



## Evaluation of the operation performance of a municipal activated sludge unit

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### ABSTRACT

The objective of this work was the evaluation of the operation of a municipal activated sludge unit and the assessment of potential correlations between the operating parameters that might affect the process performance. Samples were collected from various points of a plant receiving about 40,000 m<sup>3</sup> day<sup>-1</sup> and were analyzed for the determination of a number of parameters. The assessment of the effluent parameters and the statistical evaluation of the values during an one year monitoring period proved an efficient operation of the plant, resulting to an effluent of low organic loading and nitrogen concentration. COD average values did not exceed 60 mg l<sup>-1</sup>, while maximum values remained always lower than 95 mg l<sup>-1</sup>. These parameters remained almost constant during the monitoring period, and were not affected by potential variations of influent characteristics. The assessment of the activated sludge process took place by the measurement of the mixed liquor suspended solids and the sludge volume index; MLSS content varied between 2,000 and 6,000 mg l<sup>-1</sup>, and SVI showed a similar trend by the time. The examination of the operation parameters of the anaerobic digesters included the measurement of the solids content, volatile acids and total alkalinity; suspended solids and volatile solids presented similar behaviour with a ratio of VSS/SS about 60%. The statistical analysis of various parameters revealed a positive linearity between suspended solids and sludge volume index and suspended solids and volatile suspended solids in the homogenizer and the digesters; this analysis could be used for the assessment of the efficient performance of a treatment plant and the early identification of potential problems.

*Keywords:* Municipal wastewater; Operation parameters; Wastewater treatment plant performance; Sludge volume index; Anaerobic digester; Sludge suspended solids

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