GEOPREVENT

FLOOD ALARM SYSTEM STEINACH

PART OF HEXAGON

Flood alarm system with multi-level redundancy and automatic SMS notification for the city of St. Gallen.

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Title Page: Flood Steinach river in August 2015.

Figure 1: Usually a harmless river, Steinach can turn into a raging torrent during heavy rain.

CHALLENGE

Steinach river sources from the surrounding hills and flows through the city of St. Gallen and into Lake Constance. During periods of heavy rain the Steinach frequently grows into a powerful torrent bursting its banks and endangering the city, particularly the Emergency Response Center (ERC). Reliable early warning is vital to install mobile flood barriers in time. This required integration into the existing IT-infrastructure to streamline emergency response.

SOLUTION

In close collaboration with project partners, Geoprevent specifically developed and installed a customized system to meet the complex requirements of ERC and the fire department. The main focus was on providing a system of maximum reliablity with the option of integration into exising IT-infrastructure. Two independent sensors based on different measuring principles provide redundancy for the gauge measurement: A gauge radar mounted on a bridge measures the river level from above whereas a pressure probe installed in the river bed measures the water level through water pressure from below. The level radar is a frequently applied, very robust solution, delivering reliable measurements in all weather conditions as well as for turbulent surfaces (floods, mud flows). The pressure probe is mounted on the river bottom, which allows the application in open waters where mounting above the water is not possible (e.g. lakes). Both sensors measure continuously and trigger an alarm if the level exceeds a certain threshold.

Alarm transmission is also redundant in two ways: Via a DSL connection on the one hand and via the mobile phone network on the other. The flood alarm station transmits the alerts directly to the ERC internal system (via TUS and Certas systems). This allows emergency response staff to keep working with the systems they are familiar with. This ensures an efficient response to floods at all times and maximum safety. In addition to the direct alarm link to ERC's own systems, all data is also available any time on the password protected Geoprevent data portal.

The Flood alarm system Steinach has been running since 2014 and has triggered several alarms since then. The system serves not only as an alarm system but also for general monitoring of the creek and is now indispensable for disaster management of the area.

Figure 2: The gauge radar is mounted on the bridge, the pressure probe at the river bed.

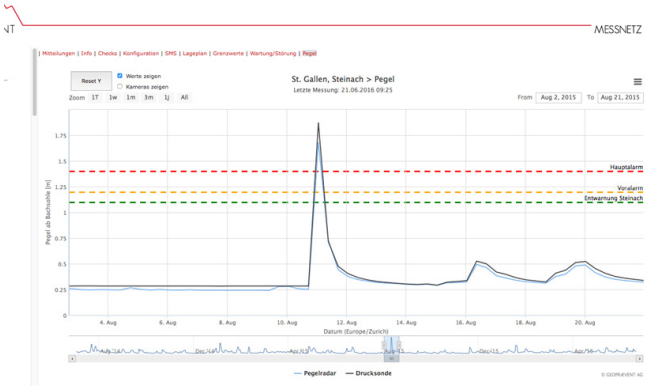

Figure 3: The Geopraevent online data portal provides access to all runoff data at any time.