

12.- WEST-applications for wastewater treatment plants: WESTfor DESIGN, WESTfor OPERATORS, WESTfor AUTOMATION, WESTfor IUWS (Integrated Urban Water Systems)

Title and name of product or technology
WESTforDESIGN
Abstract
Based on state-of-the-art software technology, WESTforDESIGN allows for validation of design options and evaluation of different plant layouts in dynamic conditions. This is done by running scenarios, e.g. for high load and low load conditions, and by evaluating the effect of complex control strategies.
Description including main features/advantages
<ul style="list-style-type: none"> • Quick and fast set-up • Plant layout set-up (unlimited size and complexity, including multiple controllers) using the extended model and components library, including controllers (for the list of models, see Annex) • Automatic generation of optimized models code, resulting in unparalleled simulation speed • Influent fractionation and data evaluation • Dynamic and interactive simulation runs • Graphic display of data results during simulation runs
Innovative aspects
Integration of dynamic simulation into design leads to better designs.
Current and potential industrial users/domains of application
Design engineers, Plant managers, research institutes
Current state of development
New Product line

Title and name of product or technology
WESTforOPTIMIZATION
Abstract
Based on state-of-the-art software technology, WESTforOPTIMIZATION allows consultants and engineers to optimize the wastewater treatment processes. The flexibility and the truly open model structure (one can change any model in the model library without limitations) in combination with add-on modules for easier calibration (sensitivity analysis, automatic parameter estimation, scenario analysis and uncertainty analysis) makes WESTforOPTIMIZATION the most powerful tool available.
Description including main features/advantages
<ul style="list-style-type: none"> • Quick and easy set-up. • Plant layout set-up (unlimited size and complexity) using the extended model and components library, including controllers (for the list of models, see Annex). • Automatic generation of optimized models resulting in unparalleled simulation speed. • Influent fractionation and data evaluation. • Dynamic and interactive simulation runs. • Graphic display of data during simulation runs. • Model Editor • Parameter estimation • Scenario analysis • Sensitivity analysis • Uncertainty analysis
Innovative aspects
Integration of dynamic simulation into process optimization leads to better designs.
Current and potential industrial users/domains of application

Consultants, design engineers, plant managers, research institutes
Current state of development
More than 1000 users worldwide

Title and name of product or technology
WESTforOPERATORS
Abstract
Based on state-of-the-art software technology, WESTforOPERATORS allows for operators to perform short-term (e.g. storm events) and long-term (e.g. consistent nutrient removal) evaluations of WWTPs their plant. This approach makes it possible, for operators, to re-use the modeling efforts of their consultants in a flexible and customizable tool. The evaluations are done for bottleneck identification, running scenarios for specific influent and operational conditions, and for evaluation of costs. The tool is most useful to improve understanding of the WWTP and hence for operator training.
Description including main features/advantages
<ul style="list-style-type: none"> • Dynamic and interactive simulation runs. • Graphic display of results during simulation runs
Innovative aspects
Integration of dynamic simulation as decision support tool for operators leads to better and more cost efficient operation of WWTPs.
Current and potential industrial users/domains of application
Plant managers, operators
Current state of development
New product line

Title and name of product or technology
WESTforAUTOMATION
Abstract
Based on state-of-the-art software technology, WESTforAUTOMATION, an extended toolkit that allows for fast integration of modeling and simulation in custom applications by automation or software engineers. Different SDKs containing comprehensive and extensive documentation and sample sets, allow for linking WEST with SCADA systems or other modeling software (Matlab, CFD, Mike Urban, ...)
Description including main features/advantages
<ul style="list-style-type: none"> • .NET API (standard) • C API (on project basis only) • C++ API (on project basis only) • OpenMI API (on project basis only)
Innovative aspects
Integration of dynamic simulation into automation projects leads to better results.
Current and potential industrial users/domains of application
Control engineers, BOOT companies, research institutes
Current state of development
More than 50 users

Title and name of product or technology
WESTforIUWS
Abstract
Based on state-of-the-art software technology, WESTforIUWS allows for: <ul style="list-style-type: none"> • Exploration of specific water quality scenarios developed by the system manager (e.g. flow diversions, introduction of tanks, changes in operation, etc.) • Automatic optimization of the operating parameters.

<ul style="list-style-type: none"> • Performing short-term and long-term evaluations. • Uncertainty and sensitivity analysis of the model to spot the most influential operating parameters and to assess the risk of non-compliance with regulations.
Description including main features/advantages
<ul style="list-style-type: none"> • Plant layout set-up (unlimited size and complexity) using the extended model and components library (including components for sewer, WWTP and surface water). • Dynamic and interactive simulation runs • Graphic display of data during simulation runs. • Linking with GIS systems. • Model Editor • Parameter estimation • Scenario analysis • Sensitivity analysis • Uncertainty analysis
Innovative aspects
Integration of dynamic simulation into the management of IUWS leads to better performance.
Current and potential industrial users/domains of application
Consultants, design engineers, plant managers, research institutes
Current state of development
New product line

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