

Metrology: Air and Water

France has a historically strong environmental metrology sector. The solutions being developed are essential for improving our capacity to monitor and to anticipate, and for developing our knowledge and our solutions in order to adapt to climate change. French businesses in the metrology sector are recognized as being very innovative.

Floods

Drones for listening to dams

The aim of the Didro project is to use aerial drones to sound out dams in order to avoid a second Xynthia. It is a matter of some urgency. In 2011 the European flood risk prevention centre (CEPRI) estimated that only 3,000 km out of the 9,000 km of dams in France were in a good condition. Within three years Didro aims to develop a full dam monitoring solution designed for managers. *"What is required is to combine a drone, suitable sensors and analytical models for the data developed by researchers at Cerema, the IGN, Ifstta and Irstea in order to offer reliable diagnostics for the state of the dam"*, explains Thibaut Miquel, a commercial engineer at **Redbird**, a supplier of integrated drone solutions, which will oversee the project. The challenge is to produce in depth diagnostics along the length of dams at a lower cost than for current monitoring. The project is also relevant for crisis situations, when major meteorological events occur in order to anticipate collapse zones or to monitor flooded areas in support of helicopters.

REDBIRD www.redbird.fr

Metrology - Monitoring

Contamination-free sampling



An engineering practice and consultancy specializing in composite materials, **CT2MC** has developed an original solution for taking liquid samples in aquatic environments. Often referred to as aquatic drones, Spyboats are floating, motorized devices capable of inspecting and taking samples without contaminating the environment in which they operate thanks to their special sterile outer skin. They are available in

several versions. The *Swan* is used in flowing water or large lakes. The *Duck* is intended for zones with weak currents (ponds, lakes) or confined spaces. A version that is currently being developed (*Octopus*) is intended for use in disturbed conditions (sea). Spyboats are easy to transport, they can operate independently for two and a half hours, and their batteries can be swapped rapidly. Two interventions at the start of 2015, one in a heavily polluted industrial basin and the other in a mining basin polluted with heavy metals, show how the Spyboat improves operator safety.

CT2MC <http://ct2mc.com> et www.spyboat-technologies.com

Atmospheric pollution

Simulating pollutant dispersal

Aria Technologies has specialized in the study of atmospheric pollution since 1990. In particular, it offers pollutant dispersal calculations, meteorological analyses and wind, emission or interior air quality modelling. Notably, it has been behind numerous pieces of software for industry, risk management, towns and territories, renewables, and, more generally, questions linked to climate (Aria Impact, Risk, City, Local, Regional, Wind, View). Besides the AirCity project, which it has been running in France with a view to developing a system capable of visualizing its urban air pollution in 3D, Aria is particularly involved in Chinese air quality (Franco-Chinese AS3 project to measure heavy metals) as well as being committed to other international projects (Romair project with the Romanian national environment agency...). It is also working on the question of indoor-outdoor pollutant transfer, for which it has launched a solution combining two modelling tools with 3D display of the results.

ARIA TECHNOLOGIES www.aria.fr