
Editorial

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Biographical notes: Salla Marttonen is a Post-Doctoral Researcher and Project Manager at the School of Industrial Engineering and Management of Lappeenranta University of Technology. She received her DSc (Tech.) in 2013. Her dissertation addressed flexible asset management in industrial maintenance. She works in the research team of capital, capacity and cost management (C3M). Her research interests include value, costs and profitability of maintenance and asset management in companies and company networks.

Miia Pirttilä is a doctoral student at the School of Industrial Engineering and Management of Lappeenranta University of Technology. Her doctoral studies concern the operational working capital management of value chains, more specifically cycle times of working capital. Her research interests include capital, capacity and cost management.

Industrial maintenance is no longer seen as a mere cost object, but as a value-adding activity that must be systematically managed to support the objectives of supply chains and to increase the productivity and competitiveness of companies. Optimal maintenance management calls for modern solutions in maintenance performance measurement because reliable and valid indicators are needed to support the decision making. Turning the research field yet challenging, maintenance decision making most often requires understanding of both technical and business related systems.

The yearly maintenance performance measurement and management (MPMM) conference aims at contributing to the above-mentioned challenges through gathering the experts from around the world to discuss their thoughts and research results. The 3rd MPMM Conference was organised at Lappeenranta University of Technology, Finland in September 2013. The three main topics of the event were maintenance performance and value, maintenance technology and knowledge management, and maintenance innovations. Participants came from 12 different countries, and the academic sessions were interlinked with business through a practitioners' workshop. According to the feedback, the conference participants enjoyed the small conference, the size of which promoted networking. The advantages of the conference were a great atmosphere and the range of topics. The participants were provided with an opportunity to conduct in-depth discussions on topics related to maintenance.

This special issue contains some of the best scientific papers presented in MPMM 2013. The conference papers were presented after a double-blind peer review, and all six

manuscripts published in this issue have been further improved after the conference on the basis of a full review process.

In the first article the effectiveness of the melting process in arc furnaces is studied regarding deviations from the preset electrical quantities for different scrap mixtures. The authors contribute to understanding the characteristics of the electric arc, as well as the predictive maintenance and condition-based monitoring of the arc furnace melting process.

The second article addresses maintenance decision making with the perspective of company networks through life-cycle modelling. The presented model supports the planning of asset maintenance and makes the value of maintenance transparent for all the network partners. The authors also take into consideration the issue of value sharing in maintenance business.

The third article examines the sustainable value creation of maintenance services. Thus both economic and environmental impacts of maintenance are assessed with the support of system dynamics and e-maintenance. As regards the environmental aspects, the authors focus on energy usage and carbon footprints.

The fourth article presents a prognosis model for rolling element bearings which often play a key role in asset health. The authors use system dynamics to model the wear process dynamically. Previous prognosis models for rolling element bearing rely on pre-determined functions or constant factors for probable damage.

In the fifth article the authors strive for linking asset condition monitoring with the optimal maintenance actions. The topic is approached through advanced signal processing and data extraction. In a case study the results are introduced through a load-haul-dump machine of mining industry.

The sixth article focuses on the maintenance of electric power systems. The authors present a method to rank the disconnectors in the system according to their need of maintenance activities. New infrared sensors are used to monitor the temperature of contacts in the disconnectors to detect increases in resistance.

Overall the research articles in this special issue communicate the role of maintenance in modern industrial settings. Detailed technical understanding of various complex processes and assets must be turned into optimal maintenance plans and actions. This optimisation can only be achieved by taking the impacts on business aspects into account; methods like life-cycle costing, value calculations and sustainability assessments are needed to justify the maintenance actions to the industrial decision makers.

We are most grateful to Professor Angappa Gunasekaran, the Editor in Chief of *IJISE*, for the opportunity to prepare this special issue. Thank you also to the authors and the reviewers who have contributed to the conference and this special issue.