Summary Model: Submit before December 15th to:
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9th IWA Odour & VOC/Air Emission Conference
26-27 October 2021 Bilbao, Spain

ABSTRACT

INNOVATIVE ODOUR IMPACT ASSESMENT FOR WWTP USING EXPERIMENTAL AND DISPERSION MODELLING TECHNIQUES

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The concern for the odour impact in urban areas generated by wastewater treatment plants (WWTP) has been increased during last years, mainly due to cities are becoming more and more populated, and the industrial areas are closer to households. Currently, there is a need to plan investments strategically to reduce WWTP odour impact, which it is generally carried out by covering and deodorizing the main process units involved.

Odour dispersion modelling software combined to dynamic olfactometry is the standard technique conducted to evaluate the odour impact studies. However, the results obtained by this methodology strongly depends on the implementation of the emission sources in the software. This study is focused on providing a dynamic odour impact assessment using CALPUFF software simulations, calculated under different “what-if” scenarios, providing a new approach to define the calibration of the emission sources.

One of the main process units of WWT studied in this work was the Primary Settling stage, since it represents a high percentage of the total odour in WWTP emission due to: it is operated outdoors, the high odour concentration of the primary effluent, and the extensive surface of their tanks. As a difference of previous works reported in the literature, an exhaustive olfactometric campaign was carried out measuring separately: (i) the passive areas with low emission, due to its low turbulence, and (ii) the active area, according to the perimeter overflow with high desorption. Once the sources were measured separately, they could be implemented in the software individually as circular and annular areas, respectively. Results showed the relevance of calculating the odour impact following this approach.

The main outcome of this work was to provide a more realistic diagnosis by means of a new source calibration approach. Moreover, this innovative odour impact assessment can be applied to different process units in the WWTP (grit chambers, DAF, etc.) which result in a more cost-effective solution to reduce the odour impact more locally.

Indicate preference of kind of presentation

- ✓ Oral Communication
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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.
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- ✓ Odour/VOC from waste water, sewer systems and livestock.
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