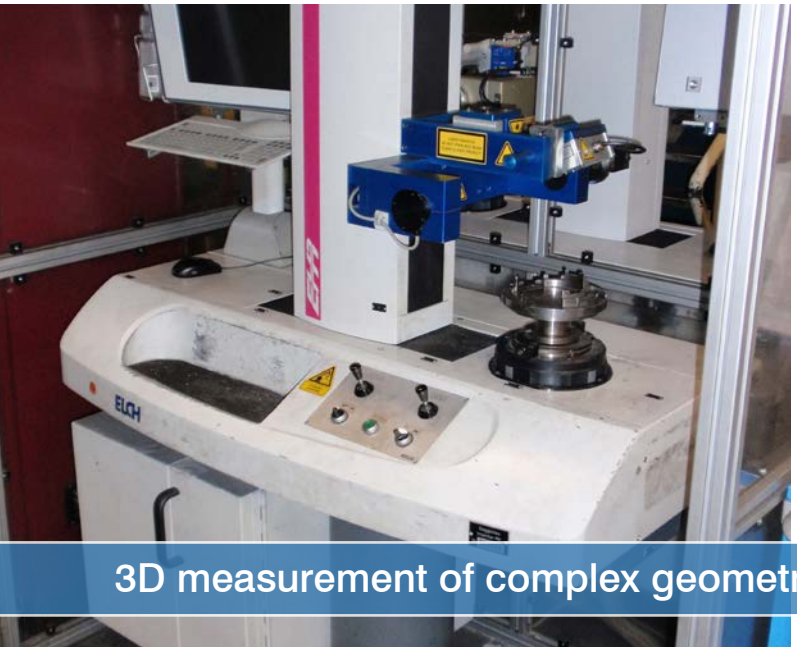
A186

Laser scanners
scanCONTROL



3D measurement of complex geometries in precision systems

Due to complex geometries and large part dimensions, micrometre precision measurement of hypoid-toothed gearbox components or cutting tools for crankshafts is a challenge. In precision machines, the German company EHR has resolved this conflict between extreme measurement resolution and large part dimensions by using high resolution, non-contact sensors from Micro-Epsilon combined with precision mechanics. In this way, component areas can be moved to and measured precisely. All part measurements can then be compiled into an overall measurement with micrometre precision. A large component is therefore measured in all relevant areas.

As well as high precision mechanics, EHR relies on the scanCONTROL laser scanner from Micro-Epsilon. The finished precision machine spans the space cylindrically with two linear axes and a rotary axis. This enables the measurement of rotationally symmetrical and cylindrical parts. Examples of these include gearbox components and ball bearings.

The scanCONTROL is mounted centrally on the measurement set-up and can be moved. Unlike conventional tool presetters, external areas as well as internal profiles of measurement objects can be scanned from this position.

Therefore 3D point clouds can be obtained from the relevant component areas, which provide sufficient data for application-specific evaluations. This provides a major benefit when compared with tactile measurements, which only provide a few measuring points in a relatively long measurement time.

Requirements for the measurement system

- The measurement system is adapted to the requirements (measurement accuracy, cycle time etc.).

Advantages

- Maximum resolution of the whole system of 1µm
- High measuring rate
- Can be modified specifically for the application