A key for sustainable longevity: integrating physical asset management and obsolescence management

Open invited track code: 8q723

IFAC Technical Committee:

TC5.1 : Manufacturing Plant Control

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CC 5 - Cyber-Physical Manufacturing Enterprises [tentative keywords, extracted from https://ifac2026.org/fairContents.do?FAIRMENU_IDX=21837&hl=ENG/#cc5]

- Viable and resilient supply chain and production
- Maintenance engineering, management and services
- Sustainable and circular manufacturing systems
- Sustainable and circular supply chain and production
- Manufacturing prognostics and health management

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I Description

The preservation and extension of the service life of systems, products, equipment, and physical assets have become a major strategic imperative for both private and public organizations. These objectives must be achieved while reconciling multiple constraints: human and environmental acceptability, economic viability, and technical feasibility.

To this end, a range of approaches may be deployed: partial or comprehensive redesigns, technological upgrades, targeted modernization, and—when overall preservation is no longer feasible—the reuse of high-value-added subassemblies. Such choices require advanced decision-support tools capable of arbitrating between replacement and life-extension interventions while integrating economic, environmental, technical, and societal constraints.

In this context, physical asset management cannot be dissociated from obsolescence and shortage management. These phenomena affect not only electronic, mechanical, and software components, but also materials, technologies, regulations, and standards. They directly influence the operational availability of long-lived systems, supply chain continuity, and the ability to maintain acceptable performance levels. Geopolitical crises and economic instabilities exacerbate these risks, constraining the availability of critical systems and infrastructures.

These challenges concern all stakeholders across the value chain—from designers and manufacturers to operators and maintainers—and call for applied research that integrates interdisciplinary approaches: risk modeling, maintenance strategy optimization, development of digital tools for predicting obsolescence and shortages, and the design of circular solutions to maximize residual asset value.

The objectives of these thematic sessions are to share the latest research findings and practitioner insights in asset management, obsolescence and shortage management, maintenance, sustainability, and circularity on one hand, and supply chain and risk management on the other, in order to establish a roadmap for future research endeavors aligned with the prospective needs of customers/consumers and the entire value chain.

Also, the topics targeted by this track sessions are at least the following:

- Asset lifecycle management
- Agile methods for managing maintenance in the presence of low-predictable or sudden component supply disruption
- Maintenance strategies vs obsolescence and shortages management strategies
- Maintenance planning and proactive obsolescence management
- Formal models linking obsolescence and key maintenance indicators
- Obsolescence and shortages data for maintenance management or supportability
- AI techniques combining system state of health and obsolescence and shortages data
- Predictive maintenance and obsolescence forecasting
- Maintenance and shortage/sudden delivery interruption
- Advanced decision-making support for asset end-of-life management and Life Extension
- Resilience of systems
- Replacement strategies for complex asset systems
- Data-centric spares and obsolescence management
- Decommissioning of industrial systems

Time schedule

- November 26th 2025, Deadline for paper submission
- April 15th 2026, Notification of acceptance/rejection
- May 15th 2026, Final paper submission
- 23-28 August 2026 23nd IFAC World Congress: Busan, Republic of Korea

Manuscript Preparation

- For Manuscript Preparation please look at
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- Upon submission, make sure to use the Open invited track code: **8q723**