

Aerial mapping of pollution and odour in a waste water treatment plant

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The normal activity of waste treatment facilities, such as wastewater treatment plants (WWTPs), occasionally generates episodes of unpleasant odours that are often related to toxic gases that may affect the health of plant operators and the wellness of neighbouring populations. The mitigation of these episodes is very limited due to the difficulty and cost of monitoring these odours as well as the complexity of predicting when they will occur. A fast and cost-effective option to monitor the WWTP pollution is the use of aerial surveys with small drones (<10Kg) featuring chemical sensors.

As part of the European project SNIFFIRDON, we are developing a drone-based system to monitor WWTP pollution and odour emissions targeting a high technology readiness level. The monitoring system will generate real time 3D pollution maps that become immediately available to the plant operators. Pollution maps are important to monitor the level of WWTP emissions, but they do not directly correlate with the concentration of odours perceived by neighbours. To estimate the odour elicited by the emissions, we use a PLS model that predicts the odour perception, based on dynamic olfactometry, from the chemical sensors' response. This provides real time 3D odour maps of the WWTP emissions. Preliminary results with our first prototype are shown in Figure 1.

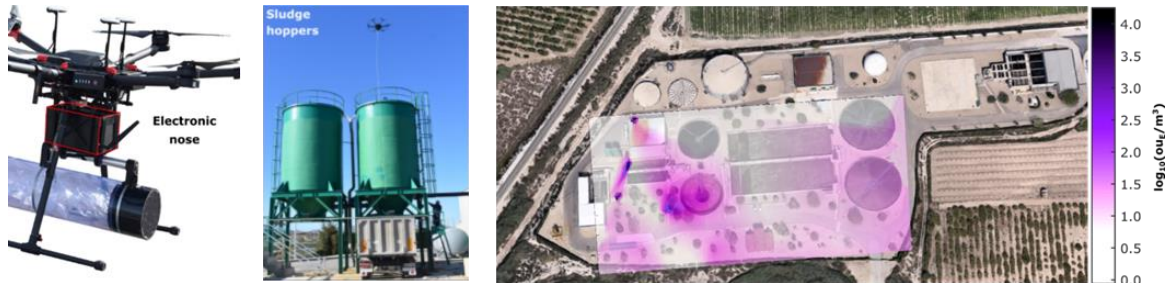


Figure 1. Drone prototype flying over WWTP and odour map generated