Example of dilemmas for low consumption house
Our house

Build 1934-5
Reconstruction 2009-10
3 bedrooms, living room, kitchen
145 m2
Family of four
# Prague’s weather

<table>
<thead>
<tr>
<th>Month</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Average high °C</strong></td>
<td>1.5</td>
<td>3.2</td>
<td>8.2</td>
<td>14.5</td>
<td>19.5</td>
<td>22</td>
<td>24.7</td>
<td>24</td>
<td>18.9</td>
<td>13.2</td>
<td>6.2</td>
<td>2.1</td>
<td>13.2</td>
</tr>
<tr>
<td><strong>Average low °C</strong></td>
<td>−3.8</td>
<td>−3.4</td>
<td>0.1</td>
<td>3.1</td>
<td>8.5</td>
<td>11</td>
<td>12.9</td>
<td>12.7</td>
<td>8.8</td>
<td>4.9</td>
<td>0.8</td>
<td>−2.5</td>
<td>4.4</td>
</tr>
<tr>
<td><strong>Mean sunshine hours</strong></td>
<td>50</td>
<td>72.4</td>
<td>124.7</td>
<td>167.6</td>
<td>214</td>
<td>218.3</td>
<td>226.2</td>
<td>212.3</td>
<td>161</td>
<td>120.8</td>
<td>53.9</td>
<td>46.7</td>
<td>1,667.90</td>
</tr>
</tbody>
</table>
Our house

Reconstruction
• 14 cm insulation
• Roof and ground floor insulation
• Triple glazing windows
• Solar system

Costs/subsidies
• Insulation/subsidy: EUR 23600/9700
• Solar system/subsidy: EUR 4300/2100
• Total investment: EUR 52800
• Payback period 14,5 years (without subsidy) 25 years
Heating

- **wood**
  hot air distribution
  3 m³ hard wood – approx. 3500kWh
- **gas** (supplementary)
  water radiators + floor heating
  also used for cooking and hot water
  Approx. 1500kWh (total consumption is 3000kWh)

Low consumption house 41,3 kWh/m²/year

Based on real consumption
Hot water

Solar system:
4,4 m², boiler 300l
No additional heating: April 15-October 15 (6 months)
Gas boiler supplementary (also used for heating)
Get away from gas options

- Pellets & hot water to electricity
  - Easy to connect to existing system
  - New chimney, limited storage space, not completely automatic
- Recuperation & hot water to electricity
  - Major reconstruction needed for air distribution, lot of space is required
- Electric heating (using hot water)
  - Cheapest option, easy to connect to current systems
  - Lowest efficiency
- Heat pump 60°
  - Easy to connect to existing system
  - Some construction work needed (connecting to outside ventilator), moderate efficiency, expensive
- Heat pump 35° & hot water to electricity
  - Most efficient system
  - Major reconstruction needed (installing floor heating in two floors)
### Get away from gas options

<table>
<thead>
<tr>
<th>Heating Option</th>
<th>Costs (EUR)</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pellets &amp; hot water to electricity</td>
<td>3 400</td>
<td>Cost depends on storage option</td>
</tr>
<tr>
<td>Recuperation &amp; hot water to electricity</td>
<td>12-18 000</td>
<td>Construction costs are difficult to estimate</td>
</tr>
<tr>
<td>Electric heating (using hot water)</td>
<td>400</td>
<td></td>
</tr>
<tr>
<td>Heat pump 60°</td>
<td>7 100</td>
<td></td>
</tr>
<tr>
<td>Heat pump 35° &amp; hot water to electricity</td>
<td>9 900</td>
<td>Floor heating on two floors</td>
</tr>
</tbody>
</table>
Thanks for your attention!

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