

GTC Kappelmeyer® in Hydraulic Engineering

The Brand GTC Kappelmeyer®

In January 2017 the company GTC Kappelmeyer® was integrated into the Solexperts group. As the independent brand GTC Kappelmeyer® we offer from the location in Karlsruhe besides the previous measuring technology in the field of thermal leakage detection, all services of the Solexperts group. They include distributed fibre optic temperature measurements and distributed fibre optic strain measurements.

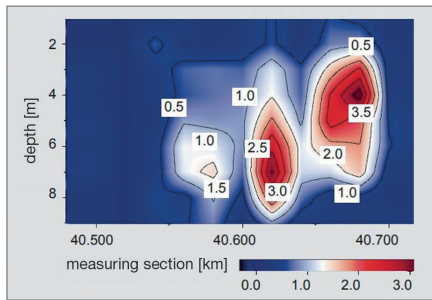
Our patented Temperature Sounding Method was used already for more than 500 km of dams, many locks and other water retaining structures.



Our Services

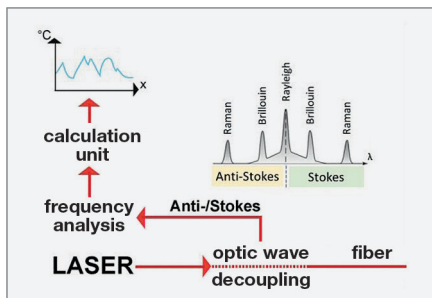
Flow conditions change usually very slowly within dams and are often not visible at the surface. Problem zones in dams and damages of sealing elements can be detected early enough for targeted repair works, if they are detected with e.g.:

- Thermal leakage detection, with and without automated alarming
- Fibre optic temperature measurements: Gradient Method and Heat-Pulse-Methode (HPM)



Thermal leakage detection

Advective heat transport leads to an adjustment of the ground temperature towards the fluid temperature, which is used as tracer, and thus causes temperature anomalies. Outer and inner changes of water retaining structures can be detected by short and long term measurements with our patented Temperature Sounding Method. A fully automated temperature monitoring system that emits warning signals automatically, can be installed.



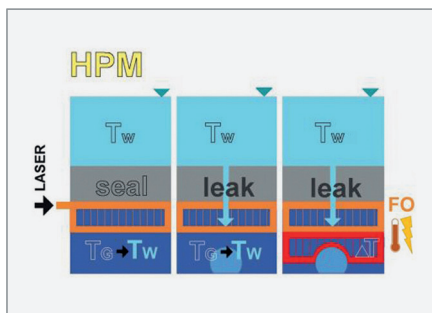
Fibre optic temperature measurements

The temperature is measured along optical fibres that are installed in new structures, during rehabilitation works or later with the Retrofit Method. Distances of more than 30 km can be recorded with a local resolution of 0.5 m.



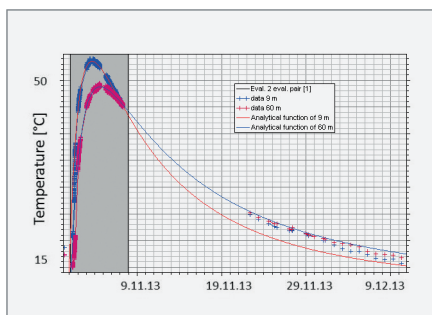
Gradient Method

If the temperature difference between the surroundings of the optical fibre and the water is high enough, the onset of leakage is detectable by a decreasing temperature gradient between the temperatures of the undisturbed ground and the seepage water. This method depends on seasonal temperature fluctuations.



Heat-Pulse-Method

In case of an insufficient temperature difference between the surroundings of the optical fibre and the water, a hybrid cable with copper wires is used. By heating the cable, an increase of temperature is recorded that is lower in areas of leakage. This method is independent of seasonal temperature fluctuations.



Monitoring of the curing temperature in concrete

Hydration heat is released during the curing of concrete and it results in a significant increase of the construction's temperature, which subsides slowly. In order to observe the construction's stability and the formation of cracks, we observe the spatial and temporal development of the temperature, e.g. with fibre optic temperature measurements.