



GROUND
BREAKING
NEWS



In our latest edition of 'GroundBreaking News', we have chosen to explore the latest innovations across our power and communication systems. It's these kinds of innovations that enable our Slope Stability Radar (SSR) suite to maintain their top-of-the-line standing within the market, whilst ensuring a minimal impact upon the natural environment.

First and foremost, GroundProbe is proud to announce that the newest iteration of our Continuous Power Supply system (CPS) is now in general production, and meets the latest Tier 4 Emission Compliance Standards in the USA and Canada. The updated CPS systems will be rolled out globally as we continually expand our radar fleet.

In other exciting news, GroundProbe is excited to release the Service Extension Kit; an accessory designed to increase radar autonomy by allowing our SSRs to operate in the field for extended periods of time between service visits.

I am also pleased to announce the success of our radars in operating at -40°C temperatures on-site in South Western Siberia without a shelter, any external power, or additional systems.

I look forward to telling you more about our new and innovative improvements to our radars' power systems as well as the environmental benefits afforded by these ongoing developments.

John Beevers
MD and Chief Executive Officer

Continuous Power Supply (CPS) Tier 4 Emission Standard Compliance

INNOVATIONS

Now in general production, GroundProbe have officially released a new iteration of the Continuous Power Supply system (CPS) for our Slope Stability Radar suite; meeting the latest Tier 4 Emission Compliance Standards in the USA and Canada.

The Tier 4 standards — which were phased-in from 2008 through to 2015 — were introduced in order to ensure substantial reductions to the amount of NOx (Nitrogen Oxides) and PM (Atmospheric Particulate Matter) being produced.

"The new CPS system now meets all current global emission requirements and represents GroundProbe's ongoing commitment to develop technologies which allow for reduced emissions and cleaner, sustainable energy," said James Usherwood, GroundProbe's Product Development Manager.

"To develop the new CPS system, we initially reviewed the market to try and find a small, diesel generator available for purchase that could run autonomously at extremely

low temperatures, and at high altitudes, all in very dusty conditions.

"Simply put, you can't buy one; no one in the world makes generators as tough as our customers need them so we designed one ourselves."

In addition to full compliance with the latest emissions standards, the newly redesigned CPS is even more rugged and reliable than our previous power supply systems; having undergone rigorous testing, including being tested to cold start in temperatures as low as -30°C, without optional heater kits.

The CPS was also tested at cold starting at a 5000m altitude, which was simulated by effectively reducing the amount of air pressure in a sealed chamber, with temperatures as low as -25°C.

"Currently, we have multiple new CPS systems in use across sites within the USA with more systems scheduled to be rolled out globally," said Mr Usherwood.

Slope Stability

Radar Service

Extension Kit

PRODUCT NEWS

GroundProbe have officially launched the Service Extension Kit; an accessory designed to increase radar autonomy by allowing our Slope Stability Radar units to operate in the field for extended periods of time between service visits.

The Service Extension Kit is the result of an extensive R&D process and long-term testing. It is an industry-leading solution, verified by regular independent lab tests of lubricant, coolant and fuel samples.

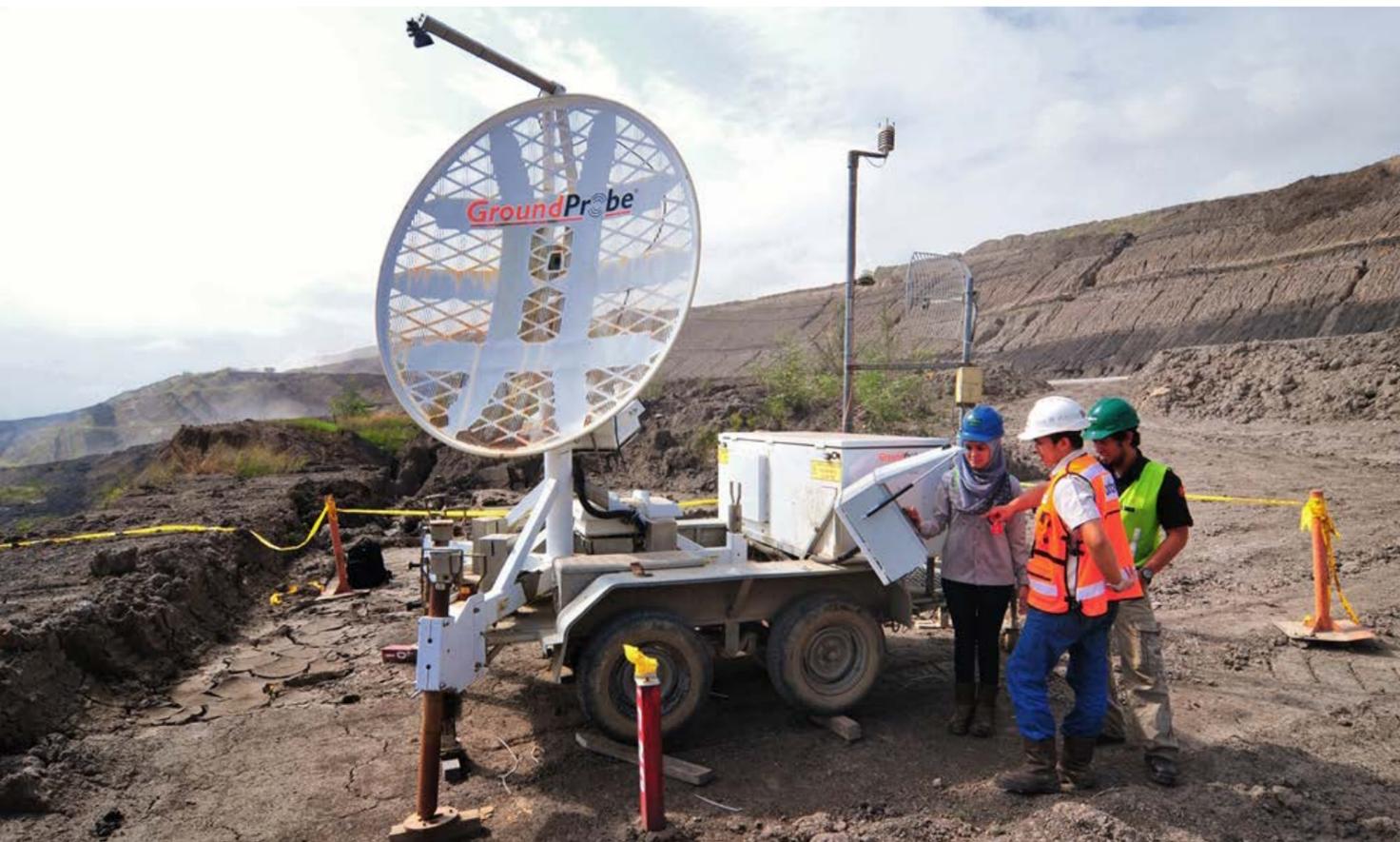
In conjunction with the new Grease Distribution Mode feature of our recently released SSR-Viewer 8.4 software, which robotically redistributes the grease on all moving parts on a daily basis, as well as further hardware reliability developments; the Service Extension Kit can extend the time between service visits to three to four months.

The kit also enhances engine durability and protection, extending the life of our diesel engines for maximum performance.

“The cleaner, more efficient engines, with improved fuel economy, allow for less frequent maintenance requirements,” said Lachlan Campbell, GroundProbe’s VP of Marketing and Technology.

The need for less frequent maintenance in turn provides value to GroundProbe’s customers through reducing the travel, accommodation and flight costs of service staff and technicians who must go on-site to conduct radar maintenance.

“With fewer site visits comes less hassle in arranging inductions, transport, accommodation needs and the on-site management of our technicians, allowing for less interruptions to our customers’ daily operations and increased radar uptime,” said Mr Campbell.



GroundProbe

Communications

Repeater Stations

INNOVATIONS



The reliability of the communication components of GroundProbe’s Slope Stability Radars can often be attributed to our Communications Repeater Stations.

Often referred to as Range Extenders, the Communications Repeater Stations are utilised if a signal physically cannot reach from the radar to the PMP, resulting in the inability to transmit data from the radar to a computer for data analysis and viewing.

Depending on the situation, sometimes several Communications Repeater Stations can be deployed which allows GroundProbe to custom build a link as required, on a

site-by-site basis.

“Allowing the exponential increase of coverage with maximum flexibility whilst offering rapid re-deployment as required, Communications Repeater Stations ensure signals can always get from the radar to the PMP no matter where your radar is on-site,” said James Usherwood, GroundProbe’s Product Development Manager.

GroundProbe’s Communications Repeater Stations are reliable, solar powered, low maintenance, manually transportable, and are a fully self-contained solution with no infrastructure dependency, making them a key component of GroundProbe’s communication systems.

Deployment in Russia's Extreme Cold

CASE STUDY

GroundProbe has successfully deployed radars across two sites in South Western Siberia, throughout an extremely harsh winter, which saw the systems functioning at -40°C temperatures autonomously without a shelter.

Siberia's climate and weather is very extreme. The summers are short whilst the winters are long, harsh and have an annual average temperature of 0.5°C with thick layers of snow remaining on the ground for at least six months of the year.

Utilising over 12 years of experience of operating our radars in arctic conditions in Northern Canada, GroundProbe was able to engineer our radar systems to overcome Siberia's extreme climate, and function at -40°C without a shelter, any external power, or other external systems.

"Initially, the sites were going to provide mains power in order to power up the heater assemblies, however due to various reasons this did not occur," said Simon Pitt, GroundProbe's Senior Technical Specialist.



In the absence of a 240V power supply, all the heater assemblies were powered from the Continuous Power Supply (CPS) system of the radar.

Data sensors were fitted to the various radar components to verify the running temperatures and aid in fine tuning the heater settings, so that the heaters run with the least power consumption possible for the radar to function, conserving power and reducing the frequency of refuelling.

GroundProbe achieved the objective of running all the radar heaters from the CPS with acceptable charge cycles during the coldest months of winter in Siberia, consequently allowing all of the on-site GroundProbe radar systems to run smoothly.

Another vendor's radar system was also on-site during this time but was forced to be switched off and stored for three months, unable to function in these extreme cold conditions.

Following this successful deployment, GroundProbe has now proven to provide 24/7 reliable radar usage in -40°C temperatures and lower, across some of the coldest parts of the world including Russia, Canada, the United States of America, and Mongolia.

Slope Stability

Radar Hybrid

Power Trailer

PRODUCT NEWS

The SSR Hybrid Power Trailer is an industry-leading low-touch power generation system that uses solar and wind energy to power all our SSR radars, including SSR-XT, SSR-FX and SSR-SARx.

An environmentally friendly and efficiency-focused piece of equipment, the SSR Hybrid Power Trailer eliminates the need to rely on a diesel generator as a sole power source, consequently saving time and reducing running costs.

“Operating as a renewable power source for GroundProbe’s SSR systems, the SSR Hybrid Power Trailer requires no refuelling and can power radars to continually scan for months at a time, allowing users to focus on data rather than diesel,” said James Usherwood, GroundProbe’s Product Development Manager.

“The SSR Hybrid Power Trailer has 1.2 kilowatts of solar panels on board, and is coupled with a 600 watt state-of-the-art wind turbine, which floats using the power of magnetic levitation for frictionless efficient power generation.”

Made with A-Grade materials, the SSR Hybrid Power Trailer is truly built for tough mining conditions. It is a maintenance-free system that is rust, dust and water proof, meaning there is no wear and tear in any given environment.

Mounted on a trailer, the SSR Hybrid Power Trailer is fully mobile and able to be deployed anywhere on-site with relative ease.

24/7 Support Desk

CUSTOMER SUPPORT

GroundProbe provides all current customers with access to our 24/7 Customer Support Desk service.

GroundProbe provides all current customers with access to our 24/7 Customer Support Desk service. This service supports all technical, mechanical, electrical, communications and software questions or issues that customers might have. Staffed 24/7, there is always someone available to help resolve a customer’s problem when needed.

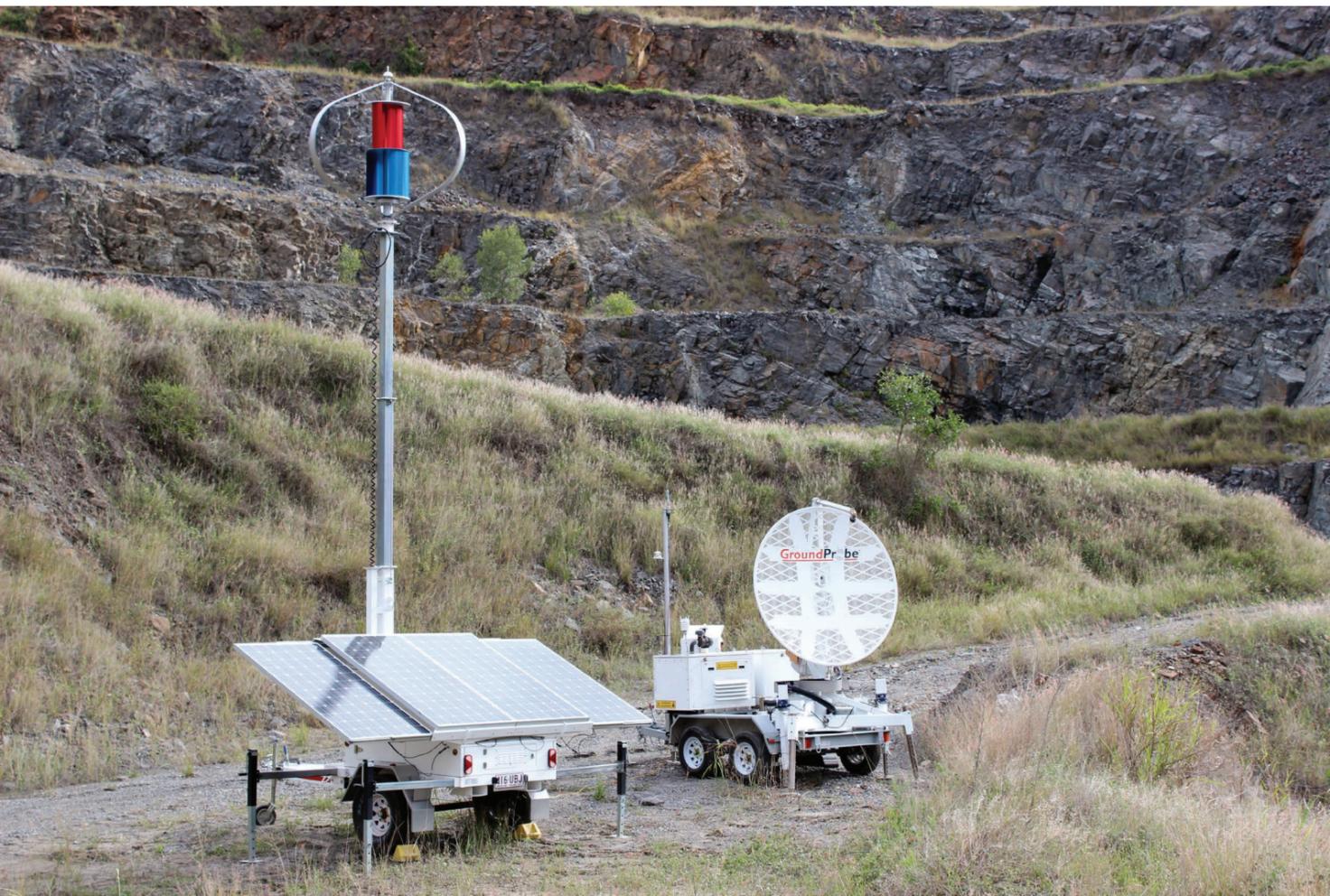
GroundProbe’s support system automates an internal escalation process, making it more efficient at directing

resources effectively. It also provides a guaranteed point of contact for any technical faults that require immediate assistance. Accessible via telephone, email or the support portal on the GroundProbe website; the system automatically generates tickets, enabling customers to track the progress of a request in real time.

Contacting GroundProbe’s support desk directly is a much more efficient and streamlined way of having issues resolved than contacting either business units or offices.

By contacting the support desk directly, GroundProbe can:

- Make a quick assessment of whether additional information is required by our technical experts to resolve your issues;
- Accurately track issues against expected resolution times; and,
- Prioritise calls for fast resolution.





GroundProbe Partners with Samarco to Ensure Safety-Critical Slope Monitoring of Tailings Dams

PRESS RELEASE

GroundProbe is proud to be announced as the sole provider of radar monitoring solutions at Samarco Mineração S.A.

Five Slope Stability Radars will now be in full operation to detect any future movement and instability of Santarém and Germano dams, with GroundProbe supplying two safety-critical, mobile radar systems (SSR-XT) and three long-range, fixed-deployment radar systems (SSR-SARx).

The complete, tailor-made monitoring solution of Real Aperture Radar (RAR) and Synthetic Aperture Radar (SAR) technologies ensures the right mix of technology is being employed for the specific needs of the application.

GroundProbe is the only company in the world that offers all slope stability radar technologies, linked by a common software solution, so are well-equipped to meet the needs of any site-specific application.

John Beevers, MD and Chief Executive Officer, GroundProbe, spoke of how GroundProbe was able to secure the key, exclusive partnership following a competitive evaluation process.

“There have been two radar vendors operating on-site for the last 18 months, allowing the Samarco geotechnical engineering team to directly compare and evaluate RAR and SAR technologies,” Mr Beevers said.

“From day one, GroundProbe provided live, accurate data and alarms on the crisis centre to guarantee safety within the immediate area, using our highly advanced and intuitive software, SSR-Viewer.

“Coupled with the support services offered from our

industry-leading Geotechnical Support Services team, software engineers and product reliability teams, we were able to answer questions and fix issues fast, providing constant support to the Samarco geotechnical team,” he said.

The radars form an integral part of Samarco’s complete risk reduction strategy; an industry-leading solution specifically developed for tailings dams, to assess further risks and hazards.

Samuel Ricardo Carvalho Carneiro, Geologist, Samarco, said the purchase of five radars cements their commitment to safety and best practice in terms of monitoring.

“We have invested heavily in the continued monitoring of the project, employing a wide range of monitoring solutions to ensure the stability of the dams,” Mr Carneiro explained.

“We have selected GroundProbe as the sole supplier of all radars, based on both their suite of technology offerings, and the quality of the support that they have provided and continue to provide our team.

“Our radar operators unanimously agreed that GroundProbe’s high quality software solution, SSR-Viewer, was unparalleled in terms of analysis and interpretation of slope monitoring data,” he said.

GroundProbe will now work to deploy the suite of radars to site, and look forward to the continued support they will provide to the Samarco team, working together to ensure that no further movement goes undetected.

“GroundProbe is not just a provider, but a partner,” Mr Carneiro said.

From the products we develop, to the slope monitoring solutions we tailor, our vision is making mining safer.

MAKING MINING SAFER

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