


# Factsheet

BEST 3 Ltd housing company Tammelankulma



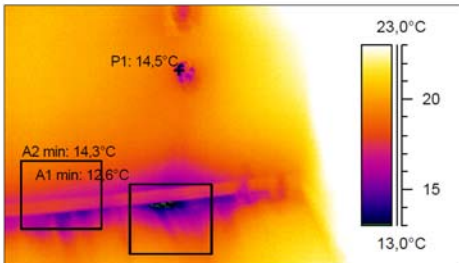


EU-GUGLE stands for “European cities serving as Green Urban Gate towards Leadership in sustainable Energy” and is funded under the 7<sup>th</sup> Framework Programme for Research and Technological Innovation.  
It is co-ordinated by CENER, Spain’s National Centre for Renewable Energies.

## 1 - PROFILE

Name and address	<i>The demonstartion area Tammela district and DEMO 3 Ltd housing company Tammelankulma</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	5395 m <sup>2</sup>	
Number of dwellings	67	
Energy performance	<i>BEFORE</i>	<i>F</i>
	<i>TARGET/AFTER</i>	<i>D</i>

## 2 - Before refurbishment

Plot map																								
Building envelope	Pre-fabricated concrete building, walls U value 0,8; windows 2,5																							
Technical system	District heating; central heating; mechanical exhaust air Renewables in district heat production 17 % Renewables in grid electricity 13 %																							
Thermal imaging before refurbishment  Leaking walls	<div></div> <div></div>																							
Energy performance certificate*	<table><tr><td>-75</td><td><div>A</div></td><td></td></tr><tr><td>76-100</td><td><div>B</div></td><td></td></tr><tr><td>101-130</td><td><div>C</div></td><td></td></tr><tr><td>131-160</td><td><div>D</div></td><td></td></tr><tr><td>161-190</td><td><div>E</div></td><td></td></tr><tr><td>191-240</td><td><div>F</div></td><td><div>F</div></td></tr><tr><td>241-</td><td><div>G</div></td><td></td></tr></table>			-75	<div>A</div>		76-100	<div>B</div>		101-130	<div>C</div>		131-160	<div>D</div>		161-190	<div>E</div>		191-240	<div>F</div>	<div>F</div>	241-	<div>G</div>	
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<p>Note: weighted by energy form factor 2012</p> <p>Includes standard use by households (cooking, white line, entertainment electronics, etc.)</p>																								

\*Not the official energy certificate calculation.

### 3 - Implementation


Stakeholders involved	
Project manager	<i>Lara Oy</i>
Architect	<i>Arkion Oy</i>
Technical system designers	<i>Insinööritoimisto Mikko Ilvesmäki Oy</i> <i>Insinööritoimisto Raimo Vainonpää Oy</i>
Main contractor	<i>Pirkanmaan Mestari-Rakentajat Oy</i>
Sub contractors	<i>Sähköurakointi Sähköansio Oy</i> <i>LVI-Urakointi Lämpövirrat Oy</i>

Costs and financing		
Refurbishment costs	Ventilation and heating incl. heatpump; monitoring system	201 600
	Lighting and electricity	124 100
	Faucets etc.	100 200
	Lifts	194 900
	Other renovation costs	1 509 600
	Planning, supervision, etc.	96 800
	VAT 24 %	534 500
	Total €	2 761 700
	Total €/m <sup>2</sup>	500
Financial resources	<i>Bank loan (90 %); EU grant (9%) of total costs; National grant (1%)</i>	

Planning and implementation	
1 - step one	2011-2012
<i>Design brief and selection of project leader</i>	
2 - step two	2013
<i>Call for bids and selection of main contractor</i>	
3 - step three	2014-2015
<i>Renovation and commissioning</i>	
3 - step three	2017
<i>Installation of energy efficient lifts</i>	



## 4 - After refurbishment

	
Envelope	<i>Additional insulation to solid walls; new windows</i>
Building service system	<i>District heating; Improvements within central heating; New plumbing Heatrecovery 1 of 2 building; HP air-to-water; Energy efficient lifts and lighting</i>
Thermal renewable integration	<i>Only in DH (2018) 47 %</i>
Electric renewable integration	<i>Only in grid electricity circa 100 %</i>
Financing model	<i>Bank loan; EU grant</i>

Energy consumption (final)	148 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>	-75	A	
	76-100	B	
	101-130	C	
	131-160	D	D
	161-190	E	
	191-240	F	
	241-	G	

\*Not the official energy certificate calculation.

## 5 - Performance monitoring

Monitoring System	<i>Remote monitoring system. Smart metering by utility company</i>
Monitored variable	<i>District heat for space heating and DHW Electricity for technical service systems</i>

	Unit	Before	After
Electricity for building service systems	kWh/m <sup>2</sup> /year	12	27
DH from network	kWh/m <sup>2</sup> /year	178	98
Purchased energy	kWh/m <sup>2</sup> /year	190	125
Operational costs	€/ m <sup>2</sup> /year	16	10