



Project information

Project type:	New eco-dwellings
Address:	Paseo de los Poetas 12,14 Tudela
End construction year:	2011
Building type:	Multi level block of apartments
Dwellings:	36
Storeys:	5
Gross area BTA:	6173 m ²
Net area:	3835 m ²
Heated area:	4115 m ²
Additional costs* for eco-applications:	653.261 €
Total building costs*:	2.710.056 €

* Not included industrial benefits, overheads and taxes

Special ECO-technologies applied:

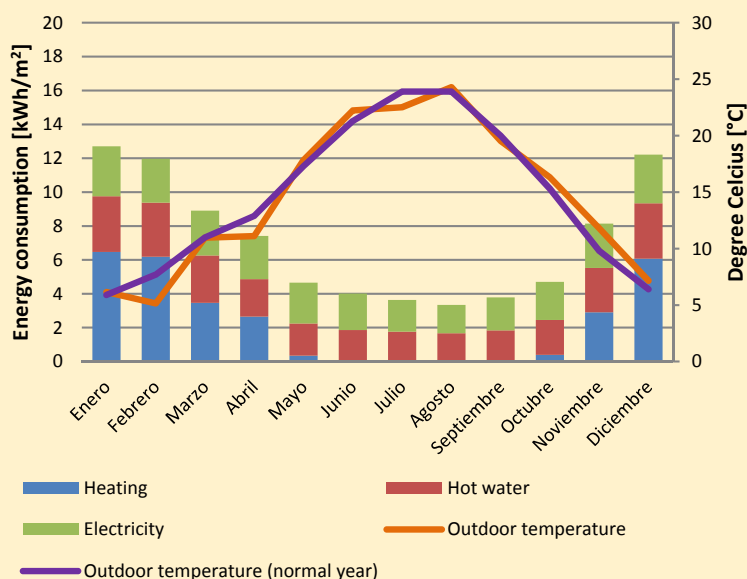
- Optimization of window type
- Passive solar
- Avoidance of thermal bridges
- Increased insulation in roof, floor and facade
- Photovoltaic Field
- Intelligent control system (TIC) for DHW+Heating
- Individual measurement system
- Improved air tightness of building envelope
- ECO-materials (mineral wool insulation and wood frames for the windows)
- Biomass powered DHW+Heating



Energy consumption

* National Regulations (2006)

Energy consumption (simulated)

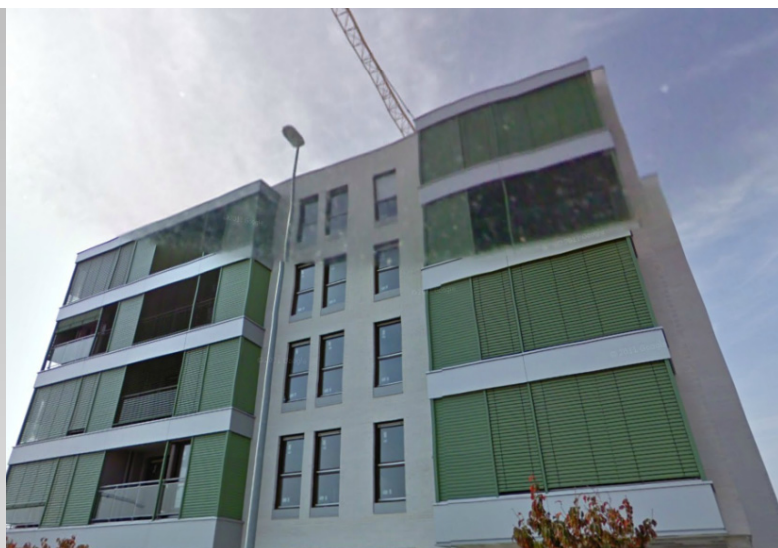


Heat trans.	Unit	National reg.*	Concerto spec.	Actual
Outerwall	W/m ² K	0.66	0.3	0.29
Roof	W/m ² K	0.49	0.2	0.19
Floor	W/m ² K	0.49	0.25	0.25
Windows North	W/m ² K	3	-	-
Windows South	W/m ² K	3.5	-	-
Glazing	W/m ² K	-	1.6	1.6
Vent. rate	h ⁻¹	1	0.5	0.5
Energy consumption				
Heat	kWh/m ²	53.6	29.7	-
Hot water	kWh/m ²	18	14.5	-
Electricity	kWh/m ²	23	15.5	-
Total	kWh/m²	94.6	59.7	-
PV	MWh	-	-	18.5

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Lessons learned:

- Designer subject to urban regulations, buildings cannot be optimally oriented. As a result, savings could be higher.
- Since these were private property developments, public administrations have been unable to have an influence on the design. As a consequence of the little know-how in bioclimatic architecture of private architects, design geometry is not optimal although concerto specifications have been successfully achieved.
- Extra costs due to energy efficiency improvement measures have been lower than expected.
- Due to the photovoltaic field, one of these buildings almost meets zero emission building specifications.



Key figures

Heat trans.	Unit	Normal practice	Concerto spec.	Actual
Outerwall	W/m ² K	0.66	0.3	0.29
Roof	W/m ² K	0.49	0.2	0.19
Floor	W/m ² K	0.49	0.25	0.25
Windows (North)	W/m ² K	3	–	–
Windows (south)	W/m ² K	3.5	–	–
Glazing	W/m ² K	-	1.6	1.6
Vent. rate	h ⁻¹	1	0.5	0.5

Energy consumption	Unit	Normal practice	Concerto spec.	Actual 2012
Heat	kWh/m ²	53.6	29.7	-
Pipe losses	kWh/m ²	Inc	Inc	-
Ventilation	kWh/m ²	Inc	Inc	-
Hot water	kWh/m ²	18	14.5	-
Total heat	kWh/m²	71.6	44.2	-
Lighting	kWh/m ²	Inc	Inc	-
Other	kWh/m ²	Inc	Inc	-
Total elec.	kWh/m²	23	15.5	-
Total	kWh/m²	94.6	59.7	-
PV	MWh	-	-	18.5

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