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EXPOVAL

EXPOVAL joint research project

Adaption of German design algorithms for wastewater treatment plants under situations in other countries

Extension of German design rules

In general, the German design for wastewater treatment plants follows well-established and reliable rules and standards of the German Association for Water, Wastewater and Waste (DWA). These rules are closely connected to the specific conditions prevailing in Germany. With regard to applications in foreign countries, the extension of these design approaches supplies optimized design rules – in particular for local climatic conditions and treatment requirements.

Photo credits: Emscher Wassertechnik

Validation of extended design rules

Within the EXPOVAL joint research, on full-scale plants all over the world specific research has been be carried out to extend and validate design rules and algorithms, in particular for higher or lower wastewater temperatures as well as raised salinity levels. Furthermore, practical design and operation recommendations has been be complemented. To this end, leading German universities and industrial partners worked together within the EXPOVAL joint project.

Focus on municipal wastewater treatment

The project investigations focus on municipal wastewater treatment processes, relevant worldwide. These processes encompasses activated sludge systems including specific aspects of pressurised aeration systems, trickling filters, anaerobic treatment reactors (UASB) and wastewater ponds. Further research topics include the treatment of sewage sludge and elimination of helminth eggs from the effluent of wastewater treatmetn plants.

Photo credits: FUCHS Enprotec

Results will be published by DWA

The project aims for easily applicable design algorithms and rules. These will be published in the “Topics” series of the DWA (German Association for Water, Wastewater, and Waste) in October 2016. It will be a guide to a wide range of professionals and internationally operating suppliers or consultants in the wastewater sector.

Support by the German research ministry (BMBF)

The joint project has been sponsored by the German Federal Ministry of Education and Research (BMBF) from 2012 until 2016 (reference numbers: 02WA1252A – 02WA1252S).

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German project partners in seven subprojects

Within the joint research project, 17 universities and industrial partners in Germany have been involved in seven subprojects, each concentrating on a specific issue:

Sub project 1: Activated sludge systems

- Ruhr-Universität Bochum (Prof. Dr.-Ing. Wichern)
- Emscher Wassertechnik GmbH, Essen
- Hach-Lange GmbH, Düsseldorf

Sub project 2: Aeration systems

- Technische Universität Darmstadt (Prof. Dr.-Ing. Wagner)
- Bilfinger Water Technologies GmbH, Aarbergen

Sub project 3: Trickling filters

- Universität Stuttgart (Frau Prof. Dr.-Ing. Steinmetz)
- ENEXIO Water Technologies GmbH (until 2015: GEA 2H Water Technologies GmbH), Hürth

Sub project 4: Anaerobic reactors (UASB)

- Leibniz Universität Hannover (Prof. Dr.-Ing. Rosenwinkel)
- STULZ-PLANAQUA GmbH, Grafenhausen (resigned from the project in 2014)
- aqua & waste International GmbH, Hannover
- Hach-Lange GmbH, Düsseldorf

Sub project 5: Wastewater ponds

- IEEM gGmbH – Institute of Environmental Engineering and Management at the Witten/Herdecke University (Prof. Dr. mult. Rudolph)
- Ultrawaves Wasser- und Umwelttechnologien GmbH, Hamburg
- FUCHS Enprotec GmbH, Mayen
- Xylem Water Solutions Herford GmbH (WEDECO), Herford (associated partner)

Sub project 6: Sewage sludge management

- Technische Universität Braunschweig (Prof. Dr.-Ing. Dichtl)
- Huber SE, Berching
- Oswald Schulze Umwelttechnik GmbH, Gladbeck

Sub project 7: Disinfection and water reuse

- Technische Universität Darmstadt (Prof. Dr.-Ing. Cornel)
- Huber SE, Berching

Contact

Emscher Wassertechnik GmbH is responsible for the overall coordination and scientific-technical supervision of the joint project. The project coordination is supported by the two scientific subcoordinators Technische Universität Darmstadt and Leibniz Universität Hannover.

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Project website

More detailed information about the joint research project can be found at the project website: **www.expoval.de**.