

SMARTGrid



SMART utilisation of the energy in wastewater – flexible consumption of electricity

SMARTGrid is a future add-on service to the STAR Utility Solutions™ for wastewater treatment plants that will allow the plant to achieve further savings on the energy consumption in connection with the buying and selling of electricity. In brief, the module postpones the electricity consumption at the plant to periods where electricity can be bought at the lowest cost and the production only takes place when the price of electricity is high.

The aim of the development of the **SMARTGrid** is to contribute to Denmark's goal of being free of fossil fuels by 2050, with more green fluctuating energy sources, such as wind and sun, which requires a quick switch-over of the energy system and thus flexible, SMART consumers.

The **SMARTGrid** is based on the latest knowledge for predictive modelling of sewer systems and wastewater treatment plants for which the prioritisation is continuously calibrated on the basis of actual conditions with regard to the wastewater treatment plant performance, the current weather forecasts and updated price prognosis for electricity.

Advantages of SMARTGrid

- Electricity consumption when the price is low
- Electricity production when the price is high
- Improved economy when buying and selling electricity
- Better CO₂ balance
- Compatible with other control modules in STAR Utility Solutions™
- High degree of safety which always complies with effluent quality standards
- Easy and understandable user interface with the possibility of prioritizing the extent of the SMARTGrid forecast.
- Little or no investment required in new online sensors



Case: Kolding Central WWTP, Denmark

This new add-on service will be tested at Kolding Central Wastewater Treatment Plant where the **SMARTGrid** demonstration project is implemented in an existing STAR Utility Solutions™. The development project will be completed during 2015, and it is expected that the **SMARTGrid** will be the first of its kind in the world.

The challenge of the development project is that a wastewater treatment plant has only limited possibilities for determining the amount and composition of the raw material (wastewater) that will enter into the production (clear water). In other words, there is a degree of flexibility that cannot be stretched too far, since it could otherwise have negative consequences for the local aquatic environment. The expectation for this project is the development of software solutions that ensure the greatest possible utilisation flexibility.

After the implementation of the Kolding project, the STAR Utility Solutions™ is expected to be the first software product in the world that through intelligent, iterative, real-time optimising processes can optimise electricity consumption and electricity production at wastewater treatment plants and in the network, in relation to the balance of the electricity grid and the quality of the treated wastewater.

The first version of the **SMARTGrid** for the STAR Utility Solutions™ system is expected to be launched on the market in 2015.

Achievements:

- Savings on charges for electricity
- Optimized electricity consumption

**For further information,
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