AP Sensing’s Solution for Spillage Detection for Water Dam at Hebei Zhanghewan Hydro Power Station

AP Sensing and partner provided a solution to monitor the integrity at a large scale water dam project in China. The solution is utilizing AP Sensing’s very accurate “Linear Pro Series” to measure the temperature profile along several kilometers of the embedded fiber optic sensor cable. With spatial resolution down to 1 meter and less than 0.1°C in temperature resolution the operator is able to get a clear overview of the real time situation at the water dam to help secure the dam.

The system offers a quick and easy overview of the thermal situation of the dam with an easy-to-use graphical user interface. Temperature graphs are easily accessed and stored in a central database. The temperature profile is used to identify and locate leakages in the dam.

Project’s Background
The Hebei Zhanghewan Pumped Storage Co. Ltd. is located at the River Gantao in the Hebei Province, which is located south of Beijing. The largest pumped storage power plant in the Province, total project investment of 4.12 billion Yuan, and offers a capacity of 1,020 mw. The expected annual electricity production is 1,675 gwh. The first unit did begin its operation in May 2008, 2nd unit went live in July 2008, while unit 3 and 4 are operating since 2009. This project also has provided the strong protection with the stable and reliable electricity for the Beijing Olympics.

This reservoir features a bituminous concrete facing. Two penstocks supply water for four 225-mw reversible pump-turbine units in an underground powerhouse. The developer is building a 63-kilometer-long 500-kilovolt power transmission line to connect the plant to the Hebei South Power Grid.