

MoveInspect HF | HR

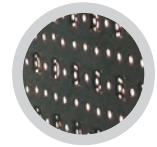
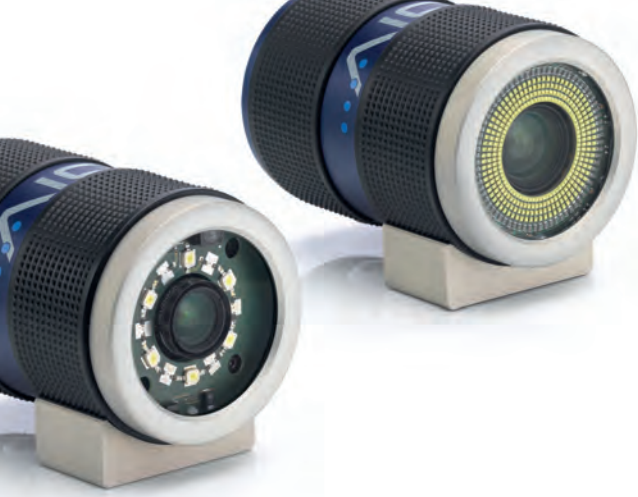
3D measurement of dynamic processes



MEASURE THE ADVANTAGE



AICON
3d.systems



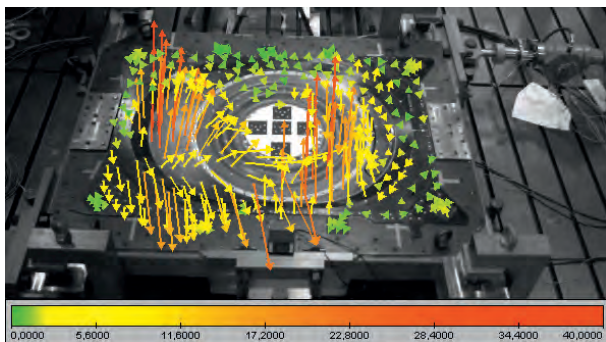
MoveInspect HF | HR

3D measurement of dynamic processes

Areas of application

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 so doing, the inspection of parts with respect to their motion and deformation behavior plays a decisive role.

In which situation is the object deformed unintentionally during production operations? How does an element behave under load? How stable is the material? When does it fracture? AICON's optical measuring system MoveInspect is applied to detect these geometric changes three-dimensionally and to find precise answers to each question with the help of the measured data.



Component testing

It is available in two versions using different digital cameras: MoveInspect HF (high frequency) and MoveInspect HR (high resolution). That means, the applied digital cameras vary in acquisition frequency and resolution according to the measuring task.

M E A S U R E T H E

The high-end version is able to conduct tests without a time limit at a frequency of 1,000Hz. Both versions, however, allow for the analysis of any number of measuring points as determined by the operator. This is a true breakthrough in optical metrology.

The following are typical applications for MoveInspect:

3D motion and position analysis

- Door slam testing
- Analysis of the closure processes of hoods (e.g. trunks), convertible tops and windows
- Testing of body component vibrations
- Control of industrial robots
- Machine vision

3D 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, structure analysis



A D V A N T A G E

Extendable with a probe

MoveInspect HF and HR are part of AICON's MoveInspect Technology, which is a high performance modular system concept that brings together a wide range of measuring technologies. This gives you a true advantage: For new measuring tasks, you can simply extend your current system with additional components and software modules from MoveInspect Technology. For example, you can easily upgrade your MoveInspect HR system with a hand-held probe. Thus you are able to conduct probing tasks, too, without acquiring a completely new system.

Functional principle

Tests with MoveInspect take only a fraction of the time and effort that traditional sensors such as travel sensors need in laboratory tests.

Adhesive targets are placed at all points which are to be measured. As these targets are very inexpensive consumable supplies, MoveInspect is also the ideal system for destructive testing. Then MoveInspect is oriented in a way that all measuring points are located in the field of view of the cameras. After a short calibration (duration: 2 minutes), the system is ready for operation. The collected data of the coordinates are automatically transferred to the connected measuring software. Different modes are available to analyze the measurement: offline (i.e. later), online, or during the measurement in real time.

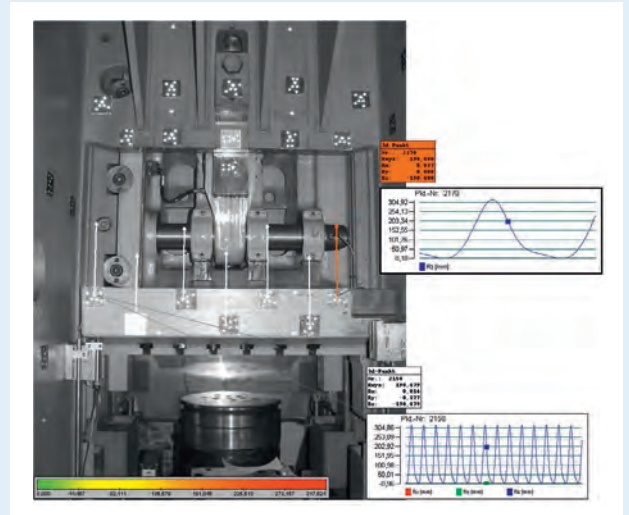
For each point in time, the MoveInspect software determines, e.g. the 3D coordinates of object points, the 6-DOF coordinates of solid bodies, and the speed of the points and solid bodies. The calculation is based on the principle of spatial image triangulation (photogrammetry) and is fully automated.



**Practical example:
Defect analysis in production process**

Production defects can be detected and corrected right on site because MoveInspect may directly be integrated into running production. Although fixtures and production machines are periodically inspected with regard to their dimensional accuracies, problems arise in production nearly every day. For example, it may happen that a robot-based welding shop would suddenly deliver parts that are inaccurate and not true to gauge. Therefore, production machines, fixtures, and materials are checked step by step in order to find the cause of the deviations as quickly as possible.

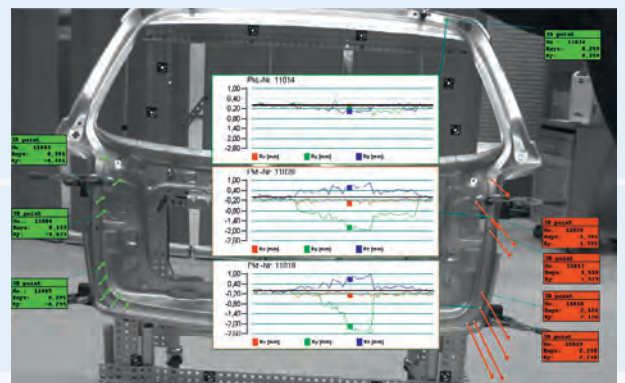
Yet causal research is very laborious without optical metrology. MoveInspect is able to significantly support this research. The measurement system is set up in running production. It continuously keeps track of each production step and observes both the machines and the part. Consequently it is possible to reveal quickly where in the production process the mistake has occurred.



Inspection of machine behavior

Your advantages at a glance:

- Identification of the 3D position and speed of a variable number of measuring points for an unlimited time period
- Performance of long-term tests at frequencies up to 1,000Hz
- Significantly reduced setup work in comparison to traditional sensors such as travel sensors
- Direct link to central data acquisition system
- 3D deformation analysis also possible in destructive testing thanks to inexpensive target accessories
- Clear visualization of results including shifting vectors, way-path-diagrams and video sequences
- Further fields of application by upgrading the system



3D and 6D motion analysis



Part inspection

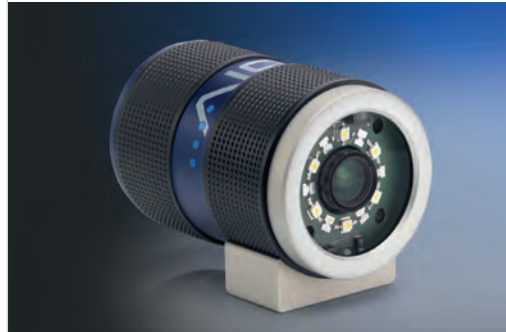


User interface

Specifications

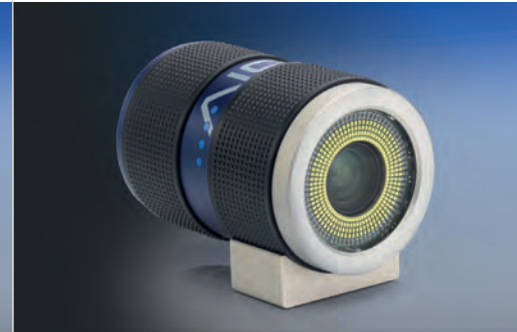
MoveInspect HR

Measurements up to 5Hz



MoveInspect HF

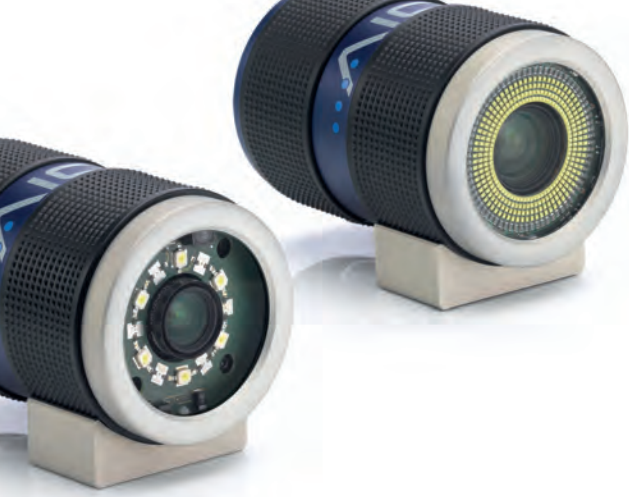
Measurements up to 1000Hz



Hardware		
Sensor	MoveInspect HR camera	MoveInspect HF camera
Resolution	5.0 megapixels	1.3 megapixels
Number of cameras	adaptable to the measuring task 1, 2 or more cameras on tripods or 3 cameras on a camera bar	2 cameras on a camera bar
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
Acquisition frequency	up to 5Hz	up to 1000Hz
Size (for setup with camera bar)	1,000mm x 100mm x 100mm	1,000mm x 100mm x 100mm
Weight (for setup with camera bar)	approx. 8.5kg	approx. 7.0kg
Control unit	syncbox for 1-4 cameras (cascadable), ext. synchronization, power supply 90-240V, Lemo connector	syncbox for 1-4 cameras (cascadable), ext. synchronization, power supply 12V or 90/240V, Lemo connector
Data transfer	TCP/IP	TCP/IP
Processing computer	high-end laptop computer	high-end laptop computer
Operating system	Microsoft® Windows® 7 / Vista / XP	Microsoft® Windows® 7 / Vista / XP
Accessories	camera bar, tripods, quick releases, 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)	camera bar with tripod and quick release, 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)
Software		
Interfaces	interface to all established data acquisition systems (e.g. DIAdem, MatLab)	interface to all established data acquisition systems (e.g. DIAdem, MatLab)
Measuring Modes	Offline, Online	Offline, Online, Realtime
Typical accuracy for 1m³	up to <0.02mm (depends on configuration)	<0.10mm

Technical data are subject to change without notice.





MoveInspect HF | HR

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MoveInspect HF | HR – systems of AICON's MoveInspect Technology

MoveInspect Technology brings together a wide range of optical measuring technologies into one high-performance modular system. That means that you can combine the individual components such as sensor, probe and computer with the appropriate software.

Thus MoveInspect Technology is a powerful and versatile CMM for probing, tracking and targeting. And as all components are portable, you can always measure right on-site.

A unique investment – in every respect.

MEASURE THE ADVANTAGE



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