



# Factsheet

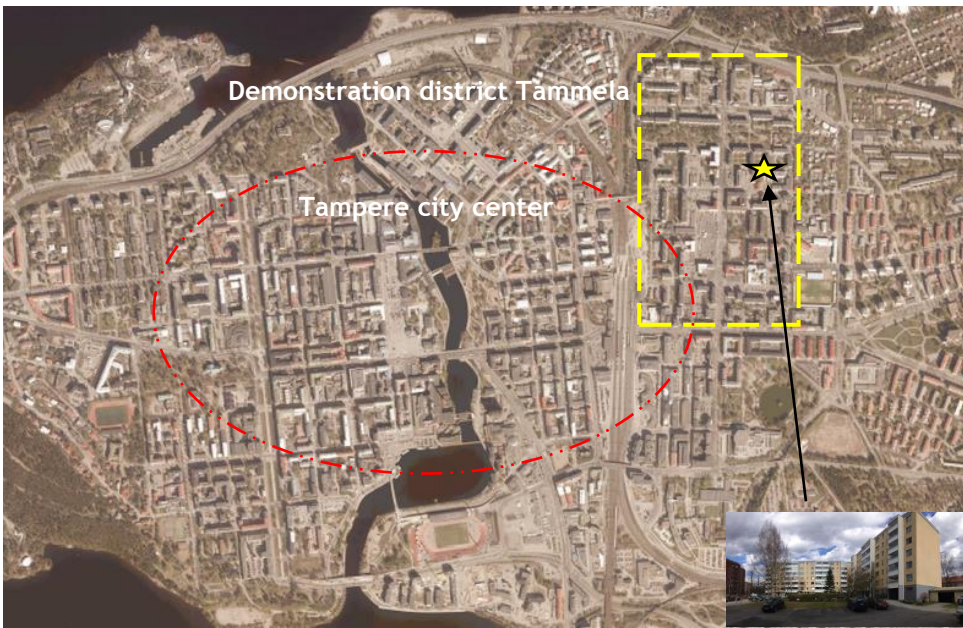
BEST 8 Limited liability housing company

Tampereen Tapio

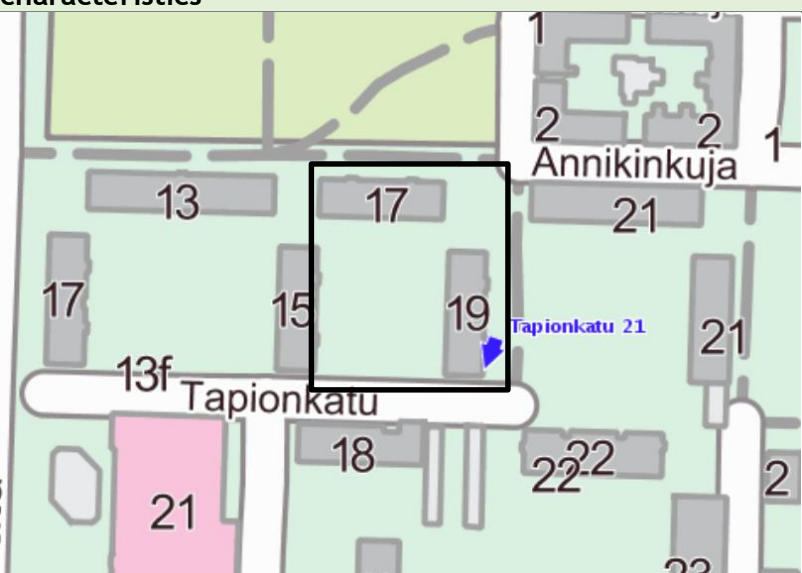


EU-GUGLE stands for “European cities serving as Green Urban Gate towards Leadership in sustainable Energy” and is funded under the 7<sup>th</sup> Framework Programme for Research and Technological Innovation. It is co-ordinated by CENER, Spain’s National Centre for Renewable Energies.

## PROFILE

Name and address	<i>Demonstration area Tammela district and DEMO 8 Limited liability housing company Tampereen Tapio</i>	
Map		
Description	<p><i>The Tammela district, where the renovations took place, has 6.337 inhabitants. The age distribution of Tammela is mostly elderly people, young couples and students. 94 % of the inhabitants are between 18 and 85 and only 6 % between 0 and 17. Decision making in the privately owned limited liability housing companies can be challenging because of the lack of interest in doing big renovations and the lack of funds. Tammela district is also a demonstration area for infill development. Additionally, there are several projects that are trying to help and encourage the limited liability housing companies in the area to use infill development as a means of funding renovations and improving the quality of living.</i></p>	
Ownership	<i>Owner occupied building</i>	
Gross surface	<i>6 060 m<sup>2</sup></i>	
Number of dwellings	<i>91</i>	
Energy performance	<i>BEFORE</i>	<i>F</i>
	<i>TARGET / AFTER</i>	<i>D</i>

## 1 – Description before refurbishment

Detailed characteristics of building	This section should be a detailed overview of the building characteristics
Plot map	
Building envelope	<i>Pre-fabricated concrete building wall U value 0,8; windows 2,2</i>
Technical system	<i>District heating; central heating; mechanical exhaust air Renewables in district heat production 17 % Renewables in grid electricity 13 %</i>
Thermal imaging before refurbishment	N/A

Energy performance certificate <sup>1</sup>	-75	A	
	76-100	B	
	101-130	C	
	131-160	D	
	161-190	E	
	191-240	F	F
	241-	G	

<sup>1</sup>Not based on the official energy certificate calculation. Calculation is based on the Finnish 2013 legislation regarding buildings' energy certificates 18.1.2013/50 and takes into account more precisely the technical values of the measures implemented in the building.



## 2 – Refurbishment concept

Concept	
Financing model	<i>Bank loan, national subsidy, EU grant</i>

### Envelope details

Wall to fenestration section (thermal bridge)	<i>New windows and doors; additional insulation and rendering</i>
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### Technical system

Technical system	<i>District heating; Energy efficiency improvements to central heating, ventilation, lighting and water service</i>
Thermal renewable integration	<i>Exhaust air heat pump Renewables in DH production 38% Renewables in grid electricity 25%</i>
Electric renewable integration	<i>N/A</i>

### 3 - Implementation

Stakeholders involved	
Envelope: project manager	<i>Vahanen Oy</i>
Envelope: planner	<i>A-Insinöörit Suunnittelu Oy</i>
Envelope: main contractor	<i>Rappaustekniikka Laurell Oy</i>
Technical system: project manager	<i>HS-Tec Oy</i>
Technical system: designer	<i>KnowTek Oy</i>
Technical system: main contractor	<i>Pirkanmaan Mestari-Rakentajat Oy</i>
Technical system: sub-contractors	<i>Sähköansio Oy</i>

Costs and financing <sup>2</sup>	
Refurbishment costs	<i>Breakdown of all costs (work, monitoring, etc)</i> <i>N/A</i>
Financial resources	<i>Breakdown of financial resources</i> <i>N/A</i>

Implementation planning	
1 - Step one	2009
Additional insulation and windows	
2 - Step two	2015-2016
Plumbing	
3 - Step three	2016
Heat pump and doors	

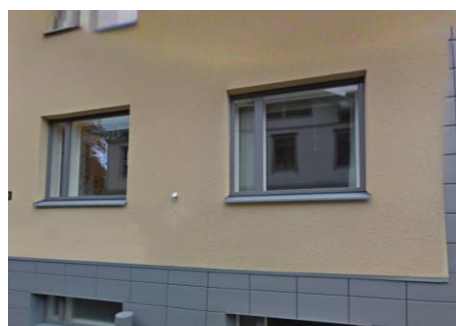
<sup>2</sup>Costs are based on different actual and calculated costs shifted to the comparison year 2014-2016 with the construction cost index.

## Work progress

*Façade renovation*



New windows and facade




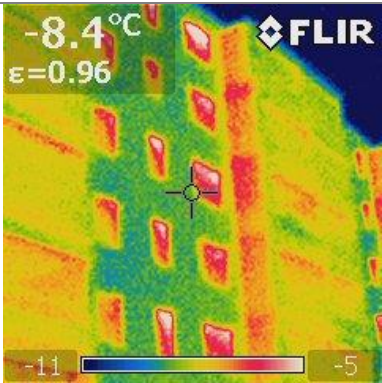
Plumbing and boiler room



Sauna (common) and bathroom (private space)



## 4 - Description after refurbishment

Photo to show architectonic concept	
A thermal imaging showing after insulation	
Envelope characteristics	New windows U value 1 and doors; additional insulation and rendering
Technical system	Led lighting with presence control
Renewable energy sources	Exhaust air heat pump Renewables in district heat production 38% Renewables in grid electricity 25%
Energy consumption (final and primary)	112 kWh/m <sup>2</sup> /a



Energy efficiency certificate <sup>3</sup>	-75	A	
	76-100	B	
	101-130	C	C
	131-160	D	
	161-190	E	
	191-240	F	
	241-	G	

## 5 - Performance monitoring

Monitoring System	Remote monitoring system. Smart metering by utility company (district heat and electricity)
Monitored variable	District heat to space and water heating Heat created for space and water heating Water Electricity

Performances <sup>4</sup>			
	Existing	Planned	Monitored
Electric consumption kWh/m <sup>2</sup> /year	7	26	N/A
Thermal consumption kWh/m <sup>2</sup> /year (HP electricity)	-	19	N/A
Thermal consumption kWh/m <sup>2</sup> /year (DH)	216	106	N/A
Thermal consumption kWh/m <sup>2</sup> /year (own production)	-	-45	N/A
Gross energy consumption in final energy	223	86	N/A
Electric RES contribution kWh/m <sup>2</sup> /year	1	6	N/A
Thermal RES contribution kWh/m <sup>2</sup> /year	37	86	N/A
Operational costs €/m <sup>2</sup> /year	12	6	N/A

<sup>3</sup>Not based on the official energy certificate calculation. Calculation is based on the Finnish 2013 legislation regarding buildings' energy certificates 18.1.2013/50 and takes into account more precisely the technical values of the measures implemented in the building.

<sup>4</sup>The first data will be available in autumn 2017. Comparison between the calculated original and planned status as well as monitored values for the completed building after at least one whole year of monitoring.