iAMP-Hydro: Ecological monitoring system, digital sensor and data logger

Environmental and biodiversity impacts from hydropower are well known and documented. Amongst these impacts are:

1) altered hydrological regime;

2) changes in water temperature; and

3) air entrainment at dams and hydropower plants that can cause gas supersaturation and threaten aquatic life.

To meet both energy and environmental targets, integrated solutions, continuous monitoring and data collection are necessary. Withing the scope of the iAMP-Hydro project, a new digital environmental probe and data logger has been developed, capable of measuring gas supersaturation, water depth and water temperature in real world environments. The data logger is connected to an online platform and transfers environmental values with a desired time interval.

The environmental monitoring system is comprised of two parts, a land-based data logger, encased in a durable plastic casing capable of long-term operation in harsh environment. The second part is a water based digital environmental probe which is connected to the data logger with a durable PUR cable. The probe is featured with an internally stored calibration, durable stainless-steel casing and is easy to repair or replace. The system is designed to operate with minimal maintenance.

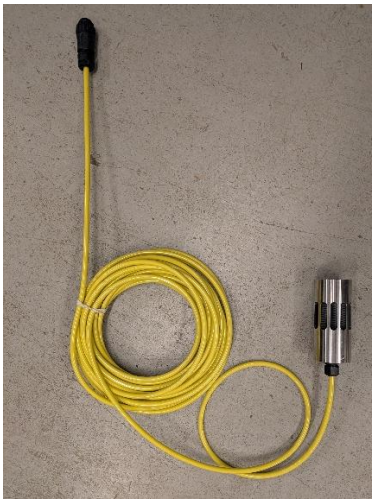

Fig 1: Digital sensor with durable PUR cable

Fig 2: Probe body in POM-plastic with replaceable spare parts

Fig 3: Data logger in robust plastic casing

Real world validation at five Hydro Power facilities in Greece and Spain have demonstrated real time monitoring in diverse conditions. The system was capable of

accurate measurements of gas supersaturation, water depth and water temperature as well as high data transfer functionality.