

URBAN ENERGY EFFICIENCY

BASED TO

CHP-CHC DHC

Nordic-Baltic energy conference

12.5.2016

Jouni Kivirinne



Helen LTD

Helen develops even more environmentally friendly and more innovative solutions for our customers.

Our goal is to achieve one hundred percent carbon neutrality in your energy supply.

We want to offer our customers the world's best urban energy also in the future.

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Helen LTD



Helen LTD in nutshell:

- One of the biggest energy companies in Finland
- Multi-scale production and product portfolios
- approx. 400 000 customers
- 1 342 professionals
- Turnover 750 M€

Presentation

- Meaning of free competition at (heating)markets
 - Minimum regulation + political-free subsidation
 - Lowest end user costs
 - Maksimum emission reductions
- Energy is more than just production and consumption
 - Value Creation
 - Security of supply each day throughout a year
- Sustainable infrastructure and building stock for sustainable energy service
 - Value with Collaboration
 - Space for innovations
- Conclusion



ENERGY IS MORE THAN PRODUCTION AND DISTRIBUTION – IT CREATES VALUE FOR CITIZENS

COMFORT FOR LIVING AND
ENERGY EFFICIENCY TO
CITIZENS



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YEAR 1950
- 5°C

**Our impact
to city climate**

YEAR 2011
- 15°C

How?

- Market based business
- No price regulation
- Low end user costs
- High efficiency > 90%
- High degree of CHP > 90%
- High service degree
- Satisfied customers

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- BALTIC ENERGY / JOUNI KIVIRINNE

SUSTAINABLE INFRASTRUCTURE AND BUILDING STOCK FOR SUSTAINABLE ENERGY SERVICES FOR SUSTAINABLE CUSTOMERS

Energy efficiency | district heat | district cooling | renewable energy sources
energy storage | demand side management | smart building services technology | electric traffic



SUSTAINABLE INFRASTRUCTURE AND BUILDING STOCK FOR SUSTAINABLE ENERGY SERVICE

INTERACTIVE ENERGY SYSTEM IS BASE FOR ENERGY EFFICIENT FUTURE



CHALLENGES FOR THE FUTURE

FINNISH CLIMATE SCENARIO 2050



Heating demand
- 17%

Cooling demand
+ 35%



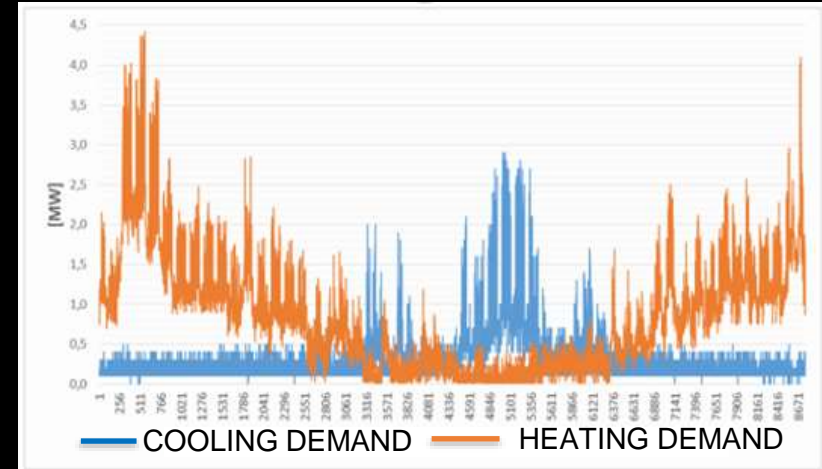
SUSTAINABLE INFRASTRUCTURE AND BUILDING STOCK FOR SUSTAINABLE ENERGY SERVICE

IDEA OF COMBINED HEATING AND COOLING

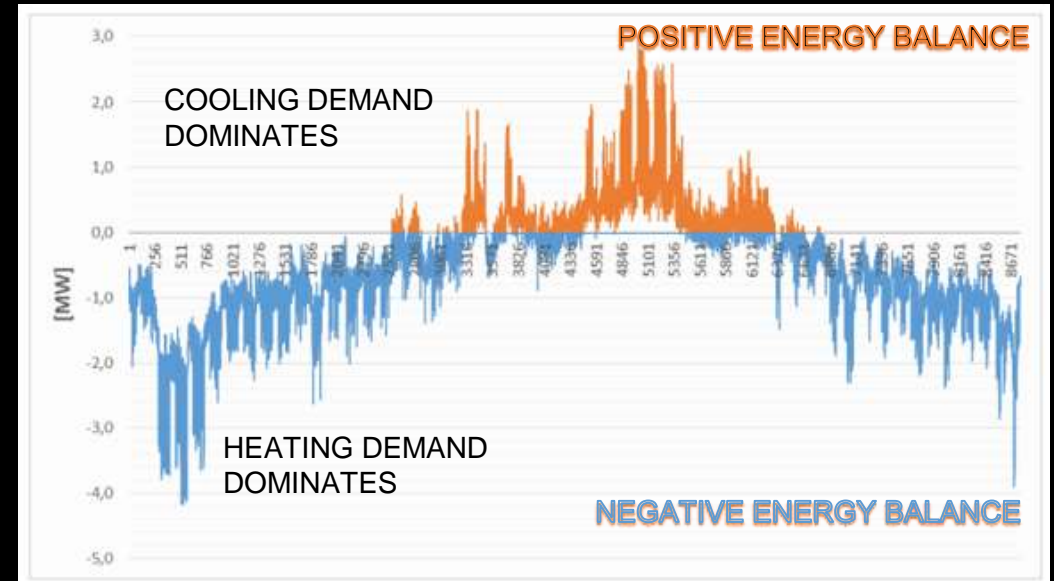
CHC



NORMAL ENERGY CONSUMPTION CURVES

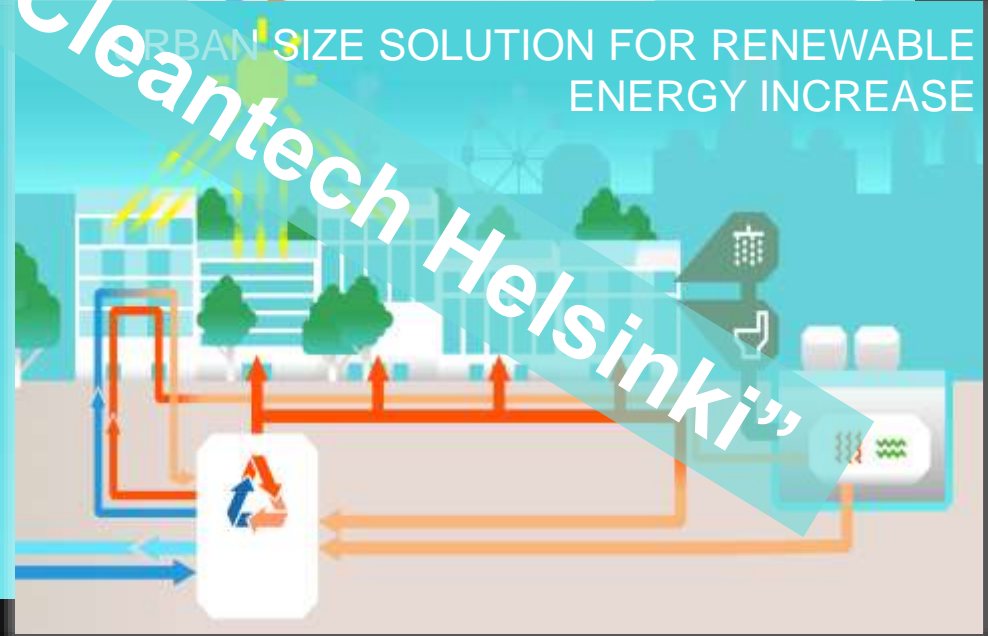


SUM CURVES OF ENERGY FLOWS



PRESENT

During summer 2014:
43 000 MWh
CHC-Solarheat



NEW DIRECTION, SunZEBUILDING VALUE CREATION



Cooling and natural light brings value for real estate and well-being for customers...



..and improving energy efficiency of building stock and increasing renewable energy

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New Direction : SunZEBuilding

Research: SunZEB-POSITIVE URBAN ENERGY



Key findings:

- + High-class indoor climate "S2" with progressive building technology
- + Large windows areas are key-role players in solar architecture and in utilizing passive solar heat
- + **Degree of renewable heat related to heat demand (incl. HDW) :**
 - + residential building 55%, office building 155%
- + Investment and life cycle costs are very competitive against ordinary solutions
- + Renewable heat production in supreme compared to ordinary solar heat collection
- + SunZEB-philosophy is pair with building-integrated PV-production

<http://www.vtt.fi/inf/pdf/technology/2015/T219.pdf>

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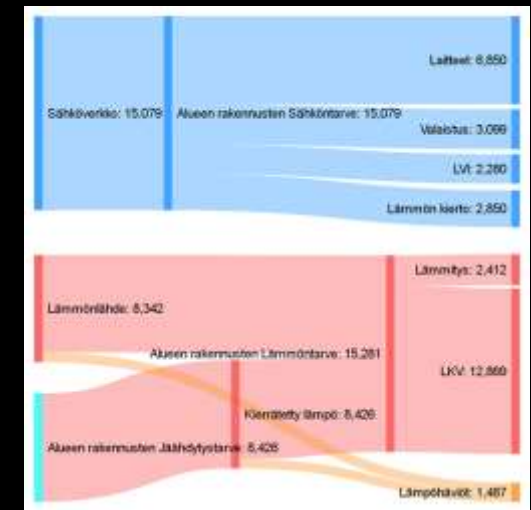
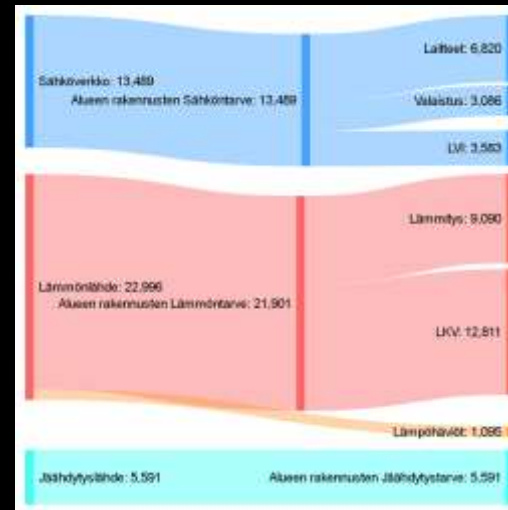
NEW DIRECTION SunZEDistrict

Positive urban energy in district level



Case: Vartiosaari master plan

Energy efficiency in SunZED-district is about 50% better than compared area with 2012_B-building stock



CHP-CHC IS BASEMENT FOR SUSTAINABLE ENERGY PRODUCTS

CONSUMER CAN CHOOSE



RENEWABLE HEAT FOR HOUSEHOLDS

CHC-
RECIRCULATION
HEAT



COOLING ENERGY
=
100% RENEWABLE HEAT



RENEWABLE HEAT FOR COMPANIES 1 – 100%

CONCLUSION

Positive urban energy in district level



What has worked so far?

- + Unregulated heating market in Finland
- + High efficiency energy production CHP –CHC
- + High service degree

What has worked not?

- + Subsidising of disruptive market players
- + Partial optimisation, lack of understanding of the entity

CONCLUSION

Positive urban energy in district level



Which sectors are most vital to target in policies to promote EE:

- + All sectors; from architects to energy service providers – space for innovations and collaboration between different sectors

- + Politicians:

 - + Integrated infrastructure between energy systems, buildings and end users needs long term commitments

 - + Laws of physics still exists

 - + Value creation – there are possibilities to create more value with less stakeholders involved

 - + Please forget "energypopulism" and keep focus in entity

Let the Sun Shine in

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Image: Image: Jarmo Roiko-Jokela