Hydrostatic Leveling system – assessing differential settlements

HLS allows to measure differential settlements at different locations of a building continuously with an accuracy of 1/100 of a mm. The technique was used in parallel with more currently available techniques for the monitoring of settlements using theodolites of accurate leveling instruments. The latter techniques allowed for long-term monitoring measurements while the first allowed understanding the level of (cyclic) deformations occurring during a shorter time span.

The technique is perfectly adapted to be used as a monitoring tool. The advanced technology (originally developed for the CERN) makes the use of it expensive, therefore it suits most in combination with other less accurate and cheaper. In the cases the technique has been used the outcome of the measurements and their interpretation has contributed to reducing the interventions and so doing it contributed to preventive conservation.

In this way relation between settlements and ambient temperature could be demonstrated (Sint-Jacobs church) or relation with the level of the water in the river that was overarched by the building were demonstrated (‘s Hertogenmolens).

Sint-Jacobs church: left + under; -s Hertogenmolens – water mills: bottom