Eidgenössische Technische Hochschule
Swiss Federal Institute of Technology
Department of Management, Technology, and Economics
Chair of Production and Operations Management
www.pom.ethz.ch

Call for Master's Thesis FS 2024

In collaboration with Accelleron, the Chair of Production and Operations Management offers a master's thesis for the spring semester of 2024.

Topic: Data- and Technology-driven support for manual assembly lines.

Industrial Partner: Accelleron, Turbo Systems Switzerland Ltd., Baden

Accelleron is a Swiss company and a leading global provider of turbocharger technologies and optimization solutions for engines in the marine, energy, rail, and off-highway industries. The company has installed around 180,000 turbochargers worldwide, maintains a global network of over 100 service stations, and employs 2,500 people globally. The thesis will be conducted at the production site in Baden.

Project Description:
Accelleron's production is characterized by a high mix of variants, with assembly processes being handled manually by highly flexible and trained operators. To enhance quality and work processes, Accelleron is modernizing its assembly line to further focus on the strengths of human assemblers (flexibility and ability to adapt) and to reduce unfavorable tasks like looking up data in tables and handling hidden complexity.
The thesis project aims to identify different supporting technologies and to examine their business value and feasibility. The following challenges and potential technologies, not an exclusive list, can be in scope, also dependent on the student's interests:

- Smart tools, that are automatically configured to the correct process parameters (torque and angular values)
- Data-driven synchronization of different assembly steps using data analytics and suitable dashboarding solutions
- Machine-vision enhanced commissioning process eliminating component errors while reducing manual inspection efforts
- System-supported quality checks using smart measuring devices

Overall, the thesis will involve analyzing the assembly process and suitable technologies, the process setup, and the implementation in the line, including change management. Scientific as well as operational support are ensured by the active contribution of the Senior Manager Assembly as well as the Factory Digitalization Manager.
This thesis is part of the Innosuisse research project ASSY 5.1, which examines the effects of augmenting technologies in manual assembly from an operational and behavioral perspective.

Requirements and skills:

- Strong analytical skills and critical thinking
- Strong interest in smart manufacturing and "Industry 4.0"

- Strong interpersonal skills and ability to effectively communicate and collaborate with professionals from diverse backgrounds
- Fluent in German and English

Duration: This work is offered as an MSc and MAS thesis
Start: FS 2024
Workplace: Baden
Contact person ETH: Alexander Albers, thesis-pom@ethz.ch, thesis coordinator Chair of POM

Application: Please send your application letter, CV, and transcripts to Alexander Albers

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