



SUCCESS STORY

Development of a reusable Safety Logic

...for a Wire Processing machine family in the field of factory automation

The Challenge

The customer sought to replace PLC-based safety solutions in various machine families with an integrated safety solution.

Flexibility for future use in different product families is crucial, alongside advanced diagnostic capabilities for easy commissioning and troubleshooting, including detailed cross-circuit detection for all external interfaces.

The Solution

MESCO successfully implemented a proven approach by utilizing Safety Design Packages, which encompass reusable design artifacts for both hardware and software.

To expedite the development process, a parallel approach involving concurrent hardware and software development at both MESCO and the customer site was adopted.



Infographic - Parallelization



The early prototyping involved running the developed software on MESCO's modular evaluation hardware.

MESCO Design Packages



Your Benefits:

- ✓ Reduced development risk
- ✓ Project cost reduction
- ✓ Shorter time to market
- ✓ Easy protocol-certification
- ✓ TÜV-certification

The Implementation

The development of the safety product commenced with the utilization of Safety Design Packages and consideration of customer requirements. However, due to the granularity and flexibility of these design packages, there were limitations in the extent of free choice for functionality. Striking the right balance was crucial for both the customer and MESCO, as any modifications to the existing design packages would impact the project's effort and cost.

For instance, deciding whether to exchange components required careful evaluation. While such a change could reduce production costs, it would increase project efforts. Therefore, close collaboration with the customer was essential to determine which adjustments were necessary for the design packages. Once this initial requirements phase was successfully completed, all development activities were initiated in parallel, following the framework of MESCO's Safety Design Packages.



Parallel development activities:

MESCO HW Development

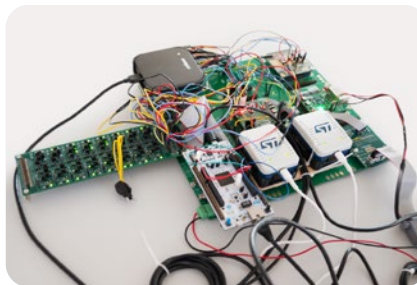
The hardware modules were developed based on the hardware design artifacts provided by the design packages. After successful validation, integration testing was conducted prior to moving the hardware modules into production.



Safety Logic on a PCB

MESCO SW Development

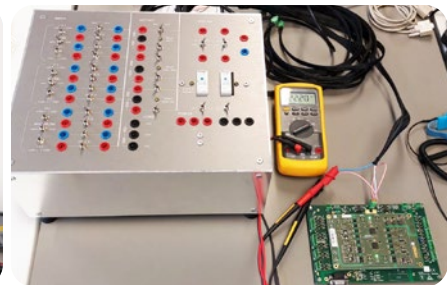
The software was developed by combining reusable code with project-specific code in a stepwise manner. The development process involved running the software on MESCO evaluation hardware modules from the beginning. Additionally, a host simulator was used to simulate the machine controller for safety-related data transfer.



Prototype on MESCO evaluation hardware

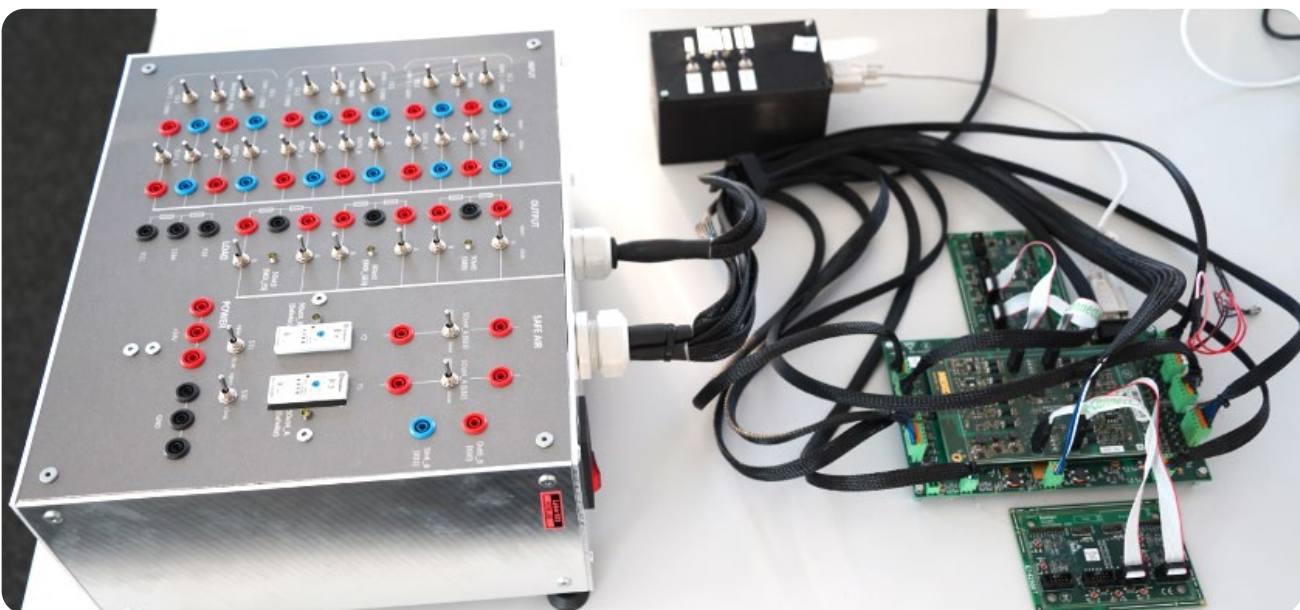
Test System

A customer-developed system test environment was created to meet the requirements of both safety development and specific customer needs.



Simulator and tester

Final Integration of the software with Safety Logic



Integration test setup



The Result

Thanks to the close and cooperative collaboration, the software was quickly completed, along with the final hardware and system test setup. The integration of hardware, software, and the test setup went smoothly, with minimal troubleshooting required.

In summary, the key success factors can be outlined as follows:

Key success factors:

- ✓ Proven MESCO Safety Design Packages
- ✓ Close collaboration with the customer throughout the project
- ✓ Solution-oriented problem-solving approach
- ✓ Willingness to compromise on both supplier and customer side
- ✓ Early software implementation of hardware close to the final product.



We also develop for you.

... where ideas turn into success!



Peter Bernhardt
Head of Sales & Marketing
Tel.: +49 7621 1575 0
peter.bernhardt@mesco-engineering.com

MESCO Engineering GmbH
Berner Weg 7
79539 Lörrach
Germany