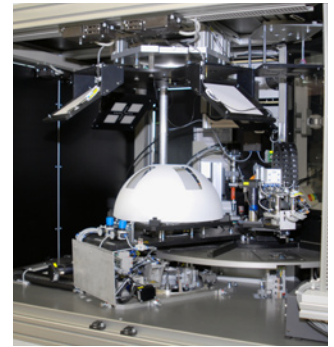


Automotive Test System for Rear View Cameras



Customer: Leading automotive supplier
Final product: Rear view camera for passenger cars
Industry: Automotive

Description:

Development of a combined assembly and test system for the automated focusing of passenger car rear view cameras. The system automatically sets the lens in focus, aligns the PCB with the optical axis and by bonding the unit is locked against twisting.

Customer Requirements:

- Low cycle time
- Setting of lens focus after verification using an MFT target
- PCB alignment to optical axis
- Locking of the lens by UV hardening adhesive
- Software for analyzing and storing of test results
- Label printing for bad parts after passing all stations
- Monitoring of bad parts

Implemented Solution:

This test system has been developed to automatically adjust the focus of a passenger car rear view camera module and align the CMOS imaging sensor in the optical axis of the lens (X-Y-Phi). This is performed by analyzing the camera picture acquiring reference marks under defined lighting conditions and imaging software from Konrad Technologies.

After this alignment step the lens is locked by applying a UV hardening adhesive against twisting. To achieve the targeted cycle time a multi station system with turn table and six independent stations has been built. The test system includes another spare station for future extensions like plasma treatment.

Furthermore, analyzing and storing of test results has been implemented as well as label printing for bad parts marking and monitored storing of them.

The software is based on National Instruments TestStand and a specially developed multi station operating interface.

Single stations:

Station 1 - Loading /unloading

Station 2 - Focus setting

Station 3 - X-Y-Phi adjustment of PCB to the optical axis

Station 4 - Spare

Station 5 - Three axis system for adhesive dispensing

Station 6 - UV bulb for adhesive hardening

Software:

NI TestStand: Test sequencing
Editor, Debugger

NI LabVIEW: Test step libraries, including KT-Vision

KT-OP: User interface
Debugging
Support for multiple parallel test stations

KT-Project: Functional test
Vision test

KT-Stat: Result file viewing and analyzing
Calculation of process capability

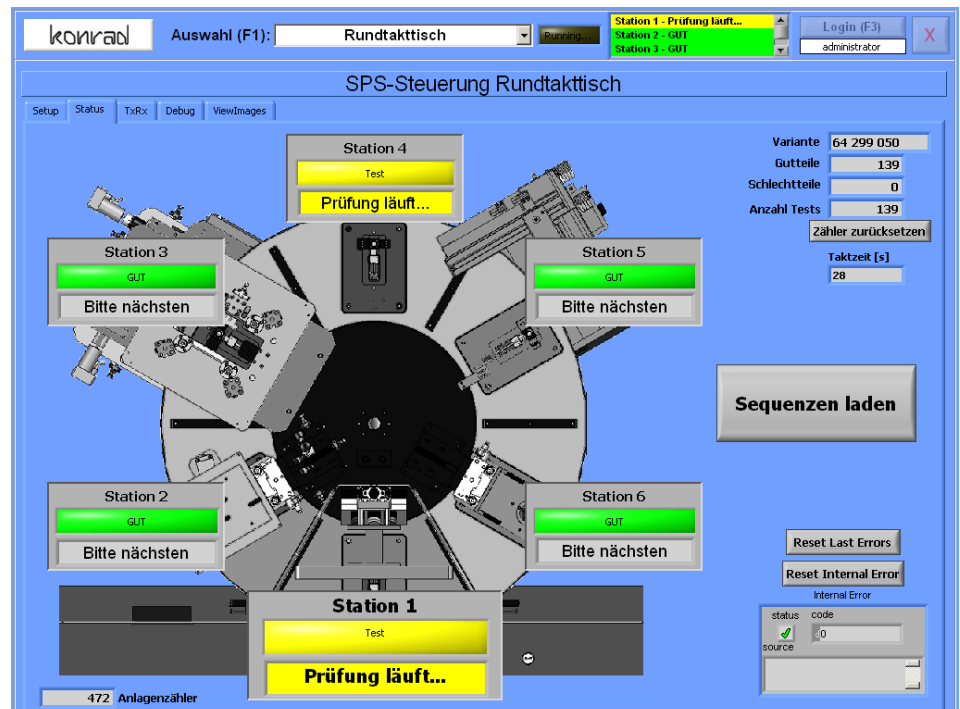
Hardware:

PC based test system with UPS

Instruments: Two frame grabber
Eight port serial I/O board for drive control
Two channel power supply for DUT powering

Conclusion:

With this assembly and test system for passenger car rear view cameras the customer received a fully automated solution which can be operated around the clock. More than 150.000 camera modules can be assembled and tested per year in a cost efficient way. Refitting for other products or variants can be done by the customer.



Automotive +++ Avionics +++ Semiconductors +++ Telecommunication +++ Medical +++ Industrial