


Factsheet

BEST 6 Ltd housing company Torinnaapuri


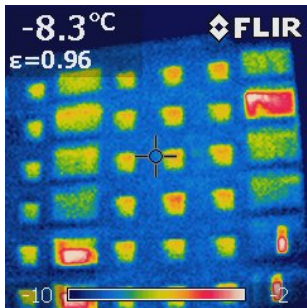


EU-GUGLE stands for “European cities serving as Green Urban Gate towards Leadership in sustainable Energy” and is funded under the 7th Framework Programme for Research and Technological Innovation.
It is co-ordinated by CENER, Spain’s National Centre for Renewable Energies.

1 - PROFILE

Name and address	<i>The demonstartion area Tammela district and BEST 6 Ltd housing company Torinnaapuri</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	3024 m2	
Number of dwellings	42	
Energy performance	BEFORE	<i>E</i>
	TARGET/AFTER	<i>C</i>

2 - Before refurbishment

Detailed characteristics of building																								
Building envelope	Pre-fabricated concrete building U value 0,4 Windows U value 2,1																							
Technical system	District heating; central heating Mechanical exhaust air Renewables in district heat production 17 % Renewables in grid electricity 13 %																							
Thermal imaging before refurbishment																								
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>E</td></tr><tr><td>191-240</td><td>F</td><td></td></tr><tr><td>241-</td><td>G</td><td></td></tr></table> <p><i>Note: weighted by energy form factor</i></p> <p><i>Includes standard use by households (cooking, white line, entertainment electronics, etc.)</i></p>			-75	A		76-100	B		101-130	C		131-160	D		161-190	E	E	191-240	F		241-	G	
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241-	G																							

*Not the official energy certificate calculation.



3 - Implementation

Stakeholders involved	
Project manager	<i>A-insinöörit Rakennuttaminen Oy</i>
Designer (structures)	<i>A-Insinöörit Suunnittelu Oy</i>
Designer (building service system)	<i>Rejlers Oy</i>
Main Contractor	<i>Pirkanmaan mestarirakentajat Oy</i>
Windows	<i>Fenestra Oy (Fenestra As since 2014)</i>
Installer	<i>Rakennus J. Pirhonen Oy</i>
Heating and ventilation remote monitoring	<i>Enermix Oy</i>
Safety supervisor	<i>A-insinöörit Rakennuttaminen Oy</i>

Costs and financing			
Refurbishment costs	Facade, windows and doors	232 500 €	
	Ventilation and heating	73 500 €	
	Lighting and electricity	6 000 €	
	Other building services	71 200 €	
	Planning, supervision, etc	19 200 €	
	VAT 24 %	97 000 €	
	Total €	499 000 €	
	Total €/m2	165 €	
Financial resources	EU Grant	151 200 €	30 %
	Bank loan	347 800 €	70 %

Implementation	
1 -step	Autumn 2011
Design brief and decision of the general meeting to continue the deep renovation project	
2 - step	Autumn 2012 - summer 2013
Detailed façade upgrading planning, tendering process and implementation of the measures	
3 - step	Autumn 2013- autumn 2014
Detailed building service system upgrading planning and tendering process and implementation of the measures	

4 - After refurbishment

Concept	 
Envelope	<i>Additional insulation and rendering; New supply air windows (U 0,8) and doors</i>
Technical service systems	<i>District heating; Improvement of central heating; Exhaust air with heat recovery; Air-to-water heat pump; Energy efficient lighting and water system;</i>
Thermal renewable integration	<i>Only in DH (2018) 47 %</i>
Electric renewable integration	<i>Only in grid electricity 100 %</i>

Energy consumption (final and primary)	108 kWh/m²/a		
Energy efficiency certificate*			
<i>Note: weighted by energy form factor</i>			
<i>Includes standard use by households (cooking, white line, entertainment electronics, etc.)</i>			
	-75	A	
	76-100	B	
	101-130	C	C
	131-160	D	
	161-190	E	
	191-240	F	
	241-	G	

*Not the official energy certificate calculation.

5 - Performance monitoring

Monitoring System	<i>Remote monitoring system Talotohtori[®]. Smart metering by utility company (district heat and electricity)</i>
Monitored variable	<i>District heat for space and water heating Electricity for technical service systems incl. HPs</i>

		Before	After
Electricity from grid	kWh/m ² /year	10	28
DH from network	kWh/m ² /year	120	47
Purchased energy	kWh/m ² /year	130	75
Operational costs	€/ m ² /year	11	6