GEOPREVENT

DIGITAL PROTECTION NET OVELLA

PART OF HEXAGON

Digital monitoring of rockfall protection nets with motion sensors in Ovella.

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Title Page: Sensors above the construction site near Ovella.

Figure 1: On site installation. The sensors are mounted on the ends of the net supports, keeping them at a distance from falling rocks.

CHALLENGE

The new river power plant currently under construction between the Austrian and the Swiss border in the Lower Engadin Valley is the largest new power plant being built in the Alps in recent years (constructor: Gemeinschaftskraftwerk Inn GmbH). Roughly 1.2 km of protection netting was installed in order to protect the construction site for the weir, located at the base of the Kitzmaiss wall, from rockfall. To maximise safety the protection nettings needed to be monitored with sensors.

SOLUTION

More than 100 motion sensor in combination with trigger lines have been installed. The sensors of the type ImpactSentinel monitor the state of the nets and provide the responsible geologists with live data about the state of the nets, warning them in case large rock fall occurs. The sensors have been installed on the Austrian side of the river Inn, while the base station receives their signals on the Swiss side of the river, and several relay stations ensure a flawless transmission. If boulders or a large amount of rocks strike a net it will bulge, causing the trigger lines to extract the pull-out pins on the sensor, triggering the alarm.

When an alarm is triggered, the responsible persons are automatically informed by SMS, and the status of each sensor can always be checked on in the data portal. On site, LED lights indicate whether the system is functioning normally (green light), a small event has been detected somewhere (orange light), or large rock fall has occurred in one of the nets (red light). In case of a large event, a siren is activated locally to evacuate the construction site.

Abbildung 3: When a net bulges, the pin on the sensor is pulled and triggers the alarm.

Figure 2: 1.2 km of monitored nets protect the construction site below.

Figure 4: The construction site is threatened by two main gullies. Multiple lines of protection netting are designed to keep rocks from reaching the valley bottom.