

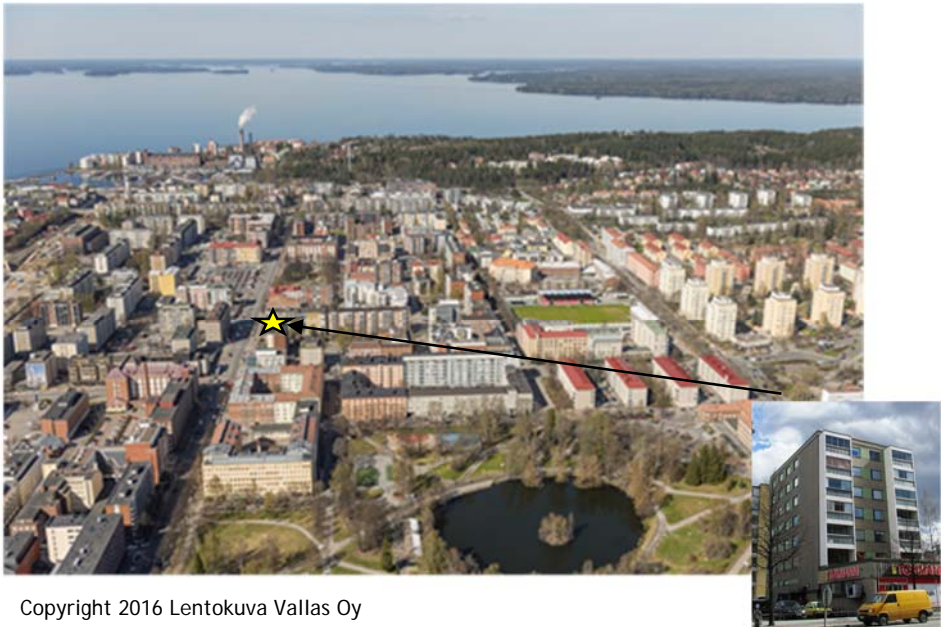
Factsheet

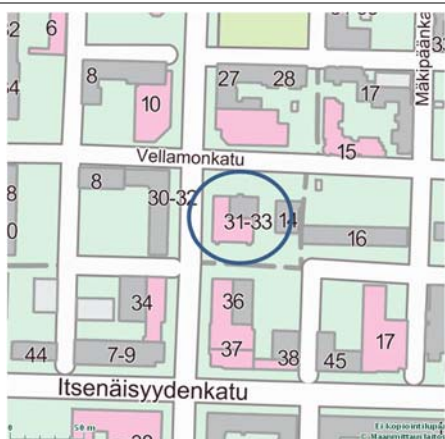
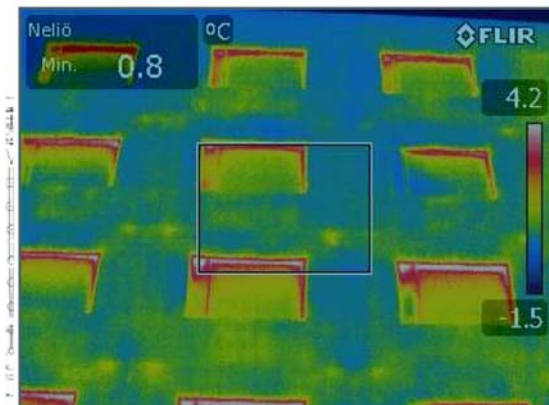
DEMO 5 Ltd housing company Tammelan puistokatu 31-33



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 5 Ltd housing company Tammelan puistokatu 31-33</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</i>	
Gross volume	<i>2488 m²</i>	
Number of dwellings	<i>24</i>	
Energy performance	BEFORE	<i>F</i>
	TARGET/AFTER	<i>D</i>

Plot map																						
Building envelope	Pre-fabricated concrete building walls 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																						
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> <p><i>Note: weighted by energy form factor 2012</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		191-240	F	F	241-	G	
-75	A																					
76-100	B																					
101-130	C																					
131-160	D																					
161-190	E																					
191-240	F	F																				
241-	G																					

*Not the official energy certificate calculation.


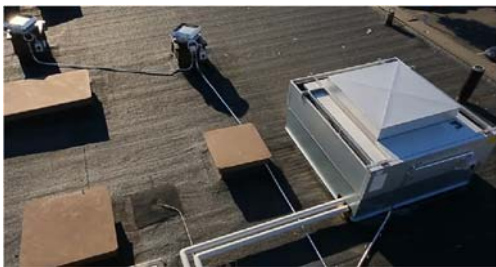
3 - Implementation

Stakeholders involved	
Project manager	Teisko LVI Oy
Technical system designer	Smart Heating System Oy
Technical system contractor	Smart Heating System Oy
Lighting and electricity	Kaapelipojat Oy
Garage doors	Metallityö Välimäki Oy
Supervision	Teisko LVI Oy

Costs and financing		
Refurbishment costs	Heating	128 000
	LED lighting	5 300
	Door and windows	5 600
	VAT 24 %	33 000
	Total €	172 000
	Total €/m ²	70
Financial resources	Bank loan 60 %; EU Grant 40 %	

Implementation planning	
1 - step one	2014
Design brief	
2 - step two	2015
Detailed planning, implementation and commissioning	

4 - After refurbishment

Concept	 																						
Technical service system	District heat; Central heating; Mechanical exhaust air with heat recovery; Air-to-water heat pump; Air-to-air heatpump; LED lighting with presence control																						
Thermal renewable integration	Renewables in DH production 47 %																						
Electric renewable integration	Renewables in grid electricity 100 %																						
Energy consumption (final)	70 kWh/m ² /a																						
Energy efficiency certificate*	<table border="1"> <tbody> <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>D</td></tr> <tr> <td>161-190</td><td>E</td><td></td></tr> <tr> <td>191-240</td><td>F</td><td></td></tr> <tr> <td>241-</td><td>G</td><td></td></tr> </tbody> </table> <p><i>Note: weighted by energy form factor 2012</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	D	161-190	E		191-240	F		241-	G	
-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 by Smart Heating</i>
Monitored variables	<i>Electricity for technical service systems (incl. HPs) District heating</i>

		Before	After
Electricity consumption	kWh/m ² /year	9	35
DH consumption	kWh/m ² /year	178	35
Gross final energy consumption	kWh/m ² /year	187	70
Operational costs	€/ m ² /year	15	6