


EDIFICI ACONCAGUA

by jordi llovera / 2015-06-29 12:47:13 / International / 14521 / EN



Renovation

Primary energy need :

4.5 kWhpe/m².year

(Calculation method :)

ENERGY CONSUMPTION

Economical building *Building*

< 50	A	A
51 à 90	B	
91 à 150	C	
151 à 230	D	
231 à 330	E	
331 à 450	F	
> 450	G	

Energy-intensive building

Building Type : Collective housing > 50m
Construction Year : 1982
Delivery year : 2011
Address 1 - street : meritxell 30 00500 ANDORRA LA VELLA, ANDORRA, Andorra
Climate zone : [Cfc] Marine Cool Winter & summer- Mild with no dry season.

Net Floor Area : 2 300 m² Autre type de surface nette
Construction/refurbishment cost : 340 000 €
Number of Dwelling : 24 Dwelling
Cost/m2 : 147.83 €/m²

Certifications :

MINER^GIE-ECO[®]

Proposed by :



General information

Reformed building with 27 apartments, applying energy efficiency criteria.

It's situated in an alpine zone.

The winter's minimum temperature is -12°C.

Reduced heating consumption by 82%.

Acting on facade insulation and heating system: thermographic study, 15 to 20cm insulation, triple glazing LowE, blower door test, etc.

See more details about this project

<http://www.construction21.org/espana/case-studies/es/aconcagua.html>

<http://www.construction21.org/articles/fr/low-energy-renovation-winner-2015-aconcagua-andorra.html>

Stakeholders

Stakeholders

Function : Designer

ENGINESA

info@enginesa.ad

<http://www.enginesa.ad>

architects and thermal engineering designer

Contracting method

Separate batches

Type of market

Table 'c21_belgium.rex_market_type' doesn't exist

Building users opinion

Users are happy because their heating cost is very low and the comfort has increased.

Owner is happy too because he can grow up the price to rent the apartments, even if the users pays less than before (because the heating cost). He is happy too because he has a waiting list to rent their apartments.

Energy

Energy consumption

Primary energy need : 4,50 kWhpe/m².year

Primary energy need for standard building : 55,00 kWhpe/m².year

Calculation method :

CEEB : 0.0001

Breakdown for energy consumption : heating made by central heat pump. Consumption 4.5 kWh/m²/year

hot water production by heat pump. consumption 21 kWh/m²/year

lighting 104.5 kWh/m²/year

Initial consumption : 212,00 kWhpe/m².year

Envelope performance

Envelope U-Value : 0,24 W.m⁻².K⁻¹

More information :

Primary facade, U=0.24 W/m²/K

Secondary facade U=0.34 W/m²/K

Facade to neighbor U=0.27 W/m²/year

Building Compactness Coefficient : 2,90

Indicator : n50

Air Tightness Value : 2,40

Real final energy consumption

Final Energy : 130,00 kWhfe/m².year

Real final energy consumption/m² : 130,00 kWhfe/m².year

Real final energy consumption/functional unit : 4,64 kWhfe/m².year

Year of the real energy consumption : 2 013

Systems

Heating system :

- Heat pump
- Water radiator

Hot water system :

- Heat pump

Cooling system :

- No cooling system

Ventilation system :

- Natural ventilation

Renewable systems :

- No renewable energy systems

Renewable energy production : 100,00 %

Solutions enhancing nature free gains :

solar gains control by blinds

Smart Building

BMS :

Control on/off, viewer of any parameter like temperatures, % opened of motorized valve, pump parameters (% velocity, flow, pressure, energy), instant and cumulated electrical and thermal energy consumption

Users' opinion on the Smart Building functions : facility controlled by a Desigo Insight central control by Siemens

Environment

Urban environment

Building in Andorra la Vella down town, shopping zone

Land plot area : 350,00 m²

Built-up area : 100,00 %

Products

Product

rockwool external pipe insulation 2x5cm each pipe

Product category :

exterior pipe insulation

very good insulation with this thickness

daikin heat pump

Product category :

Heat pump for heating low temperature (max 50°C) and high efficiency COP between 2.84 to 3.77, ESEER 3.78.

It works at proportional temperature to outdoor temp to achieve always maximum COP.

We use with this heat pump, existing old radiators (high temperature and high emission) to heat this building after refurbishment, working at low temperature and low emission.

daikin altherma for DHW

Product category :

High temperature heat pump to produce domestic hot water (DHW)

Produces low cost hot water. No problems

grundfos magna 3 for heating and DHW

Product category :

Electronic pump with connection to BMS control system, data transmission: pressure (bar), flow (m3/h), instant consumption (W), cumulate consumption (kWh), thermal flow (kWh).

Working at constant temperature function (hot water production) or at constant pressure function (for heating facility)

Sometimes the pump stops without any order

Costs

Construction and exploitation costs

Renewable energy systems cost : 35 000,00 €



Cost of studies : 22 000 €

Total cost of the building : 340 000 €

Subsidies : 30 000 €

Contest

Building candidate in the category

Low energy renovation



Green Building Solutions Awards 2015

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