

Thermal leakage detection at the construction site Tangenziale in Milan

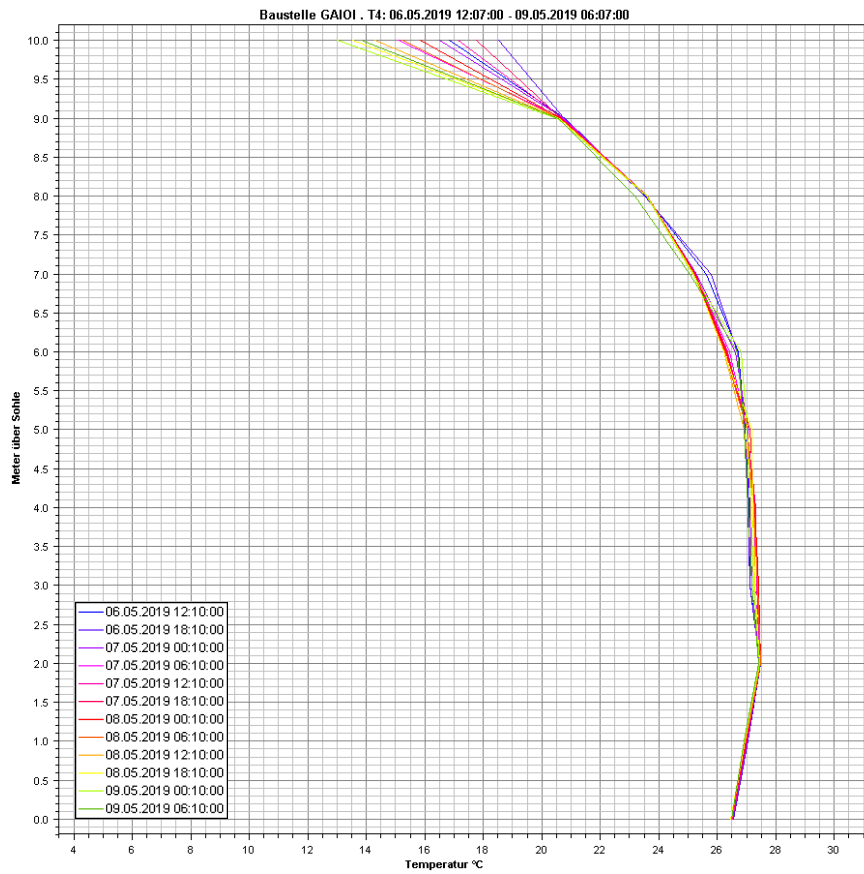
If excavation pits are below the groundwater table, it is usually necessary to hydraulically isolate the pit from its surroundings in order to keep it dry. For this reason, the excavation pits are artificially sealed by using jet grouting that produces sealing elements vertically and sometimes horizontally. Inflowing groundwater into the excavation pit during drawdown is reflected in the change in the temperature profile in the vicinity of the affected area. Thus, the temperature measurements help to locate leaks in the sealing system.



Temperature sounding with data logger

Grout columns were built in the ground in order to ensure a hydraulically sealed excavation pit. After completion, a precise location of possible leaks was carried out by means of temperature monitoring. For this purpose, 24 temperature probes were installed up to a depth of 10 m. They carried out temperature measurements every ten minutes. The temperature monitoring started / ended one day before / after the lowering test and was realized for four days.

The diagram is an example of the temperature profile for the sounding T4. The depth of 0 m refers to the top of the jet-pressed bottom slab. The temperature depth profile T4 does not show any significant temperature anomalies indicating substantial leaks in the near field of the sounding.



Temperature-Depth-Profile of the sounding T4