GENERAL DESCRIPTION

When using flexible excavation machines such as Sandvik roadheaders, the ability to exactly and efficiently excavate a desired profile without compromising advance rates by frequent repositioning and tentative excavation can only be achieved by the use of exact geodetic guidance and integrated profile management. Tauros for roadheaders is a guidance system which is jointly developed by Sandvik and Geodata.

In contrast to other roadheader guidance systems, all hardware and software components are highly integrated into available roadheader on-board components. This deep integration of the guidance system into the general machine control system yields a variety of benefits for the customer.
WORKING PRINCIPLE

The continuous acquisition of the current machine's position is based on measurements taken from a total station, which is connected to the PLC via Bluetooth radios. The total station is mounted on a bracket at the back of the tunnel and measures and tracks two motor targets which are mounted on the machine. At an arbitrary interval, an automatic orientation check is performed to a backsight prism. Several additional machine sensors are added into the calculation process to determine the cutter head's position in the project coordinate system with high accuracy.

All operations are carried out automatically. The automatic observation of thresholds reduces the operator’s workload even more and informs the user of possible problems.

BENEFITS OF AN INTEGRATED SYSTEM

- The control software communicates with integrated on-board sensors and software components and, by this way, any redundant hardware installations are avoided.
- All sensors are factory installed and calibrated, subsequent calibration can be done on site.
- Advanced features of roadheader control system become available (e.g. auto stop swing on profile boundary).
- All machine operating data relevant to the operator is displayed on a single screen.
SOFTWARE

Tunnel Editor is the ideal complementation to the onboard software. It can be used to create, manage and export alignment and profile data, manage coordinate lists and edit important processing parameters.

Tunnel Editor enables a quick and easy check of the introduced alignment data by performing an automatic consistency check. Alignments and profiles can be displayed graphically. In case of transitions between profiles, Tunnel Editor can be used to define the transition line by the means of corresponding elements between the profiles.

Taurus Online is used to guide the machine and to perform onboard operations. Important data can be imported easily by plugging in a USB stick to the interface inside the operator’s cabin.

If a profile contains several reference lines, a line can be chosen easily via a drop-down menu.

Several important tasks can be carried out which include a guided repositioning of the total station to a new bracket, communication check and remote control of the total station and adjustment of key parameters such as coordinates of the targets.