

HEAVY METALS SENSOR BOX (HM BOX)



UNIFI

Due to their toxicity, persistence and potential for bioaccumulation, heavy metals are among the priority pollutants in European waters. The policies and directives such as EU Water Framework Directive and Industrial Emissions Directive are designed to support EU countries on their way to reduce the contamination of waters by heavy metals if consequently controlled. The state-of-the-art monitoring technologies such as spectroscopy are highly accurate and sensitive but, at the same time, highly expensive and operable only off-side, in labs with experienced personnel.

UNIFI's portable heavy metal sensor box (HM Box) answers the need for an affordable alternative enabling real time quantitative monitoring of heavy metals directly on site. Equipped with miniaturised screen-printed sensors and relying on low power consumption, modularity, possibility of remote control and sharing results in the cloud, the HM box is

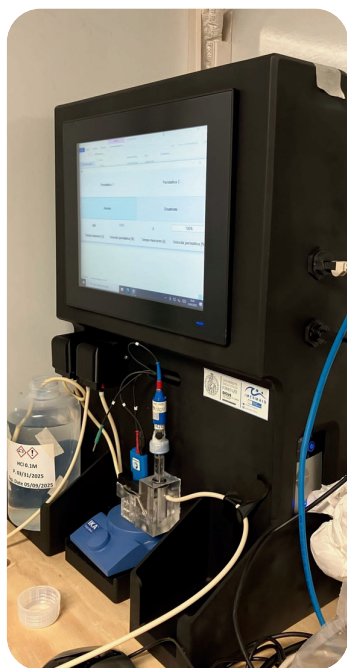


Figure 1: The HMBox working at the WWTP in Brandizzo (Turin, Italy).

capable to detect in few minutes Cd(II), Pb(II), Cu(II) and Zn(II) up to ppb levels in different types of waters. The ad-hoc designed device is equipped with a user-friendly software which supports by all steps users, including unskilled personnel.

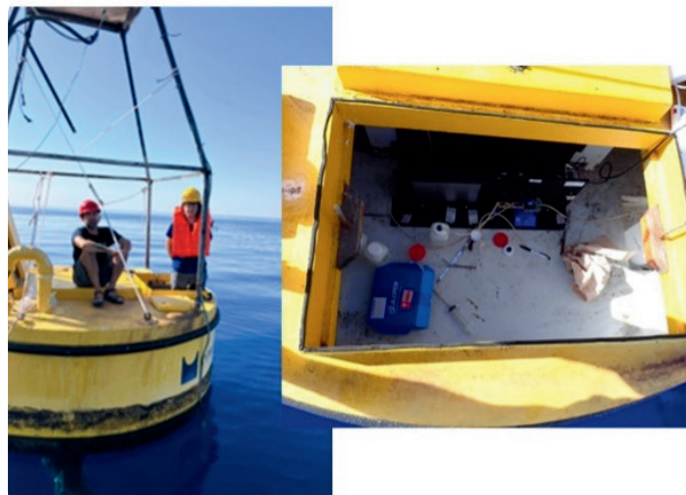


Figure 2: The HMBox installed in the marine buoy in the sea near to Limassol (Cyprus).

The solution has been tested on two use cases including a wastewater treatment plant in Brandizzo (Turin, Italy) and a marine buoy in Limassol (Cyprus) with results demonstrating that the HM Box being a valuable solution for real time monitoring and support for fast decision making. Unifi's HM Box is expected to support a wide range of stakeholders and safety regulators as a screening tool during field inspections or to quickly assess situation during contamination events.

Key Benefits



Portable, remote controllable



applicable to different type of waters



Ability to measure Cd(II), Pb(II), Cu(II) and Zn(II) at ppb levels



suitable for real time monitoring and as support for fast decision making



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