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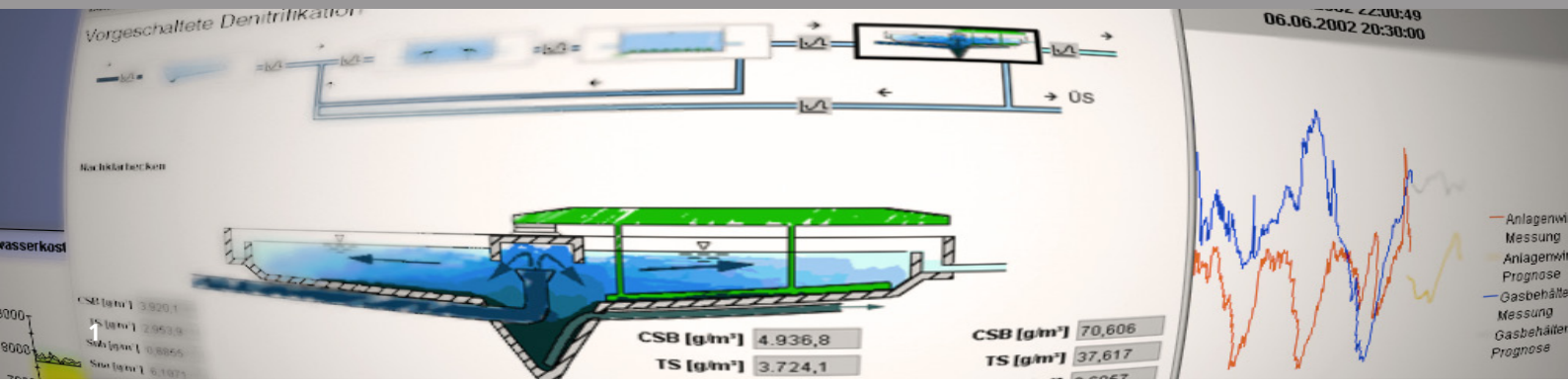
FRAUNHOFER WATER SYSTEMS ALLIANCE (SYSWASSER)



1 *Besides the process optimization POS also offers extensive possibilities for data visualization*

POS: PROCESS OPTIMIZATION SYSTEM FOR SEWAGE TREATMENT WORKS

Fraunhofer Application Center System Technology AST

Am Vogelherd 50
98693 Ilmenau, Germany

Water Supply and Waste Water Treatment:

Dr Buren Scharaw
Phone +49 3677 461-121
Fax +49 3677 461-100
buren.scharaw@iosb-ast.fraunhofer.de

www.iosb-ast.fraunhofer.de

Background

Modern wastewater treatment plants are very complex. Many different control variables and conflicting goals make optimal operation extremely difficult. Because of this, the Process Optimization System assists the operator running his plant.

The Process Optimization System is running on top of the SCADA system and supports the operator with modern methods of model predictive control by finding the long term optimal operation. Being an advisory system it is not directly controlling the plant but provides the operator with suggestions for an optimal operation.

Tasks performed

There are many different types of wastewater treatment plants regarding the processes as well as regarding the online measurements. That's why the Process Optimization System is no monolithic program but rather consists of different modules. These modules have to be adopted to the distinct plant and to the requirements of the operator. While doing this adaptation, an integrated view at the whole plant is important. This starts at the sewer system, goes to the biological stage and further on to the sludge treatment and energy production.

Besides of process optimization the system is also usable for visualisation of historical and actual data, for cost analysis and also for dynamic simulation of possible operation scenarios.

Requirements

The Process Optimization System is running on a data basis which itself imported its data from the SCADA system. For the communication with the SCADA system interfaces like SQL, ACPLT/KS and OPC are supported. The possibility to run in heterogenic net-works is an important benefit of the system. The visualization may run on a different computer than the PosServer and data may also be visualized via web browser.

The Process Optimization System requires a modern computer and supports all major computer platforms. For visualisation via internet any actual web browser is suitable.

A connection to the SCADA system is required for accessing actual measurements and plant parameters. There are high requirements on the accuracy of the online measurements.

Results

Based on a model fitted to the plant, the Process Optimization System provides the possibility to simulate the plant partly or complete. This simulation may run online or offline. An offline simulation runs on historical or manual created data. It is useful for the training of operators as well as for testing of new operational settings.

For an online simulation the model is simulated in parallel to the real plant using the same input data. As a result it is possible to get actual information on parts of the plant with no online measurements available. The simulation system is acting as a software sensor.

The optimization is using model predictive methods. This means a cost optimal operation of the plant is calculated once ore several times a day. As a result the operator gets proposals for optimal settings. Because of an integrated view at the plant an optimal cooperation of the different parts of the wastewater treatment plant is achieved.