MoveInspect

3D measurement of dynamic processes

MEASURE THE ADVANTAGE

In order to sustain its own competitive capability, every company has to meet the challenge to develop products within shorter periods, and manufacture them at lower costs. In doing so, the inspection of parts with respect to their motion and deformation behaviour plays a decisive role. In which situation is the object deformed unintentionally during running production? How does an element behave under load? And how stable is the used material, when does it fracture? AICON's new measuring system MoveInspect can now answer all these questions.

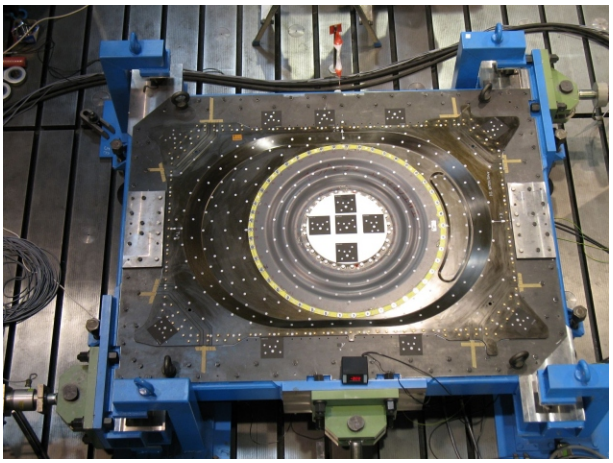
Application areas

Deformation analysis:

- Defect analysis in the production line (e.g. during welding)
- Behavior of components in wind tunnel and climate chamber
- Analysis of collision damage
- Material testing

Motion and position analysis:

- Tracking of engine motions
- Door slam testing
- Analysis of the closure process for hoods, convertible tops and windows
- Testing of body component vibrations
- Control of industrial robots
- Machine vision



Component testing at Eurocopter

MoveInspect

MoveInspect captures dynamic processes three dimensionally and analyses them regarding geometric changes. For this application, AICON has developed a special camera bar that is equipped with digital cameras and offered in the versions MoveInspect HF (high frequency) and MoveInspect HR (high resolution). The high-end version is able to conduct tests with no time limit at a frequency of 490Hz.

For each measuring epoch, the MoveInspect software determines e.g. the 3D coordinates of object points, the 6 DoF coordinates of solid bodies, and the speed of the points or solid bodies. Different modes are available to analyse the measurement: The Offline-Mode (i.e. later) and the Online-Mode (i.e. during the measurement in real time). The integrated magnifier function allows for the visualization of the slightest movement.

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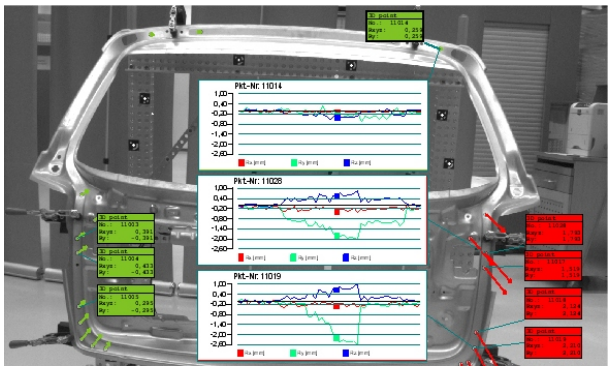
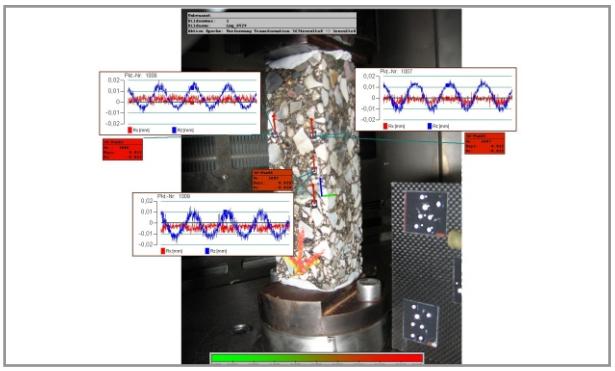
This is also possible in case of highly frequent processes with long observation times, i.e. when the data volume is very high.
The results of the dynamic measurements are displayed in a clear and descriptive manner. They may also be exported to external analysis software such as DIADem. MoveInspect can be synchronized with other systems using standard interfaces. Thus, it also supports the control of dynamic processes.

Material testing



Display of the measurement results



Display of the measurement results

Specifications

	MoveInspect HF	MoveInspect HR
Hardware		
Sensor	TraceCam F stereo bar	TraceCam 2M trinocular system
Base distance of cameras	variable	variable
Body	camera body suits industrial needs (IP 65)	camera body suits industrial needs (IP 65)
Flash	LED ringlight	LED ringlight
Resolution	1.3 megapixels	2.0 megapixels
Acquisition frequency	up to 490 Hz	up to 5 Hz
Size	1,000mm x 100mm x 100mm	1,000mm x 100mm x 100mm
Weight	approx. 7.0 kg	approx. 8.5 kg
Control unit	TraceCam F syncbox for 1-4 cameras, ext. synchronization, power supply 12V or 100-240V, Lemo connector	TraceCam 2M syncbox for 1-4 cameras, ext. synchronization, power supply 100-240V
Data transmission	TCP / IP	Firewire IEEE 1394
Processing computer	high end laptop computer	high end laptop computer
Operating system	Microsoft Windows XP	Microsoft Windows XP
Accessories	tripod, high end laptop computer, calibration panel, reference cross, one set of coded targets (ANCO-code), thereof 50 on magnetic mount, 5,000 retro reflecting targets (Ø10mm)	tripod, high end laptop computer, calibration panel, reference cross, one set of coded targets (150 pcs), thereof 50 on magnetic mount, 5,000 targets black-and-white (Ø10mm)
MoveInspect Software		
Interfaces	interface to all established data	interface to all established data
Measuring modes	acquisition systems (e.g. DIAdem) offline, online, realtime	acquisition systems (e.g. DIAdem) offline, online
Position accuracy	±0.10mm for measuring volume 1,000mm x 1,000mm x 500mm	±0.05mm for measuring volume 1,000mm x 1,000mm x 500mm

technical data subject to change without notice