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ABSTRACT

ODOROUS VOC REMOVAL BY AN ADVANCED WATER SCRUBBER AT CANNES WWTP

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Odor impact is generally low around Waste Water Treatment Plants (WWTP) when conventional Odor Control Unit (OCU) such as chemical scrubbers or biofilters are implemented. However, for some specific WWTP processes such as sludge thermal drying, or industrial wastewater, releasing odorous Volatile Organic Compounds (VOC) like aldehydes and ketones, these conventional OCU are not effective enough to avoid odor nuisances in the environment.

To fix this issue, we have proposed a simple and relevant two stages treatment line to treat odorous VOC of WWTP. The treatment line includes first a water scrubber (absorption) and second an activated carbon filter (adsorption). Theoretical modeling of water scrubber shows that this treatment line could be optimized by cooling scrubbing water. Considering that a low scrubbing temperature maximizes VOC removal in the first stage and dehumidifies air before the second stage, this solution allows to reduce activated carbon consumption for odorous VOC treatment. This SUEZ solution of advanced water scrubber has been named Azurair™ Cool.

This paper summarizes firstly the results of an Azurair™ Cool pilot tests at 1/10 scale achieved in 2018 on a drying facility of digested sludge and presents secondly the feedbacks after 1 year of operation of the first industrial Azurair™ Cool implemented on the drying facility of biological sludge at Cannes WWTP.

The one-year operation of the Azurair™ Cool at Cannes WWTP confirms the results of the pilot tests. In both cases, the treatment line, including an Azurair™ Cool and an activated carbon filter, removes more than 96% of odours released by the sludge dryers whereas usual chemical scrubbers remove only around 60% of these odours. The use of cooled water for scrubbing, as it is in the Azurair™ Cool, induces a rise of the VOC removal efficiency in the water scrubber of more than 30%. Higher VOC removal is reported for the Cannes unit than for the pilot tests, probably due to differences in the sludge quality (biological sludge at Cannes WWTP and digested sludge during the pilot tests). Furthermore, with one year of operation at Cannes WWTP, we have confirmed that the Return On Investment (ROI) of the Azurair™ Cool is under 5 years.

From the feedbacks of the Cannes WWTP operator, the implementation of the Azurair™ Cool is a success thanks to a significative improvement of the olfactive impact around the WWTP, low consumption of activated carbon, low waste production and ease of operation.

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