CIPRA
LEBEN IN
DEN ALPEN

MountEE
sustainable community building

MountEE - Energy efficient and sustainable building
in European municipalities in mountain regions
IEE/11/007/SI2.615937

BEST PRACTICES AS FOR SUSTAINABLE CONSTRUCTION AND RETROFITTING OF BUILDINGS IN THE RHÔNE-ALPES REGION

CONSTRUCTION OF AN EARLY CHILDHOOD CENTER IN THE MUNICIPALITY OF SAINT-PIERRE D'ALLEVARD (38)

RhôneAlpes Région

INTELLIGENT ENERGY
EUROPE

Introduction

The town of Saint-Pierre d'Allevard as the Community of municipalities of Grésivaudan is very sensitive to the environment and energy savings as well as renewable energies and has committed itself significantly on these topics. In 2010, this municipality has launched an exemplary action as regards the environment and energy efficiency by choosing to build an innovative early childhood center focusing on these aspects.

Context and objectives

The site is located at an altitude of about 520 m. This project includes one building on one level, consisting of a crèche day nursery, childminders support and relay and a day leisure centre. The environmental approach of the project is mainly focused on energy savings, reinforced insulation, air tightness (blower door test), ventilation and efficient joinery, pellet boiler, solar thermal, etc..This is done on the principle of a high environmental quality label and by obtaining a gain, relative to the regulation RT2005,higher than 50% corresponding to 2005 BBC level (Low Consumption Building according to calculations RT2005). This building is equipped with various innovative, effective systems and using renewable and inexhaustible local energy sources. This type of installation for demonstration is part of a process of sobriety and energy efficiency for a better management of our planet's resources.

Description

Building use
Early childhood center providing a day nursery, a relay of childminders and after-school recreation center.

Surface of the building
448,54 m² of surface + 66,46 m² changing rooms ie a total surface area of 515 m².

Heating
Heating and collective domestic hot water (pellets wood boiler, 60 kW).

Domestic hot water
Solar domestic hot water : 14 m² of collectors located on framing metal roof, coupled to a buffer tank of 750 liters technique loaded via an internal coil exchanger. The final output is made in looped network in order to limit the risk of legionella. Solar domestic hot water is mainly produced with solar energy (primary energy), in addition (secondary circuit) by the wood boiler and in security by an electrical resistance. The water for heating and the domestic hot water are stored in a hydroaccumulation tank trienergies (wood / solar / electric heater).

Heat distribution
Low temperature Hydraulic floor heating regulated by area of 300 m².
In addition 8 radiators are installed with room thermostats and blowing batteries in the dorms.

Ventilation.
Controlled mechanical ventilation is a turbofan central whose efficiency is higher than 80% (supply and exhaust air) installed to meet the regulatory needs of ventilation and also ensure minimal ventilation to sanitize the area. In addition, it will enable energy recovery from the exhaust air to preheat the air blown in the rooms.

Lighting and electrical equipement
Low energy lighting, presence detection, brightness adjustment based on the daylight.

Bioclimatic design
N/S Orientations – large French windows to the South, compactness.

Final energy consumption
BBC performance reached without asking for the label and air tightness tests carried out with great results.

Supported by INTELLIGENT ENERGY EUROPE

Insulation and joinery

The exterior walls are wood frame with high insulation distributed or poured concrete with insulation from the outside according to the facades. The bottom floor is concrete and the interior walls are drywall or other for improvement of inertia. Wood wool insulation or extruded polystyrene panels for walls and cellulose wadding into the roof. High performance double glazed 4/16/4 low-emission to argon blade and wooden joinery.

High environmental quality approach

All choices of materials, construction systems, insulation, details of treatment of thermal bridging, HVAC systems were chosen according to different scenarios tested to measure their technical impact (insulation quality, environmental impact, treatment of thermal bridging, inertia and summer comfort, occlusions, ...).

Budgets, costs and financing

A close collaboration between owners and contractors have allowed to bring this project to high levels of environmental and energy performance. Many proposals have been made on both sides to integrate all parameters without jeopardizing the economy of the project and estimated costs were looking very close to actual costs of selected companies.

Investments :

*Fluid part : Estimation: 170 000 € HT.
Actual cost of the selected company : 193 369 € HT.
*Electricity :Estimation: 75 000 € HT.
Actual cost of the selected company : 78 579 € HT.

Subsidies :

Total cost : 1 847 830 €
Subsidies : 573 396,18 €
Loan 0% CAF (Family Allowance Fund) : 100 000 €
Self-financing : 1 174 433,82 €

Main results

Conformity with 2005 BBC label option EFFINERGIE from 01/10/2009

Analysis of lessons and success factors

Technically and economically the project went smoothly thanks to the motivation and involvement of the owner and secondly through effective partnership with the contractor team. Technically, the project went far in terms of energy performance. However the label Effinergie has not been applied for because the cost of the latter was considered too expensive. The end of the construction is scheduled for late 2012, as there has not yet been heating season there is no figures on consumption.

Dates and duration

Call for tenders : January 2010
End of construction : December 2012

Contact

Town hall of Saint-Pierre d'Allevard
Mairie - 38830 ST-PIERRE-D'ALLEVARD
Email stpierre.d.allevard@wanadoo.fr Tel 33 4 76 45 11 10

info@mountee.eu - www.mountee.eu

Supported by INTELLIGENT ENERGY EUROPE