Motivation

- Today earth-laid fresh water pipes can be rehabilitated by modern redevelopment procedures without having the pipes replaced.
- Inspection of fresh water pipes is usually carried out by CCTV technology which is not sufficient for an objective assessment of the pipe condition.
- With respect to a cost efficient redevelopment procedure pipe defects like e.g. deformation, pitting depth and sedimentation level must be measured precisely.

Sensor Concept

- The concept is based on the well-known optical triangulation technique.
- The sensor employs at least two triangulation modules of similar type arranged in parallel, with beam direction in diametrical opposition.
- By rotating the sensor modules around the pipe axis and simultaneous forward motion it is possible to measure and model the inner pipe geometry over the whole pipe length.

Implementation

- The sensor concept allows a very compact mechanical design - it can be used with pipe inspection robots or cable rod systems.
- Hollow shaft axis implementation allows the appliance as an inter-mediate sensor module for existing inspection systems.

Application

- The ROGS sensor concept is used for the condition survey of fresh water pipes.
- The measurement allows the reconstruction of inner pipe geometry very precisely:
  - The result of an inspection run can be visualized as an 3-D or 2-D representation.
  - Green colored areas indicate pipe sections with geometrical deviations less than 2.0 mm.
  - Red colored parts indicate a deviation of the nominal geometry more than 1.0 mm.