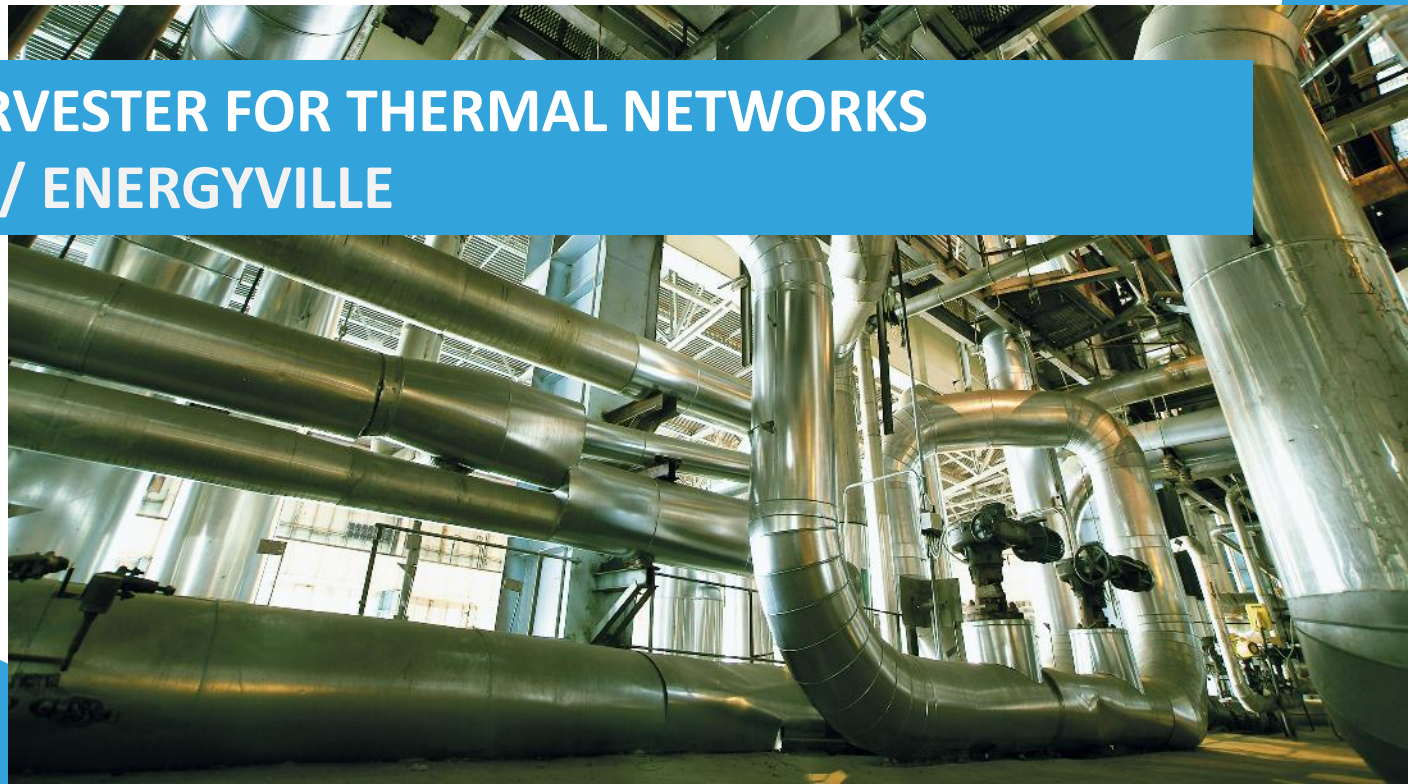
FLEX harvester

by VITO / EnergyVille

FLEXHARVESTER FOR THERMAL NETWORKS BY VITO / ENERGYVILLE



The number of private and public thermal networks will grow to a market of 175 Billion euro by 2027.

Fortune Business Insights (https://www.fortunebusinessinsights.com/industry-reports/district-heating-market-100097)

Collective heat production allows in an economic way the implementation of more renewable heat production. It is one of the solutions that helps address our climate challenge

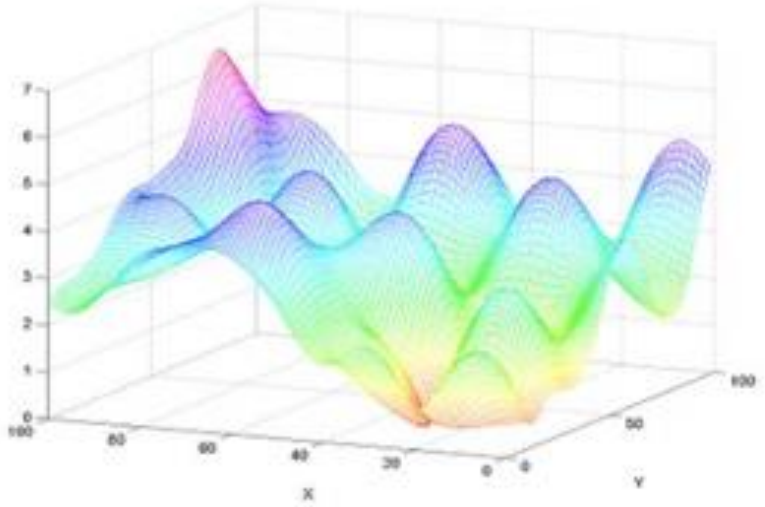
More return can be realized **by managing in an intelligent way the balance** between heat production, consumption and storage and to make use of the present **storage capacity** in communities and cities.

The more renewable sources can be utilized the **lower the total emission** and production costs.
Reducing peaks and shifting production is the way forward to tackle our climate challenge.

PEAKS IN A HEAT NETWORK IMPACT THE PROFIT

Peak production is the most expensive energy cost in operating a heat network. Heat network operators need to have multiple standby heat production installations to cover this instant heat demand.

By combining historic information on heat demand with the buffer capacity of buildings itself and with an adequate weather forecast, heating consumption can be shifted in time per building to reduce those peaks and in the mean time keep the same comfort level for every habitant. The result of avoiding peaks is a reduction in capex investment on the number of standby heat production installations and the optimal use of existing production capacity which also lowers the production cost.



Uses the untapped storage capacity of every building

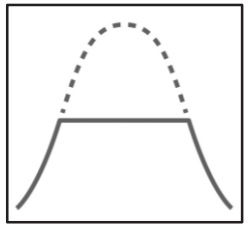
Easy applicable on every new or existing building, district and city heat network.

Reduce the heat production cost up to 15% without loss of comfort for the inhabitants.

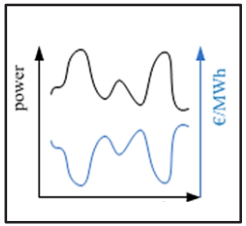
STORM DISTRICT ENERGY CONTROLLER

A VITO/EnergyVille developed artificial intelligence making use of the thermal mass of buildings for flexibility management and demand response in heating networks.
The outdoor temperature sensor steers in a smart way the interaction between production, the network and the building, resulting in:

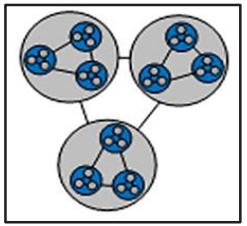
- **Production mix cost reduction** (peak vs base, CHP, heat pump)
- **Extension of connected customers** potential without investment in production and backbone infrastructure for networks that are at the limit of their capability
- **CO2 emission reduction**



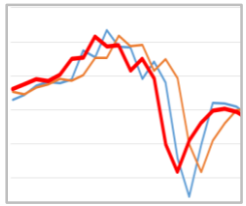
Peak shaving



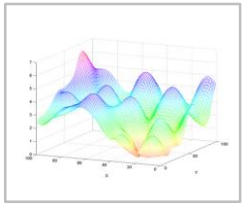
Electricity market interaction



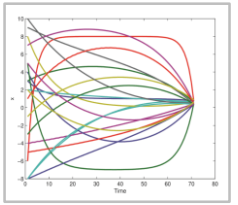
Custom control objectives



Forecasting

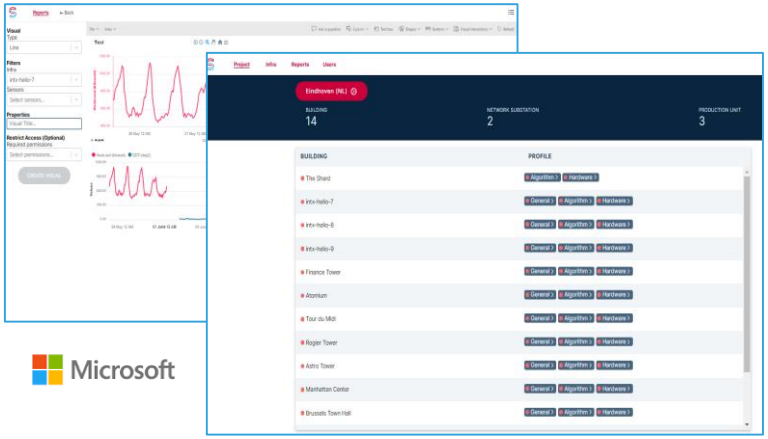


Day ahead scheduling & optimization



Real time tracking & optimization

FLEXharvester by VITO/EnergyVille



FLEXharvester for Thermal Networks

The **FLEXharvester** software components allow integrators, network operators, building management system providers and real estate companies to **enhance** their project **right away** with the **STORM District Energy Controller** for flexibility management and demand response capabilities.

A ready to use ARM template supporting easy configuration of sensors, network, buildings, data lake, dashboards and algorithms.

With the **FLEXharvester** ARM template you easily install the total suite of software components on your Microsoft Azure subscription. Using our template, solution providers reduce the implementation time in the field. Our open connection philosophy on every component allows also integration with any other technology or customization.

Ongoing support and feature development by a renowned Energy Research organization

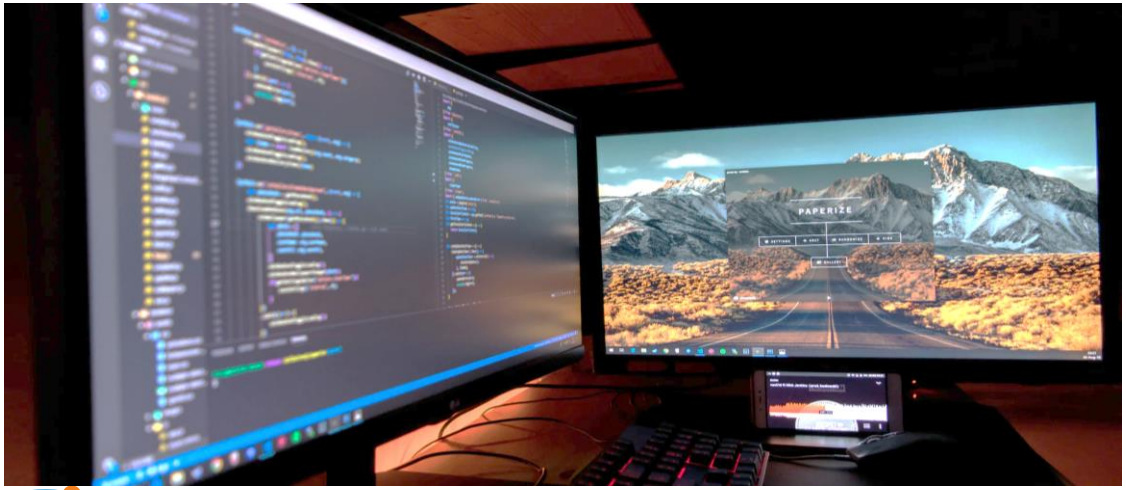
FLEXharvester is a spearhead technology in VITO/EnergyVille's District Heating and Cooling roadmap for at least 5 to 10 upcoming years. A continuous stream of new features will fuel your innovation and make it future proof. EnergyVille's extensive field tests of all components de-risks your development

Using Microsoft products like IOT Hub, Power BI and Devops, the STORM District Energy Controller can be deployed as a solution to a wide network of Microsoft Partners.

Microsoft Partners will tune **FLEXharvester** to your and your customers' needs, apply the FLEXharvester application **STORM District Energy Controller**'s control objectives that maximize the net return for every specific thermal network, and enhance your customer interaction experience.

VITO - ENERGYVILLE'S FLEXHARVESTER PLATFORM BUILDS ON MICROSOFT IOT HUB , MICROSOFT AZURE AND MICROSOFT POWER BI

Built with the Microsoft Azure ARM template concept, the platform integrates the ongoing research developments in demand response applications of thermal networks. It enables Microsoft Solution Providers worldwide to understand, integrate and deploy energy flexibility solutions based on Microsoft apps and platforms.



A Microsoft Azure PAAS solution

The platform can grow building by building. No worry on capacity and performance. Microsoft Azure platform and management portals monitor the needed capacity. You start small and grow along with your Smart City project.

Easy interact with any certified Microsoft IOT Hub device and Microsoft Edge

Microsoft IOT Hub allows you to connect our application virtual with a broad range of connected gateways and sensors. The IOT hub provides security, authentication , communication and manageability between buildings and the **FLEXharvester** asset database and log service.

Build your own dashboard with Microsoft Power BI in no time

Microsoft Power BI model makes the visualization of building and heat network data easy. You can create memorable personalized reports or dashboard on impact and savings thanks to the **FLEXharvester** application.

Understandable repository structure and manage application life cycle with Microsoft Devops

Azure DevOps influences the application lifecycle throughout the planning ,development, delivery and operational phases. With **FLEXharvester** we deliver a documented and well defined structure and repository.

PLANS

FLEXharvester Pilot

A solution to pilot FLEXharvester running as a managed service at VITO/EnergyVille (*)

FLEXharvester Solution

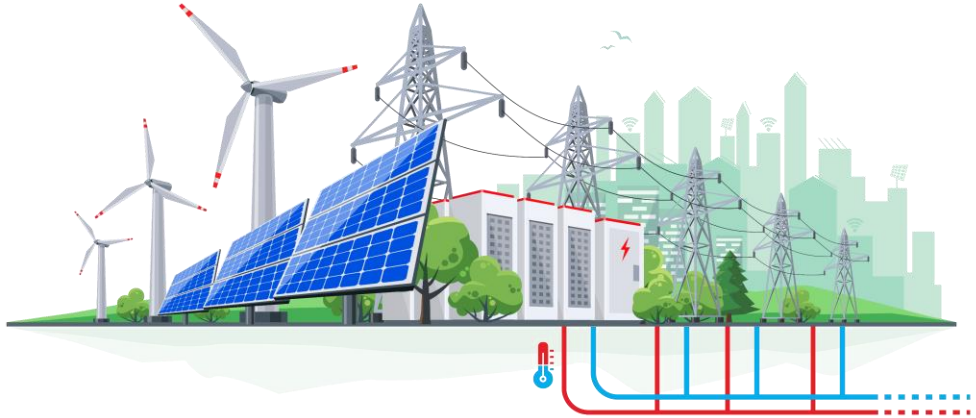
As a system integrator you design (**), integrate, deploy and manage the solution yourself with VITO/EnergyVille support for the STORM District Energy Controller (***) application

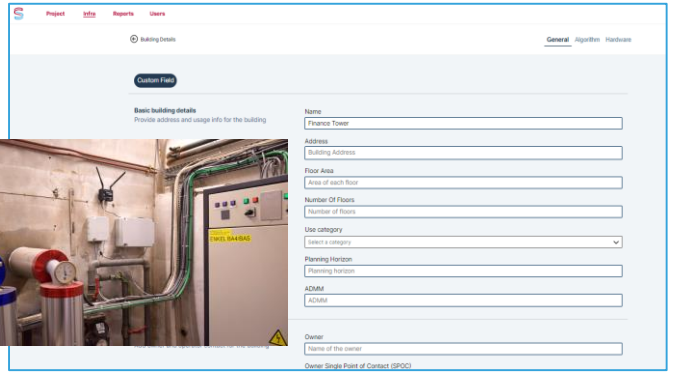
FLEXharvester Tech Transfer

As partner you receive the source code and are able to tune and adapt the FLEXharvester including the STORM District Energy Controller solution according to your and your Customers' needs

(*) Or a third party Microsoft tenant
(**) VITO/EnergyVille can support you in the design, configuration and tuning in a first phase
(***) STORM District Energy Controller is also available as separate product

STORM DISTRICT HEAT CONTROLLER TARGETS 15% ON HEAT GENERATION COST SAVINGS IN MOL (BE)





Five buildings out of 40 connected

The district heating network in Mol includes 40 buildings of VITO with office space, lab infrastructure and a residential area. For the first pilot phase 5 buildings are connected.

This living lab environment demonstrates how FLEXharvester can be implemented on existing district heating networks.

The algorithm enables the maximum use of renewable heat from the different sustainable sources

By minimizing the peak heat loads on the district heating network, the share of renewable heat from different sources is maximized. The heat consumption is monitored continuously on the district and building level

Wireless indoor environment sensors guarantee the indoor comfort for the employees.

Multiple indoor LoRa based temperature, CO2 and humidity sensors are sending data via Microsoft IOT Hub to the algorithm to monitor indoor comfort

Login in our **FLEXharvester** ARM demo

Visit the Microsoft Azure Marketplace :
https://azuremarketplace.microsoft.com/en-us/

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email: erik.deschutter@energyville.be

Learn more: www.flexharvester.com
www.energyville.be/en/storm-controller