

TAMPERE | Tammella district

30.000 m² of floor area

400 dwellings

560 inhabitants

40% energy savings

Tampere has 215,168 inhabitants, the Central Region Tampere has 360,681 inhabitants and the Tammella district, where the renovations take place, has around 7000 inhabitants. The age distribution of Tammella 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. Tammella 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.



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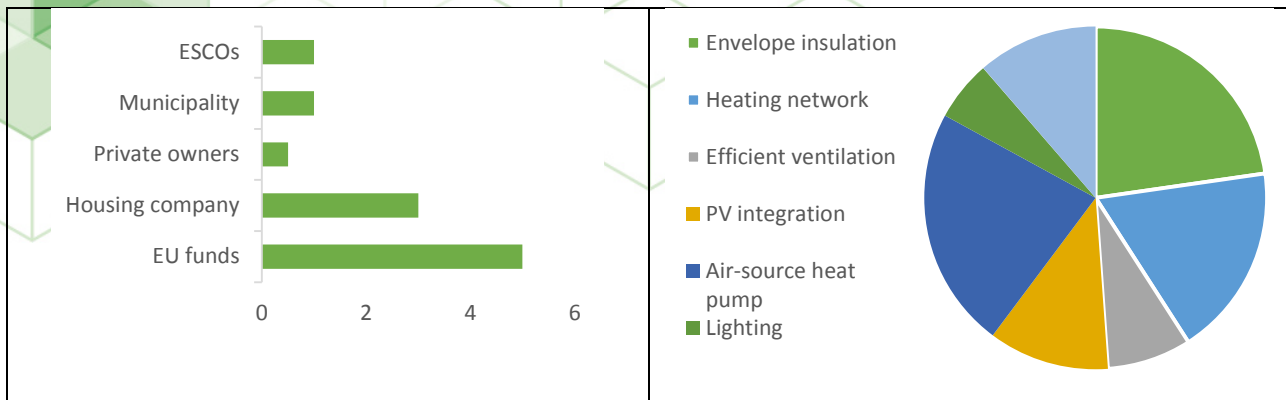
Total energy consumption
in refurbished areas

<figure before>  <figure after>

Total Investment*
Around 8 Million €

Areas of intervention
(proportions based on investment per type)

*Costs are based on different actual and calculated costs shifted to the comparison year 2014-2016 with the construction cost index. Costs of BEST 8 roughly estimated.



| Demo 1 - Limited liability housing company Itsenäisyydenkatu 15 | |
|---|---|
| Characteristics | A residential block of flats built in 1961. Total area 1960 m ² . |
| Legal structure | Building and building site is owned by the shareholders (mostly residents) who form the limited liability housing company. |
| Financing model | 12 % EU-grant + 7 % national subsidy + 81 % Bank Loan |
| Energy consumption | 291 > 120 kWh/m ² /a Primary energy savings estimated: -59 % |
| Measures implemented | <p><i>Facades U value 0,2 (additional insulation 200 mm)</i></p> <p><i>Windows U value 1</i></p> <p><i>District heating; central heating; LED lighting with presence control</i></p> <p><i>Heat recovery and exhaust air heat pump, 17 kW</i></p> <p><i>Renewables in district heat production 38 %</i></p> <p><i>Renewables in grid electricity 25 %</i></p> <p><i>Remote monitoring system Talotohtori ® and smart metering by utility company</i></p> <p>Renovation was completed in November 2015.</p> |

| Demo 2 - Limited liability housing company Kaupinpiiritti | |
|---|---|
| Characteristics | A residential block of flats built in 1968. Total area 3693 m ² . |
| Legal structure | Building and building site is owned by the shareholders (mostly residents) who form the limited liability housing company. |
| Financing model | 10 % EU-grant + 90 % Bank Loan |
| Energy consumption | 193 > 92 kWh/m ² /a Primary energy savings estimated: -52 % |
| Measures implemented | <p><i>Additional insulation; new skin; new supply air windows U value 0,8 W/m²K; façade U=0,21 W/m²K</i></p> <p><i>District heating; central heating; LED lighting with presence control</i></p> <p><i>Exhaust air heat pump 40kW</i></p> <p><i>Renewables in district heat production 38 %</i></p> <p><i>Renewables in grid electricity 25 %</i></p> <p><i>Remote monitoring system. Smart metering by utility company</i></p> <p>Renovation will be carried through in 2016.</p> |

| Demo 3 - Limited liability housing company Tammelankulma | |
|--|---|
| Characteristics | A residential block of flats built in 1970. Total area 5395 m ² . |
| Legal structure | Building and building site is owned by the shareholders (mostly residents) who form the limited liability housing company. |
| Financing model | 7 % EU-grant + 1 % national subsidy + 92 % Bank Loan |
| Energy consumption | 220 > 90 kWh/m ² /a Primary energy savings estimated: -59 % |
| Measures implemented | <p><i>Only solid facades have got additional insulation (+ 100 mm). New windows U value 1,4</i></p> <p><i>District heating; improvements within central heating; LED lighting; water saving faucets</i></p> <p><i>Exhaust air heat pump 40 kW</i></p> <p><i>Recycled waste air</i></p> <p><i>Renewables in district heat production 38 %</i></p> <p><i>Renewables in grid electricity 25 %</i></p> <p><i>Remote monitoring system. Smart metering by utility company</i></p> <p>Renovation was completed in November 2014.</p> |

| Demo 4 - Limited liability housing company Aionkatu 2 | |
|---|---|
| Characteristics | A residential block of flats built in 1971. Total area 5554 m ² . |
| Legal structure | Building and building site is owned by the shareholders (mostly residents) who form the limited liability housing company. |
| Financing model | 16 % EU-grant + 1 % national subsidy + 84 % Bank Loan |
| Energy consumption | 191 > 90 kWh/m ² /a Primary energy savings estimated: -53 % |
| Measures implemented | <p><i>Windows U value 1</i></p> <p><i>LED lighting</i></p> <p><i>Exhaust air heat pump; 46 kW</i></p> <p><i>Renewables in district heat production 38%</i></p> <p><i>Renewables in grid electricity 25%</i></p> <p><i>Remote monitoring system; Smart metering by utility company</i></p> <p>Renovation will be completed in 2016.</p> |

| Demo 5 - Limited liability housing company Tammelanpuistokatu 31-33 | |
|---|--|
| Characteristics | A residential block of flats built in 1974. Total area 2488 m ² . |
| Legal structure | Building and building site is owned by the residents who form the limited liability housing company. |
| Financing model | 40 % EU-grant + 60 % Bank Loan |
| Energy consumption | 212 > 74 kWh/m ² /a Primary energy savings estimated: -65 % |
| Measures implemented | <p><i>New garage doors</i></p> <p><i>Heat recovery systems 10.1 kW and 14,4 kW</i></p> <p><i>Exhaust air heat pump 50 kW + 16 kW + 16 kW; COP 2-4</i></p> <p><i>LED lighting with presence control</i></p> <p><i>Renewables in DH production 38 %</i></p> <p><i>Renewables in grid electricity 25 %</i></p> <p><i>Remote monitoring system. Smart metering by utility company</i></p> <p>Renovation was completed in the autumn 2015.</p> |

| Demo 6 - Limited liability housing company Torinnaapuri | |
|---|--|
| Characteristics | A residential block of flats built in 1978. Total area 3024 m ² . |
| Legal structure | Building and building site is owned by the shareholders (mostly residents) who form the limited liability housing company. |
| Financing model | 30 % EU-grant + 70 % Bank Loan |
| Energy consumption | 166 > 78 kWh/m ² /a Primary energy savings estimated: -53% |
| Measures implemented | <i>Additional insulation U value 0,23 and rendering</i> <i>Windows U value 0,8</i> <i>District heating; central heating;</i> <i>real time remote monitoring</i> <i>Exhaust air heat pumps 40 kW</i> <i>In district heat production 38 %</i> <i>In grid electricity 25 %</i> <i>Remote monitoring system Talotohtori ®.</i> <i>Smart metering by utility company (district heat and electricity)</i> Renovation was completed in December 2014. |

| Demo 7 - Limited liability housing company Tampereen Pohjolankatu 18-20 | |
|---|---|
| Characteristics | A residential block of flats built in 1980. Total area 4117 m ² . |
| Legal structure | Building and building site is owned by the shareholders (mostly residents) who form the limited liability housing company. |
| Financing model | 19 % EU-grant + 6 % national subsidy + 75 % Bank Loan |
| Energy consumption | 172 > 57 kWh/m ² /a Primary energy savings estimated: -67 % |
| Measures implemented | <i>New windows and doors (U value 1)</i> <i>District heating; central heating; LED lighting with presence control;</i> <i>water saving faucets</i> <i>Exhaust air heat pumps 60 kW</i> <i>Solar collectors 10 m²</i> <i>Renewables in district heat production 38%</i> <i>Renewables in grid energy 25%</i> <i>Remote monitoring system Talotohtori ®.</i> <i>Smart metering by utility company (district heat and electricity)</i> Renovation was completed in June 2014. |

| Demo 8 - Limited liability housing company Tampereen Tapio | |
|--|---|
| Characteristics | A residential block of flats built in 1973. Total area 6060 m ² . |
| Legal structure | Building and building site is owned by the shareholders (mostly residents) who form the limited liability housing company. |
| Financing model | <i>N/A Bank loan; EU Grant; National subsidy</i> |
| Energy consumption | 223 > 86 kWh/m ² /a Primary energy savings estimated: 61 % |
| Measures implemented | <i>New windows U value 1 and doors; additional insulation and rendering Led lighting with presence control Exhaust air heat pump Renewables in district heat production 38% Renewables in grid electricity 25% Remote monitoring system. Smart metering by utility company (district heat and electricity) Renovation will be completed in 2016.</i> |

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