

## EDITORIAL

The energy transition in Germany aims at increasing the share of renewable energies in electricity consumption to 80 percent until 2050, while the primary energy consumption shall be reduced by 50 percent in comparison to 2008. In addition, greenhouse gas emissions shall be reduced by 80 to 95 percent compared to 1990 until 2050. These ambitious goals can be achieved only by the cooperation of all sectors including the water industry. For several years already, KWB has been working on this goal through a number of research projects. The recently completed OptiWells project has demonstrated that a number of relatively straightforward measures lead to energy savings during well operation of up to 20 percent, and even to 50 percent when particularly aged pumps are replaced (see also page 3 of this newsletter).

The recently launched EU project PowerStep, succeeding the CARISMO project which was placed among the Top 3 of the German Sustainability Award, is coordinated by KWB and shall demonstrate how sewage treatment plants can be converted from energy consumers into energy producers at an industrial scale. The according conversion and extension works have been started at several European wastewater treatment plants ([www.powerstep.eu](http://www.powerstep.eu)).

Since life cycle assessment is an integral component of most of our projects, energy efficiency issues are often on board our research projects. The special significance of the energy issue for the field of water management in the Berlin-Brandenburg region is reflected by a symposium organised by GFZ German Research Centre for Geosciences, Berliner Wasserbetriebe and the Energy Technology Cluster Berlin-Brandenburg and to be held on 15 March 2016. For more information please refer to the events calendar on the last page.

Edith Roßbach, Andreas Hartmann  
*Kompetenzzentrum Wasser Berlin,  
Managing Directors*

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## LATEST NEWS



Photo © BMBF

## GREEN-TALENTS in Berlin

Under the patronage of the Minister of Research, Professor Johanna Wanka, the German Federal Ministry of Education and Research (BMBF) every year honours young researchers with the GREEN TALENTS Award. The competition takes place regularly in the context of the framework programme "Research for Sustainable Development" (FONA) and supports the approach to strengthening international cooperation in the field of sustainability research. From a field of more than 550 applicants received in 2015, a high-ranking jury selected 27 winners who were granted unique access to Germany's research elite and renowned business enterprises during a two-week tour. The delegation visited the Fraunhofer Institute Fokus, the Ecologic Institute, Henkel AG, ThyssenKrupp Steel Europe AG, and on 22 October the Kompetenzzentrum Wasser Berlin. The photo shows the participants during the award ceremony held at the BMBF.

→ [www.greentalents.de](http://www.greentalents.de)

## FLUSSBAD BERLIN

### First phase of practical operation started

*FLUSSBAD BERLIN is a project which aims to transform the intra-urban Spree Canal flowing around the Berlin Museum Island into a swimming area.*

To this end, the non-profit association "FLUSSBAD BERLIN" was founded in 2012. It is dedicated to promoting the project which was initiated by the brothers Jan und Tim Edler in 1997 already. Having turned into a "National Project of Urban Development" in the meantime, the association has been entrusted with the advancement of the project by the Federal Government and the Land Berlin. Without additional treatment of the fluvial water,

*Continues on page 4 >>*

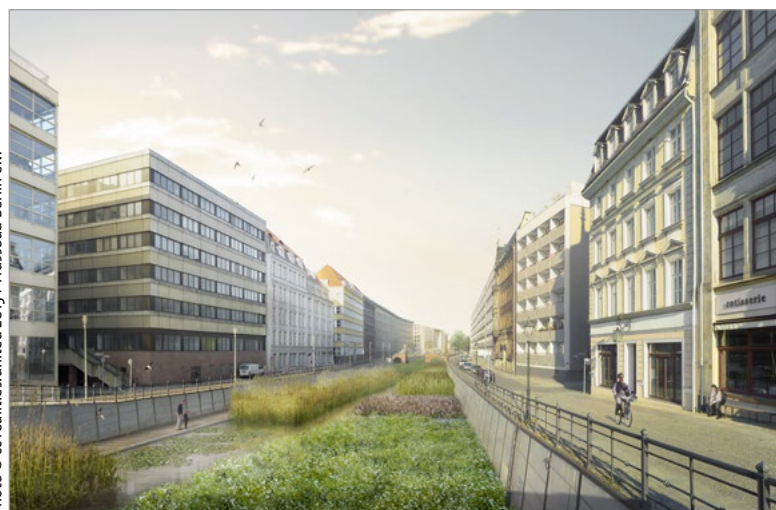


Photo © cc realities:united 2015 / Flussbad Berlin e.V.



# NEW CONCEPTS FOR WASTEWATER TREATMENT PLANTS

INTERVIEW WITH DR. CHRISTIAN LODERER, PROJECT MANAGER OF EU HORIZON2020 PROJECT POWERSTEP COORDINATED BY KWB SINCE SEPTEMBER 2015.

DR. CHRISTIAN LODERER HAS GRADUATED IN ENERGY AND ENVIRONMENTAL MANAGEMENT AS WELL AS CIVIL ENGINEERING. BESIDES HIS SCIENTIFIC BACKGROUND, HE HAS ALSO PROFESSIONAL EXPERIENCE IN INDUSTRIAL BASED RESEARCH AND WORKED IN THE INDUSTRY AS WELL.

Photo © private

*Dear colleague, almost half a year ago you joined our team. Could you give us a brief glimpse of your professional career?*

Since I have always been interested in environmental science, I graduated in the master programme "Energy and Environmental Management" at the University of Applied Sciences Burgenland where I acquired the basic skills in this area. During my studies, I gained a first insight in wastewater treatment, and the topic immediately fascinated me.

At the University of Natural Resources and Life Sciences, Vienna (BOKU), I studied "Water Management and Environment" and specialised in Civil Engineering. As a research assistant at the Institute for Sanitary Engineering and Water Pollution Control (SIG) I participated in various projects. After graduation, I got a PhD position at the Institute for Environmental Biotechnology (BOKU). In the scope of an EU-funded project for which I took over the project management, I wrote my thesis on "Dynamic filtration - An innovative process for sludge removal in activated sludge processes". But I wanted not only to work in a scientific context and was keen to learn about economic aspects. I got the chance to combine the position of a sales engineer and team member of the research department of a business company, so I acquired useful knowledge about sales and new product development. The idea of working abroad has always appealed to me, and my scientific stays in foreign countries proved to me how important it is to look beyond one's own nose. A colleague called my attention to KWB's job advertisement. I did not hesitate for a long time and took the chance to apply for the position. I am indeed very happy about the fact that I got this position which allows me to contribute to finding solutions in the field of environmental protection.

*You now coordinate the joint project PowerStep. What are the particular highlights and goals of this project?*

The global expansion of power plants generating electricity from renewable energy sources underlines that the idea of sustainability has become established as a key principle. However, also other potential producers of renewable energy should be considered in this respect. In this context, I would like to specifically address municipal wastewater treatment plants. At present, WWTPs are counted among the biggest electricity consumers of many municipalities, although it is entirely possible to design and operate treatment plants in such a way that they become energy-positive instead of consuming any electricity. This is exactly what the project is looking for: It is an attempt to achieve the economic competitiveness of energy positive wastewater treatment plants through the appropriate combination of existing and novel technologies and integration of new schemes. In the scope of the PowerStep project we are pursuing this goal together with 15 European partners from industry and research.

PowerStep is a demonstration project which is very exciting indeed. Large scale tests of innovative treatment technologies and various schemes are being carried out as "case studies" at 6 different WWTPs throughout Europe to demonstrate that those plants will have to be considered as local energy suppliers for the future. Briefly speaking: Science and practice at their best, and this even on a large scale!

*The project has been running for almost half a year now - Are there any results already?*

Usually, the first phase of such a large project is dedicated to becoming acquainted with the project's properties and with

the people working for it. At the moment, the transnational working groups are dealing with the design and construction of the demonstration plants most of which are supposed to go into operation in mid-2016. The construction of the plants in Sweden and Denmark has been finalised and the pilot operation will soon be started. The planning phase of other demonstration plants is nearing completion. All project activities can be observed on our homepage [www.powerstep.eu](http://www.powerstep.eu).

*You are highly committed to Austria's IWA National Committee. Are there any points of contact to the German partner organisation?*

It is important to me to draw the public attention to the issues of urban water management and to disseminate the sector's activities. To this end, the International Water Association (IWA) network is very helpful. Being the Western Europe representative of IWA Young Water Professionals and member of the Austrian IWA National Committee, I regularly publish a newsletter and organise various events in Austria but also in neighbouring countries. With regard to the events in particular, there are indeed points of contact with the German colleagues. Currently we are planning a joint workshop for YWP at IFAT 2016 on the subject "Career and networking".

*The mandatory personal question: You have moved from Vienna to Berlin. Do you already feel a bit like at home?*

For the short time I have been living here, I have got a number of first impressions of Berlin: It is a very exciting city where you can discover something new every day. ●

*Thank you very much for this interview. Bodo Weigert asked the questions*



## WATER RESEARCH IN BERLIN AND BRANDENBURG

Photo © KWB



### OPT WELLS

#### Tools for energy efficient well field operation

*In the scope of the 3-year project OptiWells both generally transferable and case-specific approaches to the energetic optimisation of individual wells and entire well fields were developed.*

The results obtained to date at three well fields in Germany and France indicate that optimised well operation reduces energy consumption by 20%. The supplementary replacement of particularly aged pumps increases the savings even up to 50%. A newly developed pump database comprising the relevant facts of submersible pumps of different manufacturers can be used for the selection of suitable pumps. The Technische Universität Berlin has carried out pump audits and developed a decision tree to assess the feasibility of frequency converters as energy saving tool for submersible pumps. To carry out the optimisation modelling, the data of the pumping tests collected during the audits and operators' network data were used. A simultaneously tested data-based approach has yielded energy consumption forecasts with a similar accuracy. Upon request, KWB can offer such energy consumption forecasts for interested water utilities. The project was sponsored by Veolia.

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#### Investigation of decentralised treatment schemes for roadway runoffs

*A great deal of surface water pollution in Germany is due to the diffuse source contaminants, in particular untreated roadway runoffs. Decentralised treatment schemes can contribute to reducing this problem.*

As part of a project funded in the Umweltentlastungsprogramm of the Land Berlin (UEP) and managed by the Technische Universität Berlin, several available systems were examined both in real operation and on a test site. The retention degree of the tested systems measured in situ was between 15% and 57% depending on the materials and systems investigated. During test operation, the schemes tended to achieve higher retention values than in real operation. The retrofitting of the wet gullies with a long coarse bucket may already be an inexpensive and effective solution for the retention of organic matter and larger particles. With regard to their eco-efficiency, decentralised treatment systems fall short of centralised soil filters or simple coarse material buckets due to the retention values measured in-situ. For targeted use however, they are significantly better than centralised stormwater reservoirs. The test site at the TU Berlin is available for further investigations.

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Senatsverwaltung  
für Stadtentwicklung  
und Umwelt

berlin Berlin



Photo © KWB



Photo © Abwasserverband Braunschweig

Umwelt  
Bundesamt

#### Treated wastewater in agricultural irrigation

*Despite climate change, water supply in Germany is considered safe. Nevertheless, regional conflicts during extended periods of drought cannot be excluded.*

Against this background, the German Adaptation Strategy states that the reuse of treated wastewater is a potential measure for coping with possible regional water stress.

The project is financed by UBA Umweltbundesamt (German Environment Agency) in the scope of the Environment Research Programme (UFOPLAN) of the German Federal Ministry of Environment (BMBF). It aims at conducting a risk and benefit analysis of water reuse in agriculture on the basis of a literature review and the merge of existing information. With the priority on aspects of human health, the analysis includes both quantitative aspects and requirements concerning the water quality of irrigation water. The project is managed by KWB and carried out in cooperation with Technische Universität Darmstadt, The University of Applied Sciences and Arts Northwestern Switzerland (FHNW) and the Leibniz Centre for Agricultural Landscape Research (ZALF). The results are available now and will be published shortly by the Umweltbundesamt (UBA).

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>> continuation of page 1 (Flussbad Berlin)

swimming in the urban course of the River Spree is dangerous to health. The water pollution is in particular due to the combined sewer overflows occurring during stormwater events in the Berlin downtown area. To actually obtain bathing water quality in the respective area between the Department of Foreign Affairs and Bode Museum, the river water has to be treated. To hit this target, FLUSSBAD BERLIN is pursuing the idea of installing plant filters along the Friedrich Canal. Currently a consortium of Berlin engineers and scientists is working on the design of a pilot filtration scheme on site. The aim is to identify the necessary capacity and performance of a filtration system to be installed later on on a permanent basis. For this purpose, the water quality related sensory data recorded before and after the filtration, have to be collected and fed into a database. Ingenieurgesellschaft Pecher&Partner mbH, AKUT Umweltschutz Ingenieure Burkard und Partner and Kompetenzzentrum Wasser Berlin are involved in the project work. Ingenieurgesellschaft Prof. Sieker mbH is responsible for the technical advice of the project. ●

→ [www.flussbad-berlin.de](http://www.flussbad-berlin.de)

## FOCUS

**Reference book on current drinking water issues**  
(in German)

*Edited by Dr. Hermann H. Dieter, Director and Professor, retired (Umweltbundesamt), biologist and toxicologist, Trebbin; Dr. Ingrid Chorus, Biologist, Umweltbundesamt, Berlin; Dr.-Ing. Wolfgang Krüger, Chemist, Berlin; Dr. Birgit Mendel, Biologist. 2015, ISBN 978-3-503-14103-6 Wuppertal*



Renowned experts explain in detail the legal, practical and technical requirements for the production, distribution and rating of safe drinking water considering also the protection of drinking water resources. The book contains all essential legal, procedural and technical principles completed by a wealth of useful information providing support for both authorities and operators who are responsible for the surveillance and control of drinking water quality. Being a loose-leaf edition, the book is continually updated and thus an excellent source

## EVENTS

**Meet us at the following upcoming events:**

2-4 March 2016

**49. ESSENER TAGUNG für Wasser- und Abfallwirtschaft "Wasserwirtschaft 4.0"**

Organiser: ISA Aachen

Venue: Essen, Germany

→ [www.essenertagung.de/index.php/de](http://www.essenertagung.de/index.php/de)

15 March 2016

**Water & Energy in the Berlin-Brandenburg metropolitan region**

Organiser: Deutsches GeoForschungs-Zentrum GFZ, Berliner Wasserbetriebe und Cluster Energietechnik Berlin-Brandenburg

Venue: Harnack-Haus of Max-Planck-Gesellschaft, Berlin, Germany

→ [www.berlin-partner.de/services/technologie-services/wissens-und-technologietransfer](http://www.berlin-partner.de/services/technologie-services/wissens-und-technologietransfer)

20-21 April 2016

**Abschlusskonferenz „Intelligente und multifunktionelle Infrastruktursysteme für eine zukunftsfähige Wasserversorgung und Abwasserentsorgung (INIS)“**

Organiser: BMBF | Venue: ESMT Berlin

→ [www.bmbf.nawam-inis.de/de/veranstaltungen/inis-abschlusskonferenz](http://www.bmbf.nawam-inis.de/de/veranstaltungen/inis-abschlusskonferenz)

28 April 2016

**6. Kommunalen Erfahrungsaustausch Regenwasserbehandlung in der Praxis**

Organiser: SAMUWA (BMBF)

Venue: Gelsenkirchen, Germany

2-5 May 2016

**Jahrestagung Wasserchemische**

**Gesellschaft** | Venue: Bamberg, Germany

→ [www.wasserchemische-gesellschaft.de/de/wasser-2016](http://www.wasserchemische-gesellschaft.de/de/wasser-2016)

12.-14. May 2016

**8<sup>th</sup> Eastern European Young Water Professionals Conference**

Organiser: IWA | Venue: Gdansk, Poland

→ <http://iwa-ywp.eu>

23-24 May 2016

**12. Berlin-Brandenburger Brunnentage**

Organiser: pigadi GmbH | Venue: Potsdam

30 May – 2 June 2016

**IFAT**

Venue: München | → [www.ifat.de](http://www.ifat.de)

of relevant technical information to be used by water supply companies, surveillance authorities, laboratories, industry and all institutions entrusted with drinking water issues. ●

→ [www.TRINKWASSERAKTUELLdigital.de](http://www.TRINKWASSERAKTUELLdigital.de)

6-7 June 2016

**IWA Workshop on Strategic Asset Management**

Organiser: IWA | Venue: Straßburg, France

→ <https://iwasams.wordpress.com>

13-16 June 2016

**13<sup>th</sup> IWA Leading Edge Conference on Water and Wastewater Technologies (LET2016)**

Organiser: IWA

Venue: Jerez de la Frontera, Spain

→ [www.let2016.org](http://www.let2016.org)

20-24 June 2016

**9<sup>th</sup> International Symposium on Managed Aquifer Recharge (ISMARg)**

Organiser: IAHR and Andere

Venue: Mexico City | → [www.ismarg.org](http://www.ismarg.org)

27-30 June 2016

**3<sup>rd</sup> IWA Specialized International Conference "Ecotechnologies for Wastewater Treatment" (ecoSTP2016)**

Organiser: IWA | Venue: Cambridge, UK

→ [www.ecostp2016.com](http://www.ecostp2016.com)

28 June – 1 July 2016

**9<sup>th</sup> Internat. NOVATECH Conference 2016**

Organiser: GRAIE | Venue: Lyon, France

→ [www.novatech.graie.org/a\\_index.php](http://www.novatech.graie.org/a_index.php)

31 August – 2 September 2016

**8<sup>th</sup> International Conference on Sewer Processes & Network**

Organiser: Sewer Systems & Processes

Working Group of the IWA-IAHR

Venue: Rotterdam, Netherlands

→ [www.spn8.nl](http://www.spn8.nl)

12-16 September 2016

**8<sup>th</sup> International Phosphorus Workshop (IPW8) in Rostock**

Organiser: Leibniz ScienceCampus

Phosphorus Research Rostock

Venue: Rostock, Germany

[www.sciencecampus-rostock.de/ipw8-home.html](http://www.sciencecampus-rostock.de/ipw8-home.html)

## about us

The Berlin Centre of Competence for Water (Kompetenzzentrum Wasser Berlin, KWB) is a public-private partnership company. Its associates are the Technologiestiftung Berlin, the Berliner Wasserbetriebe, the Berlinwasser Holding and Veolia. Through its network activities, the KWB strengthens Berlin's position as an international centre in the field of water economy and technology. Partners and actors are scientific facilities, public institutions, companies as well as multipliers from public and private sectors.

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