

INTRODUCTION

Nowadays most EU countries treat practically the totality of the generated volume of urban wastewater. However, an in depth look at the performance of most of the existing wastewater treatment plants (WWTPs) evidences that significant improvements can still be made in terms of effluent quality, process robustness and operational costs. More efficient operation of WWTPs could significantly improve the stability of the process and the quality of the effluent, while at the same time achieving a reduction in operational costs, with a special impact on energy consumption and recovery.

In this respect, the new and more stringent quality requirements for water treatment systems have led to major advances in WWTPs: on the one hand, new treatment technologies based on more and more complex plant configurations have emerged; on the other hand, online instrumentation has experienced significant improvement.

In fact, the above advances have brought about important changes with respect to the availability of data in WWTPs. Some years ago one of the main technical limitations to optimising plant operation was the scarcity of data and therefore the very limited information about a plant, mainly due to the lack of reliable measuring devices. However, WWTPs now have to deal with a very large volume of heterogeneous data separately collected from different sources at the plant (Olsson G. and Newel B., 1999; Hack and Wiese, 2006). Data logging and supervisory control and data acquisition software tools used by WWTPs on a daily basis manage thousands of points of data from all sources of the plant, which means the likelihood that errors and/or faults are present in the data has greatly increased. The appropriate processing and proper management of all these heterogeneous, incomplete and frequently inconsistent data points normally beyond the capacity WWTP staffs. Consequently, although now it for reasons of excess rather than shortage, access to valuable plant information for diagnosis and carrying out operation activities continues to be limited (Olsson and Jeppsson, 2006).

In conclusion, in order to arrive at the optimum operation of WWTPs, there is presently a clear and urgent need for advanced data management algorithms and tools.

References

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