

OPEN INVITED TRACK

## REMANUFACTURING for CIRCULARITY concern (code 4khj5)

TC 5.2. Manufacturing Modeling for Management and Control

**Proposed by :**

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**Short presentation:**

The technology “across” processes of Industry 4.0 is now addressing the flexibility of production and the robustness of value chains to gain circularity and sustainability through technology. It integrates the Human-Centric perspective asking to apply technologies to adapt production processes to the societal and environmental and industrial landscape. This involves designing (and promoting) products (and processes) that can be reused and repaired (Re-Manufactured) in a sustainable circular economy perspective. Remanufacturing as the series of steps needed to transform an old (broken) product into one to be considered as new (repaired) [BS8887-220:2010] involves: market analysis for products collection; quality issue for initial inspection and market re-entering and tracing; process arrangement for the disassembly and reassembly balancing; product requirements for modularity, fast prototyping and remediation of components; logistics issues for the reverse and warranty management.

The remanufacturing and refurbishment market is rapidly (e.g., in the global automotive parts remanufacturing market grows with a CAGR of 7.1% over the forecast period from 2020-2026 but still account 2% of US production and 19% of EU production) gaining a huge market amount (it is expected 100 Bn of euros for the European market).

Considering the complexity of remanufacturing, product and process and company barriers have to be overcome while discussing (and testing) remanufacturing strategies (and approach) for circularity.

The objective of this proposed section is to collect contributions to share knowledge on: business model to support integration, identification, application and mapping of Industry 4.0 technologies to support remanufacturing and refurbishment processes; model, design, control and simulation of processes in order to overcome the uncertainty in timing and quality of returns, balancing of load; design and arrangement and for reverse - service oriented - logistics; design and investigation for product and materials integration and complexity management; manufacturing strategies for part integration and specificity making; cost barriers for remanufacturing development; customer points for product and market acceptance; human and robot cooperating for fitting remanufacturing requirements; deep sustainable maintenance strategies for remanufacturing.

In this proposed session, we invite contributions in both theoretical and applications based proposals in the field of REMANUFACTURING for CIRCULARITY (from manufacturing to service) included but not limited to:

- Circular Economy and Sustainability
- Business models for remanufacturing
- Product specification for remanufacturing
- Market acceptance for remanufacturing
- Uncertainty in operations for remanufacturing
- Machine learning strategies for sustainable maintenance in remanufacturing
- Design for disassembly methods
- Robotic disassembly
- Human related Factors in remanufacturing
- Reverse logistic management for remanufacturing
- Inspection/Testing before/after remanufacturing
- Cloud based strategies for remanufacturing

Papers must be submitted electronically using the IFAC PaperPlaza Conference Manuscript Management System: <https://ifac.papercept.net/conferences/scripts/start.pl>. All submissions must be in PDF format, written in English, and prepared according to the IFAC format.

Please visit <https://ifac.papercept.net/conferences/support/support.php> for detailed instructions.

Papers submissions will be due - preferentially - before October 31<sup>st</sup>, 2022 through the conference submission platform, selecting “invited track” and entering the session **code 4khj5**.

Distinguished papers based on their fast-track review and oral presentation will be selected and published in an extended journal article form as part of a special issue.