



EXPOVAL: Transfer-oriented research in the wastewater sector – validation at industrial-scale plants

Adaptation of German standards for the design of wastewater treatment plants to situations in other countries

In many areas of the world, sewage pollutes rivers, lakes, and coastal waters. If not treated accordingly, this sewage poses a threat to our natural water resources. Particularly developing and emerging countries with exceptional climatic conditions have a considerable backlog regarding the installation of wastewater treatment plants. In Germany, experience has been accumulated over the years for planning a large variety of wastewater treatment facilities. However, these time-tested rules are designed to cope with local conditions. The partners of the EXPOVAL joint project are therefore working to adapt these rules to the situations existing in other regions of the world. This is the basis for the transfer of wastewater technologies and engineering services. Simultaneously, protection of international water resources is facilitated.

Biological processes play a major role in the treatment of wastewater and the resulting sewage sludge. These processes are strongly dependent on the local boundary conditions, such as wastewater composition and temperature. If applied under the specific conditions abroad, the standards developed for German conditions may lead to uneconomical overdimensioning of plants.

Extension of standards...

Within the framework of the EXPOVAL joint project, German design rules are to be adapted to and tested for use in other countries. The work will focus in particular on higher and lower wastewater temperatures and elevated salt concentrations.

The corresponding investigations will be carried out at industrial-scale plants in various climatic zones worldwide. Based on the results obtained, design rules and

recommendations will be adapted to other countries. For the solution of specific problems, additional investigations are planned to be carried out at smaller container-based test plants for instance.

... for sewage treatment facilities...

The joint project covers the review of design rules for municipal wastewater treatment processes that are commonly used all over the world and of particular significance to developing and emerging countries. To that end, EXPOVAL consists of several sub-projects in the fields of wastewater and sludge treatment.

One of these sub-projects deals with the design of the widely-used activated sludge process, in which the prevailing water temperatures have a great impact on the optimum size and, consequently, on the costs of the treatment tank or on the design of the oxygen supply system for the bacteria that are used for wastewater



Construction of trickling filters at a sewage treatment plant in South America

treatment purposes. Several sub-projects are devoted to wastewater treatment processes that are commonly found all over the world, such as trickling filters, anaerobic reactors, and wastewater ponds. In addition, some project partners investigate means to improve the treatment, recycling, or disposal of the sewage sludge obtained from wastewater treatment in order to optimize these processes for varying climatic conditions. To this end, they use solar-based methods for drying sewage sludge, for example. Another focus will be placed on the disinfection of the pre-purified effluents in treatment plants for reuse, especially in agriculture. Here, removal of the helminth eggs commonly found in wastewater in developing countries plays a major role.

... all over the world

Under the EXPOVAL project, academic and industrial partners are working together to produce practicable standards that can be applied all around the world. Among others, these will be compiled in a monograph of the German Association for Water, Wastewater, and Waste (DWA) and made available to internationally operating plant suppliers and engineers.

In this way, German know-how and existing technologies for wastewater treatment plants can be deployed more efficiently under the exceptional climatic conditions abroad. EXPOVAL supports suppliers in their efforts to transfer wastewater technologies and accompanying engineering services. At the same time, it will decisively contribute to the protection of worldwide water resources.

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