

Digitalization supports the visualization of environmental impact in production systems

Background

Sustainability agenda 2030 remains a significant challenge to manufacturing companies. Meanwhile, the development of digitalization reshapes not only the competitive landscape of production efficiency, but also sustainability performance. As an important first step to improve the environmental sustainability, companies need to understand the current environmental performance within the production system through visualizing the environmental data. Digitalization could help to collect and visualize the data in an efficient way, and lay a solid basis for companies to analyze the environmental data and optimize the performance.

Project Aim

This thesis project aims to explore the potentials, challenges and opportunities of integrating digitalization in visualization environmental data. Digital technologies, including but not limited to simulation, connectivity solutions, such as RFID tags, wireless devices, and apps, enable efficient solutions to visualize the environmental data. It is important to decide what data can be collected, how these data can be transformed into information, and how these information can be analysed/interpreted to support the decision making of improving the environmental performance.

Research question

How digitalization can be used to visualize environmental impact in production systems?

Tasks and methods

- **Theoretical data collection:** primary theoretical framework of this study will be found on reviewing scientific articles and reports covering the area digitalization and its connection to sustainability (and circular economy) and visualization.
- **Empirical data collection:** Primary data will be collected directly from involved company, Bror Tonsjö. The implementation of digitalization (simulation) will be done with the support from Siemens.
- **Practice:** Compare empirical results and theory, choose a digital tool (possibly with Plant Simulation) to visualize the environmental impact of manufacturing systems; identify practical potential and opportunities for involved companies, as well as evaluate challenges and list possible solutions for improving environmental performance.

Preference:

Background in Production Engineering or Environmental Science is preferred.

Requirements and timing

Two students are required for this project between January and June 2022.

Information

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