply chain departments' role in scheduling, (7) Operations and maintenance coordination and roles, and (8) Managing the daily work list.

Monday, September 25, 2017 - 18:30

Becoming a Certified Asset Management Assessor

Suzane Greeman - Above Ground Asset Manager/Lead Maintenance Engineer, Veolia North America

with Dharmen Dhaliyah - Corporate Asset Manager, Town of Halton Hills

No time to study for the CAMA Exam? Reduce your pre-exam stress by spending time with the experts. This 8 hour course is designed to give individuals (with the necessary background experience) an efficient overview of the recommended preparation material for the CAMA Exam. These materials provide insight into: (1) the ISO 5500x framework of documents, (2) the GFMAM Asset Management Landscape and (3) the GFMAM Competency Specification which indicates what ISO 5500x Asset Management Systems Assessors must know to complete that task effectively. All these documents are available and can be studied independently. But why not take advantage of the opportunity to discuss with a group of peers and the facilitators?

Tuesday, September 26, 2017 - 08:00

Keynote Address

Tina Markovic - Head of Production, Potash, BHP Billiton Canada Inc

Reflecting on the conference theme, "Connect, Learn, Contribute" from her point of view as the Head of Production in the Potash division of BHP, Tina has been thinking about the connections between employers and the communities in which they play a part. Her address will touch on a few key learning challenges and opportunities for companies and communities and will consider how we can learn from the past to envision the future.

Tuesday, September 26, 2017 - 09:00

KT Analysis: A Systematic Approach to Find the Root Cause of Problems Quickly and Reliably--and Prevent Them From Reoccurring

Jeff Robinson - Regional Managing Consultant, Kepner Tregoe

with Michael Curran-Hays - Practice Leader, Principal, Kepner Tregoe

In Canada, we face an increasing emphasis on improving asset productivity, utilization and ultimately, profitability. With the flow of easily available capital greatly diminished, organizations must tap the underutilized resources that exist within their own processes and capabilities to release value and defer investment.

Kepner-Tregoe's (KT) Root Cause Analysis (RCA) training equips individuals and teams with the tools to systematically find the root cause of problems and prevent them from reoccurring. Plant operations, engineering, and maintenance teams around the world have used KT's root cause analysis methodology for almost 60 years. KT has led major investigations in every industry and environment possible, and this workshop brings that wealth of experience so you can learn and practice root cause analysis skills and make an immediate impact back on the job.

Through a facilitated discovery process, this workshop will provide participants with an overview to: (1) Understand how to use a systematic process to find root cause of persistent performance issues, (2) Avoid the common pitfall of jumping to cause - fixing a symptom that is not the

problem, (3) Improving communication by making the thinking process visible and sharing information with other teams, (4) Make improvements stick.

Using a step-by-step root cause analysis model gives companies a competitive advantage far beyond efficiency improvement. By developing operations leaders through a combination of coaching, facilitated implementation and training, organizations can create operational excellence that is sustainable.

Optimizing Maintenance Decisions with Failure Data Analysis (Practical ½ day Workshop)

Jesús Sifonte - Director, CMMI

Weibull Analysis goes beyond typical RAM analysis. It emphasizes the probability of fulfilling a specified function instead of an average time to failure. Statistical life data analysis is particularly applicable to assets having operating and maintenance history with well documented failure events. Such events should be recorded and sorted by failure causes. Some of the maintenance management related outcomes and applications of life data analysis are: (1) Failure forecasting and prediction, (2) Evaluating corrective action plans, (3) Maintenance planning and cost effective replacement strategies, (4) Spare parts forecasting, (5) Calibration of complex design systems.

Mechanical, electrical, electronic, materials, quality, design and even human failures can be modelled and predicted using failure data analysis techniques. We will discuss how failure data analysis complements other reliability analysis methods. We will cover: (1) Creating failure probability plot, (2) Determining reliability and probability of failure at any operating time, (3) Determining item's predominant failure patterns (physics of the failure), (4) Confirming appropriate consequence management strategies selection, (5) Calculating time based task frequencies.

Weibull Analysis is useful for a wide range of problems and applications. It is the leading method for analyzing life data. Basic Weibull Analysis consists of plotting failure data on Weibull probabilistic paper and interpreting the plot. Predictions of failures and their corresponding costs, spare parts consumption, labor usage, failure rates, electrical outages can be determined accurately with this magnificent statistical tool. The major advantage of Weibull Analysis is its ability to provide accurate failure analysis and forecasts with extremely small samples. Predominant failure patterns, failure probabilities, consequence management policies and optimum replacement times can be easily determined at the failure cause level. This technique adds Evidence-Based decision making to our Asset Management efforts.

Workshop participants will create and interpret Weibull plots with data provided. We will discuss how to use and interpret 4 forms of the Weibull distributions representing Reliability, Probability of Failure, Failure Rate and Probability Density Function for their practical use in failure data analysis.

Tuesday, September 26, 2017 - 13:00

How to Build a Maintenance System That Delivers Predictable Performance

Jason Ballentine - Engineering Manager - North America, Arms Reliability Canada Inc.

Whether you are starting from square one or looking to improve your current strategy, creating or improving a maintenance system can be a large undertaking that many asset managers struggle to get right. Without a solid maintenance structure in place, everything falls apart and it becomes very challenging to capture accurate information, plan maintenance activities, determine spare parts/resource levels, and actively manage costs. The good news is it's never too late to improve.

No matter what stage you're at, this workshop will teach you how to establish a solid foundation for your maintenance system and apply best practices that have been derived from 20 years of experience across multiple industries and operations at all reliability maturity levels. We'll examine how to properly establish a maintenance system with reliability in mind so you can create an environment that allows for continuous improvement and positive growth in your asset performance.

Developing a Leadership Mindset: The Journey From Operations to Supervisor thinking
Marie Gervais - Ceo, Shift Management Inc.

Often people who are good at their jobs at the operations level are promoted to supervisory positions without much thought about how to equip them for success in the new role. The mentality of "sink or swim" has been proven contrary to how people actually learn on the job. So what can you do to up skill your supervisors? What can you do to assist supervisors with transitioning from hourly, operational thinking to salaried leadership thinking? The key lies in knowing how to develop leadership using on-the-job coaching, training and mentorship. When approached strategically and thoughtfully, organizations can effectively equip supervisors to see themselves as part of the management team, develop the skills and confidence to take charge and lead their teams effectively.

Wednesday, September 27, 2017 - 09:00

Building the Business Case for Maintenance Improvement
Susan Lubell - Senior Consultant, Steppe Consulting

While a host of factors influence profitability, maximizing your plant's production output potential is arguably one of the facility's greatest opportunities. An Asset Management, Reliability and Maintenance Strategic Plan can guide continuous improvement that's aligned with bottom-line performance expectations for managing assets and people. This presentation will provide a framework approach for establishing your strategic asset management & reliability plan and the associated business case. Delegates will gain a fundamental understanding of how to establish a baseline: "know where you are," define where you're going, who needs to be involved, how to measure the program's progress and results, and what elements are essential for success.



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Asset Decision Framework for Optimal Value

Nigel D'Souza - Manager, Asset & Maintenance Management, City of Mississauga

Most organisations have implemented processes and tools to collect data to facilitate informed decision-making. Often, they will seek out best practices and measures to assist in decision-making or rely on technology to guide the basis of decisions. However, in many cases these same organisations approach a gap in tactical deployment and the ability to draw a connection to the follow-up or pre-emptive actions required to derive value from assets. This presentation will review the processes for establishing a framework for alignment and priority setting, while looking at the techniques employed for resiliency and risk management using a technology agnostic approach. We will review potential data sources which can be leveraged for decision-making and which reflect the needs and current state of the business environment. Further, we will discuss the relationship and application to the decision-making process. An overview of the fundamental outcome of key performance indicators and visualized metrics will be demonstrated. Finally, we will investigate the influence on decision making and the level of data confidence.

Predictive Pattern Recognition at NSPI and Its Role in Maintenance Strategies

Warren Rodgers - Senior Engineer, Asset Management Office, Nova Scotia Power

Nova Scotia Power owns, operates and maintains the majority of its power production. This is in the form of thermal steam units, combustion turbines, hydro, tidal, wind and biomass. The age and complexity of the power production facilities and equipment ranges from 90 years in some Hydro stations, 40 years in some steam turbines, 40 years for many combustion turbines and as new as 3-6 months old in our wind turbines. Our stakeholders expect cost efficient and reliable electricity supplies. Technical people expect to understand the risks, operators and maintainers expect safe and trustworthy equipment.

The imperative to run leaner and more profitable without adding risk is the challenge that a strong asset management program can support. A main element of a strong Asset Management program is a practical and efficient maintenance strategy. Maintenance strategies provide physical assets with layers of protection against failure modes specific to that machine or process. Where instrument data is available a maintenance strategy can benefit from predictive analytics such as Sciencetech FAMOUS and PEMAX systems.

This presentation will highlight Nova Scotia Powers' asset management program for monitoring the state and reporting condition based (CBM) deficiencies on our physical assets with predictive analytics. This discussion will review NSPI's approach to maintenance strategies, the development, management, integration and day-to-day application of our PDP program. Finally it will conclude with case studies exemplifying the use of the PdP data and its influence on asset protection decision making in our business.

Wednesday, September 27, 2017 - 10:20

Reliability Centered Maintenance Re-Engineered RCM-R(r): An Introduction

James Reyes-Picknell - Managing Consultant, Conscious Group Inc.

with Jesus Sifonte - Director, Condition Monitoring and Maintenance Institute, PdMTech USA

Reliability Centered Maintenance - Reengineered, provides an optimized approach to a well-established and highly successful method used for determining failure management policies for physical assets. It makes the original method that was developed to enhance flight safety, far more

useful in a broad range of industries where asset criticality ranges from high to low. RCM-R® is focused on the science of failures and what must be done to enable long term sustainably reliable operations. If used correctly, RCM-R® is the first step in delivering fewer breakdowns, more productive capacity, lower costs, safer operations and improved environmental performance. Maintenance has a huge impact on most businesses whether its presence is felt or not. RCM-R® ensures that the right work is done to guarantee there are as few nasty surprises as possible that can harm the business in any way. RCM-R® addresses the shortfalls of RCM that have inhibited its broad acceptance in industry. Little new work has been done in the field of RCM since the 1990's, yet demand for such a method, better adapted to industrial applications is higher than ever and growing. Demographics and ever more complex systems are driving a need to be more efficient in our use of skilled maintenance resources while ensuring first time success – greater effectiveness is needed. RCM-R® was developed to leverage on RCM's original success at delivering that effectiveness while addressing the concerns of the industrial market. RCM-R® addresses the RCM method and shortfalls in its application. It modifies the method to consider asset and even failure mode criticality so that rigor is applied only where it is truly needed. It removes (within reason) the sources of concern about RCM being overly rigorous and too labor intensive without compromising on its ability to deliver a tailored failure management program for physical assets sensitive to their operational context and application. RCM-R® also provides its practitioners with standard based guidance for determining meaningful failure modes and causes facilitating their analysis for optimum outcome. It places RCM into the Asset Management spectrum strengthening the original method by introducing International Standard based risk management methods for assessing failure risks formally. RCM-R® employs quantitative reliability methods tailoring evidence based decision making whenever historical failure data is available.

Key Components of Electrical Power System Maintenance

Paul Baker - Manager, Technical Services, Shermco Industries Canada Inc.

with Kerry Heid - President, Shermco Industries Canada

As I spend more and more time in and around maintenance, reliability and asset management professionals, and though my own experiences as both an end user and now a contractor, it has become more and more clear that there is a definitive gap in most maintenance and reliability plans....the electrical system. This is not to say that there is not maintenance being done, or that people are not recognizing that their electrical system is critical. But do you understand what you are doing? Do you understand why? Is what is being done correct? Is the budget that is set aside for electrical adequate or too much? How do you know? What are the best practices and where do you start? As discussed this is not a technical presentation but rather a look at a basic electrical system and where an end user can start in regards to assuring themselves that they are doing the right things. There are some new technologies that are in the market place that can assist in determining if there is a potential problem with parts of your system...this presentation is not about those. Alternatively it is about "the basics", learning to walk before you can run: Looking at the system as a whole and learning where most trouble areas are; Assisting end-users in looking at past test results and planning next steps; Determining what needs to be done based on predictive tests such as transformer oil samples or IR scans, and what can be pushed into next year's budget; What cannot be skipped because, if it is, it may not only cause catastrophic plant failures but potential fatalities. In conclusion what this presentation will focus on is assisting Maintenance Management professionals to treat their electrical assets with the same care that they keep their mechanical assets. It is not overly technical and you do not have to be an electrical professional to understand or benefit.

An Open Letter to Our Future Senior Leaders

Paul Daoust - Principal Engineer, Reliability, TransAlta

Dear Future Leader: You are quite bright and very ambitious. You have as much of your career ahead of you than behind you. You have goals to eventually advance into an executive position. You aren't in Finance or Human Resources, which is unfortunate because the skills and practices required in those disciplines are tried and true. No, your road in operations and asset management is less traveled; where the skills and practices are less certain and the landscape is changing at breakneck speed. I present to you some advice to aid you in your journey. I offer this because as seasoned asset management practitioner I've developed certain expectations of my senior leaders to drive the most value out of our assets. I've seen things good and bad. I've learned where value is most often leaked across the asset life cycle and the practices to stop the value leakage. Here are the competencies you will need to develop to assure you add value to your company and be successful in your current and future leadership roles.

Sincerely, Paul Daoust, Asset Management Professional

Wednesday, September 27, 2017 - 11:30

Case Study: Mobile Devices in a Mining Environment

Doug Stretton - Senior Director, Maintenance Business Process Improvement, PotashCorp

This presentation will highlight PotashCorp's extensive implementation of mobile devices to support its business processes. Aligned Mobile Applications are now in use or being implemented



Each year, our uranium delivers
the same clean-air benefits as
26 billion trees.

Cameco's uranium fuels enough nuclear energy to prevent 550 million tonnes of CO₂ emissions annually. If we want clean air, we need cleaner energy production. At Cameco, we're making it possible.

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at PotashCorp's Allan, Augusta, Aurora, Geismar, Lanigan, Lima, Rocanville & Trinidad sites. We have partnered with Viziya to develop a single integrated mobile app to meet our maintenance and supply chain business requirements and we continue to deploy 'out of the box' apps from our Enterprise Resource Planning (ERP) system. Vendor mobile devices are now a commodity which provide a cost effective way to drive efficiencies. Importantly, apps are available across various platforms; hardware choices do not drive decision making when it comes to selecting the best tools for our business. If you are thinking about implementing a shift to mobile devices on the front lines, this will be a great opportunity to learn from the Potash experience.

Setting up for Success

Cliff Williams - Operations Manager, Erco Worldwide

In his book 'Good to Great' Jim Collins tells us that the secret to success is to have the right people in the right seats on the right bus. How many of our organizations actually achieve that? What are some of the reasons we don't succeed? During this presentation we will see that perhaps the biggest reason we don't succeed is simply we don't really know what the 'right people' look like. We will look at how we normally determine if the people are right based on what we expect them to do as it compares to their skill sets. For example - why is it that so many College Quarter Backs or Junior A hockey players fail to make the big time and play in the NFL or NHL? Getting closer to home we will look at why many people who are put in the role of maintenance and reliability leaders continue to struggle even though they seem well suited for the job and turn out to be the wrong people in the right seats. As we look at the reasons that this happens we will look at what it is exactly that these leaders need to do, know and understand in order to succeed. We can assure you that what you'll learn from this presentation will change how you approach filling the vacancies within your organization! We promise you that you will listen, learn and laugh!

Electrical Asset Condition-Based Reliability Management System

John Hodson - Director, Leading Edge Sales

with Dr Prodipto Ghosh - Director Power System Asset Management Solutions [PSAMS], PSAMS

For some time a necessary change has been evolving in how we look at maintenance of electrical power systems and equipment. This is being driven by many influences including cost, technology and an ever evolving human resource base to name but a few. Efforts are being directed to explore new approaches and techniques regarding the monitoring, diagnosis, life assessment and condition evaluation of critical facility infrastructure. Power interruptions and failures are one of the major symptoms of ageing electrical distribution components. Facility managers are understandably out to maximize the use and performance of the electrical distribution network assets, while ensuring that quality and reliability are not compromised. Organizations are migrating from traditional time based maintenance to a condition based reliability maintenance (CBRM) program for their electrical assets. CBRM or more simply CBM periodically and more commonly continuously determines the state of equipment deterioration and maintains equipment when the condition falls below acceptable risk thresholds. The process of transition from a reactive maintenance organization to a totally proactive structure is not an overnight project. It will take time, effort and planning to accomplish. The transition requires commitment from all levels of the organization. The key to this approach is to have a reliable means to evaluate the condition of equipment and the system as a whole. To do this all information regarding the equipment is stored and weighted as to its value in determining condition. This includes all "cradle to grave" information starting with manufacturers' tests and specifications, site acceptance tests and routine maintenance testing. Now more and

more on line diagnostics are being used to input real (or close to) real time input to the formula. In addition the more accomplished and superior algorithms will include a component of risk weighting, in other words how critical is the equipment to the ultimate process. Although the ultimate aim is to develop and implement condition and risk-based asset management strategies and capabilities, it is prerequisite or necessity for organizations to fully understand its capability gap and realign its asset management functions by addressing all the necessary building blocks or pillars of asset management. The comprehensive approaches must effectively deal with leadership mindset, integrated asset information system, condition assessment technologies, organizational structure and human competencies and remain consistent with industry standard asset management practices as per ISO PAS 55-1 now ISO 55000. In conclusion, this paper will provide an update on these evolving practices and some early adopters experience with the new methodology. A sample working system utilizing a transformer will be described with the pros and cons of operating such a system rationalized. Real life data will be utilized to explain the principals of operation and if possible real time streaming data from an operational installation will be utilized.

MRO Roundtable

MCs: Rehana Begg and Hammad Sharif

200 heads are better than one and together we are likely to have over 3000 years of experience at this session. In an effort to gather the wisdom from the floor, we'll break the conference attendees into 6 discussion groups. Each group will discuss 2 topics with 2 different facilitators whose task will be to summarize the discussions for the wider group. Insights gathered will be compiled and shared with the conference attendees and a subsequent article in MRO Magazine.

Wednesday, September 27, 2017 - 15:00

Asset Management related Value Improvement Practices for Major Projects

Dave Daines - Chair of Board of Directors, Asset Management Council of Australia

Asset Management is defined as "the coordinated activity of an organisation to realise value from assets" (ISO 55000. 2014). Simplistically, asset management converts the fundamental aims of the business into practical implications for selecting, acquiring, utilising and maintaining assets to deliver those aims whilst seeking the best total value approach (optimal combination of cost, risk, performance and sustainability) over the life cycle of those assets.

Within the Capital Project environment, a key element of driving value is related to many Value Improving Practices (VIP's) that are recognised by Independent Project Analysis (IPA) as out-of-the-ordinary practices used to improve cost, schedule, and/or operational performance of capital construction projects (IPA,2005).

From the definition of Asset Management, it could be argued that all the recognised VIP's form part of the "coordinated activity of an organisation" in terms of realising value, however there are three that have been discretely selected as particularly relevant and are used in the Asset Management related context.

The three key practices of Process Reliability Modelling, Maintenance Development and Predictive Maintenance reflect a somewhat historical view of Maintenance versus Asset Management and this paper will demonstrate their inter-relationship combined with a broader Asset Management related focus can deliver a true value improving outcome that involves the balancing of costs, opportunities and risks against the desired performance of the assets to achieve the organisational objectives.

PM Optimization: Integrating Lean into your Maintenance Strategy

James Kovacevic - Principal Consultant, HP Reliability Inc.

Preventive Maintenance (PM) Optimization is often thought of as an activity to improve the effectiveness of the maintenance strategy, looking at the activities in the PM routine and matching them with known failure modes. While this is the first step to improving any maintenance strategy, it is just a beginning. In order for an organization to achieve its highest performance, they not only need to do the right maintenance, but they also need to do it efficiently.

This is where PM Optimization can unlock the hidden potential. When PM Optimization is combined with known and accepted Lean techniques, the efficiency of maintenance is truly unlocked. When performing PM Optimization, the team should be aware of the 8 types of waste: (1) Defects, (2) Overproduction, (3) Waiting, (4) Not utilizing talent, (5) Transportation, (6) Inventory excess, (7) Motion waste, and (8) Excess processing. Once the team is aware of the waste, there needs to be an unrelenting focus on eliminating the waste and minimizing planned downtime. To eliminate the waste, the team uses various Lean tools, such as SMED, 5s, and Visual Factory. When the 8 types of waste are targeted, the amount of planned downtime goes down, allowing higher levels of asset utilization.

IIoT, Smart Industry and Artificial Intelligence for Manufacturing: Beyond The Hype, A Practical Look from an Reliability Insider

Blair Fraser - Manager, Reliability Solutions, Lakeside Process Controls Ltd.

Is it all just hype and the fad of the season or as transformational and disruptive as it is being hyped up to be? How will it impact manufacturing, industrial automation and the people responsible for running these operations? As a process control and reliability professional, what should I be preparing for, learning and applying to enable my company to benefit from this technological revolution? This keynote talk will address why and how the industrial automation and reliability professionals should embrace these technologies and be the leaders for the digital transformation of their companies.

This talk will address some of the following topics: (1) These technologies will be as transformational as the invention of the internet was on our lives; as influential as the programmable controller, the PID controller, the personal computer, the Ethernet and digital communication was to industrial automation, (2) The pace of technology advancement will be unlike any seen before, completely defying Moore's Law, (3) The technology will not - as hypothesised by fear mongers' - replace humans. It will enable and empower humans to focus on creative and high value, rather than mundane contributions of their skills and expertise to advance the manufacturing industry, (4) While cloud computing is one of the key enablers, Smart Industry does not mean running all your applications in the cloud, (5) A majority of the infrastructure required to start implementing IIoT and Smart Industry exists in most industrial plants. Ripping out your existing automation infrastructure is not necessary; you may not need new sensors, and you certainly don't need for a new, common IIoT protocol to be finalized, (6) That it is not as complicated, scary or risky as some laggards would have you believe; nor does it require everyone to become data scientist and programmers to implement it, (7) That industrial automation professionals and domain experts will now become some of the most valuable contributors to an enterprise's supply chain, (8) That we can all begin our journey of learning and starting to apply these technologies today; without disruption to our existing operations and work processes.

Debunking Risk Resiliency by Implementing a Risk-Based Maintenance Strategy

Suzane Greeman - Above Ground Asset Manager/Lead Maintenance Engineer, Veolia North America

Yet for the average Maintenance Manager, the challenge of interpreting asset risk for the organization is still uncharted waters. There are several ways in which the traditional Maintenance Manager can understand the wide breadth of risks facing the asset, determine appropriate responses and communicate them to the appropriate stakeholders. In fact, one or more of these may already be in place in the organization but may not be seen as building risk resilience. This presentation will explore one methodology used by Veolia to develop an asset-centric, risk-based Maintenance Strategy at the City of Winnipeg's, Waste Water Treatment Plants using a Maintenance Management Maturity Assessment.

The City of Winnipeg's Waste Water Department is at a very interesting juncture in its history, in that there are several major capital upgrades being undertaken, whilst the plants continue to run. The goal of the Maintenance Strategy is therefore two-fold. To maintain the existing levels of service at least whole life cost with risk balanced against the cost of meeting objectives, whilst ensuring that there is a plan to maximise maintenance for the future asset base to realise the benefit of the investment over the whole life of the assets.

As a result, in 2016, in collaboration with its selected O&M improvement partner, Veolia North America, the City of Winnipeg's Waste Water Treatment Plants, went on a path of discovery. Two significant tools of investigation were employed: 1. An Asset Management Maturity Assessment was conducted and 2. The City participated in the National Waste Water Benchmarking Initiative (NWWBI) Maintenance Task Force Survey implemented by AECOM. The Asset Management Maturity Assessment examined 8 fundamental areas of Maintenance Management and outlined positions of excellence that the City hoped to achieve both at the 1-year and 3-year mark from the date of assessment with 2017 being Year 1. The NWWBI Maintenance Task Force Survey examined 42 granular yet, over-lapping areas of Maintenance Management, with 18 of them reporting significant gaps for the City's Waste Water Treatment Plants. The results of the two analyses were combined into eight (8) key Objectives and the underlying activities required to achieving them over the next three (3) years. These eight (8) Objectives are: 1. Implementation of Asset Condition Assessment Plan (ACAP) 2. Inventory Management Optimization Plan (IMOP) 3. Work Organization Improvement Plan (WOIP) 4. Implementation of Maintenance Quality Strategy (MQS) 5. Financial Capability Improvement Plan (FCIP) 6. Asset Registry Improvement Plan (ARIP) 7. Implementation of Document Management (DM) 8. Revision and Implementation of Asset Criticality Model (ACM)

This presentation will examine the detailed plans for each objective, the inter-connectivity and alignment of the Objectives, the Road Map for the next 3 years, the processes for monitoring and continual improvement and the benefits of implementing this approach.

Asset Management - Alignment between Financial and Operational

Edmea Adell - Présidente, IFRAMI

The introduction of the ISO 55000 Asset Management Standards has raised awareness in many asset intensive organizations of the importance of improving their linkages between the various technical and financial functions that operate across the organization. Whilst we would all like to think that these functions operate collaboratively, in reality this is often not the case and instead organizational

'silos' prevail. Issues such as differing terminology and understandings, incompatible data bases, lack of sharing of information and competing objectives, all lead to inefficiencies that counter productivity. ISO 55000 has been helpful in shining a spotlight on a number of key principles or fundamentals that can flow from adopting a management systems approach to the way in which organizations manage their assets to maximize value for their stakeholders. We need to recognize that all organizations rely on assets (be they physical assets and/or intangible assets) to deliver the outcomes expected of them.

Case Study: Lean Six Sigma in Maintenance Optimization

Gustavo Moreno - Reliability and Maintenance Engineer, Husky Energy

As always, equipment maintainability plays an important role in uptime. Besides the reduction of failure rates, the quick recovery from those failures or the successful execution of scheduled activities makes a considerable difference in availability indicators. The application of Lean tools and Six Sigma analysis contributes to the improvement of maintenance execution by applying the 5 steps of Lean Six Sigma methodology (Define, Measure, Analyze, Implement and Control) and using the tools associated with them. This presentation will discuss Lean Six Sigma theory, basic principles of the methodology and case studies showing the use of tools. Case 1 will illustrate the application of Lean Six Sigma in scheduled preventive maintenance for slurry pumps operating in the oil sands industry. Case 2 will examine how the use of Six Sigma analysis reduced the corrosion rate of tubes in a bank of 12 heat exchangers shell and tube type, which heat diluted bitumen upstream of a distillation tower. Both cases emphasize the importance of using data and facts to make decisions, including front end personnel, and the sustainment of implemented solutions.

Thursday, September 28, 2017 - 08:00

Keynote Address

John Hardwick - Executive Director, Sydney, Roads and Maritime Services NSW

Thursday, September 28, 2017 - 09:00

Case Study: Creation of Failure Codes and How to Leverage KPI Reporting for Failure Analysis

Kevin Vick - Manager, Maintenance Processes, PotashCorp

ISO 14224:2016 provides a comprehensive basis for the collection of reliability and maintenance data in a standard format for equipment in all facilities and operations within the petroleum, natural gas and petrochemical industries during the operational life cycle of equipment.

This presentation will discuss how I leveraged the ISO 14224 Failure Codes & mapped them to Asset Groups in our asset data system. It is important to note that the data in the failure code hierarchy is not the root cause of the failure but a description of the problem or 'what failed'. Failure Comments are used to provide the 'technical' description of the failure. The work we did analyzing and carefully developing our failure set data provided a basis for failure analysis and helped us to develop sound Key Performance Indicators (KPIs).

Effective use of aligned Failure Sets provides information to satisfy the following business requirements: detailed reliability analysis, using data from within and across all sites, provide

confirmation of Reliability Strategies applied by Asset Number and Asset Group, Failure Codes are created once, and applicable to all sites, benchmarking of common assets across all sites, provide data to support warranty issues, and identify "bad actors" - Asset Numbers and Asset Groups with high functional failure rates.

Managing Assets in the Context of Asset Management

David McKeown - CEO, Institute of Asset Management

People and organizations have been caring for assets since mankind first invented tools. Over the years we have derived entire disciplines to help define the best ways to care for those assets through their lives and as such we have been Managing Assets forever. With the advent of the formal discipline of Asset Management some 20 years ago there has been a development of structured approaches to assure stakeholders that those care activities are focused on deriving value for the organization and not just promoting 'gold-plated' care arrangements. In this pursuit Asset Management and Managing Assets are not alternatives.

Based on a recent article co-authored by the speaker, David McKeown, and published by the ISO TC251 Committee, this talk will highlight the value of being clear on the answer to the question, "Do you mean Asset Management or Managing Assets?"

Case Study: Evidence Based Asset Management for Signals and Communication Systems

Martins Efemuai - Signals & Communication Officer, CN Rails/ University of Alberta

CN Western Canada has analyzed its train delays and categorized the causes based on a specific list of technical failures. Delays negatively impact CN's ability to deliver customer goods and commodities on time and in good condition. From an operational and financial perspective, delay penalties create risk and income leakage for both CN and its many stakeholders.

This presentation will demonstrate how an "Evidence Based Asset Management" critical analysis of the failure modes, failure rates and occurrences has resulted in: (1) Simplification of the management of these assets, (2) Reduction in outages due to technical failures and lower outage-related costs. The EBAM system is also enabling us to leverage data to determine correlation and to predict and minimize failures. A customized CMMS software program will help us to leverage the EBAM for work-management, repair/replacement decision-making, planned maintenance, asset life cycle management, ERP data importing and integration as well as KPI's Analysis.

Thursday, September 28, 2017 - 10:20

Kettles Hill Windfarm - Drive Train Condition Monitoring System

Edwin Fung - Plant Engineer, Windfarms and Cavalier Energy Center, ENMAX Energy Corporation

with Marius Stoian - Senior Engineer - Rotating Equipment, ENMAX

This project - Monitoring and Understanding the Health of our Wind Turbine Gearboxes, ENMAX Energy Kettles Hill Wind Farm - was executed to address the growing concern for the aging fleet of gearboxes at the Kettles Hill Wind Farm. The project was comprised of the installation of a vibration monitoring system and an oil particle count system which addressed the need for the monitoring and condition based maintenance of the wind turbine gearboxes. The project was constructed and commissioned through the collaboration of the owner (Kettles Hill Wind Energy, Inc.) and the OEM service provider (Vestas-Canadian Wind Technology, Inc.). The remote monitoring and analysis reporting is provided through an agreement with GE Bently Nevada.

In the first five months since commissioning the system, three wind turbine generator gearboxes were identified as having significant indications of vibration or excessive particles passing through the particle counter. This resulted in planned maintenance and modular component change out activities to mitigate the issues and prevent unscheduled downtime. The mitigation activities executed prevented unexpected production losses and avoided substantial expenses due to major component catastrophic failure.

Case Study: Digital Asset Management

Palak Patel - Engineering Technologist, Ontario Clean Water Agency

Manuals and drawings are the basis of all plant operations and maintenance. In modern times, organizations are not only struggling to maintain these records of information for facilities, but also unable to provide or show data when required for maintenance work. Ontario Clean Water Agency (OCWA) faced this document management problem while operating water and wastewater sites in the Region of Peel. The Services group in OCWA took the initiative to resolve this problem by upgrading the already purchased Open Text database software and uploading Operation and Maintenance Manuals and Engineering Drawings that were available from the original plant operations that began in the Region during the 1960s. This project's goal was to make information easily accessible to 160 OCWA employees that are distributed across 20 facilities in the South Peel area.

All documentation in relation to the plant operations and maintenance are considered as assets and therefore the initiative was named Digital Asset Management (DAM). Initially, manuals and drawings for all facilities were scanned. Once scanning was completed, the documents went through a process of Optical Character Recognition (OCR) so each file could be searchable for key words. Furthermore, other documents such as reports on maintenance, inspections, and safety were uploaded on this database regularly. All the information uploaded on the database would be searchable and easy to view through different formats (ex. Pdf, Word, Excel, CAD, etc.) for all OCWA employees. Frequent Open Text training was provided to staff to ensure they knew how to use the various functions on the database, such as editing documents, creating versions of documents, and sharing those documents through the mobile phone application called Tempo Box.

In total, 600 Operation & Maintenance (O&M) manuals for all water and wastewater facilities were scanned and uploaded onto the Open Text database. In total, 1100 various archival materials were received in 2016, which was highest ever since OCWA began operating its facilities in 2008. The Digital Asset Management initiative has proved to be a successful implementation for OCWA, as it plays a vital role in assisting maintenance work across facilities and improving asset management.

The Journey towards Maintenance & Reliability Excellence

Nezar Al Shammasi - Principle Director, Shammasi Maintenance & Reliability Consultancy

This presentation describes the requirements to reach excellence in maintenance and reliability and describe the processes and tools to achieve it.

Thursday, September 28, 2017 - 11:30

Tactics to Sustain and Improve Your Reliability Program

Vlad Bacalu - Sr. Director, Reliability and Technical Services, AECOM

The first part of the presentation will discuss maintenance and reliability processes and how these processes relate to each other.

Implementing a good and sustainable 5S program improves the efficiencies of the maintenance team and promotes a safer environment. The program begins by directing and training operators to perform minor checks and inspections and understanding failure modes increases the reliability of the equipment. The next step is to develop a root cause analysis thought process, and train the maintenance technicians to follow an easy to understand RCA process. Once the proper troubleshooting mind set is developed, the next step is to evaluate the effectiveness of the existing PMs, and implement a PM optimization program. The main question you should ask yourself is: Are your PMs generating follow up work orders? An effective PM program would generate follow up work orders, as well as minimize or eliminate asset breakdown between PMs. For critical assets, a reliability centered maintenance (RCM) program ensures that the preventive maintenance program has tasks to mitigate failures, identified through the failure mode effect analysis (FMEA) process. RCM also considers the most cost effective way to increase the reliability of the asset.

Developing the skills of the maintenance team plays an important part in the reliability roadmap. The first step in developing the maintenance team is to creating a skills matrix which shows the skills of each maintenance technician. The skills matrix serves as the foundation of the technical training program. Interpersonal trainings help the maintenance technicians interact with equipment operators and production personnel. Maintenance technicians need to be able to interview operators to understand the conditions that caused the failures. Once a repair is completed, the maintenance technician needs to ensure that the repaired asset is turned back to production and the operator is satisfied with the repair.

Improving efficiencies by using mobile technology frees up maintenance personnel and allows them to focus on improving the reliability of the assets. Automating certain tasks, and making RCA and RCM database bases available to the maintenance teams, allows them to perform these tasks faster and use lessons learned, along with best practices.

The last part of this presentation will focus on discussing benefits obtained from a well implemented reliability program.

Case Study: Implementing a Lubrication Program - Cameco Cigar Lake Operation

Bradley Owen - Senior Reliability Technologist, Cameco Corporation - Cigar Lake

Cigar Lake is Cameco's newest uranium mine located in northern Saskatchewan. During construction it was decided that a lubrication program needed to be implemented to ensure that critical assets were properly maintained. The mine offers challenges in that there is not just one plant or area to setup. There is a fleet of equipment both underground and surface with mobile and stationary assets. In addition there is diesel power generation and a fleet of freeze compressors installed. Each area presents its own challenges and opportunities when setting up a program.

There are several aspects of a lubrication program that need to work together to ensure reliability. This presentation will share Cigar Lake's journey from ground zero towards a world class lubrication program, one that was featured in Machinery Lubrication's 2016 Lube Room Challenge edition.

Why a lubrication program is needed will be discussed. In addition, the improvements made to program management, storage and inventory management, cleanliness, product standardization and sampling will be presented. Lastly, some of the specialized assets in use at the mine will be highlighted and discussed on how they fit into the program.

Case Study: Implementing Business Process for Capital Investment Using Asset Analytics

Ashley Alex - Sr. Reliability Engineer, ENMAX Energy Corporation

with Kurt Ersser - Senior Engineer, Asset Investment Management Planning , ENMAX

Annual spending on new projects, major maintenance, and sustaining capital require careful consideration, which has led to an increased scrutiny at ENMAX Generation. A data driven and financial model-based decision-making process for Capital Planning and Portfolio Optimization can be significantly improved using asset analytics to provide meaningful insights.

The implementation of this involved review of existing business process including current and future state mapping, gap analyses, alignment with Project Management Office (PMO) Stage Gate Process and with Authorization for Expenditure (AFE). It also included a redesign of value measures and modeling to appropriately value projects/investment opportunities. We developed preliminary Health Index based on asset condition, operating age, probability of failure curves, replacement costs/parameters, and consequence of failure and risk levels. This journey has utilized practices by ISO 55000 for data-driven decision making and Value Measures and Value Frameworks in the Capital Planning and Budgeting Process. The results are probabilistic "optimal" replacement dates. We use Reliability Centered Maintenance methodology to manage our plant physical assets. One of the challenges faced today is in integrating technology sources, which is driving our engineers and consultants to devise a Health Index (HI) for critical assets, starting with the high-value assets.

In conclusion, a key element of effective data and model-based decision making in Capital Investment and Management Planning relies heavily on predictive asset analytics. For asset analytics to effectively work, we require a lot of meaningful data to populate newly enhanced Capital Budgeting Software (C55). These are used today in C55 to compute the optimal replacement dates.

Thursday, September 28, 2017 - 13:30

Operational Reliability: Case Study of an RCM Analysis and the Unexpected Result

Jean-Pierre Pascoli - Director, Asset Management & Reliability, Cameco Corporation

with Richard Overman - President, Core Principles, LLC

Developing an optimal maintenance strategy often requires a systematic approach that includes a Reliability-Centered Maintenance (RCM) analysis. To be successful, these analyses require involvement from many stakeholders and performing a number of pro-active actions to detect or prevent functional failure. Such actions can be unpopular at times and require a solid partnership between the reliability engineering function and Operations and Maintenance.

In this case study, highlights of an RCM analysis are reviewed including the unexpected outcome. When there are no safety or environmental consequences, the decision of whether to do an inspection is based on a cost-benefit analysis. This presentation discusses a case study recently performed during a reliability-centered maintenance (RCM) analysis at Cameco's Port Hope Conversion Facility. The RCM analysis evaluated the cost effectiveness of partially removing a calciner shell to perform a non-destructive examination (NDE) of the bottom of the shell. The RCM uses a specific equation derived to calculate the number of inspections required to be performed

within the interval between potential and functional failure. The equation is generic and can be used for any situation.

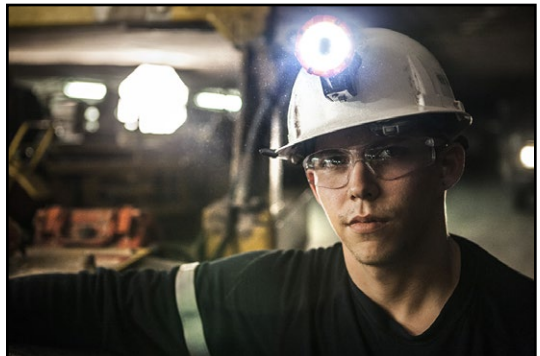
One purpose of this presentation is to demonstrate the identification of the interval between potential and functional failure and how the equation is used so the audience can replicate the analysis in their own situation. Sensitivity analyses are also performed to demonstrate how changes in certain data points affect the results of the analysis. The second purpose of this presentation is to demonstrate how the recommendation of the analysis was counter-intuitive to conventional thinking given a unique situation and highlights the importance of operational context.

A Case Study in Business Improvement Using Asset Management Maturity Principles **Sally Nugent - Principal Engineer, Salyent Pty Ltd**

Asset management maturity is defined by the Global Forum on Maintenance and Asset Management as, "the extent to which the capabilities, performance and ongoing assurance of an organisation are fit for purpose to meet the current and future needs of its stakeholders, including the ability of an organisation to foresee and respond to its operating context." The authors of, 'Living Asset Management Maturity', have proposed five principles to be applied across an organisation to deliver asset management maturity. This presentation summarizes these five principles and explores how they have been applied at a specific oil and gas plant to achieve a turnaround in business performance. The key lessons and learnings are summarized.

Winning Capstone Project(s) 2017

The Capstone is the final project of the Maintenance Management Professional program. Capstone course participants, often working in teams, analyze real-life maintenance management realities at one of their places of employment and work together to apply the relevant concepts from the MMP program to make a recommendation to advance proactive practices. The Capstone course instructors nominate the best project proposals in their classes each year and two are chosen to receive the Capstone Awards.



What if your future was our future?

With the world's population expected to increase by 2 billion people by 2050, PotashCorp's role in the global food solution is growing more important every day.

Through our support of PEMAC and numerous scholarship programs, we're developing a new generation of leaders from many disciplines and trades – all committed to the goal of working together to build a better future.



Asset Management Professional (AMP) Certification



The AMP Certificate program is designed to build organizational capacity for excellence in Asset Management by developing relevant knowledge and skills across disciplines for those responsible for Asset Management decision-making and design of the Asset Management system.

*The program is offered exclusively at Humber College,
in association with PEMAC.*

www.pemac.org/certification



Maintenance Management Professional (MMP) Certification



The MMP program provides training and certification to those aspiring to, or already in, maintenance management or supervisory positions enabling them to align their work with the Asset Management strategies and plans of the organization.

For more information about the program that is offered at 16 colleges, universities and technical institutes across Canada, visit: www.pemac.org/certification



PEMAC Acknowledgements

On behalf of the Board of Directors and the conference attendees, we would like to extend a big thank you to the MainTrain 2017 planning committee, PEMAC staff and all of the on-site member volunteers that have made this year's conference a success. Your time, effort and careful attention to making this a truly successful conference shines through.

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Sridhar Ramakrishnan, Suncor Energy Inc.

Committee CoChair:

Paul Baker

Committee Members:

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Arthur Cradock, University of Saskatchewan

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Erika Mazza, Region Municipality of Durham

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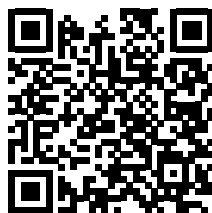
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Tell Us How We Did

We hope that you enjoyed the conference. Take a moment to let us know how we did by completing our online feedback survey. Visit this website www.surveymonkey.com/r/MainTrain2017Feedback. Or scan the QR code shown here.





Looking Ahead *MainTrain 2018*

MainTrain 2018 is coming to Ottawa!

MainTrain 2018 will be held in the vibrant city of Ottawa, Ontario. We are thrilled to be hosting PEMAC's annual conference in Canada's capital city! This conference will be held in Ottawa's West end conveniently located 20 minutes from the downtown core. The city is rich in cultural diversity and iconic scenery, from the Parliament buildings to the Rideau Canal and the multitude of museums and galleries in between.

When: September 24 to 27, 2018

Where: Brookstreet Hotel

Don't miss your chance to join us again, meet with participants from across the country and around the world, and share all of your maintenance, reliability and asset management insights.

More details about the 2018 conference will be available shortly at www.maintrain.ca.

For more information email events@pemac.org or 1-877-525-7555 ext 4.



MainTrain 2018 | Ottawa, Ontario

www.MainTrain.com | September 24th to 27th, 2018

This image shows a full page of blank, lined paper. It features approximately 20 evenly spaced horizontal grey lines across its entire surface, typical of notebook or composition paper. There are no margins, text, or other markings present.

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This image shows a full page of blank, lined paper. It features approximately 28 horizontal blue or grey lines spaced evenly apart, typical of notebook paper. The lines extend across the entire width of the page, leaving small margins at the top and bottom. There are no vertical lines, text, or other markings on the page.

This image shows a full page of blank, lined paper. It features approximately 20 evenly spaced horizontal grey lines across its entire surface, typical of notebook or composition paper. There are no margins, text, or other markings present.

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Services & Solutions from SKF - let's talk about Defect elimination

We believe the **SKF Defect elimination program** would benefit virtually any PEMAC member. It has saved Canadian customers tens of millions of dollars – with high return on investment.

A defect is defined as anything that erodes value, reduces production, compromises health, safety, or the environment, or creates waste.

Defect elimination is a reliability and business improvement tool that seeks to proactively identify these defects, allocate them a priority, and then identify and eliminate root causes.

Talk to SKF about your organizations goals, we would love to help you not just reach them – but exceed them.



1-866-TEAM-SKF

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