INNOVATIONS
& TECHNOLOGIES
INFORMATION

TesmecNext

TrenchIntel
THE AUTOMATIC MACHINE GUIDANCE SYSTEM

Tesmec is proud to introduce ***TrenchIntel***, the **GNSS automatic guidance system** for trenchers and surface miners, based on Topcon **RTK** technology (Real Time Kinematic) and Topcon **3D-MC** platform.
Tesmec TrenchIntel controls machine alignment and digging depth, with relevant benefits in jobsite management, machine performance and excavation accuracy.

TrenchIntel overcomes many other solutions to control machine alignment and digging depth, such as: laser system, stakes and other rudimental methods.
Based on the project data entered into the system, digging alignment and depth are automatically maintained, avoiding undercut, overcut or even wrong cut, saving customers time and money.

TESMEC
Trencher

TESMEC

CHARACTERISTICS

- Capable to read L1/L2 frequencies from **GPS** and **Glonass** satellites.
- Support correction from a local base station via radio or from a CORS network via internet.
- Radio modem could be either UHF* or Spread Spectrum.
- Compatible with most survey equipment manufacturers using RTCM correction format.
- 5Hz update rate
- Optional connectivity for remote support and map download/upload.

*UHF frequencies could be subject to licensing

TRENCHINTEL LAYOUT

A clear layout of TrenchIntel system is provided in pic. 1.

Two GNSS antennas provide precise direction control: the main antenna controls machine's 3D position, while the auxiliary one controls machine's heading. Body and boom sensors control trenching depth/grade.

The display located in the cab provides visual indication to the operator.

The radio is used to receive correction signal from a local base station (pic. 2). Alternatively, the cellular modem could be used to receive correction from a CORS network via internet (NTRIP*) - see pic. 3.

*NTRIP is available only in some countries and requires a specific service subscription.

1

FULL AUTOMATIC OPERATION CAPABILITY

SUPERSEDES TRENCHING/ ROUTE MARKING (FLAGS, STAKES, SPRAYPAINT, ETC...)

SUPERSEDES ENVIRONMENT SENSIBLE TECHNOLOGY FOR TRENCHING DEPTH CONTROL (LASER)

WATER, DUST AND WIND PROOF TECHNOLOGY (UNLIKE LASER)

GPS Antennas
- multipath reduction technology
- rugged design
- easy to install

Main antenna

Auxiliary Antenna

Control Box
- 10" Color LCD touch screen
- USB port
- grade indicators

Position Sensor
- 5Hz updating rate
- Electronic components

GPS Receiver
- status LED for easy diagnostics
- GSM/CDMA/UMTS modem
- UHF and Spread Spectrum radio options

Body Sensor
- Rugged design
- 5Hz position updating rate
- dual axis (pitch & roll)

REMOTE CONNECTIVITY

WORK OPTIMIZATION (TRENCH/PASS)

SAFETY & RELIABILITY

ELIMINATES RE-WORKING

PERFORMANCE AND FEATURES

In order to get best results in terms of performance and accuracy, Tesmec chooses ***RTK*** technology to correct the inaccuracies of traditional GNSS system, pushing its precision even farther: if traditional GNSS accuracy is approx. 2-3 mt (6,5'), RTK provides ± 2 cm (±0,7").

RTK technology is based on a particular data combination between two receivers, one of them is stationary and is called "base station", the other one is the "rover". The base station measures errors and knowing that it is stationary it transmits corrections to the rover via radio. The result is a huge enhancement in accuracy and precision, thanks to which RTK becomes the ideal measurement system for machine control.

Operating range could span from 3 to 10 km depending on the power of the radio coupled with the base station.

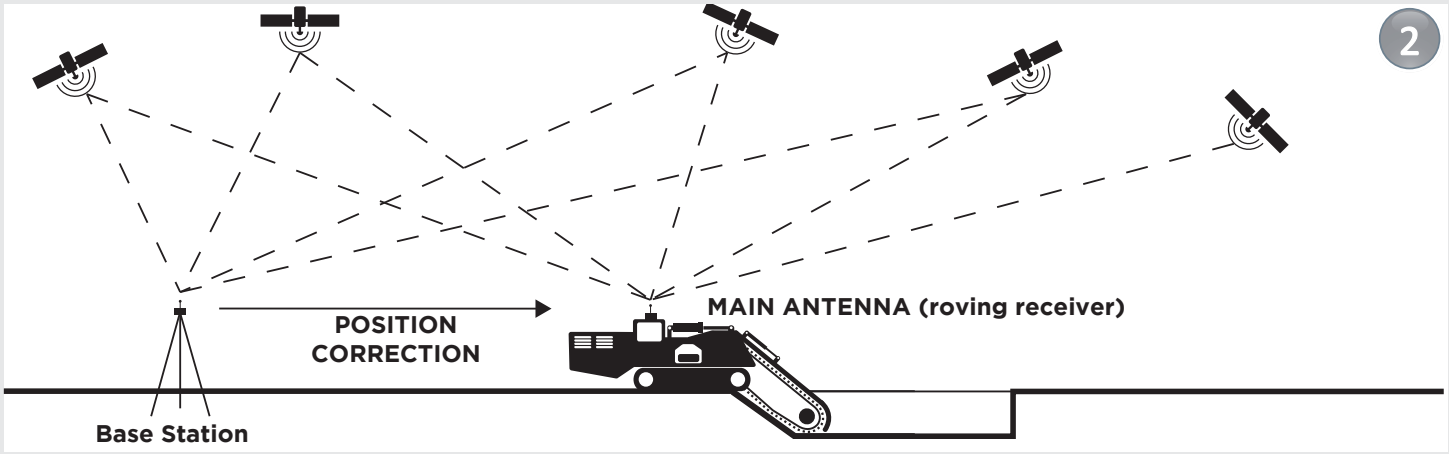
If NRTIP is used as source of correction, the only limitation is the cellular coverage.

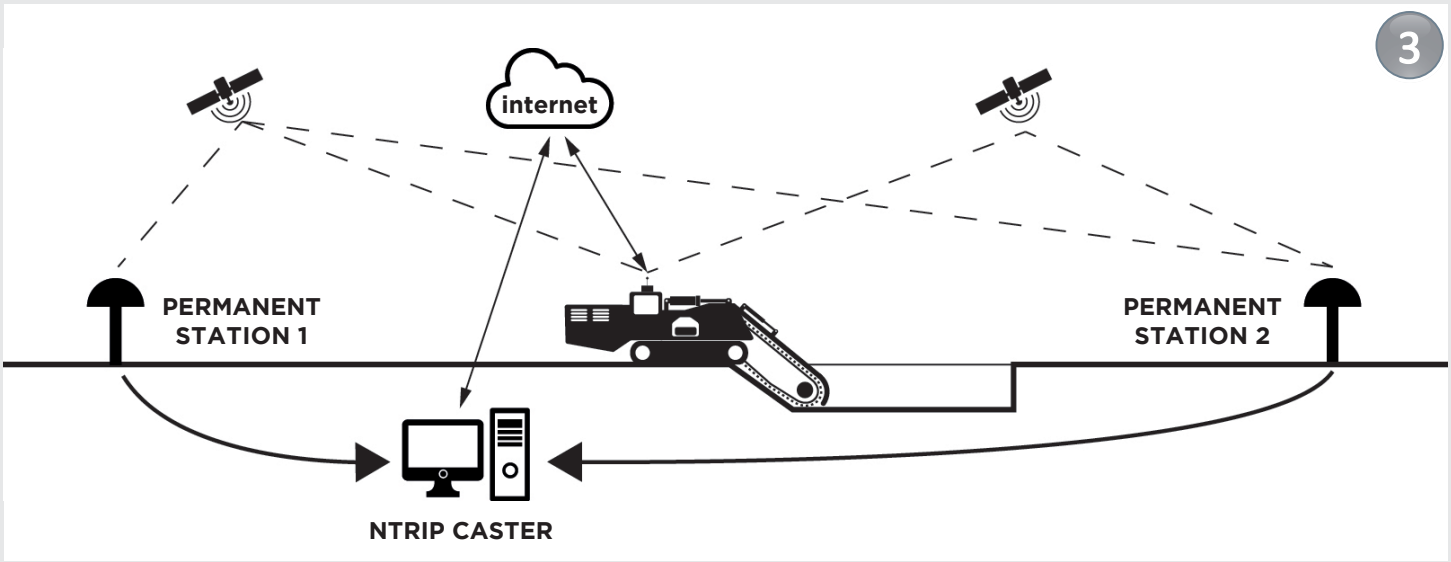
HOW TO USE IT?

Just follow these three easy steps (pic. 4):

1. Import the project map* into the system
2. Select the trenching alignment and set trenching depth/ slope
3. Turn the auto guidance system on and start digging.

*Project map must be geo-localized





1. IMPORT PROJECT MAP

2. SELECT ALIGNMENT

3. START DIGGING

FIELD OPERATION

Tesmec TrenchIntel integrated system is available for Tesmec Trenchers and Surface Miners.

- ***Rock Hawg application samples:*** pass optimization & selective mining (pic. 5), multi-machine control in bulk excavation (pic. 6).
- ***Chainsaw and Bucket Wheel application samples:*** realization of straight line, curved line, double-cut, & grade (pic. 7).
- ***Rocksaw application sample:*** installation of underground utilities (fiber optic, cables, telecom networks...) (pic. 8).

ANTI-COLLISION

If a map of existing underground utilities is available, it is possible to import it into the system and activate the anti-collision function. The system, will alert the operator when the trenching tool is approaching an obstacle (pic. 9).

AS-BUILT

More often construction contracts require as-built drawings (also called record drawing) to document the construction process, showing the exact location of installed underground utilities. TrenchIntel could record position data while the machine is trenching, realizing an as-built map in real-time (pic. 10).