

ECS 2023 Interlaken

Workshop: Pendulum systems in dams

Date and time: Tuesday September 5, 2023, 13.00-15.00 p.m.

Location: Congress Center Interlaken, Saal Grimsel 1

**Co-ordinators: Martin Glück (BTE/STUMP)
 Thierry Guilloteau (EDF)
 Roberto Gardenghi (HUGGENBERGER)**



Plumb lines and inverted pendulums are very commonly used in concrete dams to measure change of verticality of the structure. A plumb line (or direct pendulum) is a gravity-referenced instrument. It consists of 3 elementary components, namely a stainless-steel wire attached to a fixed point, a weight and a damping bucket containing a damping fluid. An inverted pendulum differs from a plumb line in that it is anchored in a borehole on the foundation of the dam, which makes it necessary to locate a float and a damping bucket above the anchoring point.

The workshop is structured in 3 blocks and reports on the technologies, instrumentation, methods, and experiences of the 3 companies EDF, Stump BTE and Huggenberger concerning pendulums as dam monitoring tool. This workshop is relevant for dam owners, dam engineers and contractors involved and commissioned with instrumentation and monitoring.

PROGRAM OF WORKSHOP

Date and time: Tuesday September 5, 2023, 13.00-15.00 p.m.

1. Introduction
2. Feedback on pendulums (EDF)
3. Overview over different drilling technologies for inverted pendulums drilling (Stump BTE)
4. State of the art of vertical precision drilling for pendulums (Stump BTE)
5. Case histories (Stump BTE)
6. Pendulum systems (direct pendulum, inverted pendulum, centering device and ZGL (Hugg))
7. Manual readout and automatic readout (Hugg)
8. Outlook to new version of telelot-system (Hugg)
9. Cooperation Stump BTE and Huggenberger to provide turnkey solution (Stump BTE and Hugg)
10. Open discussion and conclusions

RG/11.05.2023