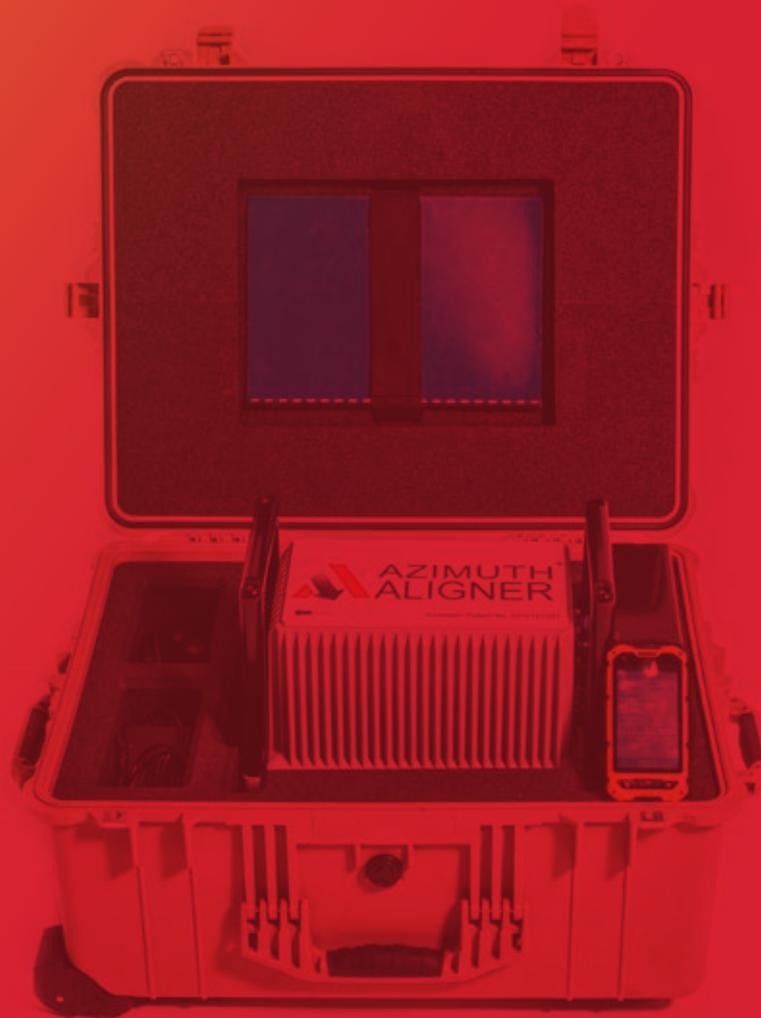




www.minnovare.com



Construction | Mining

The Azimuth Aligner®

Drill. Faster.
Cheaper.
More Accurate.

The Azimuth Aligner replaces conventional drill rig alignment methods in Mining and Construction.

Users are able to eliminate the manual, time consuming and inaccurate processes typically associated with drill rig alignment.

Using the Azimuth Aligner, drillers in mining and construction are empowered to set their drills up faster, cheaper and more accurately.



What does that mean for you?

EXPLORATION DRILLING SERVICES CONTRACTORS

- Reduce your drill rig set up time by 70-90%
- Set your rig up to +/- 0.2°

The Outcome:

Increase revenue per rig by 4-10%. Deliver more production to clients. Deliver increased quality to clients through increased accuracy.

MINERS CONDUCTING EXPLORATION

- Reduce drilling contractor downtime + Increase set up accuracy

The Outcome:

Reduce your cost per drilled meter by 3-10%. Eliminate set up errors and associated cost.

UNDERGROUND LONG HOLE DRILLING PROGRAM

- Set your rig up to +/- 0.2°

The Outcome:

Eliminate long hole deviation attributable to error at the collar. Reduce overbreak in your production blasting operation.

GROUND ENGINEERING CONTRACTORS

- Reduce your drill rig set up time by 70-90%
- Set your rig up to +/- 0.2°

The Outcome:

Increase drilling production per shift by up to 30%. Reduce reliance on site surveyors by 90%.

"Conventional survey / alignment techniques are impossible in this situation, both in terms of time required and practicability, thus the Azimuth Aligner is an invaluable addition to our program."

Steve Warriner

Chief Geologist at Poseidon Nickel



TURN IT ON. CLAMP IT TO THE ROD, ALIGN, SAVE YOUR DATA, REMOVE IT, START DRILLING – IN 5 MINS

The Azimuth Aligner is the drill rig alignment technology of choice for some of the worlds largest miners, drilling contractors and geotechnical engineering houses.

How it works?

- The portable system allows the device to be shared among multiple drills
- Turn the device on, Azimuth and Dip data begins to stream live to the wireless hand piece, clamp it to the drill, perform your alignment, remove the device and start drilling – all in 5 mins with 80% less input from surveyors
- The system allows rig set ups to be saved via the Azimuth Aligner user interface providing a clear record of the set up in relation to the hole plan
- The Azimuth Aligner uses Highly robust solid state gyroscopic sensors to deliver accurate Azimuth and Dip data in GPS denied environments
- With an hour of training drillers are capable of effectively using the system

Using the Azimuth Aligner



STEP 1

Remove device from its case and clamp the sensor to a drill rod



STEP 2

View the heading and inclination of the rig via the wireless display device



STEP 3

Adjust the position of the rig to the required heading and inclination



STEP 4

Remove the sensor from the rig to put back in case, and commence drilling

How are the results delivered in my industry?

EXPLORATION PROCESS COMPARISON

TRADITIONAL ALIGNMENT

Surveyors and a string line – 1hr



THE RESULT: Increase Drilling Production by 5-15%

WITH AZIMUTH ALIGNER

Driller completes process in 5mins

CONSTRUCTION PROCESS COMPARISON

TRADITIONAL ALIGNMENT

Surveyors using move, measure move process – 1-2hrs



THE RESULT: Complete your construction drilling program by up to 30% faster

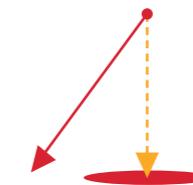
WITH AZIMUTH ALIGNER

Driller completes process in 5mins

LONG HOLE RIG ALIGNMENT COMPARISON

TRADITIONAL ALIGNMENT

All holes set up with an average 4-10 Degrees Error at the collar



THE RESULT: Reduce dilution, fragmentation issues and hang ups that result from long hole deviation.

WITH AZIMUTH ALIGNER

All hole set up to +/- 0.2 Degrees of the plan – deviation associated with set up error eliminated

What's the value for my specific operation?

We understand that every operation is different and comes with its own set of site specific challenges. At Minnovare, we also understand that our clients need to see a quantifiable business case to support the implementation of any technology on site.

Why choose the Azimuth Aligner?

- **WEIGHT / VOLUME:** 30% less volume than the alternative
- **ACCURACY:** +/- 0.2 in Azimuth compared to the +/- 0.5 in Azimuth of the alternative
- **SIMPLE USER INTERFACE:** Low complexity, intuitive user interface
- **MINIMISE DRILLER DATA INPUT:** Minnovare configures the Azimuth Aligner with all information specific to your operation prior to the system arriving onsite. This means that drillers do not have to spend time inputting critical information such as latitude and grid offsets into the system each time they use the device.
- **DATA FLEXIBILITY:** You have the flexibility to push data to a system of your choice. E.g. Mine Planning, Drill Plods, other data capture systems.
- **HARDWARE & SOFTWARE INTEGRATION:** Integrate the Azimuth Aligner with your rigs power, control, data-logging systems and user interface.

Overview of Business case development process with Minnovare:

- Engage with Minnovare for a brief discussion of your operation to allow us to understand the issues specific to your site
- Minnovare captures some key data points about your operation
- We produce a projected business case based on data from your operation and our experience working with other clients
- We review the business case with you and your team
- We agree to conduct a trial of the system on your operation to validate the business case
- See over the page for an overview of how engaging with Minnovare works

What's it like to engage with Minnovare?



At Minnovare, our confidence in the Azimuth Aligner is demonstrated through our risk free trial offering. See for yourself, the power of our unit working on your site. The trial includes consultation, training, and use of the aligner for the first month, with no obligation to continue using the Azimuth Aligner afterwards. Find out more in one of our industry specific resources for mining and construction in 'where to from here' on the next page.

Some questions you may have:

WHAT MAINTENANCE DOES THE UNIT REQUIRE?

The device is designed to be maintenance free. Outside of regularly cleaning, the system does not require ongoing maintenance.

WHAT SUPPORT AND BACK UP DO YOU OFFER?

24/7 support is provided with every unit. Free onsite training is supplied for every site. In most cases back up units can be supplied to your operation in 24-48hrs.

WHAT TRAINING IS REQUIRED?

Depending on the scale of your operation, a Minnovare trainer will need to be onsite for 1-2 days to train your personnel.

DOES THE UNIT REQUIRE CALIBRATION?

No. the system is preconfigured for your operation prior to arriving onsite. No ongoing calibration of the system is required onsite.

CAN I QA THE SYSTEM ONSITE?

Yes. Using a survey instrument test stand or a known reference provided by your site surveyor you can periodically QA the device.

DRILLERS USE THIS DEVICE, HOW ROBUST IS IT?

The device is designed with the driller in mind. Outside of the system sustaining a significant mechanical shock (i.e. being dropped from 2m onto concrete) the system will withstand use in typical mining and construction environments.

WHAT HAPPENS IF WE BREAK IT?

Minnovare provides a fully comprehensive insurance policy that covers damaged units. As soon as we are aware a unit has been damaged, a replacement unit can be dispatched.

TECHNICAL SPECIFICATIONS FOR THE AZIMUTH ALIGNER

- Accurate and usable on surface and underground without the need for GPS
- Flexible and portable – can service several rigs per site
- Seeks true north in 15 minutes (AZ = +/- 0.2 degrees)
- Real time Azimuth and DIP via high contrast display
- Unaffected by magnetics
- Live movement tracking and stored data reporting capacity
- 24 hour battery life (in conjunction with battery booster pack)
- Recalls data to enable accountability and validation
- Clamps onto BQ to PQ rod sizes
- Shock proof and sturdy unit for optimal use on site

Where to from here

To help you understand how the Azimuth Aligner is used in each industry application, we have produced industry specific brochures to communicate the specific use in each market.

Go to www.minnovare.com/azimuthaligner to download your copy.

To understand the business case for your specific operation, contact us on the details to the right.

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