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200606R-Seco, A

Knowledge Area

Chemical Engineering
Wastewater Treatment
Environment

Collaboration

Technology available for licensing
Other collaborations may be considered

Intellectual Property Rights

Patent rights

BioCalibra: Device for activated sludge models calibration

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Background: To achieve an optimum design of new waste water treatment plants (WWTP) or increase the efficiency of the operative ones, is necessary a deep knowledge of the mechanisms that take place in the activated sludge processes. The great quantity of factors that influences the performance of these processes makes necessary the use of complex mathematical models. In fact, the large number of parameters present in the most used and accepted models, and the high correlation among these parameters, makes especially difficult their correct estimation for a specific system.

A possible alternative could be the parameter estimation through the adjustment by simulation of experimental data on dynamic conditions. However, this methodology has various disadvantages, as could be its inaccuracy for those parameters that present high correlation and its dependence on the experimental data hydraulic conditions.

The invention: Researchers from the *Universitat de València* and the *Universitat Politècnica de València*, have developed an automated calibration device that allows the calculation of the kinetic and stoichiometric parameters for the most accepted models for activated sludge processes. BioCalibra performs all necessary assays for calibration, as well as numerous experiments designed for the performance evaluation of the biological process as could be: determination of biodegradability of waste water, verification of the existence of toxic compounds, determination of possible interferences, or determination of potential impacts on treatment process. The use of this new device allows improving the calibration process, so reducing time and manpower necessary for this task. BioCalibra performs both the experimental tasks and the subsequent determination of calibration parameters for the mathematical models.

Applications: Optimization of WWTPs design and performance for those plants that include biological removal of organic matter, nitrogen and phosphorus.

Advantages: The device has the following advantages over existing techniques:

- Improves WWTP simulations: allows simulation of calibrated WWTP with only the adjustment of influent characteristics.
- High efficiency: allows the calculation of the most important set of parameters for the activated sludge model with the minimum of experimental effort
- User friendly software: all elements are controlled by the calibration software that can be installed on any conventional computer



"BioCalibra": calibration device for activated sludge models

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Related Technologies: Control system for the biological nitrogen removal in wastewater treatment plants based on low-cost sensors (Ref. OTRI: 200814R-Seco, A)

