

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

## **BEST PRACTICES AS FOR SUSTAINABLE CON- STRUCTION AND RETROFITTING OF BUILD- INGS IN THE RHÔNE-ALPES REGION**

**CONSTRUCTION OF A MULTI-POLE CHILDCARE  
HOME - COMMUNITY OF MUNICIPALITIES OF THE  
COMBE DE SAVOIE (73)**



This project began with the necessity of the Community of Municipalities of Combe de Savoie (CCCS) and the Community of Municipalities Gelon Coisin (CCGC) to cope with the growing needs of parents for permanent and occasional childcare. They came together for the realization of two twin nurseries. It was asked to meet the objective of the BBC label (low consumption building) and integrate ambitious criteria for the environmental quality of the building to first facilitate a very good indoor air quality.

### Context and objectives

Because of very motivated and informed owners, the selected contractor proposed to go beyond the objectives of the program by offering:

- a passive project (heating needs <math><15 \text{ kWh/m}^2\cdot\text{year}</math>) and positive energy by adding a photovoltaic roof (the local energy production will be superior to the total of energy needs of the building) .
- and a comprehensive environmental approach (renewable energies, choice of materials, requirements on indoor air quality and emissions of volatile organic compounds tiles ...). This building is equipped with various innovative and efficient systems and using local renewable and inexhaustible energy sources.

This type of installation for demonstration is part of a process of sobriety and energy efficiency for a better management of the resources of our planet.

### Description

**Use of the building** : childcare multi-pole with a childhood nursery and a crèche.

#### **Building surface.**

365 m<sup>2</sup> net surface

#### **Heating.**

Automatic pellets condensation boiler - 15 kW.

#### **Domestic hot water**

About 6 m<sup>2</sup> of collectors on the roof with a 500 liters balloon.

The domestic hot water production is made mainly by the solar energy (primary circuit), in addition (secondary circuit) by the wood boiler

#### **Heat distribution**

Low temperature hydraulic floor heating regulated by area promoting soft heat radiation

#### **Ventilation**

The controlled mechanical ventilation is a double flow unit efficiency superior to 80 % (air blowing and extraction) installed to meet the regulatory needs for air ventilation. Moreover, it will lead to the energy recovery of the air extracted to preheat the blown in the rooms and thus reduce the losses and guarantee a better comfort.

#### **Lighting and electrical equipment**

Low energy lighting, presence detection, brightness adjustment based on the daylight.

#### **Bioclimatic design**

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

#### **Summer comfort**

Solar protections

#### **Final energy performance**

Passive level performance reached, no setting up approach for labeling and air tightness tests performed.

#### **Insulation and joinery**

The outer walls are wooden frame with reinforced insulation on all walls. The bottom floor is a concrete slab on grade. Stone wool insulation and wood fiber for the walls and roof. Double glazed 4/16/4 low-emission to argon blade and wood joinery to the South, and highly-performing triple glazing on other facades. Training

was offered to all companies working on the site as regards air tightness.

**Environmental High Quality approach**

All choices of materials, construction systems, insulation, thermal bridging, HVAC systems were chosen according to various screenwriters tested to measure their technical environmental and energy 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. Additional costs related to performance have been mastered, and owners have benefited from additional financing for the ambitious requirements of the project. Surcharge of 6% to go from low consumption level to passive level.

**Investments :**

Total cost : 845 557 € HT  
 2080 €/m<sup>2</sup> net surface  
 Enveloppe cost : 342 000 € HT  
 Heating cost : 62 000 € HT  
 Ventilation cost: 17 000 € HT

**Subsidies : about 80% of public subsidies**

**Main results**

Compliance with BBC label (2005)  
 Compliance with requirements of passive buildings

**Analysis of lessons and success factors**

The owner has evaluated needs and expectations in collaboration with users. Then the program was clearly defined with specific energy and environmental goals. The contractor has ensured the follow up of objectives of this environmental approach. Through an effective partnership between owner and contractor, this program resulted in a high performance building with low environmental impact.

**Dates and duration**

Call for tenders : March 2009  
 End : September 2011

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