



Project information

Project type:	New eco-building
Address:	Paseo de las Capuchinas, 29, 31 Tudela
End construction year:	2011
Building type:	Multi family dwellings
Dwellings:	40
Storeys:	5
Gross area BTA:	6117 m ²
Net area:	3873 m ²
Heated area:	4133 m ²
Additional costs* for eco-applications:	562.604 €
Total building costs*:	2.517.579€

* Not included industrial benefits, overheads and taxes

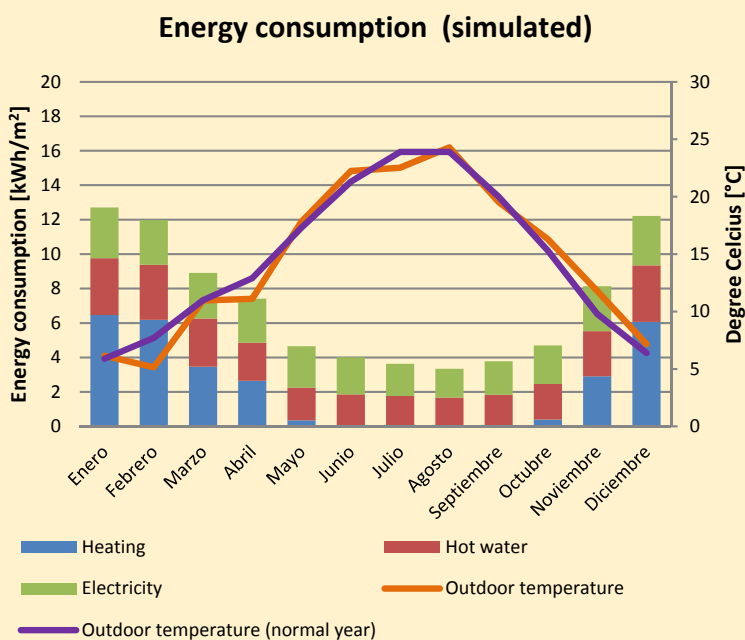
Special ECO-technologies applied:

- Optimization of window type
- Passive solar
- Avoidance of thermal bridges
- Increased insulation in roof, floor and facade
- 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)



Heat trans.	Unit	National reg.*	Concerto spec.	Actual
Outerwall	W/m ² K	0.66	0.3	0.26
Roof	W/m ² K	0.49	0.2	0.17
Floor	W/m ² K	0.49	0.25	0.24
Windows (north)	W/m ² K	3	-	-
Windows (south)	W/m ² K	3.5	-	-
Glazing	W/m ² K	-	1.6	1.4
Vent. rate	h ⁻¹	1	0.5	0.5

Energy consumption	Unit	National reg.*	Concerto spec.	Actual 2012
Heat	kWh/m ²	48.1	28.5	-
Hot water	kWh/m ²	18	14.5	-
Electricity	kWh/m ²	23	15.5	-
Total	kWh/m²	89.1	58.5	-

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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.



Key figures

Heat trans.	Unit	Normal practice	Concerto spec.	Actual
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Glazing	W/m ² K	–	1.6	1.4
Vent. rate	h ⁻¹	1	0.5	0.5

Energy consumption	Unit	Normal practice	Concerto spec.	Actual 2012
Heat	kWh/m ²	48.1	28.5	-
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	66.1	43	-
Lighting	kWh/m ²	Inc.	Inc.	-
Other	kWh/m ²	Inc.	Inc.	-
Total elec.	kWh/m²	23	15.5	-
Total	kWh/m²	89.1	58.5	-

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