Application of renewable sources in district heating

Paul Voss/ Euroheat & Power
Renewable Energy Sources in District Heating and Cooling Systems, 5-6\textsuperscript{th} December 2019
Belgrade, Serbia
What do you see?
One day, one building, one city at a time.

Vision 2050
Best practice examples of upgrading DH:

- Integration of thermal storage
- Optimisation of pumping operations
- Biomass fired boiler house
- Renovation of the DH system
- Replacement of fossil fuels
- Integration of solar thermal
- ...and more
Akmenės energija has implemented several renovation measures in the district heating system:

- inefficient boiler houses → modern and efficient gas boilers
- increase the share of biomass in the fuel mix
- change the pipelines with new insulated pipelines
- modern metering solutions for the users
- education measures for the community → promote the idea of sustainable development

This led to a remarkable increase in the DH energy efficiency, such as a decrease of technical losses in DH networks, water, electricity and fuel consumption for the generation and supply of heat.
The project increases the use of renewable energy sources, specifically for heating public buildings, business buildings and individual houses, as well as renewable electricity production. Retrofitting measures include:

- reconstruction of 2,600 m of pipe network
- upgrading of the boiler room
- installation of additional biomass boilers
- extension of the piping network
- installation of photovoltaic panels (844 m²/79 kWp)

DH based on fuel oil
**The future is solar?**

**15 MW** SDH plant inaugurated in Latvia

**21,672 m²** solar field and a wood chip boiler

Meets **90 %** of demand from the local heat network

Could reduce the company’s district heat tariff by **at least 5 %**
INTEGRATION OF SOLAR THERMAL...IN RUSSIA’S FAR EAST

Government-owned heat utility Primteploenergo has started up its first solar thermal system.

It is made up of 18 vacuum tube collectors, which supply hot water and space heating to a kindergarten on Russky Island in the Andaman Sea, west of Japan.

The payback period is just five years.

Photo: image taken from a video at https://vestiprim.ru/

Primorje Region in the far east of Russia

the largest Hungarian geothermal district heating project

the largest geothermal heating plant of Central Europe

natural gas was the key energy source for the DH system

the main energy sources now are geothermal energy, biomass and solar energy

Reduction of CO2 emission – 800–950 TJ/year

Societal impact - a new renewable energy operating company with dozens of employees: Miskolc Geothermal Ltd.

**natural gas** was the key energy source for the DH system.

The main energy sources now are **geothermal energy** and **solar energy**.

Redeemed natural gas – **52 MW** heat capacity.

Reduction of CO2 emission – **800–900 TJ/year**.

Societal impact - a new renewable energy operating company with **dozens of employees**: Arrabona Geothermal Ltd.

Images: [www.pannergy.com](http://www.pannergy.com)
IMPROVING THE PERFORMANCE OF DISTRICT HEATING SYSTEMS IN CENTRAL AND EASTERN EUROPE

designed to support district heating operators, when deciding to improve their existing district heating system

Launched a Learning Centre
EXAMPLE OF PROJECT SUPPORT: CROATIA

Novosti

4 April 2019
Data intelligent operation of district heating and district cooling systems
KeepWarm project partner University of Zagreb (Faculty of Mechanical Engineering), together with the Centre for IT-Intelligent Energy Systems (CITIES) project and the City of Zagreb, organised a joint workshop on “Data intelligent operation of...”

5 December 2018
Croatia towards improving the performance of DHS
As its combination of concrete work with pilot district heating systems and its close cooperation with national and European multipliers to disseminate this experience broadly are unique features of the KeepWarm project, we would like to start...

11 April 2018
KeepWarm Kick-off meeting took place in Zagreb
In many countries in Central and Eastern Europe District Heating Systems (DHS) are often inefficient and for the most part still overly reliant on fossil fuels (oil, gas or coal). The EU Horizon 2020 project KeepWarm aims at modernising DHS around...
EXAMPLE OF PROJECT SUPPORT: UKRAINE

Новини

25 April 2019
У рамках проекту KeepWarm відбулося навчання з фінансових та організаційно-управлінських питань для теплопостачальних підприємств
23-25 квітня у м. Київ відбулися чотвертий та п'ятий навчальні семінари для представників тепломуніфера в рамках проекту...

13 March 2019
Учасники проекту KeepWarm познайомилися із досвідом використання біомаси в системі теплопостачання у Кам'янці-Подільському
12-14 березня у м. Кам'янець-Подільський відбувся третій навчальний семінар для представників тепломуніфера в рамках проекту KeepWarm....

25 January 2019
У Житомирі відбувся другий навчальний семінар у рамках проекту KeepWarm
22-24 січня у м. Житомир відбувся другий навчальний семінар для представників тепломуніфера в рамках проекту "Покращення...
UPGRADING THE PERFORMANCE OF DISTRICT HEATING NETWORKS IN EUROPE

opportunities for the energy efficient upgrading of district heating systems

The handbook is aimed at decision makers, utilities and system operators, and is available in English, Danish, Italian, Lithuanian, Polish, Croatian and Bosnian.
MAKING IT HAPPEN: KEYS TO SUCCESS

• Strategic national vision for heating and cooling
• Empower your cities
• Focus on investing to stop spending
• Internalise external costs (pollution, supply disruption, CO2)
• Look beyond the building
• Look beyond your network – system integration makes things easier
• Ask for help
• Take pride in what you have! It’s more precious than you think.
THANK YOU - Questions?

Head over to www.euroheat.org
www.upgrade-dh.eu
www.solarthermalworld.org
www.pannergy.com
www.keepwarmeurope.eu
and find out more.