

## Optical assembly inspection of components

### Efficient quality inspection of different types of modules

#### The task

At the assembly inspection of automotive aggregates all individual components like radiator, fans, surge tanks and outlet joints are inspected for their presence and correct assembly. Additionally, the machine vision system VINSPEC checks the correct assembly of rivets, frames, eyelets and similar components. About 100 different types of aggregates are inspected.

#### Benefit

When inspecting many different aspects of complex aggregates with a high type variety it is indispensable to standardize



*Inspection - production process*

the sensors (camera and illumination) as well as the user interface. Whereas the inspection by human beings varies depending on several factors, e.g. qualification, „daily form“, pressure of time or forgetting cer-

tain examinations, an automated inspection guarantees an objective result and streamlines the production process.

#### Implementation

When an aggregate moves through the inspection area 14 matrix cameras capture the entire surface from six sides. In standstill six additional special cameras complete the inspection and examine the aggregate at difficultly accessible regions. Switchable LED illuminations are orientated towards the modules' surface from different angles and expose the individual features of each aggregate.

#### Technical data

Cameras:	14 high-resolution CMOS cameras with digital interfaces 6 standard CCIR cameras for the special views
Illumination:	38 switchable LED-illumination Flash illumination with approx. 1.5 Hz (continuous transport)
Resolution:	Approx. 0.2 mm / pixel
Speed / Throughput:	Feed rate 100 mm/s. Cycle time per part 17 s: 12 s during transport, 5 during standstill
Image acquisition:	11 x 8 successive image acquisitions during transport 12 image acquisitions during standstill
Hardware / Interfaces:	<ul style="list-style-type: none"> <li>• 2 systems with 3 industrial PCs each, plus 1 offline workplace</li> <li>• Reading and coding of the transponder tag on the work piece carrier</li> <li>• XLM-reports of the entire inspection process per module to the host computer</li> </ul>