

# OUR REACTIVE MONITORING AND ALARMING SOLUTION, RGR-VELOX







GroundProbe has the industry's broadest range of geotechnical monitoring technologies and services, yet we continually strive to design and develop new solutions to best meet our customers' needs.

The RGR-Velox is the latest technology to be born from GroundProbe's industry-leading Research and Development (R&D) and Product Development (PD) programs.

It's GroundProbe's first product release under the reactive monitoring application, with the company now offering both predictive and reactive monitoring technologies.

By offering predictive and reactive monitoring solutions, our customers are ensured the highest level of safety for their on-site personnel as well as neighbouring communities.

Tried and tested, RGR-Velox systems have already been successfully deployed across numerous customer sites in the Americas.

If you would like to find out more about our RGR-Velox system, please get in touch with your local GroundProbe office.

**David Noon**

**Chief Executive Officer**



## Emergency Monitoring of High Consequence Failures with the RGR-Velox

### PRODUCT NEWS

RGR-Velox is a military-precision reactive monitoring and alarming system for tailings dams, landslides, avalanches, and large slope failures.

It detects, tracks, and alarms on moving geohazards in real time, keeping people and communities safe.

World-leading in every specification, the RGR-Velox is the highest precision, fastest scanning and longest range doppler radar in the market, providing unrivalled confidence.

With the addition of the RGR-Velox, GroundProbe now offers predictive and reactive monitoring technologies to better manage risk and ensure maximum safety.



# Yet Another Solution Added to our Already Comprehensive Range of Market-Leading Technologies

PRODUCT NEWS

As a global technology leader, we continue to heavily invest in research and development to deliver market-leading solutions.

The RGR-Velox is the most recent innovation to be added to our already-extensive fleet of technologies and services.

For a comprehensive approach to risk-based monitoring and ultimate safety, the RGR-Velox can be combined with GroundProbe's predictive monitoring solutions and our renowned support network, systems, and services.

PREDICTIVE AND REACTIVE MONITORING

GroundProbe's suite of predictive monitoring technologies include five Slope Stability Radars (SSR) and our GMS laser solution. Through these technologies and our software, our customers are able to monitor and detect wall movement, understand when it becomes a problem, and determine when a collapse is likely to occur.

Conversely, the RGR-Velox is a reactive monitoring tool. It tracks and alarms on the movement of materials post collapse.

Together, they deliver a complete, state-of-the-art monitoring strategy to better manage risk and ensure maximum safety.

A COMPLETE OFFERING

All of GroundProbe's systems utilise our industry-leading data visualisation, analysis and reporting software, MonitorIQ, along with our safety-critical alarming application, the Alarm Centre.

No matter the technology solution, GroundProbe customers enjoy access to our global support network and established systems.

Our support network - technical service specialists, expert reliability engineers and dedicated proactive support officers



- operates from 17 locations around the world.

To ensure our customers get the support they need quickly we position people, workshops, and critical spares locally.

Together with our Geotechnical Support Services (GSS) unit - one of the largest assembled teams of geotechnical mining professionals in the world - GroundProbe is poised to offer exceptional value to our customers' monitoring regimes.

The development of our comprehensive solution suite is no accident. Our tailored, customer-first approach sees us truly recommend the right solution for each distinctive monitoring challenge - the right technology, the right support, and the right services.





Powered by Military-Grade Hardware with  
a Long History in Detecting and Tracking  
Moving Targets

INNOVATION

The debris flow from geohazards such as landslides, avalanches, tailings dam breaches and slope failures can quickly and easily threaten the safety of people, property and communities.

For high-consequence, reactive monitoring of these geohazards, precision and reliability are the ultimate requirements.

The RGR-Velox comes after extensive collaboration with a global technology leader specialising in innovative sensing solutions, including advanced threat detection systems.

The system is uniquely built on military-grade technology, not urban doppler technology, assuring its reliable and robust performance.



FIELD-PROVEN

Our partner's systems are not only used in mission-critical applications, but also for coastal naval monitoring, border security to detect breaches of national borders and boundaries and in many of the world's airports for drone and intruder detection. They have a long history in successfully detecting and tracking moving targets spanning over four decades and the defence, government, industrial, marine and security industries.

Their military-grade hardware is combined with GroundProbe's safety-critical software, alarming and systems. Those processing techniques, systems and smarts have never failed to detect a collapse. Together, the system provides unrivalled confidence.



OPERATES IN ALL WEATHER CONDITIONS

Built for rugged environments and long-term use, the radar and integrated camera can be left out in all weather and conditions without the need for shelters or housing.

Transmitting at a low frequency, the radar allows for better control of atmospherics and better penetration of rain – ensuring uninterrupted monitoring, even during rainfall.

NO MOVING PARTS

The system uses electronic beam steering to direct the beam to every individual azimuth position without moving a single mechanical part.

No moving parts is one of the ultimate requirements for reliability.



# Truly Designed as an Emergency Monitoring System

INNOVATION

The RGR-Velox features a myriad of safeguards to ensure monitoring never stops, vital for high-consequence, emergency monitoring.

With 20 years' experience and over 600 deployments of our technologies in mine sites across the globe, GroundProbe has a proven track record in safety-critical design and assuredness.

The RGR-Velox leans on this experience and industry know-how. It's built for emergency monitoring with four scans per second around the clock, robust and reliable hardware, tried and tested watchdogs constantly monitoring for

faults, three tiers of power redundancy and a myriad of customisable alarm parameters to suit every scenario.

FOUR SCANS PER SECOND, 24/7

The RFR-Velox leads in scan time, capturing actionable information in real time and providing new information of the scene every 0.25 seconds. The radar continues to scan day and night, 365 days of the year.

ROBUST HARDWARE

Powered by hardware used in mission-critical military applications, the RFR-Velox offers high reliability and robustness. Its hardware is built for rugged environments,

with no moving parts and ability to be left out in all weather and conditions.

INDUSTRY-PROVEN PROCESSING UNIT

A key component of the system is the Processing Unit (PU). GroundProbe's PU is field proven, with over 80 units deployed globally across open cut mines, underground mines, and tailings dams.

The rugged and waterproof unit gives ~6 hours of back-up power to the radar in case of a power failure.

A battery monitoring system is inbuilt and includes an alerting function for a low battery state.

To reduce the risk of theft, the PU is padlock ready and comes with a non-descript enclosure.

TRIED & TESTED WATCHDOG

The system includes GroundProbe's watchdog that monitors for system failures, battery levels and computer malfunctions, promptly raising alerts if any abnormalities

are detected. It's tried and tested in the field with hundreds of deployments over the last 20 years.

Safety-critical by design, the device includes status indicators for quick troubleshooting, backup battery and charger in case of external power failure and inbuilt relays to trigger local alarm devices for emergency alarms.

POWER REDUNDANCY

To ensure the radar never stops, the system features three tiers of power redundancy and alerting on low power.

For optionality, the system can be powered directly from AC mains or run on solar panels and batteries with input for both DC or AC.

CUSTOMISABLE ALARMING

Users are empowered to design alarms tailored entirely to their own site challenges and conditions. Alarm outputs are also user defined and able to be received through a range of channels and devices.





# Unrivalled Confidence with Independent Alarm Zones, Triggers And Outputs

INNOVATION

When it comes to arming potential geohazards with emergency alarm systems, there is no compromise.

A missed alarm is unconscionable, and false alarms can come with large penalties and a breach of trust within the community.

With customisable and stackable parameters and filters across multiple alarm zones, alarming can be customised to suit every scenario.

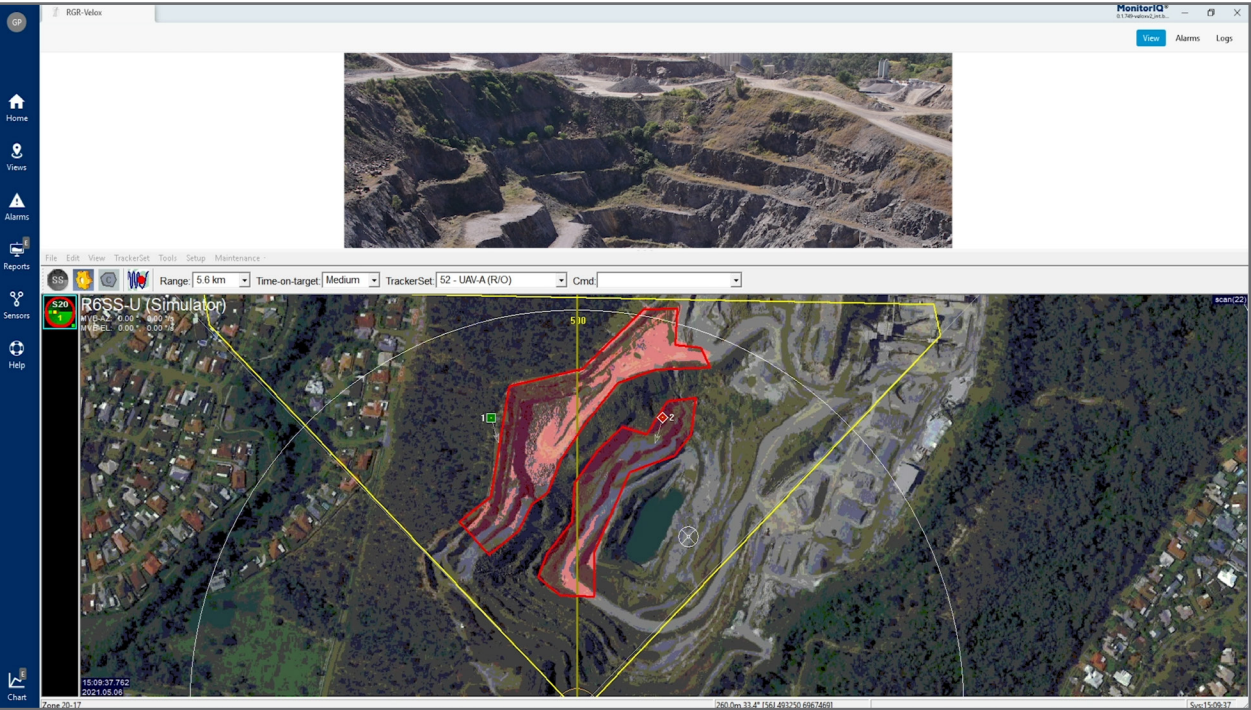
Users are empowered to design alarms tailored entirely to

their own site challenges and conditions. This new system of customisation is met with unrivalled confidence, enabling sites to not miss an alarm and to avoid false alarms.

ALARM ZONES

Users can break up the scene into multiple alarm zones, each with their own unique alarm triggers and outputs. For added assurance, alarm zones can overlap.

Multiple alarm zones can be combined into the one alarm and contiguous alarm zones can be combined sequentially to track the movement of collapses in real time.



ALARM TRIGGERS

Alarms can be set with specific settings of varying parameters and filters.

Core criteria can include velocity, direction of movement, radar cross section (RCS) size estimation and area of movement. Completely customisable to the application and site, users can select as many or a few parameters and filters as needed.

By allowing sites to design an alarm that balances the real movement of non-geohazards - such as people, birds, machinery, and vehicles - from the debris flow of real geohazards, users are empowered to not miss an alarm and to avoid false alarms.

Adding to the avoidance of false alarms is the fact that the RGR-Velox is low frequency technology. Lower frequency means better handling of atmospheric and fewer false alarms than high frequency systems.

ALARM OUTPUTS

Alarm outputs are completely configurable per individual alarm zone or per combined alarm zones.

When user-defined alarm parameters are triggered, the system outputs alarms for immediate action or evacuation through a range of channels and devices.

Alarms can be sent to certain devices, people or methods including SMS, phone, and email or by XML to any device - such as lights, sirens, boom gates and radios. Alarms can also be viewed and acknowledged in the Alarm Centre.

GroundProbe's Geotechnical Support Services (GSS) engineers can also work with customers to review and optimise alarm settings in response to any unwanted alarms.



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Calls are currently answered by English-speaking support officers.

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