


# Fact sheet

BEST 2 Ltd housing company Kaupinpirtti



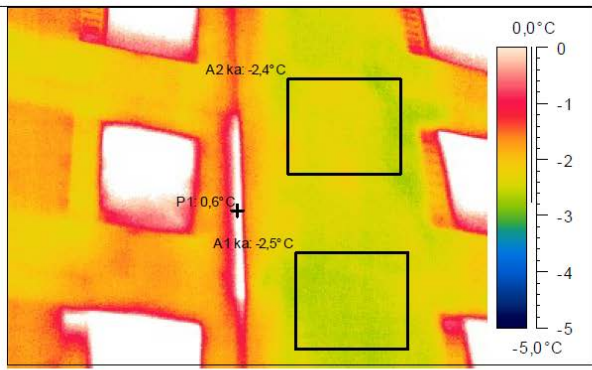


EU-GUGLE stands for “European cities serving as Green Urban Gate towards Leadership in sustainable Energy” and is funded under the 7<sup>th</sup> Framework Programme for Research and Technological Innovation.  
It is co-ordinated by CENER, Spain’s National Centre for Renewable Energies.

## 1-PROFILE


Name and address	<i>The demonstartion area Tammela district and DEMO 2 Ltd housing company Kaupinpirtti</i>	
Map	 <p>Copyright 2016 Lentokuva Vallas Oy</p>	
Description	<p><i>Tammela district, where the renovations take place, has 6337 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	3693 m2	
Number of dwellings	78	
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 U value 0,4; windows U value 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																								
																								
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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 - Refurbishment concept

Refurbishment ongoing	
Envelope	<i>Additional insulation; Balcony glasses; New supply air windows <math>U=0,8</math> W/m<sup>2</sup>K</i>
Technical service systems	<i>Heat recovery to exhaust air; Air-to-water HP Remote monitoring; LED lighting with presence control</i>
Thermal renewable integration	<i>Only DH (2018) 47 %</i>
Electric renewable integration	<i>Only from grid 100 %</i>
Financing model	<i>Bank loan; EU Grant</i>

### 3 - Implementation

Project manager	<i>Ltd Housing Company Kaupinpiirtti</i>
Design brief	<i>A Insinöörit Suunnittelu Oy</i>
Envelope designer	<i>A Insinöörit Suunnittelu Oy</i>
Main contractor	<i>IS-Yhtiö Oy</i>
Windows supplier	<i>Pihla Oy</i>
Sub contractors	<i>Putkityö KV Oy</i>

Planning and Implementation	
1 - step one	2014-2015
<i>Condition assessment; thermographs; design brief and planning</i>	
2 - step three	2016
<i>Call of bids; procurement; implementation of deep renovation</i>	



Costs and financing			
Refurbishment costs (€)	Facades, windows, doors	838 000	
	Heating and ventilation	227 300	
	Planning, supervision, etc.	53 300	
	VAT (24 %)	268 400	
	Total (€)	1 387 000	375 € / m <sup>2</sup>
Financial resources	Applied EU grant	193 200	15 %
	National subsidy	1 193 800	85 %

## 4 - After refurbishment

Architectonic concept			
Energy consumption (final)	94 kWh/m <sup>2</sup> /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		
	76-100		
	101-130		
	131-160		
	161-190		
	191-240		
	241-		

\*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	14	26
DH from network	kWh/m <sup>2</sup> /year	160	68
Purchased energy	kWh/m <sup>2</sup> /year	174	94
Operational costs	€/ m <sup>2</sup> /year	15	8