



OTT Application Notes / Success Stories

## Long-term Water Quality Monitoring in the Arosa Bay/Spain with Hydrolab DS5X multi-parameter probes

Compact autarkic buoy-based monitoring systems for water quality



### Background

One of the great impediments to further development of shellfish aquaculture in the north-west region of Spain is a perception that industry expansion and tourism could have negative environmental effects on the coastal waters. Especially the bay around Villagarcia de Arosa is very famous because of its excellent areas for shellfish farming.



Shellfish farms in the bay of Arosa

The government of Spain is concerned about the environmental pollution in this area and the negative impact it will have on the shellfish aquaculture and the social and economic issues surrounding. To get reliable data about the current situation and to be able to react on the situation with appropriate measures the need to control water quality in the transition water zone between the end of several rivers and the Atlantic ocean was realised.



### Task

- Control of industrial and tourism related influences on the water quality with a network of **18** autarkic working buoys (state 06/2008).
- To provide reliable and accurate marine water quality measurement technology (**DS5X Hydrolab multiparameter probe**) with stable and long-term deployment (min. 2 months) capabilities.



- Generate and publish near real-time water quality data from the different buoys to protect the interests of the Spanish government and to detect any conspicuousness.
- OTT Spain was contacted after a series of tests with Hydrolab multi-parameter probes to provide the technology which fits into the Ecofloat offshore buoys.

## Monitoring Solution

- ECOFLOAT GALICIA S.L. - VIGO – SPAIN designed a complete water monitoring system consisting of 18 solar powered buoys (first part of the project) to install them in different places of the bay.
- Inside the buoys the installed electronic for the remote data transfer (GPRS) consists of a CPU (Computer Processing Unit), a modem, a rechargeable battery, a Red Algae Sensor and the **Hydrolab DS5X multi-parameter probe**.
- The Hydrolab probe communicates by Modbus at 9600 baud.
- The measured values are transferred via GPRS to the central server of the Spanish government.
- A vertical tube at the centre inside of the buoy, allows it to mount the probe for optimal measurement.
- Each Hydrolab **DS5X** is configured with one of the following sensors:
  - LDO™ (optical dissolved Oxygen)
  - Temperature
  - Conductivity
  - pH/ORP
  - Chlorophyll-a / Blue-Green Algae



## Data of the project

- For calibration, maintenance of the probes and service of the buoys the complete system is taken out of the seawater every **2 months**.
- Buoys and data transfer has been operational since November 15, 2007
- Ecofloat is putting up a building at the moment to manufacture all the components of the buoys at one place. Also the final set up of the system with the modem and the **Hydrolab DS5X multi-parameter probes** will be done there.

## Summary

- The monitoring project with the 18 buoys and the Hydrolab water quality sensors is the first of several planned system along the Spanish coast. Ecofloat expects to serve most of the Spanish north-west coast with the goal to export this technology also to other countries..

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