.:Quality Components:.

- The survey-grade GNSS receivers and antennas we offer for machine positioning can track all visible GPS, GLONASS and Galileo satellites. This is to ensure that enough satellites are available at all times, even with severe signal obstructions present.
- We use short-baseline RTK positioning for the highest achievable accuracy and reliability. A dedicated GNSS reference station is deployed on site and RTK corrections are broadcast over VHF radio and/or cellular connection.
- The Alberding Combineddirection software supports a wide variety of real-time data formats and interfaces.
- The complete system is customisable. The modular architecture makes it easy to add new components and improved features if necessary.

.:Alberding GmbH:.

Alberding GmbH develops and distributes system solutions in the field of satellite-based positioning. We build on more than 20 years of experience to provide high-accuracy GNSS systems and services for a variety of user applications.

In the mining sector we provide complex systems for precise position and heading determination of bucket-wheel excavator machines. Our deformation monitoring solution is used in open pit mines and at landslide areas for motion detection of highwalls and slopes.

Alberding GmbH also produces low-cost multi-constellation GNSS receivers to provide sub-metre accurate location information of personnel and machines in a mine. A fleet management system can access this data in real time to improve operation safety and efficiency.

Use our experience to your advantage!

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Alberding GmbH

Mining machine positioning

.:Alberding GNSS Solutions:.

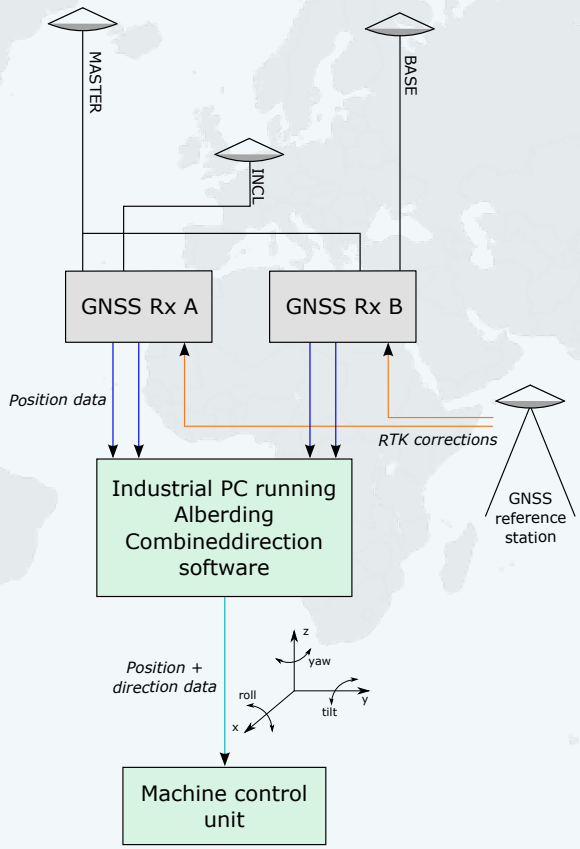
- Precise position and direction determination
- Multiple-antenna GNSS control system
- Customisable hardware and software
- Status monitoring via web interface
- Automated quality control

.:Multi-GNSS System:.

- The Alberding mining machine positioning system is designed for the precise position and direction determination of giant bucket-wheel excavators used in open pit coal mines.
- 3 GNSS antennas are installed on the excavator machine forming a triangle. Centimetre accurate position solution is calculated for each antenna by 2 high-quality, dual-antenna input GNSS receivers using short-baseline RTK technique.
- The Alberding Combineddirection software computes the 3 baseline vectors between the antennas. The software outputs real-time position and direction (roll, tilt, yaw) data of the excavator wheel to the machine control system.
- Additionally a 4th GNSS antenna and/or tilt sensors can be installed to improve system reliability and provide redundant information for quality control.

.:Direction Determination:.

- The simplified diagram below shows the GNSS reference station and the most important system components installed on the excavator machine. The fault-tolerant architecture ensures that no single-point failures will result in inaccurate machine positioning.



.:User Interface:.

- The Alberding Combineddirection software can be configured and monitored through a web-based graphical user interface.
- System operators can define custom specific threshold values for baseline lengths, roll, tilt, yaw angles, position quality indicators, satellite numbers, etc.
- The software generates visual warnings if any of the monitored parameters exceed pre-set limits.

- A graphical display helps operators assess position determination status of all 3 antennas.