

Modular WING Power Bank Assembly on the FESTO CP Factory Line

Degree programme : BSc in Industrial Engineering and Management Science

Specialisation : Industrial Engineering

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Building on a previous preliminary study, this bachelor thesis examines how the CP Factory at BFH can be adapted technically and didactically to produce a module for the modular WING Powerbank. Automated and manual process concepts are evaluated to strengthen the practical relevance and increase the strategic visibility of the CP Factory in teaching and industrial cooperation.

Introduction and objectives

The CP Factory is currently used primarily as a demonstration platform and is geared toward a standardized product. This work aims to enable the production of a WING power bank module—specifically, the multimeter. This should enable the technical, economic, and educational potential to be better leveraged, thereby increasing the attractiveness of the industrial engineering program and the interest of industry partners.

Research Design

The methodology comprises qualitative expert interviews, a quantitative survey among students, and a workshop with students in their final semester. Suitable modules and process variants were discussed in the workshop. This was supplemented by a systematic risk analysis using Design FMEA, the creation of user stories, and a SWOT analysis to evaluate possible manufacturing concepts.

Results

During the workshop, the multimeter (Figure 1) module was identified as particularly suitable for integration into the CP Factory. As a result, it was decided to adapt the existing production process accord-

ingly: The layout of the plant was redesigned, a new application module for turning the workpiece was integrated, and the process steps of the CP Factory (Figure 2) were structurally revised. These changes not only increase the practical relevance of teaching but also enhance the attractiveness of the CP Factory for potential students and industry partners.

Implications and Recommendations

The implementation of a real product at the CP Factory, with the active participation of students, strengthens the didactic quality and visibility of the degree program. It is recommended that the developed solution be further developed iteratively, particularly considering technical feasibility, maintainability, and possible expansion scenarios. The early involvement of external partners offers additional potential for the sustainable use of the CP Factory.



Matteo Bumann

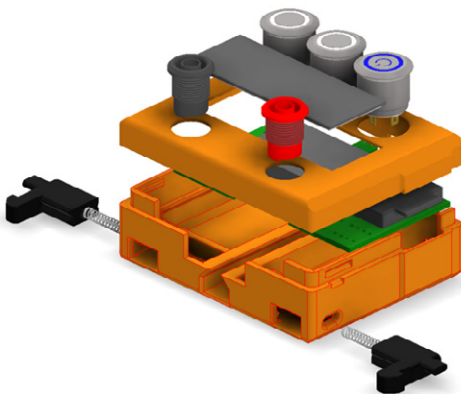


Figure 1: Multimeter from WING Powerbank

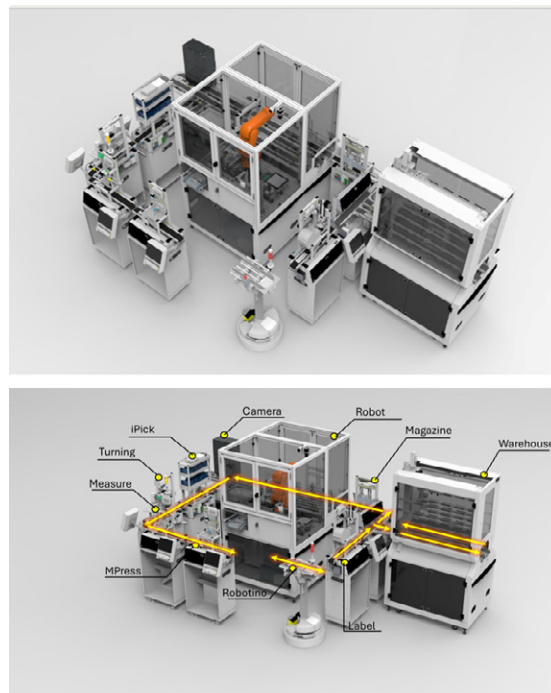


Figure 2: New Layout CP Factory