FLEXharvester by VITO / EnergyVille

STORM

DISTRICT ENERGY CONTROLLER

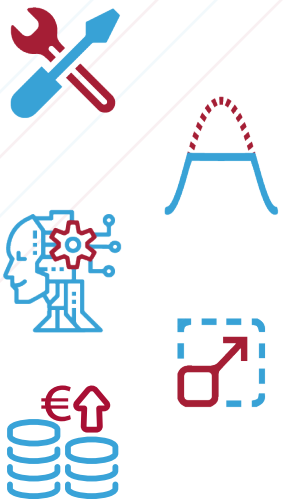
Digitalization for district heating

PEAK SHAVING PILOT V1.0

For operators of district heating networks who are looking for a small-scale implementation of intelligent control to prove its feasibility, FLEXharvester STORM Pilot provides demand side management customized to your business objectives via heat load peak shaving, quickly and without making long-term commitments.

FEATURES

- **Free compatibility check**: Free of charge scan of the compatibility of your network with FLEXharvester STORM
- **Peak shaving**: Heat demand is shaved or shifted from peak times to off-peak times when cheaper sustainable energy is available without loss of comfort
- **Autonomous**: Self-learning and adaptive algorithms ensure that there is no need for expert intervention in order to reconfigure and adjust
- **Truly scalable**: Can connect to large and small heat networks, with connections to few or many buildings. Can easily scale to multiple heat networks.
- **Easy integration**: Can easily be integrated with substations of several leading brands
- **Quick execution**: Pilot project concluded in one heating season with detailed analysis of results
- **Savings calculation**: Includes high level benefits calculation according to your business-case



FOR WHOM?

- **District heating network operators and owners**
- **Administrations of cities with district heating networks**

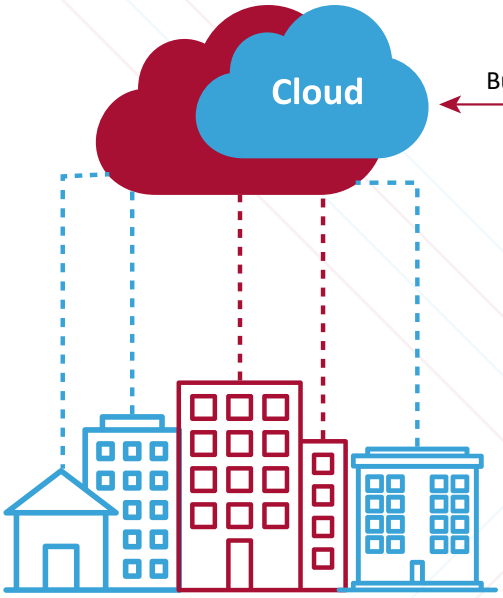
FLEXHARVESTER STORM BRINGS YOU:

- Production mix optimization (peak vs base)
- Large Heat Pump electricity market interaction optimization
- CHP electricity market interaction optimization
- Extra heat consumers with existing production assets and infrastructure, for networks that are at the limit of connecting heat consumers
- Renewable energy sources integration improvement
- CO_2 reduction

FACTS & FIGURES

- Reduction in peak heat demand **17,3%**
- Reduction in CO_2 emissions **11,2 kilo Tons/year**
- Potential increase in capacity of **42,1%** enabling **48.000** additional homes

- Reduction in peak heat demand **12,7%**
- Reduction in CO_2 emissions **10,8 kilo Tons/year**
- Reduction in power procurement costs of **6%**



Multiple buildings connected to the STORM Controller running in the cloud

IoT hardware installed in each building for two-way wireless data communication with the cloud

WHAT DO YOU GET AND HOW DO YOU GET IT? WHAT'S IN THE PACKAGE?

SOFTWARE

- Access for the duration of the project (typically one winter season) to an own instance of VITO's FLEXHarvester cloud platform on which the STORM Controller is running.
- Individual user accounts on the User Interface for all team members to monitor system performance and operations.

HARDWARE

- IoT gateway for each connected building in case direct connection to the building management system (BMS) is not possible via an API
- As and when required: Modem, additional sensors, wiring, switches, mounting systems, etc.

SERVICES

- On-site hardware installation and configuration by our technicians
- Remote configuration and management of the STORM Controller by our expert staff

TRAINING

- There is no training foreseen in the STORM Pilot: the system runs completely on its own.

DOCUMENTATION

- A user manual explaining how to use the UI and configure the heat network.

SLA

We make a distinction between the different solution layers:

SLA FOR THE INFRASTRUCTURE LAYER:

- Since FLEXHarvester/STORM Controller is hosted on the Microsoft Azure platform, and as VITO uses this platform both as IaaS and PaaS, VITO refers to the SLA's that Microsoft provides: https://azure.microsoft.com/en-us/support/legal/sla/
- Azure offers also different levels of Replication Service for storage and services. In the standard scenario VITO has chosen for **Local redundancy**. The other options (zone-redundant storage, geo-redundant storage and read-access geo-redundant) are available at an additional cost.
- Some of the used services with the SLA are listed below.

IoT Hub	99.9%
Azure Functions	99.95%
Azure Data Lake Gen 2	99.9% or greater
API Management	99.95% for Consumption Tier, Basic Tier, Standard Tier, and Premium Tier
Azure Kubernetes Service (AKS)	99,9% to 99,95%

SLA FOR THE APPLICATION LAYER:

- On the application layer VITO provides a Best Effort Support during working hours (Mon – Fri, between 9.00 and 17.00 h, phone/mail)

SLA FOR THE HARDWARE LAYER:

- On the hardware layer VITO provides a Best Effort Support during working hours (Mon – Fri, between 9.00 and 17.00 h, phone/mail).
  Standard warranty from the manufacturer.
  Breakdown replacement after consultation.
  More specific provisions can be agreed upon with local service company.

Prerequisites

If one (or more) of these questions gets a **'YES'** as an answer, then the district heating network is a good candidate to explore for STORM District Energy Controller benefits:

- Do I explore to implement **thermal storage** on my district heating network?
- Do I want to decrease the number of operational hours of the peak boilers, or do I want to **optimize the energy mix** in the central heating production facility?
- Does the network heating production encompasses **CHP or heat pump**?
- Are there buildings with issues on comfort that could be due to **capacity problems on the network or in the substation(s)**?
- Do you consider an **extension(s)** of the network?
- Do I have **large heat consumers** present in my network (e.g. hospitals, schools, large buildings,…)?
- Do I have **two-way data** access to the heating substations of the buildings?

Contact us for a free of charge STORM compatibility check, we need the results for our assessment.

References/Testimonials

"In order to remain competitive against alternative heating sources at the market, it is very important for us to keep our production costs down. The RME (bio-oil) consumption is an important key factor for us to impact, as we now, thanks to the STORM-project can influence even further. Despite the fact that RME is a fossil-free fuel, it feels both more sustainable and resource-efficient to be able to deliver heat, made of residues from the surrounding forests."

Peter Philipsson, Section manager operational support, Rottne production plant
www.veab.se

"Through the STORM project we have been able to deliver our contribution to the development of the self-learning STORM controller. Implementing this controller in the operating system of our highly innovative 5G DHC system has led to such promising results in the areas of Peak Shaving (17.3%) and Cell Balancing (42.1%), that – due to these combined features – the capacity of our network can be enlarged with 52%. This potential of the controller gives Mijnwater the possibility to connect more buildings and companies to the same system, which will lead to significantly more positive business results. It is our intention -even after the STORM project has ended- to continue working on the development of the controller in the future, since we see a lot of potential when residual energy flows and thermal buffing also can be incorporated in the controller-model in order to achieve total and integrated energy management within the build environment."

Ed Smulders, Technical Manager
www.mijnwater.com

Contact

For a price request or additional info

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STORM-website: https://stormcontroller.eu/en
FLEXharvester website: www.flexharvester.com
Microsoft Commercial marketplace / AppSource: search on STORM or FLEXharvester