



Rapid on-line method of wastewater parameters estimation by electronic nose for control and operating wastewater treatment plants toward Green Deal implementation

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ABSTRACT

In order to comply with legal regulations related to wastewater quality, the operational mode of facilities at wastewater treatment plant (WWTP) should be properly adjusted according to parameters of influents, however it is very difficult without frequently performed measurements. Currently there are known many techniques and devices for assessment of wastewater parameters such as chemical oxygen demand, biochemical oxygen demand, total organic carbon, as well as phosphorus and nitrogen compounds. In spite of the far reaching improvements of treatment process automatization, there still isn't developed a automatic and fast measuring system of wastewater parameters. Rapid on-line method of wastewater parameters estimation by electronic nose and computer simulations could be recommended as an alternative solution in many WWTPs in comparison with traditional approach. Within this paper the analysis of real-time data obtained from laboratory bioreactor were used to estimate wastewater parameters in order to develop the inexpensive and fast-responding measuring for the WWTPs. The elaborated method enables continuous and relatively low cost monitoring of the wastewater quality even in many key points of operating and control WWTP. In this context, computer simulation support with on-line e-nose measurements could be cheap and useful tool to improve the WWTP efficiency.

Keywords: On-line measurement; Wastewater parameters estimation; Electronic nose; Modelling strategies; Operating and control of WWTPs

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