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Winner of GreenTech Award 2015 category Urbanization
SEMIZENTRAL Germany – IWAR, TU Darmstadt



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Binder supplied for the aeration lines of the project SEMIZENTRAL as an Equipment-Sponsor a complete system for aeration control and air distribution: 4 VACOMASS® square diaphragm control valves, 4 VACOMASS® flow meter, 2 VACOMASS® control cabinets with 4 master & 2 econtrol modules as well as start-up assistance and fine-tuning of the control parameter.

The institute IWAR of Darmstadt University of Technology won the GreenTec Award in the category Urbanization for its infrastructure concept SEMIZENTRAL. The innovative approach is of great benefit to the Chinese megacity Qingdao, since it is suffering from severe water shortages. Together with Tongji University Shanghai and Qingdao Technological University, as well as German partners from the industry and sciences, Darmstadt University of Technology has managed to develop a progressive infrastructure concept which adapts to the city's growth, relies on the reuse of water resources and saves energy at the same time. On May 7 IWAR received the award at the German pavilion at IE expo trade fair in Shanghai.

Decription of the project (Source www.semizentral.de):

The fast growing port city of Qingdao has already been suffering from increasing water shortage for years. During the last 10 years, the SEMIZENTRAL approach has been developed under the general management of the Chair of Wastewater Technology of the Institut IWAR at the Technische Universität Darmstadt, in close cooperation with numerous German partners from industry as well as scientific partners from Germany and China.

The joint project "Resource efficient and flexible Supply and Treatment Infrastructure Systems for Fast Growing Cities of the Future" within the frame of the BMBF funded program CLIENT China is divided in two phases. The first phase (April 2012 - March 2013) includes preliminary activities necessary for implementation, i.e. adaption of the concept to the local conditions and expert monitoring of the planning and permission process. Purpose of the second phase (May 2013 - July 2016) is the validation, optimization, and further development of the research approach.

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For implementing SEMIZENTRAL, it is planned to separately collect the accruing wastewater streams (greywater and blackwater) in a development area close to the World Horticultural Exposition for transport to a semicentralized supply and treatment center. The STC is designed for 12,000 population equivalents. Besides wastewater, biowaste (food residues) from the area will be treated in the STC. The treated and disinfected greywater will be reused as service water for toilet flushing, while the treated and disinfected blackwater will be reused for irrigation and street cleaning. This way, the domestic demand for drinking water is reduced by at least 30%.

Via co-treatment of biowaste in the anaerobic thermophilic sludge treatment, the biogas yield will increase. By using the biogas, an energy self-sufficient operation of the STC is achieved and the dependence on external primary energy, mostly from fossil resources, is avoided.

SEMIZENTRAL's objects of research include, inter alia, the energetic optimization of the STC and its related networks, validation of material flows regarding quality as well as quantity, usability of output flows, planning and approval processes, transferability of the approach to other locations and environmental challenges, ..., validation and further development of analysis and control of service water systems as well as strategy development on the prevention of recontamination, development and adaption of MCR technology for integrated infrastructure systems and their application in the optimized usage of resources.

Duration Phase A: April 2012 - März 2013

Project funding Ref. No.: 02WCL1215A-D

Partner: Abwassertechnik, Landmanagement, est, Kocks, E+H, Roediger Vacuum

Duration Phase B: Mai 2013 - Juli 2016

Project funding Ref. No.: 02WCL1266A-K

Partner: Abwassertechnik, est, LM, Institut für Baubetrieb, Kocks, E+H, RV, m+p, Cosalux, Far Eastern Consulting, GECOc, Heyl, Emscher Wassertechnik, ISOE

Equipment-Sponsors: wilo, Aerzen, Auma, Ott, **Binder**, LAR

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