





Organised by: Division of Operation and Maintenance Engineering, Process IT Innovations

Organizers:

Prof. Uday Kumar, General chair Dr. Ramin Karim, Scientific chair Dr. Aditya Parida, International chair Mr. Anders OE Johansson, Local chair Dr. Alireza Ahmadi, Programme chair Dr. Philip Tretten Mr. Anders Jonsson

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The northernmost University of Technology in Scandinavia **World-class research and education**

Programme

The 2nd international workshop and congress on eMaintenance

Dec 12-14 Luleå, Sweden **eMaintenance**

Trends in technologies & methodologies challenges, possibilites and applications





gramme:

Day I - 12th December 2012 Day II - 13th December 2012

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|-------------|---|-------------|-------|
| 08:30-10:00 | Registration | 07:30-08:30 | Reg |
| 10:00-12:00 | Workshop I - eMaintenance Challenges for | 09:00-09:30 | Оре |
| | Railway | | Roc |
| | Room: Olga Bardh | 09:00-09:10 | Wel |
| | Chaired by: Christian Eriksson, The Swedish | | Roc |
| | Transport Administration | | Uda |
| | Data Harvesting Dan Larsson, Damill AB | 09:10-09:30 | Kar |
| | Data Presentation | | Joh |
| | Ramin Karim, Luleå University of Technology | | Vice |
| | Data to Decision | 09:30-10:00 | Key |
| | Thomas Nordmark, MTAB | | Mar |
| 10:00-12:00 | Workshop II - eMaintenance in Process | | Roc |
| 10.00 12.00 | Industry | | Mic |
| | Room: VIP rum | 10:00-10:30 | Key |
| | Chaired by: Anders OE Johansson, ProcessIT | | Roc |
| | Innovations | | Chr |
| | eMaintenance and automation at LKAB | | Adr |
| | Carina Persson, LKAB | 10:30-10:45 | Cof |
| | KPI for Mining Industry | 10:45-11:15 | Key |
| | Aditya Parida, Luleå University of Technology | | iativ |
| | eMaintenance Challenges for Process | | Roc |
| | Industry | | Chr |
| | Robert Karlsson, SSAB EMEA | 11:15-11:45 | Key |
| | Production reliability at SCA:s Paper Mill in Ortviken | | Dev |
| | Nicklas Holfeldt, SCA Ortviken. | | Roc |
| 10.00 10.00 | Lunch break | | Tom |
| | | 11:45-13:00 | Lun |
| 13:00-16:00 | Visit to the Railway way-side research station Visit to LTU and eMaintenance LAB | 13:00-14:20 | Ses |
| 10.00.10.00 | | | Roc |
| 18:00-19:30 | Outdoor winter activities at Brändön | | Cha |
| 10.00.00 | (no extra clothing needed) | 13:00-13:20 | The |
| 19:30-22:00 | Traditional swedish christmas dinner "julbord" | | wa |
| | followed by Lucia celebrations | | Mai |

ed by (dress casual)



| 07:30-08:30 | Registration | | | |
|-------------|--|--|--|--|
| 09:00-09:30 | Opening ceremony | | | |
| | Rooms: Lilla salen | | | |
| 09:00-09:10 | Welcome | | | |
| | Room: Lilla salen | | | |
| | Uday Kumar, Luleå University of Technology | | | |
| 09:10-09:30 | Karl Petersen, Municipal Governer | | | |
| | Johan Sterte, Luleå University of Technology | | | |
| | Vice Chancellor | | | |
| 09:30-10:00 | Keynote - Prognostics and Systems Health | | | |
| | Management for Sustainability | | | |
| | Room: Lilla salen | | | |
| | Michael Pecht, University of Maryland | | | |
| 10:00-10:30 | Keynote - eMaintenance in Transport System | | | |
| | Room: Lilla salen | | | |
| | Christian Eriksson, The Swedish Transport | | | |
| | Administration | | | |
| 10:30-10:45 | Coffee break | | | |
| 10:45-11:15 | Keynote - Health Monitoring and Ongoing Init- | | | |
| | iatives to Prepare Future Aircraft Maintenance | | | |
| | Room: Lilla salen | | | |
| | Christophe Bordry, Airbus industries | | | |
| 11:15-11:45 | Keynote - Evolution of Aircraft Maintenance | | | |
| | Development | | | |
| | Room: Lilla salen | | | |
| | Tomas Lagerberg, ABB | | | |
| 11:45-13:00 | Lunch | | | |
| 13:00-14:20 | Session I (eMaintenance Railway I) | | | |
| | Room: Lilla salen | | | |
| 10.00.10.00 | Chaired by: Peter Söderholm, Trafikverket | | | |
| 13:00-13:20 | The Use of Laser Based Trolley for Rail- way Switch and Crossing Inspection | | | |
| | Marius Rusu, Clive Roberts and Stephen Kent | | | |
| 13:20-13:40 | Data to Decision through Contextual | | | |
| 10.20 10.40 | Presentation of Railway Infrastructure | | | |
| | Performance | | | |
| | Christer Stenström, Karina Wandt and | | | |
| | Aditya Parida | | | |
| 13:40-14:00 | Prognostic and Health Management of | | | |
| | Wheel Condition: Integration of Wheel | | | |
| | Defect Detection and Wheel Profile | | | |
| | Monitoring data | | | |
| | Matthias Asplund, Stephen M. Famurewa and | | | |
| | Matti Rantatalo | | | |
| 14:00-14:20 | Improvement of Configuration Manage- | | | |
| | ment in Railway Signalling System Amparo Morant, Phillip Tretten, Ramin Karim | | | |
| | | | | |
| 13:00-14:20 | and Diego Galar | | | |
| 13.00-14:20 | Session II (eMaintenance Aviation) Room: Olga Bardh | | | |
| | Chaired by: Dr Christian Delmas, Airbus Industries | | | |
| 13:00-13:20 | Handheld Maintenance Workstation, the | | | |
| | mechanic's key to the aircraft | | | |
| | Torbjörn Fransson and Olov Candell | | | |
| 13:20-13:40 | Simulation as Support for PBL Contract | | | |
| | Design | | | |
| | Olle Wijk and Patric Andersson | | | |

| Engineering Approach within Aviation eMaintenance Timothy Tinney and Olov Candell 14:00-14:20 Augmented Reality as a New Level for maintenance Efficiency Rúben Oliveira, José Torres Farinha, Inácio Fonseca, Luis Andrade Ferreira and Fátima Armas 13:00-14:20 Session III (eMaintenance I) Room: VIP rum Chaired by: Prof PS. Heyns, University of Pretoria 13:00-13:20 Current and Prospective Information and Communication Technologies for the E-maintenance Applications Jaime Campos 13:20-13:40 Case-Based Reasoning Supports Fault Diagnosis Using Sensor Information Ning Xiong, Tomas Olsson and Peter Funk 13:40-14:00 Framework for Design and Petformance Evaluation of Effective Condition Moni- toring and Maintenance Management Systems Rezsa Farahani and Michael G. Lipsett 14:00-14:20 Usability Aspects of eMaintenance Solutions Karina Wandt, Phillip Tretten and Ramin Karim 14:20-14:40 Coffee break 14:40-16:30 Workshop III - eMaintenance in civil and military aviation - challenges and possibilities Room: Lilla salen Chaired by: Dr Olov Candell, Saab Technologies and Luéé University of Technology Matching eMaintenance and cost effectiveness K.M. Ali, Boeing eMaintenance based services - improving customer and supplier collaboration? Christian Delmas, Airbus Industries 14:40-16:20 Session IV (eMaintenance II) Room: Olga Bardh Chaired by: Prof Torse Farinha, University of Coimbra Jakob Krause and Klaus Kabitzsch 15:00-15:20 Condition monintoring of oil and gas sub- sea electrical equ | 13:40-14:00 | |
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| Chaired by: Prof Torres Farinha, University of Coimbra 14:40-15:00 Reliability Predictions based on Failure Rates with Respect to Aging Conditions Jakob Krause and Klaus Kabitzsch 15:00-15:20 Condition monitoring of oil and gas sub- sea electrical equipment - Case study Åsgard subsea compression project Hermanto Ang, Tore Markeset and Tor Ole Bang-Steinsvik 15:20-15:40 A Study of Wireless Vibration Sensors for Monitoring Bearing Faults Mustafa Aliwan, F. Gu and A. Ball 15:40-16:00 Re-Design of AC Excitation Busduct based on Infrared (IR) Thermography Analysis: Power Plant Condition-Based Monitoring (CBM) | 14:40-16:20 | |
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| Analysis: Power Plant Condition-Based Monitoring (CBM) | 15:40-16:00 | - |
| Monitoring (CBM) | | |
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| S.Gopinath and Abdul Razak b. Jamin | | |
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| 16:00-16:20 | Machine Health Monitoring: An Inte- | 13:20-13:40 | Information logistics for continuous |
|-------------|--|-------------|---|
| | grated Maintenance Approach | | dependability improvement |
| | Mahantesh Nadakatti, Sarbjeet Singh, Aditya | | Per Norrbin and Peter Söderholm |
| | Parida and Uday Kumar | 13:40-14:00 | Holistic Maintenance Information wi |
| 14:40-16:20 | Session V (eMaintenance III) | | Multi-layers of Contractors |
| | Room: VIP rum | | Mikael Palo, Isabelle Lindsund and Per-O |
| | Chaired by: Prof Peter Funk, Mälardalen University | | Larsson-Kråik |
| 14:40-15:00 | Numerical Simulations of Effects of | 14:00-14:20 | E-Monitoring of Operation and |
| | Faults in a Vertical Axis Wind Turbine's | | Maintenance Task under Difficult Vis |
| | Performance | | Work Environment |
| | Atif Shahzad, Suman Pradhan, Taimoor Asim, | | Ravdeep Kour and Ramin Karim |
| | Rakesh Mishra and Kyoo-Seon Park | 14:20-14:40 | • |
| 15:00-15:20 | Computational Fluid Dynamics based | | Converters: Using the IEEE Std 762 |
| | Performance Optimisation of Vertical | | Yasser Mahmood, Alireza Ahmadi and |
| | Axis Marine Current Turbines | | Ramin Karim |
| | Kyoo-Seon Park, Taimoor Asim, Rakesh | 13:00-14:40 | Session VII (eMaintenance IV) |
| | Mishra, Atif Shahzad and | 10.00 14.40 | Room: Lilla salen |
| | Gilbert Mirangwanda | | Chaired by: Dr Jaime Campos, Linnaeus Univ |
| 15:20-15:40 | Application of Particle Swarm Optimiza- | 13:00-13:20 | |
| | tion Approach in the Inflationary Inven | 10100 10120 | Failure Probability with quantitative |
| | tory Model under Stochastic Conditions | | Methods for Critical Applications |
| | Seyed Mostafa Orand, Abolfazl Mirzazadeh | | Ossmane Krini and Josef Börcsök |
| | and Farzaneh Ahmadzadeh | 13:20-13:40 | |
| 15:40-16:00 | Multi-objective reliability allocation | 10.20 10.10 | prediction of Electronic Components |
| | problem | | Adithya Thaduri, A K Verma, Gopika Vino |
| | Jalal Safari and Farzaneh Ahmadzadeh | | Rajesh Gopinath and Uday Kumar |
| 16:00-16:20 | On the Integration of Wear Model into | 13:40-14:00 | |
| | Dynamic Analysis for Rolling Element | | Mustafa Aljumaili, Karina Wandt and |
| | Bearing | | Ramin Karim |
| | Idriss El-Thalji and Erkki Jantunen | 14:00-14:20 | |
| 16:30-18:00 | Sightseeing - Gammelstad Church | | a study of SCADA Security |
| | Town and Luleå | | Yamur K. Al-Douri, Mustafa Al-Jumaili an |
| 19:30-22:30 | Congress Banquet and entertainment | | Ramin Karim |
| | (dress casual) | 13:00-14:20 | |
| | | 10.00-14.20 | Room: Lilla salen |
| Day III | - 14th December 2012 | | Chaired by: Prof Tore Markeset, University of |
| | | | Stavanger |
| 09:00-09:30 | Keynote - Integrated Logistic Support with | 13:00-13:20 | e-Monitoring for haul road maintena |
| | eMaintenance | | in mining applications |
| | Room: Lilla salen | | PS Heyns, HM Ngwangwa, T Heyns and |
| | Laurence Earl, Saab Technologies | | van der Westhuizen |
| 09:30-10:00 | Keynote -Status and outlook of eMaintenance | 13:20-13:40 | CMMS Benchmarking Development |
| | in aviation | | Mining industries |
| | Room: Lilla salen | | Yonas Lemma, Stephen M. Famurewa, D |
| | K. M. Ali, Boeing | | Galar, Håkan Schunnesson and Jonas Fj |
| 10:00-10:30 | Coffee break | 13:40-14:00 | |
| 10:30-11:00 | Keynote - Evolution of Aircraft maintenance | | supported in HMM |
| | development | | António Simões, José Torres Farinha, Iná |
| | Room: Lilla salen | | Fonseca and Fernando Maciel Barbosa |
| | Christian Delmas, Airbus Industries | 14:00-14:20 | |
| 11:00-11:30 | Keynote - eMaintenance makes Businesss | | maintenance state |

11:30-13:00 Lunch

Sense: A State-of-the-Art Review

Raj B. K. N. Rao , COMADEM International

Chaired by: Vivianne Karlsson, Banverket

Bjarne Bergguist and Peter Söderholm

asset condition using both temporal and

13:00-13:20 Control charts for assessment of linear

15:00

Room: Lilla salen

Room: Lilla salen

13:00-14:40 Session VI (eMaintenance Railway II)

spatial information

lependability improvement Per Norrbin and Peter Söderholm Iolistic Maintenance Information with Aulti-layers of Contractors Aikael Palo, Isabelle Lindsund and Per-Olof arsson-Kråik -Monitoring of Operation and Maintenance Task under Difficult Visual Nork Environment Ravdeep Kour and Ramin Karim Evaluation of Data for Traction Frequency Converters: Using the IEEE Std 762 asser Mahmood, Alireza Ahmadi and Ramin Karim Session VII (eMaintenance IV) Room: Lilla salen Chaired by: Dr Jaime Campos, Linnaeus University New Idea to Estimate the Reliability and ailure Probability with quantitative Methods for Critical Applications Ossmane Krini and Josef Börcsök Modified Physics of Failure approach for prediction of Electronic Components Adithya Thaduri, A K Verma, Gopika Vinod, Raiesh Gopinath and Udav Kumar Maintenance Related Ontologies Justafa Aljumaili, Karina Wandt and Ramin Karim nformation Security in eMaintenance study of SCADA Security amur K. Al-Douri, Mustafa Al-Jumaili and Ramin Karim Session 8 (eMaintenance V) Room: Lilla salen Chaired by: Prof Tore Markeset, University of Stavander -Monitoring for haul road maintenance n mining applications PS Heyns, HM Ngwangwa, T Heyns and SF an der Westhuizen MMS Benchmarking Development in Vining industries ronas Lemma, Stephen M. Famurewa, Diego alar, Håkan Schunnesson and Jonas Fjellner Jrban Road Transports E-maintenance. supported in HMM António Simões, José Torres Farinha, Inácio Fonseca and Fernando Maciel Barbosa new approach for the diagnosis of maintenance state Hugo Raposo, José Torres Farinha, Inácio Fonseca and Luís Andrade Ferreira 14:20-14:40 Lean versus Kanban -An Actual Paradigm Pedro Dias, José Torres Farinha, Inácio Fonseca and Luís Andrade Ferreira **Closing Session** Coffee break