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ABSTRACT

OLFASCAN FLYING LAB – AN INNOVATIVE WAY OF PERFORMING AIR QUALITY MEASUREMENTS BY USING STATE-OF-THE-ART DRONE TECHNOLOGY

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Performing air quality measurements with classical measurement methodologies is often too cumbersome, time-consuming and restricted in time and space, especially when large odour/VOC emitting surfaces like water treatment plants and biofilters need to be mapped. The OLFASCAN Flying Lab is an innovative technique to perform air quality measurements in a safe, efficient and accurate way by using the enormous possibilities of unmanned drone flights. The technique often works in twofold in which the drone is firstly equipped with a thermographic camera to detect areas with an increased change in odour/VOC emissions based on surface temperature variations. In a second step the drone is equipped with the OLFASCAN Flying Lab, a Scentroid-based laboratory containing a wide variation of electrochemical sensors to perform air quality measurements. The laboratory has further been modified by OLFASCAN to allow for more accurate readings of the emission parameters by better sealing the chamber holding the sensors and by decreasing interference of the drone rotors by using a long air-suction pipe. The Scentroid software allows real-time assessment of the emission parameters and the measured parameters come with a time- and GPS-stamp for further data processing in geospatial processing software. The OLFASCAN Flying Lab is also equipped with a laser scatter sensor and an extra connection point to collect airsamples for further analysis in the OLFASCAN laboratory on odour/VOC quantification by Full VOC Screening. The technique is promising and versatile in its use and allows (i) to quantify diffuse emissions from large emitting surfaces like biofilters, water treatment plants and landfills. By also simultaneously attaining meteorological data and measuring the emission parameters of these surfaces on different heights, the fluxwindow method can be used to determine the flow rate of the emissions in order to model the emission impact of these surfaces for the surrounding areas. (ii) The quantification of emissions coming from process buildings and biogas domes in combination with thermographic imaging to detect possible leakages, and (iii) quantifying emission parameters from difficult and dangerously to reach locations such as chimneys.

Indicate preference of kind of presentation

¤ Oral Communication
☐ Poster

Indicate topic of your work for the conference:

☐ Policy and associated regulations for odour and air quality.
¤ Odour/VOC measurement, monitoring&sensor technologies.
☐ Odour/VOC perception, impact, formation and dispersion.
☐ GHG emissions particulate matter and industrial emissions.
☐ Source characterization and odour/VOC mapping.
☐ Odour/VOC abatement, mitigation and neutralization.
☐ Odour/VOC from waste water, sewer systems and livestock.
☐ Air emissions and sustainable solutions for waste handling
☐ Community engagement, social media and citizen action.
☐ Other (suggest a new topic):

The scientific committee may change the session where authors propose to include their works.