Proceedings of the International Conference on Industrial Engineering and Operations Management

Publisher: IEOM Society International, USA DOI: 10.46254/NA10.20250201
Published: June 17, 2025

Introducing Smart Asset Criticality (SAC) and How it Differs from Conventional Asset Criticality

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Abstract

Asset criticality plays a significant role in asset maintenance, for example, capital improvement, investment decision, maintenance tasks planning and scheduling, etc. Existing techniques to develop the conventional asset criticality are either based on asset prioritization or theoretical probability of failures and consequences highly dependent on individual opinions. Also, the static nature of the asset criticality hinders its purpose for facilities with aging equipment. This abstract introduces a smart asset criticality (SAC), which eliminates bias and subjectivity of individual opinions by utilizing real-time asset data managed by computerized maintenance management system (CMMS). Use of real time data improves equipment risk management, represents accurate equipment health status and elevates situational awareness of facilities equipment. This in return allows better incorporation of operational and asset risk factors leading to continuous quality data feeding into CMMS and dynamic iteration of SAC. This work involved a rigorous review of historical background of asset maintenance and its progression through industrial revolutions summarizing the literary works on asset criticality as the priori to develop the proposed SAC. The dynamic nature was tested and validated for its real-time implementation using data at Great Lakes Water Authority in Detroit, Michigan. The implementation results showed that the SAC provided a more realistic view of overall assets condition leading to a more efficient maintenance tasks management. It is concluded that in the Maintenance 5.0 manufacturing, smart asset criticality (SAC) is superior to conventional asset criticality in maintaining physical assets across industries.

Keywords
Asset Criticality, Work Order Priority, Reliability, Maintenance

Acknowledgments
Development and validation of Smart Asset Criticality implementation were performed by Operations, Special Projects and Reliability & Maintenance Engineering (RME) at Water Resource Recovery Facility (WRRF), at Great Lakes Water Authority, Detroit, MI.

Biographies
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Christopher Wilson is the Special Projects Manager at the Great Lakes Water Authority. He has a Bachelor of Science in Chemical Engineering. Chris is a registered professional engineer with the state of Michigan and hold an

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Majid Khan is the Director of Wastewater Operations at the Great Lakes Water Authority. He has a doctorate in Applied Chemistry, and a Master of Science in Information Systems. Majid is a certified reliability leader, and certified municipal wastewater class-A operator. He has worked through the ranks since starting as a Junior Chemist with the City of Detroit in 1996, with a clear goal of improving the water sector through innovative methods and effective leadership.

Navid Mehram is the Chief Operating Officer for Great Lakes Water Authority. He has a Bachelor of Science in Civil Engineering. Navid is a registered professional engineer with the state of Michigan. Navid has extensive background in wastewater treatment design and construction, with over 20 years of experience in the water sector and over 10 years of leadership, management of variety of facilities in effort to protect public health.