

# Environmental Monitoring Off-grid Well Monitoring Stations

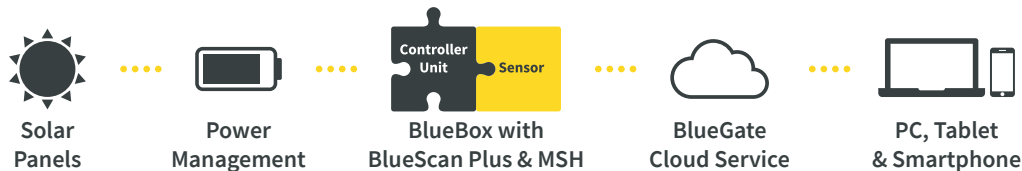
GO Systemelektronik supplied the measurement equipment for the construction of six well monitoring stations in Switzerland. The off-grid stations were designed to operate self-sufficiently by using solar power.

## Project description

To protect the population, the groundwater at a depth of approx. 35 meters is monitored next to the construction site of a motorway junction, with measurements every hour. Contamination which could unexpectedly penetrate the groundwater should be detected in time before it reaches the groundwater catchment of the pumping station. This is to prevent possibly contaminated groundwater from being pumped into the supply network. As the protection zone is located between the construction site and the groundwater catchment, it is inevitable to ensure the quality of the groundwater entering the supply network. Five monitoring wells have been constructed at a depth of 35 meters with a distance of 47 meters between each of them to monitor the flow from the construction site to the pumping station. As a reference measurement, the inflow to the construction site is also monitored in order to better determine differences.



## Configuration by GO Systemelektronik



The BlueBox Controller is at the heart of the configuration of the measuring stations. The controller collects all measured data and makes them available in the BlueGate cloud data service via the integrated modem.

In addition, the stations are equipped with batteries and power management modules which can automatically shut down and start the BlueBox to avoid discharging the batteries. A BlueScan Plus UV/Vis Spectrometer and Multi Sensor Head (MSH) are connected to the BlueBox via CAN bus. The sensors allow the simultaneous measurement of a multitude of parameters.

## Measured Parameters



- BlueScan Plus**
- Absorbance at 230 nm
  - SAC/UVT at 254 nm
  - Absorbance at 280 nm
  - Absorbance at 436 nm
  - Temperature
  - Pressure
  - Level

- Multi Sensor Head (MSH)**
- Conductivity
  - Temperature
  - Salinity
  - TDS
  - Dissolved Oxygen
  - Redox /ORP
  - pH

## Functions & Features



UV/Vis Spectrometer



Multi Parameter Sonde



Remote Access & Control



Solar-Powered

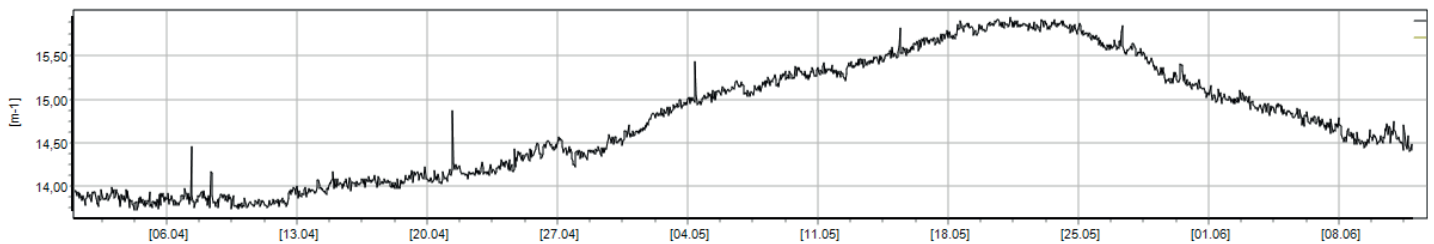
## Construction of the measurement stations

The measuring systems are housed in measuring containers, in which the measuring probes are also lowered into a 4-inch pipe via a cable winch. The system is self-sufficiently operated and supplied with solar power by two solar panels of 275 W each, which are mounted on the roof and a 230 Ah battery for solar systems. The containers have been aligned for optimal solar radiation.

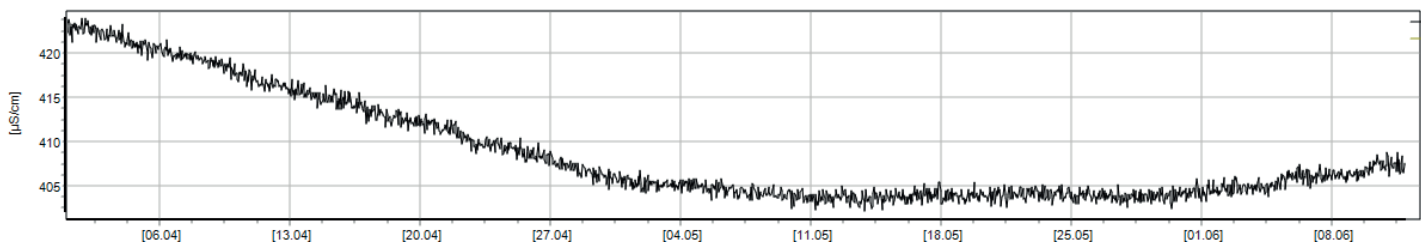


## Availability of measurement data

The individual parameters are measured every 60 minutes and are automatically transmitted to the BlueGate Cloud Data Service, making the measured data available via browser at any time and from any place. In addition to providing the data, the connection also allows for remote service to make changes to the settings if necessary. Thanks to the availability of the data and the possibility of remote service, the ideal time for on-site maintenance visits can be determined. This function is particularly advantageous for remote installations.



Absorbance at 230 nm in 1/m, over a time span of 2 months measured by the BlueScan Plus UV/Vis Spectrometer



Conductivity in  $\mu\text{S/cm}$ , over a time span of 2 months measured by the Multi Sensor Head (MSH)