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A Knowledge Based System for Intelligent Planning of e-motors remanufacturing activities.

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Abstract

The implementation of Circular Economy principles and the shift toward more sustainable manufacturing practices have highlighted critical issues in the flexibility of production systems, especially in de and remanufacturing phases.

High customization and wear and tear cause significant variability in product conditions upon re-entry, leading to planning problems and inefficiencies in rigid manufacturing systems. This hampers the development of new, more sustainable and greener strategies within the manufacturing field.

To overcome these limitations, this thesis proposes a rule-based knowledge system to generate flexible activity schedules that can meet the product-specific needs to ultimately apply the most suitable strategy for de and remanufacturing. The solution ensures extensive and scalable applicability through a Knowledge Shell.

A case study on de and remanufacturing activities of electric motors was conducted to test and validate the proposed method.

