



Texel Island: Solar PV and storage for waste water management installation

Short Description

The purpose of the Texel LOGiC pilot project is to match supply and demand in balance for a decentralised renewable energy hybrid system (DHES) as well as to distribute the generated energy on the existing network.

About the implementation partners

Hoogheemraadschap Hollands Noorderkwartier ([HHNK](#)) is one of the 22 waterboards in the Netherlands and is responsible for the water safety in the Northern part of the province North-Holland. HHNK is the local Dutch water authority of Texel and the biggest energy consumer of the island. To achieve our own sustainability goals and help the island Texel with theirs, HHNK and three other partners are working together on the Energy project Texel. The three other partners are:

- ❖ [Municipality of Texel](#): The municipality is coordinating and stimulating renewable energy projects since many years.
- ❖ [Texel Energie](#): This partner is the local energy supplies of Texel and has a permit to build the solar panel park.
- ❖ [Liander](#): this is the energy network operator of Texel.

The Challenge

The purpose of the project is to find out how the energy use of the water management installation can be altered within the acceptable levels of risk management. It means to adapt the use of energy to periods in which renewable energy is available. For this a model is required to be able to monitor and control the water/energy system.

The project addresses two challenges:

- ❖ Supply and demand in balance
- ❖ Distribution of the generated energy on the existing network

Renewables-based decentral hybrid energy system (DHES)

Two PV parks will be built on the waste water treatment plant Evertsekoog, from which HHNK will generate its own energy consumption (1.6 MW).

Three low-carbon technologies are combined: energy storage by storage in water level (kW eq. to be determined in the project), small scale battery storage for peak shaving (budgeted at max 100kW) and PV energy. The project builds on three underlying ideas

- ❖ **The water system as an electricity buffer:** this technique was pioneered by the Engineer Lievense in 1981. The technique describes the use of water as an electricity buffer in elevated land. When there is a surplus of electricity the water is pumped towards a higher level. When there is an energy shortage the water will fall towards lower level by gravity generating energy.

In the Dutch polder landscape we will use the margin in water level (10-30cm). When there is a surplus of energy pump water and when there is scarcity of water, switch pumps off.

- ❖ **The energy market:** The energy market has three common information sources 1) OTC 2) APX 3) within a day. These source provides information of when there is a huge amount of electricity available and when there is not. This information will be used to maintain the water levels on Texel within the risks
- ❖ **Watermodel:** On Texel we have all important pumping stations, weirs and locks automated and communicating with a central placed computer. We want to bind this existing model with the model predictive controle. By using weather forecast and the precipitation drainage model we know how much water we need to pump. This output will be send to AGRO energy and they tell us what the best moment is to pump the water.

Project Financing and Costs

The solar panels will be placed by Texel Energie and distributed to the local water installations by Liander. The total project cost is €3.000.00 of which €360.000 comes from [Interreg North-West Europe](#) via the Low Carbon Off-grid Communities (LOGiC) project.

Expected Project Outcome

It is planned that up to 80% of the current energy demand will come from renewable energy (1.280.000 kWh annual). Energy not used for water management will be made available to meet other demand on Texel Island.

Contact information

Klaas Jan de Hart

Manager - Peilbeheer

kj.dehart@hhnk.nl

www.hhnk.nl

