Recognition Award for Eawag and Kloten/Opfikon Water Treatment Plant

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Working together with the Kloten/Opfikon water treatment plant, Eawag researchers have developed a means of producing fertilizer from wastewater, and thereby saving energy and raw materials. As one of three projects nominated for the Swiss Environmental Prize, this innovative project was honoured at the awards ceremony on Tuesday, January 17, 2012 with a special recognition award. The Environmental Prize went to Neurobat AG for its work in developing an intelligent HVAC controller.

The Swiss Environmental Prize's sponsor, the Pro Aqua – Pro Vita Foundation, awarded the 50,000 Swiss francs main prize for product-oriented technological innovations in the area of environmental sustainability to Neurobat AG. From among 68 project entries in the category "Innovation", the jury selected the joint project entered by Kloten/Opfikon Water Treatment and Eawag as one of the three finalists for main prize.

First time Industrial Scale Implementation

Carried out at the Kloten/Opfikon water treatment facility in the Canton of Zurich, the project represents the first industrial-scale implementation in Switzerland of the technical process known as nitrogen stripping. In this process, valuable nitrogen is recovered from wastewater and processed into fertilizer for agricultural purposes. The stripping process itself involves the use of air to remove and capture gaseous elements such as nitrogen from liquids. At the Kloten/Opfikon plant, around 90 per cent of the nitrogen contained in the wastewater is recovered. The efficient recycling of the nutrient into fertilizer, instead of its release into the air, represents a near closure of the nitrogen cycle. In other words, nitrogen is conserved as a resource and not allowed to become an environmental problem. The process eases conventional nitrogen elimination at the water treatment plant and helps to save energy. Moreover, thanks to a long-term agreement reached with a supplier of fertilizer, the recovered nitrogen generates revenue for Kloten/Opfikon Water Treatment.

CO2-Pre-treatment: an Eawag Discovery

An especially innovative aspect of the award-winning project is that CO2 is removed before the nitrogen is separated from the wastewater – also using stripping. The pH value of the wastewater is thus raised, so that only about half the usual amount of alkaline substance needed to separate out the nitrogen needs to be added. This saves resources and energy, thus increasing efficiency. This pre-treatment process was developed by Eawag.

Early experiments show that the facility can also be used to treat separately collected urine. In addition to nitrogen, urine contains valuable phosphorous, which can also be recycled in a separate process and marketed as fertilizer. Given that phosphorous has become a scarce raw material, methods of phosphorous recycling, as well as the separate collection of urine, can be expected to take on greater significance in the future.

Owing to the highly innovative content of the project and its technological sustainability, Zurich's cantonal Office of Waste, Water, Energy and Air has provided considerable financial support. In the spring of 2011 the project was awarded the Climate Prize of the Zurich Financial Services Group.

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