

# MONITOR Process

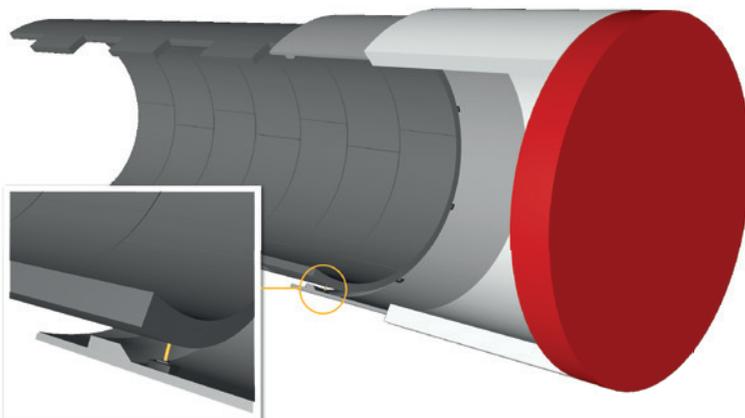
The ring build is a decisive part of mechanized tunnelling with segmental lining. To determine the optimal installation of the ring it is necessary to observe the current position and orientation of the TBM, plus the position of the last built ring. SLuM Ultra enhances the ring build process by measuring the ring position relative to tailskin axis with millimetre-accuracy.

## Automatic Tailskin Clearance Measurement System SLuM Ultra

Regarding the demand of ideal ring position within the tunnel, SLuM Ultra supports centric ring build by automatically evaluating the room available in the shield space. This is even more important if conical rings are used, which are most suitable for creating complex tunnel alignments.

The system optimizes the ring build process by interacting with the VMT Ring Sequencing software by taking into account the tunnel alignment, ring design, tailskin clearance, cylinder extensions and machine position and orientation. This avoids damage to the concrete segments and the shield itself.

SLuM Ultra is a fully automated system which enables faster evaluation of measured values and more efficient tunnel construction. It also improves data quality, reduces faulty values and contributes to site safety as manual measurement and manual data input are not required.



*Schematic SLuM Ultra*

