

MountEE - Energy efficient and sustainable building
in European municipalities in mountain regions
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BEST PRACTICES AS FOR SUSTAINABLE CONSTRUCTION AND RETROFITTING OF BUILDINGS IN THE RHÔNE-ALPES REGION

**RENOVATION OF THE TOWN HALL OF SAINT-VERAND,
FRANCE**





This project is about the major renovation of the Town Hall of Saint-Vérand in Isère. The building to be delivered during the summer of 2012 has been designed according to the standard BBC (Low Consumption Building): consumption of primary energy must not exceed - 40% of the conventional reference. This level of performance allows to limit emissions of greenhouse gases and to fight against climate change.

Context and objectives

This building is of type "Jules Ferry" with a special architectural style, an important heritage to preserve. Thus the choice for renovation was to maintain the appearance of the exterior and thus to insulate the building from the inside. In addition, the changing roles and regulations led to consider a major renovation with removal of all existing wood floors and all interior refurbishment. The environmental approach of the project is mainly focused on the search for energy savings, insulation, air tightness (blower door test), ventilation and efficient joinery, while retaining the historic facade of 1904. This type of installation for demonstration is part of a process of sobriety and efficiency for better management of our planet's resources.

Description

Building use.

This project has changed the building use becoming a town center gathering the post office, home associations, town hall and a reception area in case of disaster.

Surface of the building.

Building R+2 of 686 m² net surface area and of 450 m² of operating surface.

Heating

Low temperature gas boiler 40 kW.

A small district heating with a wood boiler heat should also be implemented.

Ventilation.

Double flow controlled mechanical ventilation and simple flow humidity B.

Lighting and electrical equipment

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

Final energy consumption (heating, running auxiliaries, ventilation and lighting).

97,31 kWh/m².year.

Insulation and joinery

Walls : interior insulation of **16 cm** of bare glass-wool (Rd =5m²K/W).

Roof : **30 cm** of glass-wool (Rd =5m²K/W).

Floors : **10 cm** of stone wool (Rd =2.6m²K/W).

Joinery, wood shutters and exterior blinds

Chassis : Pine frame, ep : 68mm

Double glazing : 4mm Planibel Clear/16 argon 85%/4mm Planibel Top N+pos.3.

Uw : 1.4 W/(m².k)

AEV : A :4 - V :7b - E :c3



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 both to measure their technical impact (insulation quality, environmental impact, treatment of thermal bridging, inertia and summer comfort, occlusions, ...) and their economic impact to find the best possible ratio between technical and environmental gain according to costs.

Budgets, costs and financing

This renovation project identifies several challenges, not obvious to reconcile that are energy efficiency, minimized environmental impact and a budget very close and lower than originally taking into account the "surprises" the state of art. Many proposals have been made on both sides (owners and contractors) to integrate all parameters without jeopardizing the economy of the project. Indeed a very low budget gap could see the project simply stopped.

Investments :

- 1 137 000 €** (excluding exteriors).
- 917 000 €** (renovation works only). **ie. 1 336.73 €/m².**
- Insulation : 29 900 €
- Joinery, shutters and blinds : 80 000 €
- Ventilation : 53 000 €
- Lighting : 8 900 €

Subsidies :

TOTAL of 457 350 € representing **40 % of the investment**

Main results

	Energy Performance
PEC* before renovation	316,39 kWhep/m ² /year
PEC* after renovation	97,31 kWhep/m ² /year
Expected results	69,3 %

* - use : heating, domestic hot water, lighting, ventilation, cooling and electric auxiliaries

BBC renovation standard reached

Analysis of lessons and success factors

End of the project : mid 2012 no heating seasons yet and consequently no information regarding consumption.

This renovation project is the recipient of the call for proposals PREBAT (program of research and experimentation on energy in buildings) organized by the Rhône-Alpes Region and ADEME, to reward innovative projects in energy performance. This project is a pilot in the Rhône-Alpes. It will serve as a reference for other similar projects.

- Thanks to thermal insulation the performance BBC renovation standard has been reached. All thermal bridging is treated thoroughly. The objective is to achieve a continuous insulating layer soil-wall ceilings. The qualities of insulation and careful implementation guarantee a good part of the thermal per-



formance of the building.

- The air tightness is obtained by placing a film impervious to air and continuous barrier between the interior and the exterior. A test of air tightness will be made at the end of the laying of the film. This process significantly reduces the energy losses associated with air inlets.
- Finally, the principle of "double flow ventilation" is to warm fresh air in the building by recovering heat from the exhaust air through a heat exchanger.
- In addition, the proposed transformation of the Municipality is guided by a comprehensive high environmental quality environmental approach: energy conservation, maintenance, thermal comfort in winter and summer, acoustic management, management of construction waste are priorities.

Dates and duration

Following an urban and architectural study conducted in 2009, the municipal team decided to keep the Town Hall on the same site. Elected officials in charge of the case being desirous to make this an exemplary project implementation and resolutely turned towards the future, it is the beginning of the drafting of the program operation in late 2009, the idea of construct a 'low consumption' building, incorporating a high environmental quality approach appeared. The designation of the contractor in 2010, was made on the basis of this program in conjunction with the HQE assistance to owner of the town. The building is currently being finalized and work is expected to be fully delivered in late summer 2012.

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