

Geobrugg Enhances Environmental Safety with HiveMQ

Real-Time Monitoring and Predictive Maintenance Increase Protection Against Natural Hazards

Brugg Group, a global conglomerate with 1800 employees and operations spanning seven companies and 19 production facilities worldwide, specializes in district heating technology, protection systems against natural hazards, as well as cable solutions for e-mobility, wind energy, and industry.

One of its notable subsidiaries, Geobrugg, stands out as a leader in developing and producing high-tensile steel wire nets e.g. nets designed to mitigate natural hazards and matching services. With 430 employees, eight production facilities, and a revenue of 175 million Swiss Francs, Geobrugg specializes in creating innovative solutions that promote safety.

Geobrugg GUARD was created to allow clients to monitor environmental sites remotely. The device proved valuable in helping geologists monitor data for lifecycle management; the team needed to scale the platform to include more devices, data, and integrations. The GUARD system needed to deliver 24/7 monitoring of the barrier nets and support inspection and maintenance units in decision-making and planning on-site inspections. The connectivity and availability of data from the sites are paramount to keeping customers informed and citizens safe.

Geobrugg set out to build a central IoT platform capable of detecting and immediately notifying clients of various environmental impacts, including rockfall events. The team needed IoT messaging technology that could power a scalable, efficient, and user-friendly solution to enable predictive maintenance and asset performance management, ultimately reducing regular site visits and providing immediate notifications to enhance safety.

At a glance

What do they do?

- Development and production of barrier nets to mitigate natural hazards
- Create solutions to promote environmental safety

Challenges

- Deliver 24/7 monitoring of barrier nets
- Support timely on-site inspections and maintenance
- Notify clients of hazards in real-time

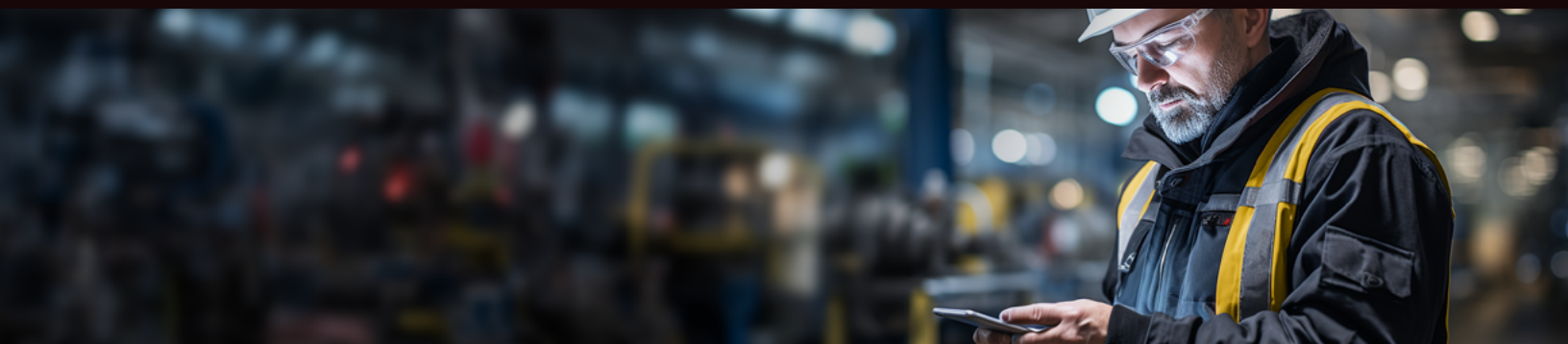
Solution

- Phased out Google IoT Core and deployed HiveMQ for IoT messaging
- HiveMQ reduced data processing time, resulting in faster insights and analysis

Results

- Notification time reduced from 10 minutes to near real-time
- 460 connected devices across six continents
- Cost savings and improved safety for clients





Implementing a Future-Proof Messaging Solution

Andreas Eigenmann, data and analytics manager at Geobrigg, and his team created criteria to find the right solution. The requirements included a vendor with longevity, excellent customer support, easy customization options, and of course, scalability. The team was phasing out Google IoT Core and wanted a reliable connectivity company. With limited time to find a solution, the team did their due diligence on several technologies but chose HiveMQ and implemented it quickly.

The leap of faith we took with HiveMQ paid off. The processing time for messaging reduced significantly from up to 10 minutes to near real-time.

Andreas Eigenmann, data & analytics manager at Geobrigg

“The decision to switch to HiveMQ was driven by its scalability, ease of implementation, and excellent service and support. It made our complex integration with other technologies seamless,” said Eigenmann.

Geobrigg GUARD used MQTT-S and needed to ensure the MQTT provider could provide that standard to help with future use cases.

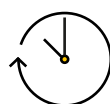
Geobrigg GUARD’s technological foundation includes GSM/UMTS/LTE for network connectivity, MQTT-S for data transmission, HiveMQ for data reception and forwarding, Kafka for data decompression, and Thingsboard for data processing and storage.

“The leap of faith we took with HiveMQ paid off. The processing time for messaging reduced significantly from up to 10 minutes to near real-time,” said Eigenmann.

The setup helps prevent data loss, which would significantly hamper remote monitoring. Sascha Schultes, product manager at Geobrigg, explained that HiveMQ keeps the uptime high for their clients.

“HiveMQ has two nodes, so if one node requires an update or any maintenance, the other is still running. This way, we can guarantee no data is lost.”

Using HiveMQ, Geobrigg has been able to:



Reduce time to notification of issues from 10 minutes to near real-time



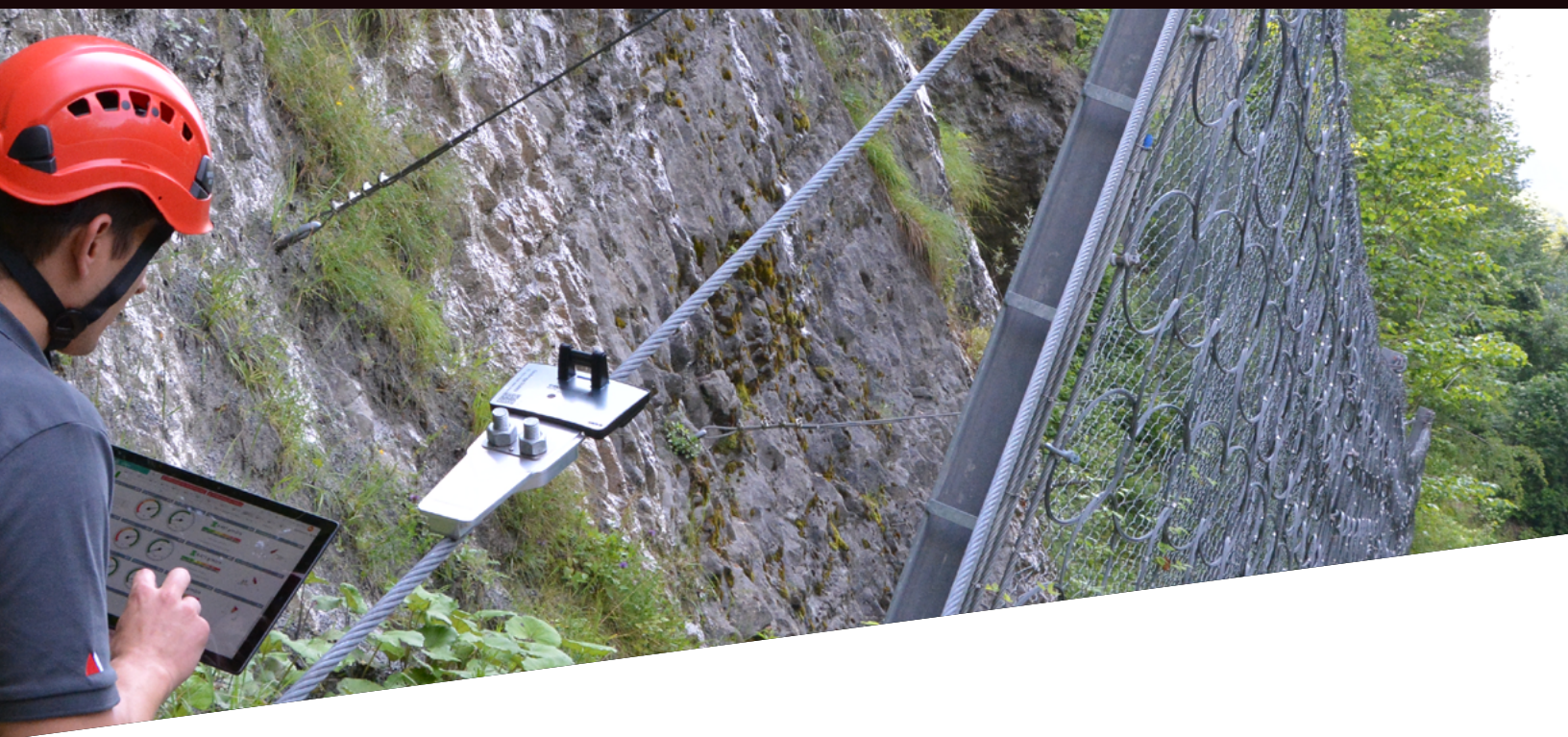
Connect 460 devices across six continents



Increase cost savings due to fewer inspection site visits



Improve safety for employees and citizens across the world



Immediate Insights Increase Safety and Cost-Savings for Environmental Organizations

Geobrugg GUARD monitors dynamic impacts, static loads, and corrosion directly on protective systems. With this information, the operation and maintenance of the protective systems can be better planned, and the capacity of the protective measures can be maintained in the long term.

The platform has had a profound impact on safety and operational efficiency. Eigenmann highlighted that direct notifications enable quick response and countermeasures, ultimately reducing the time to address incidents. The platform has been instrumental in detecting and notifying impacts, reducing the need for regular site visits, saving both time and money and increasing overall safety levels.

"Getting notifications from the platform in real-time means that companies can operate quickly and immediately start providing safety for towns and roadways. Without quick action, it can take a long time to identify a problem, understand what happened, and begin working toward a solution. Main roads through cities and valleys are monitored, so if they are blocked, it becomes a big ordeal," said Schultes.

For example, in a highly corrosive environment near the sea in South Africa, the Geobrugg GUARD helped identify the need for barrier

maintenance due to abrasive wind, sand, and salt spray. The platform saves time by eliminating routine site visits and contributes to cost savings through targeted maintenance in the area.

Continuous Improvements to Scale Safety

The team at Geobrugg frequently hears from clients that the world is changing, and the needs for environmental companies are evolving as well. Clients need to trust that the technology provider can adapt to the influx of natural hazards.

Geobrugg GUARD allows for 24/7 real-time measurements and reduced inspections onsite. These features promote higher levels of safety for clients and citizens. The platform saves costs by only inspecting sites with problems and improving budget planning to maintain those sites.

HiveMQ helped reduce processing time, allowing the Geobrugg team to focus on analyzing data and immediately addressing any issues. As a result, they can better serve their customers and open opportunities for more data-driven innovations in the future. As Geobrugg GUARD continues to evolve, the collaboration with HiveMQ will continue to provide clients with a reliable, secure platform for environmental hazard monitoring and safety worldwide.