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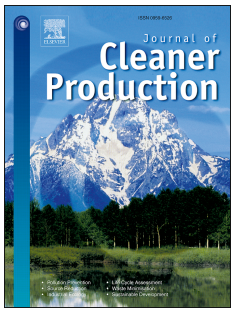

Energy saving in wastewater treatment plants: A plant-generic cooperative decision support system

D. Torregrossa, F. Hernández-Sancho, J. Hansen, A. Cornelissen, T. Popov, G. Schutz

PII: S0959-6526(17)31914-5

DOI: 10.1016/j.jclepro.2017.08.181

Reference: JCLP 10440

To appear in: *Journal of Cleaner Production*

Received Date: 1 September 2016

Revised Date: 9 June 2017

Accepted Date: 21 August 2017

Please cite this article as: Torregrossa D, Hernández-Sancho F, Hansen J, Cornelissen A, Popov T, Schutz G, Energy saving in wastewater treatment plants: A plant-generic cooperative decision support system, *Journal of Cleaner Production* (2017), doi: 10.1016/j.jclepro.2017.08.181.

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Energy saving in wastewater treatment plants: a plant-generic cooperative decision support system

D. Torregrossa[a], F. Hernández-Sancho[b], J. Hansen[c], A. Cornelissen[d], T. Popov[a], G. Schutz[d]

[a] *Luxembourg Institute of Science and Technology (LIST), 41 Rue du Brill, 4422 Sanem, Luxembourg*
[b] *Water Economic Group, Universitat de València, Avda dels Tarongers, s/n, 46022 Valencia, Spain*
[c] *Université du Luxembourg, 6 rue Richard Coudenhove-Kalergi, L-1359 Luxembourg*
[d] *RTC4Water s.a.r.l, 9, av. des Hauts-Fournaux, 4362 Esch-Sur-Alzette (Belval), Luxembourg*

Abstract

In Europe, the analysis of Waste Water Treatment Plants (WWTPs) shows a significant energy efficiency potential (up to 25%). Optimistically, plant managers assess their plant efficiency once or twice per year. Consequently, the time gap between an inefficiency and its detection produces avoidable operational costs. Although the installation of multiple on-line sensors can provide detailed energy information, for a human operator it is unrealistic to analyse the produced data in a satisfactory time-scale. This paper proposes a cooperative tool for energy saving that remotely accesses and evaluates WWTP databases to produce daily energy assessment reports. The novelty of this decision support tool lies in the original combination of: key performance indicators, daily benchmarking, expert knowledge, scenario analysis, fuzzy logic and shared knowledge. In this paper, the Shared Knowledge Decision Support System (SK-DSS) concept is presented and the methodology demonstrated and validated on the energy consumption of biological aeration systems.

Keywords:
Waste Water Treatment Plant (WWTP), Energy Benchmarking, Key

*Corresponding author: Dario Torregrossa
Email address: dario.torregrossa@list.lu (D. Torregrossa)

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