

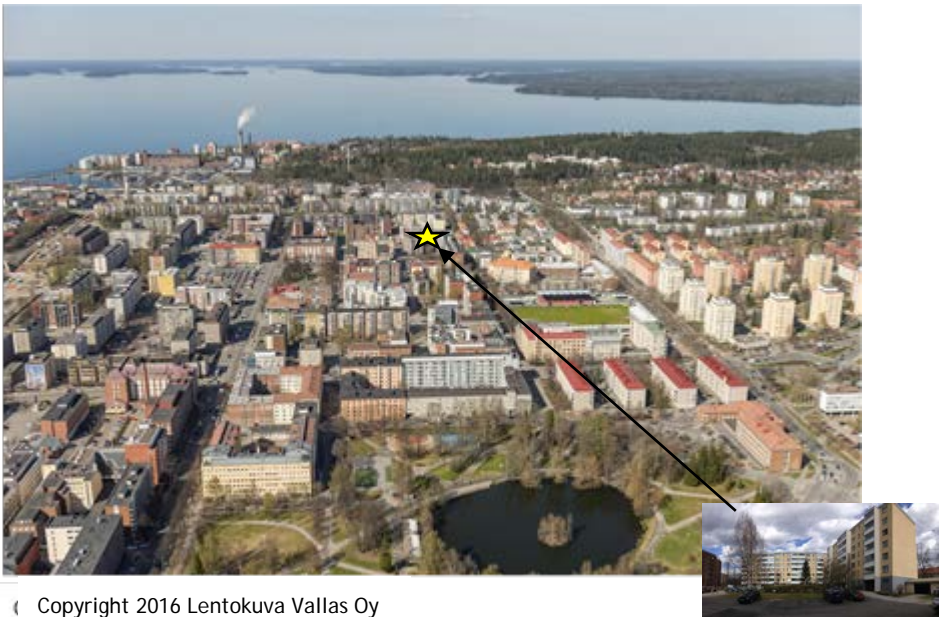
## Factsheet

### BEST 8 Ltd housing company Tampereen Tapio

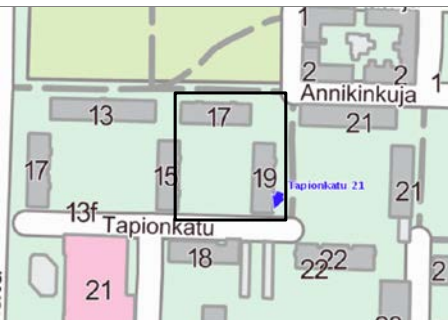




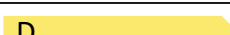







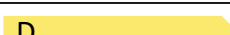







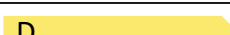






EU-GUGLE stands for “European cities serving as Green Urban Gate towards Leadership in sustainable Energy” and is funded under the 7<sup>th</sup> Framework Programme for Research and Technological Innovation.  
It is co-ordinated by CENER, Spain’s National Centre for Renewable Energies.

## 1- PROFILE

Name and address	<i>The demonstration area Tammela district and BEST 8 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 <sup>2</sup>	
Number of dwellings	91	
Energy performance	BEFORE	<i>F</i>
	TARGET/AFTER	<i>D</i>

## 2 - Description before refurbishment

Plot map																						
Architecture																						
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>																					
Energy performance certificate*	<table><tr><td>-75</td><td></td><td></td></tr><tr><td>76-100</td><td></td><td></td></tr><tr><td>101-130</td><td></td><td></td></tr><tr><td>131-160</td><td></td><td></td></tr><tr><td>161-190</td><td></td><td></td></tr><tr><td>191-240</td><td></td><td></td></tr><tr><td>241-</td><td></td><td></td></tr></table>	-75			76-100			101-130			131-160			161-190			191-240			241-		
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131-160																						
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241-																						
<i>Note: weighted by energy form factor 2012</i>  <i>Includes standard use by households (cooking, white line, entertainment electronics, etc.)</i>																						

\*Not the official energy certificate calculation.

### 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>
Technical system: sub-contractors	<i>Finnwind Oy</i>

Costs and financing			
Refurbishment costs (€)	Facades, windows, doors	1 220 000	
	Heating, ventilation, lighting, water fittings	571 000	
	Planning, supervision, etc.	89 500	
	VAT (24 %)	451 300	
	Total (€)	2 331 800	380 € / m <sup>2</sup>
Financial resources	Applied EU grant	15 %	
	National subsidy	5 %	
	Bank loan	20 %	

Implementation planning	
<b>1 - step</b>	<b>2009</b>
Additional insulation and windows	
<b>2 - step</b>	<b>2015-2016</b>
Plumbing	
<b>3 - step</b>	<b>2016</b>
Heat pump and doors	
<b>4 - step</b>	<b>2017</b>
PV plant	



## 4 - After refurbishment

Architecture	
Envelope	<i>New windows and doors; additional insulation and rendering</i>
Building service systems	<i>District heat; Energy efficiency improvements to central heating; Mechanical exhaust air with heat recovery; Air-to-water HP; Energy efficient lighting and water service; PVs</i>
Thermal renewable integration	<i>Renewables in DH production 47 %</i>
Electric renewable integration	<i>PV plant on the roof Renewables in grid electricity 100 %</i>

Energy consumption	72 kWh/m <sup>2</sup> /a		
Energy efficiency certificate*  <i>Note: weighted by energy form factor 2012</i>  <i>Includes standard use by households (cooking, white line, entertainment electronics, etc.)</i>	-7	A	
	7 -10	B	
	10 -13	C	
	13 -16	D	D
	16 -19	E	
	19 -24	F	
	24 -	G	

\*\*Not the official energy certificate calculation.

## 5 - Performance monitoring

Monitoring system	<i>Remote monitoring system</i>
Monitored variables	<i>Electricity for technical service systems (incl. HPs) District heating</i>

		Before	After
Electricity from grid	kWh/m <sup>2</sup> /year	7	20
DH from network	kWh/m <sup>2</sup> /year	130	52
Purchased energy	kWh/m <sup>2</sup> /year	137	72
Operational costs	€/ m <sup>2</sup> /year	11	6