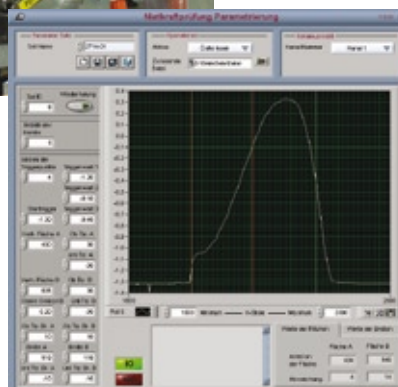
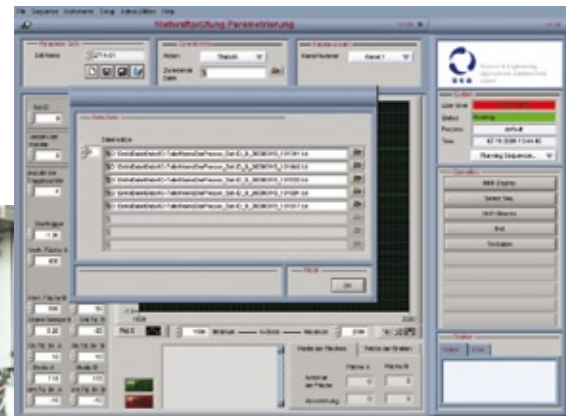




# Automation of in-process inspections in automotive component manufacturing



## Objective

Increasing demands on quality assurance necessitate the growing use of diverse measuring and testing operations in manufacturing. Continuous improvement in quality assurance has often been pioneered by the automotive industry and its component suppliers. Their approach is exemplified by this supplier of seat systems. Each seat frame passes numerous processing stations on an assembly line, e.g., for component mounting and riveting operations, assembly of the two guide rail parts, insertion and securing the bearing balls, lubrication and checking for effortless movement,

etc., before the seats can be installed.

For the various inspection stations, a standard PC-based software was to be created. The system was expected to support customization to individual process requirements and an integration of multi-vendor hardware in a user-friendly manner. In addition, the specification called for flexible adaptability to future requirements.

User interface for in-process inspection of seat frames by imaging, including two function panels, status information area, user definable functions buttons and menu bar.



## Solution

A solution was provided in the form of S.E.A.'s *TESTMASTER*® software product. Programmed in LabVIEW™, this modular platform-independent tool is specifically designed for industrial testing and manufacturing environments. The application comprises the customer's inspection stations plus an array of TestMaster PCs or PXI systems equipped with National Instruments hardware components. Uncluttered operating screens provide convenient access, optionally via touch panel PCs, to the interactive system control features and all measuring and control functionalities. TestMaster comprises five core modules: Sequence control

- Test management and monitoring
- Hardware abstraction
- Process data distribution & visualization
- Process data administration

The hardware abstraction, process data administration and Yase sequence editor modules play a key role in the present application. The Yase system allows the customer to create his own test sequences and define processes without programming skills or intervention in the software. Image processing algorithms can be integrated as inspection steps using National Instruments IMAQ Vision Builder.

## Outlook

The defined automation and documentation requirements for the 100% inspection steps were effectively met with this LabVIEW and TestMaster®-based system. The system is adaptable to diverse quality control stations and has given good results in everyday manufacturing practice.

The application can be reconfigured for different components and is usable in client/server mode as well. In addition to this automotive use S.E.A. provides modular TestMaster platform for various industrial uses.



Photos overleaf: Graphic user interface of the seat rail quality control software; ball insertion during seat rail assembly



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