

# MONITOR Process

If pre-fabricated concrete segments are used for the tunnel lining, not only the determination of the current TBM position is important. Rather the room available in the shield space and the optimal alignment of the most economical ring type must be determined along with taking account of the decisive part of the tunnel boring process.

## Semi-automatic Tailskin Clearance Measurement System GAPtrix

This is even more important if conical rings are used, which are most suitable for creating bent or straight tunnel stretches. The optimal ring positioning is a decisive part of the tunnel boring process.

Tail skin clearance values are measured at the last built ring to determine position relative to the tail skin axis. The measured clearance values are used for:

- Ring center determination of the last built ring
- Consideration of position relative to tail skin axis for the following ring sequence calculation

It is important to measure the tail skin clearance values very exactly, in order to guarantee precise data of the constructed rings and an accurate ring prediction.

## Semi-automatic Tailskin Clearance Measurement System GAPtrix

The combination between TUnIS Ring Sequencing and GAPtrix allows a precise and error-free calculation of the ring position. Additionally the semi-automatic measurement process raises the quality management and the process velocity between advance and ring erection.

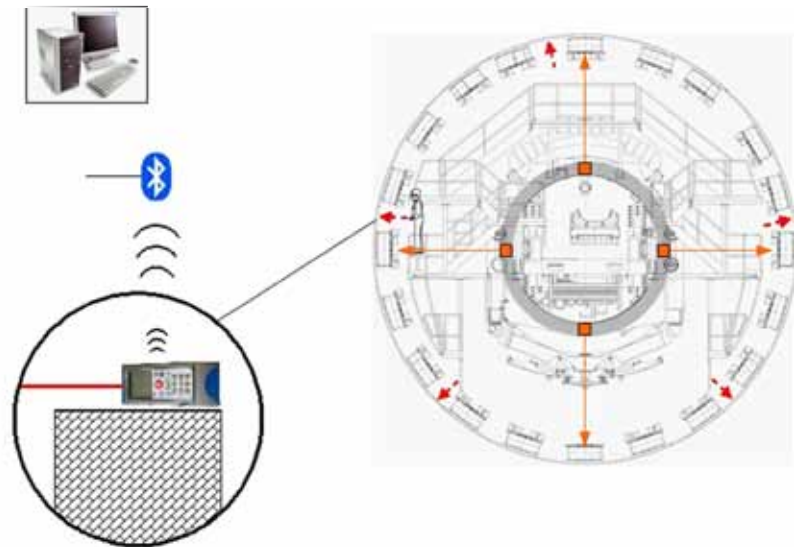
### Advantages

- Measurement of tail skin clearance during advance possible
- Faster and safer data transfer with Bluetooth®-Technology
- More precise calculation of ring sequencing because of faster access to values
- Automatic data transfer into TUnIS Ring Sequencing
- Avoid of faulty insertions

### Features

- Field of applications: tunnelling with segmental lining
- Wireless acquisition of measurement values
- The measurements are taken on location at the ring
- Precise measurement, no parallax (Precision  $\pm 1.5$  mm typ. in measurement range from 0.05 to 200 m)
- Data transfer with Bluetooth®-Technology

Traditionally, the tail skin clearance is measured manually using a folding ruler. The values are written down and entered into the system manually. This procedure is fault-prone and is not up to a continuous electronic data flow standard.



*GAPtrix measurement process with  
Leica DISTO<sup>tm</sup>plus via Bluetooth*