9th IWA Odour & VOC/Air Emission Conference
26-27 October 2021 Bilbao, Spain

ABSTRACT

ON LINE MONITORING OF ODOR UNIT (OU) EMISSIONS AND ODOR SOURCES IDENTIFICATION, BY USING A NEW GENERATION OF GAS AND ODORS ANALYZERS

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Dynamic olfactometry (ES 137225) is the standard and well-established technique for odor intensity measurements, however it is not adapted for big industrial sites which need continuous monitoring and fast results. Additionally, these sites need to have odor sources identification solutions to ensure proper remediation actions.

In the city of Ventspils, (Latvia), the harbour can welcome up to 20 petrol tankers, and the Baltic wind can push the gas and odors towards the city. The municipality does not have the tools neither to quantify nor to identify the sources of pollution and nuisances.

In the experiment with the port authorities, an array of WT1 devices was deployed on different sites close to the sources and at the fence line. During the initial training period, the devices were trained with four different types of samples at different dilution levels (black fuel oil, solvent naphta, petrol, kerosene), and a successful correlation model was established following the 13725 standard between sensory measurements with dynamic olfactometry and the WT1 outputs, allowing the quantification of odors as well as the identification with an accuracy superior to a 0,85 R^2. Additionally, a PCA (Principal Component Analysis) and a LDA (Linear Discriminant Analysis) were built and the WT1 modules proved to differentiate accurately the different sources of odor and pollution.

The RUBIX WT1 gas and odors sensing modules allow not only on-line monitoring of Odor Unit and various gas emissions, but also allow odor fingerprint identification. The paper will present the methodology that combines a range of smart sensors with AI statistical data processing techniques, allowing for the odor sources identification.

The experimental plan, including the training with dynamic olfactometry will be described.

Indicate preference of kind of presentation
    xOral Communication
    ⬜ Poster

Indicate topic of your work for the conference:
    ⬜ Policy and associated regulations for odour and air quality.

    x 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.