Interreg
North-West Europe

Co-funded by the European Union

Energy transition

ResNRJwater



Emergency power and an energy management system for an urban wastewater treatment plant, DE

Energy Source:
Solar power & digester gas

Energy Storage & management:
To be defined

Energy Use:
Power for water and wastewater sector / peak shaving for grid stability

Context

Wastewater treatment plants (WWTPs) are energy-intensive facilities that face pressure from rising energy costs and the ongoing energy crisis. At the same time, operators also need to get ready for possible power outages and make sure their on-site energy supply is reliable.

Specific problem

Electricity generation from **Combined Heat and Power (CHP)** and **solar plants** is partly mismatched with consumption profiles of WWTPs. **Limited storage capacity** leads to inefficient use of self-generated power, continued grid dependency, and lack of resilience during public grid outages.

Idea

The project implements an **integrated energy system** combining **CHP-based power generation, solar power**, and **battery storage** with **smart control**. This system is aimed at maximising self-consumption while enabling peak shaving and ensuring reliable plant operation during grid disruptions.

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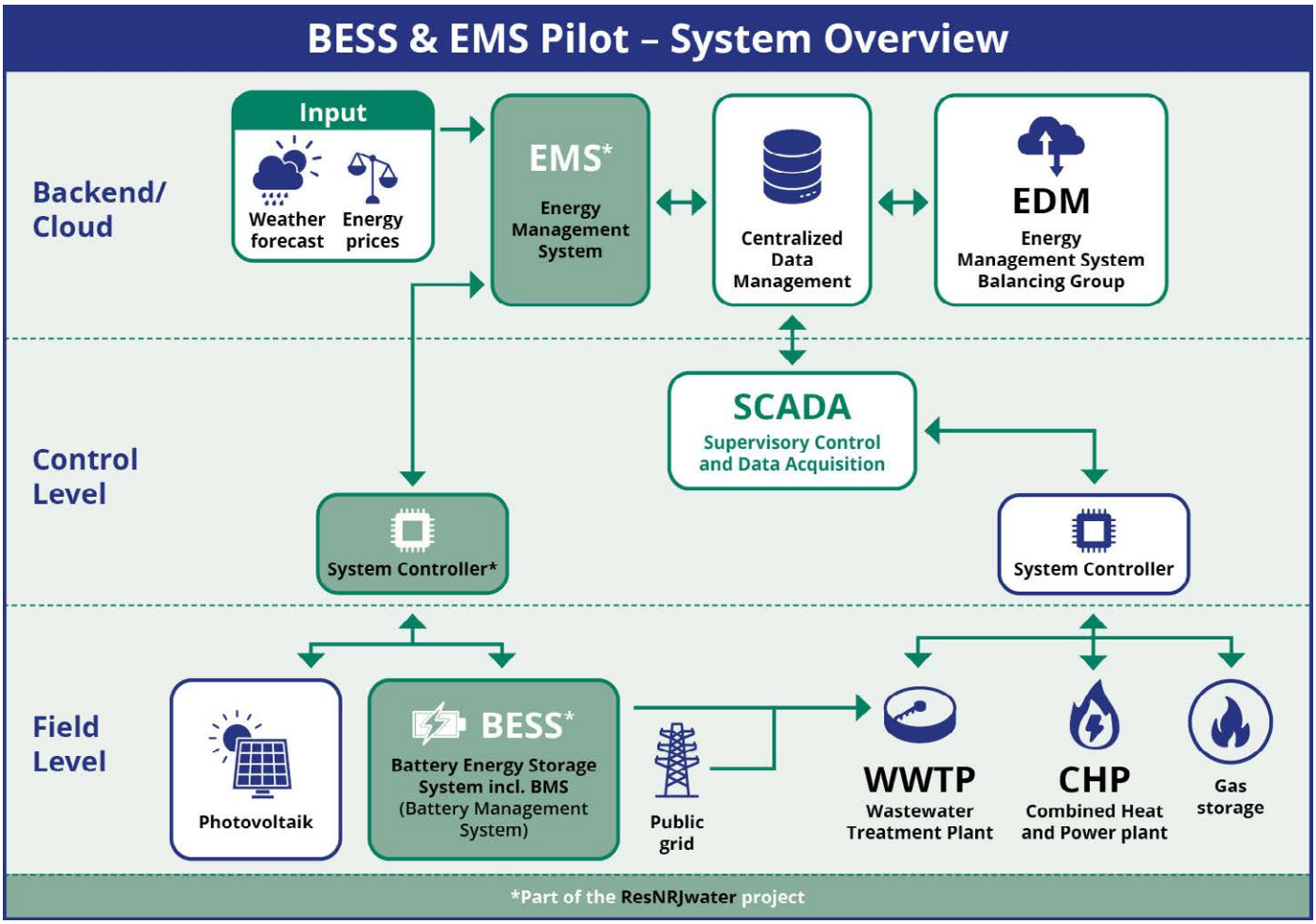
Solution

Pilot location:
Lippeverband WWTP Dorsten, DE

Energy saving:
n.a.

Produced energy:
n.a.

Reduced grid feed in:
To be defined



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How it works

A **Battery System** (yet to be defined) that is coordinated by an energy management system enables to **store self-generated electricity** when it is not needed on-site. The electricity is generated by **digestor gas converted in a CHP unit** and **complemented by solar PV.** This system optimises load profiles through peak shaving and self-consumption strategies.

If excess electricity cannot be used or stored, it can be fed into the **grid,** allocated to a **balancing group,** or sold on the market. In case of public grid failure, the system is designed to provide **backup power** in order to maintain wastewater treatment operations.

Benefit

Reduces energy costs and **grid dependency** while **making the energy supply more secure. Enhances operational resilience** through optimized self-consumption and reliable backup power.

Responsable for investment:

EGLV
Lippeverband

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