



Factsheet

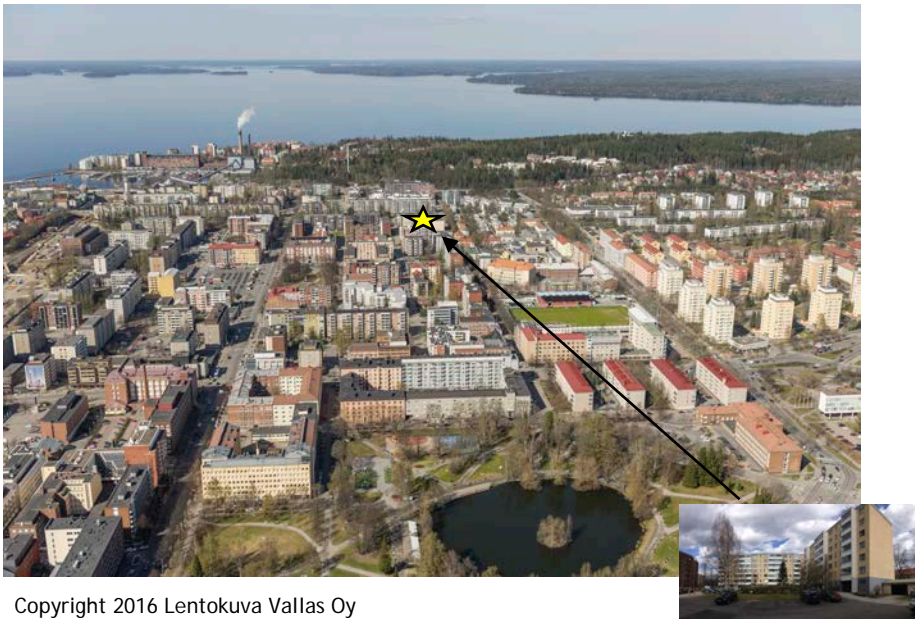
BEST 8 Limited liability housing company

Tampereen Tapio

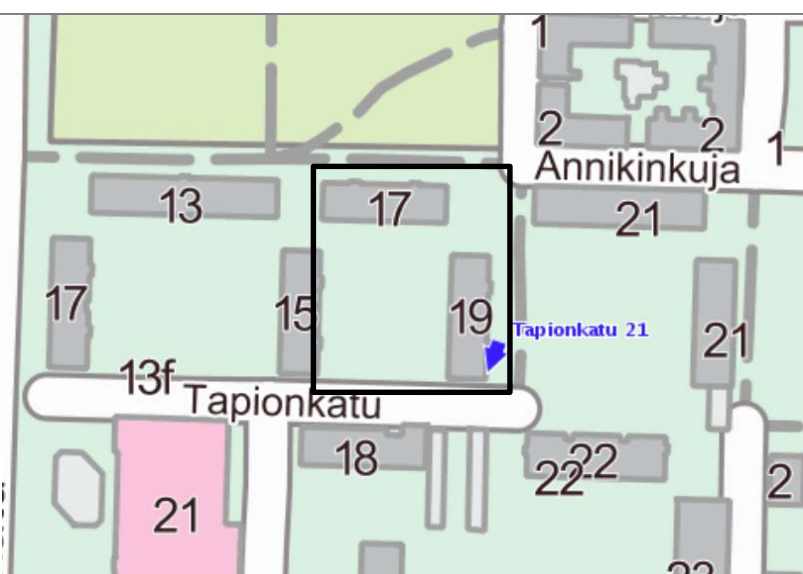


EU-GUGLE stands for “European cities serving as Green Urban Gate towards Leadership in sustainable Energy” and is funded under the 7th Framework Programme for Research and Technological Innovation. It is co-ordinated by CENER, Spain’s National Centre for Renewable Energies.

PROFILE


Name and address	<i>The demonstration area Tammela district and DEMO 8 Limited liability housing company Tampereen Tapio</i>	
Map	 <p>Copyright 2016 Lentokuva Vallas Oy</p>	
Description	<p><i>Tammela district, where the renovations take place, has around 7000 inhabitants. The age distribution of Tammela is one-sidedly mostly elderly people, young couples and students. 94 % of the inhabitants are between ages 18-over 85 and only 6 % between the ages 0-17. Decision making in the privately owned limited liability housing companies can be challenging because of lack of interest to do big renovations and lack of funds. Tammela district is also demonstration area for infill development. And 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 improve quality of living.</i></p>	
Ownership	<i>Owner occupied building</i>	
Gross volume	6060 m ²	
Number of dwellings	91	
Energy performance	BEFORE	F
	TARGET/AFTER	D

1 – Description before refurbishment

Detailed characteristics of building																						
Plot map																						
Building envelope	Pre-fabricated concrete building wall U value 0,8; windows 2,2																					
Technical system	District heating; central heating; mechanical exhaust air Renewables in district heat production 17 % Renewables in grid electricity 13 %																					
Thermal imaging before refurbishment	N/A																					
Energy performance certificate*	<table><tr><td>-75</td><td>A</td><td></td></tr><tr><td>76-100</td><td>B</td><td></td></tr><tr><td>101-130</td><td>C</td><td></td></tr><tr><td>131-160</td><td>D</td><td></td></tr><tr><td>161-190</td><td>E</td><td></td></tr><tr><td>191-240</td><td>F</td><td>F</td></tr><tr><td>241-</td><td>G</td><td></td></tr></table>	-75	A		76-100	B		101-130	C		131-160	D		161-190	E		191-240	F	F	241-	G	
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Other relevant technical aspects																						

*Not the official energy certificate calculation. Calculation is based on the Finnish 2013 legislation of the buildings' energy certificate 18.1.2013/50 but it takes into account more precisely the technical values of the measures done in the building.

2 – Refurbishment concept

Concept	
Envelope	<i>New windows and doors; additional insulation and rendering</i>
Building service systems	<i>District heat; 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	
Financing model	<i>Bank loan; EU Grant; National subsidy</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**	
Refurbishment costs	<i>Breakdown of all costs (work, monitoring, etc)</i>

	N/A
Financial resources	Breakdown of financial resources
	N/A

**Costs are based on different actual and calculated costs shifted to the comparison year 2014-2016 with the construction cost index.

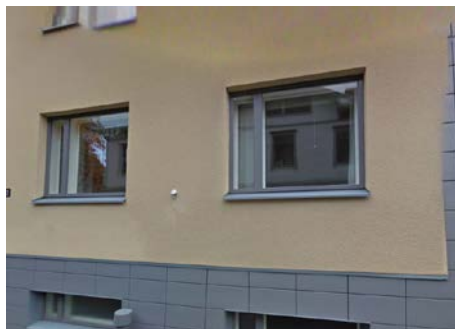
Implementation planning	
1 - step one	2009
Additional insulation and windows	
2 - step two	2015-2016
Plumbing	
3 - step three	2016
Heat pump and doors	

Work progress

Façade renovation



New windows and facade




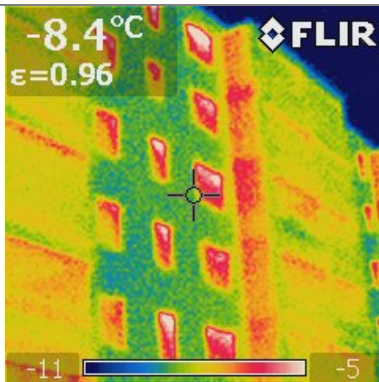
Plumbing and boiler room



Sauna (common) and bath room (private space)



4 - Description after refurbishment

Photo to show architectonic concept																						
A thermal imaging showing after insulation																						
Envelope characteristics	<i>New windows U value 1 and doors; additional insulation and rendering</i>																					
Technical system	<i>Led lighting with presence control</i>																					
Renewable energy sources	<i>Exhaust air heat pump Renewables in district heat production 38% Renewables in grid electricity 25%</i>																					
Energy consumption (final and primary)	112 kWh/m²/a																					
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5 - Performance monitoring

Monitoring System	<i>Remote monitoring system. Smart metering by utility company (district heat and electricity)</i>
Monitored variable	<i>District heat to space and water heating Harvested heat to space and water heating Water Electricity</i>

Performances ***			
	Existing	Planned	Monitored
Electric consumption kWh/m2/year	7	26	N/A
Thermal consumption kWh/m2/year (HP electricity)	-	19	N/A
Thermal consumption kWh/m2/year (DH)	216	106	N/A
Thermal consumption kWh/m2/year (own production)	-	-45	N/A
Gross energy consumption in final energy	223	86	N/A
Electric RES contribution kWh/m2/year	1	6	N/A
Thermal RES contribution kWh/m2/year	37	86	N/A
Operational costs €/m2/year	12	6	N/A

***The first data available in autumn 2017. Comparison between the calculated original state and the planned as well as monitored values of the completed building after at least one whole year of monitoring.