Using living organisms to improve water quality monitoring

ViewPoint has combined video-tracking of living organisms with Irstea's ecotoxicology expertise to come up with a new solution for monitoring aquatic pollution

Supporting Innovation

Maintaining water quality is a key environmental and health imperative. Viewpoint measures the behaviour of invertebrates whose mobility reflects the toxicity of a given environment. Irstea researches the use of living organisms to perform diagnostic testing of contamination and toxicity in aquatic environments. The partnership with Irstea has made it possible to develop and market ToxMate, a comprehensive solution for monitoring water contamination on line with a 30-day power reserve. ToxMate is particularly effective in measuring the quality of wastewater and sewage – the main pathways for chemical contaminants – in order to assess performance with regard to the treatment of micropollutants in wastewater for example, or phytosanitary intake in aquatic environments.

The client needs

ViewPoint, an SME based in Dombes, France, has been marketing innovative applications for analysing animal behaviour using video-tracking since 1990. In 2014, it began participating in developing new standards for detecting toxicity in water. As part of the joint FUI SMILE project, ViewPoint and Irstea approved the general principle of measuring the toxicity of an environment by analysing the behaviour of a group of organisms. This enabled Viewpoint to handle the technical requirements involved in monitoring aquatic environments and its workforce began to grow. The partners filed two patents, essential for protecting their findings and safeguarding the company's development. The partnership with Carnot Irstea was extended in order to develop a standalone application designed for manufacturers.

Partnership

Carnot Institute Irstea is renowned for its research and expertise in the diagnostic testing of contamination and toxicity in aquatic environments. It used all of its know-how and field experience to design the device. It teamed up with ViewPoint to adapt the method and select a combination of invertebrates that would provide optimal sensitivity to a wide range of pollutants. Data is generated by analysing images produced by a camera placed inside a box containing the carefully calibrated organisms. Locomotor behaviour measurement, correlated to a specific toxicity threshold, is transmitted on line. The application was evaluated in situ at a waste water treatment plant where ToxMate was instrumental in identifying a deterioration in toxicity over a 12-week period of continuous monitoring.