

DOSSIER

Energy efficient buildings: something new!

Energy efficiency is more topical than ever and buildings are increasingly being targeted. And no wonder: 40% of energy consumption in Europe occurs in buildings and they are responsible for a quarter of greenhouse gas emissions – a trend which is on the increase.

The European Commission has been working on this issue since 2002, especially with the directive on energy performance of buildings currently being adapted in member states.

The European Commission's energy efficiency action plan, presented in October 2006, has an objective of saving 20% of energy between now and 2020 with much importance placed on energy performance of buildings.

In France, the POPE law of 13 July 2005 stipulates that greenhouse gas emissions shall show a four-fold reduction before 2050.

In addition, successive thermal regulations have contributed to improving the energy performance of new constructions, but up until now only the performance of new buildings has been organized whereas the rate of renewal of real estate is only 1% per year.

Today, challenges represented by existing buildings are finally being considered and various regulatory and voluntary provisions are being implemented in order to work towards these ambitious objectives.



Regulation: progress is being made!

TR 2005: thermal regulation for new buildings

Thermal regulation (TR) 2005 came into force in 2006. It applies to new buildings in the residential and tertiary sector for which the building permit was filed from 1 September 2006.

The objective is to improve the performance of new constructions by at least 15% compared with regulations from the year 2000, with the expectation of progressing every 5 years to reach 40% in 2020.

This new regulation constitutes a significant new step towards energy performance and its enforcement requires the support of professionals and contracting authorities which Rhônalpénergie-Environnement actively contributes to.

TR 2005 recommendations:

- enforce an energy consumption ceiling;
- introduce renewable energies into reference systems;
- favour bioclimatic design (solar gains, solar protection, orientation);
- reinforce requirements on summer comfort and give more consideration to thermal inertia;
- reinforce requirements with respect to structure and fittings.

Thermal regulation for existing buildings

The most important new aspect of the European directive for France is the obligation of following, from this point forward, recommendations concerning renovating existing buildings.

The decree relating to feasibility studies on energy supplies, temperature characteristics, the energy performance of existing buildings and the presentation of energy performance audits published in the Gazette on 21 March 2007, stipulates these obligations.

In case of large-scale renovation of a building larger than 1000 sqm, requirements for minimum energy performance to be met are set.

For others, standard technical solutions are to be observed for each type of work (insulating walls, roofing, door frames...). The decree specifying the relevant technical solutions was published in the Gazette of 17 May 2007.

Energy performance audits

Since 1 November 2006, sales of buildings or sections of buildings must be accompanied by an energy performance audit (EPA). From 1 July this will also apply to all leases. The decree was published in the Gazette on 17 May 2007. Implementing provisions are

planned for new buildings (1 July 2007) and for display in public buildings (2 January 2008). This measure, aimed at informing consumers, consists of presenting on a single document a property's energy consumption and corresponding greenhouse gas emissions by ranking them on a scale of values. It also includes work and management recommendations. Although it would have been desirable for the EPA to go further by stipulating, for example, that work be carried out for poor energy performance, it can nonetheless be commended for informing citizens, making concepts about energy consumption and CO₂ emissions linked to buildings more widely known and proposing a common language to allow comparisons to be made.

Auditors are in the process of being trained. From 1 November 2007 auditors will be required to have their skills certified.

Rhônalpénergie-Environnement has been working for two years on informing lessors and authorities about this plan, by regularly organising meetings between professionals.

To find out more consult

www.buildingdirective.org

Voluntary actions: example of the Effinergie approach

To take things further, the Effinergie association, created at the beginning of 2006, aims to set up a label for new and renovated buildings which are comfortable and respect quality of life and at the same time favour real energy efficiency in order to reduce environmental damage caused by energy use.

This efficiency is markedly superior to regulatory requirements currently in force because the objective is to promote innovative building design and creation aiming to achieve a four-

fold reduction in our greenhouse gas emissions between now and 2050 (50 kWh/sqm for the new residential sector and 50% of the 2005 RT reference for the tertiary sector).

The relevance of the Effinergie approach has been recognised by the Ministry for Housing, which has adopted, for the Bâtiment Basse Consommation (BBC) – Low Consumption Building (LCB) – national label, criteria from the Effinergie frame of reference (decree of 8 May 2007 relating to the content and condi-

tions required for granting the "high energy performance" label).

Rhônalpénergie-Environnement has been very involved in developing this label alongside other founding members of Effinergie, especially with regard to the principle of regional expansion of the Label.

The Rhône-Alpes region is in the process of joining Effinergie alongside nine other French regions.

EDITORIAL



Roger Léron,
President of
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Common sense to be put into action

This letter concerns the latest news on energy efficiency in buildings. The last two years have seen a turning point in France, where, finally, generalised awareness has increased in order to reduce energy consumption in housing and buildings with an approach driven by demand and no longer by offer. Thermal regulation and its variations help, but they will have also brought about changes in behaviour. It is now a question of living better whilst consuming less. Very willing initiatives abound for new builds but are more difficult to implement for existing buildings, which are, however, numerous. Financial solutions are yet to be created to reach the national and European objectives of a 20% saving in energy by 2020 and a four-fold reduction (factor 4 concept) in greenhouse gas emissions for 2050. In the field, local elected officials are responsible both in terms of setting a good example with regard to municipality estate and providing incentives (via information or financial support). We have the means, it is now necessary for everyone to take action.

The Rhône-Alpes Eco-Energies Cluster

Following nearly two years of informal cooperation, the Rhône-Alpes Eco-Energies cluster became an association in November 2006. The cluster's main aim is to guide and support businesses in the renewable energy and high performance building sector in order to develop their economic activity. Rhônalpénergie-Environnement has coordinated, since the cluster was created, one of six key actions: the development of a brand for high performance buildings.

Following market research, carried out in 2006, discussions have focused on the construction of individual houses. The setting up of the Effinergie brand with the "Low Consumption Building" state label has created a national frame of reference. The possibility of regional expansion with greater consideration given to renewable energy in a Rhône-Alpes brand is currently being studied. The task force is open to different partners in buildings, construction and financing and consultative bodies.

To find out more consult

www.buildingdirective.org

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Rhône-Alpes, a dynamic region

- In February 2006, as part of its regional energy plan, the Rhône-Alpes region launched a **pilot program to ensure high performance thermal retrofitting of old properties** with the objective of reducing the primary energy consumption of about ten apartment blocks, built before 1975, to 50 kWh/sqm/year.
- **"100 houses using less energy"**, was the objective of the request for proposals launched at the end of 2006 by the Rhône-Alpes region. It concerns individual houses (construction and renovation), the objective being to obtain buildings with very high energy performance, for which the level of consumption (heating and domestic hot

water) does not exceed 50 kWh/sqm/year in new properties and 60 kWh/sqm/year in old properties.

- The Rhône-Alpes region, ARRA and ADEME set up, at the beginning of 2007, a **frame of reference aimed at contributing to the generalisation of Qualité Environnementale du Bâti (QEB) – Structure Environmental Quality (SEQ) – practices in producing social housing.**

The partnership concerns, in particular, energy consumption, the objective being (in order to reward very high performance energy constructions) to limit charges for heating and domestic hot water which fall to social housing residents.

- Within the scope of PREBAT (programme national de

recherche et d'expérimentations sur l'énergie dans le bâtiment – national experimentation and research program on energy in buildings), this summer the Rhône-Alpes region and ADEME shall launch a **request for proposals "Buildings with low energy consumption"**.

It aims to encourage the creation of buildings that meet Effinergie label requirements in the region.

It is directed at all contracting authorities (excluding individuals) and concerns both construction and renovation (apartment blocks and buildings in the tertiary sector).

Rhônealénergie-Environnement has participated in setting up this appeal to tender and shall form part of the selection jury.

From energy efficiency to passive construction

In addition to energy efficiency labels, passive construction has arrived in France and promotional initiatives are starting to grow. Indeed, in 2007 the first Assises de la Maison Passive - Passive House Conference was held in Grenoble, the association La Maison Passive France - the Passive House France was formed and the conference organised by LATERE in Saint-Etienne in April welcomed over 300 participants. The term "passive building"

denotes a construction guaranteeing a comfortable internal climate both in summer and winter without a traditional heating system. This performance requires special attention at all levels of the project. Significant training work is required for all partners in buildings. Rhônealénergie-Environnement is working on this topic as part of the NENA European project. The actions planned (baseline censuses, creation of an Internet site, visits and trai-

ning) will facilitate the emergence of this new concept together with active partners of very low consumption construction in Rhône-Alpes and of the Rhône-Alpes Eco-Energies cluster.

Contacts

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The experience of public-private partnerships in managing projects contributing to sustainable development

Les sociétés d'économie mixte (SEM) – public-private partnerships – are increasingly seeking to consider sustainable development criteria in their projects, but vary in their willingness to meet the demand of authorities in this field.

SCET wished to discover the skills and experience of public-private partnerships of the INTERSEM Network (which it coordinates and which Rhônealénergie-Environnement is a member of) in order to promote and develop them. In 2006 it gave Rhônealénergie-Environnement a supporting role in this process aimed at:

- helping public-private partnerships to seize opportunities that open the "sustainable development" approach in order to complete their offer to authorities, by making use of the rich Rhône-Alpes experience,
- promoting the experiences of Rhône-Alpes public-private partnerships as part of the Intersem national work program,

- measuring the development potential for public-private partnerships and SCET on the different technical fields discovered and in a general way, that linked to the sustainable A group to exchange experiences between public-private partnerships of the Rhône-Alpes was formed.

It allowed about fifteen experiences (summary sheets describing these approaches will soon be available on the site: www.raee.org) to be highlighted and agreed on the requirement for public-private partnerships to:

- seek to ensure consideration of sustainable development throughout projects (develop an overall cost approach and strategic vision, adapt to political pressure and context);
- introduce new environmental sustainable development and environmental requirements into projects (increasingly upstream consideration of environmental aspects and integration into the environment, influencing matters relating to economy of space, social, citizen and economic development);
- use new tools (sustainable development and environmental requirement specifications, certified or non certified environmental management systems, management charts, internal training);
- employ new practices: appropriation of frames of reference and methods (HQE® frame of reference, ISO 14001, European or regional requests for proposals, exchanges of experience), internal mana-

gement and interdisciplinary organisation around "sustainable development" standards;

- communicate their expertise in various ways and branch out, in particular, on aspects of mediation;
- seek new partnerships between public-private partnerships, with local associations.

In addition to profitable exchanges between public-private partnerships, this work has confirmed that public-private partnerships, through a sustainable development approach, their position and the flexibility of their operation, could enhance their role as authority intermediaries. A day of exchanges between public-private partnerships and local authorities involved in the "sustainable development" networks could be organised. This type of action could, as part of coordination of the INTERSEM Network, be applied to other regions.

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Electrical recovery of biogas in Donzère (26)

In subsurface containment centres, waste (composed mainly of carbon and nitrogen) degrades, under the effect of intense microbial activity, to produce biogas. Biogas derived from this organic decomposition process is essentially made up of methane, a gas with strong energy potential, carbon dioxide and other gas elements in the form of traces.

Given the impact of these gases on the greenhouse effect, the decree of 9 September 1997 relating to class II landfills (household waste and ordinary industrial waste) prescribes the collection of landfill biogas and research into production solutions, or failing this, its destruction thermally by flare. In this case, it is not strictly speaking a means of production but rather a pollution control technique which limits the impact of biogas on the greenhouse effect.

Several production solutions can be considered: direct use by an industrialist or in leachate treatment plants, in thermal form for heating or in electric form.

Example of the storage of non hazardous waste in Donzère.

The non-hazardous waste storage plant in Donzère, in Drôme, was recently equipped with a biogas electrical production facility and constitutes one of the rare plants of this type in Rhône-Alpes. In this way, since September 2006, biogas produced by the 150,000 tonnes of annual waste received by the Donzère platform, is recovered by this facility run by Fairtec.

A collection network recovers the biogas derived from fermentation of waste and fuels a spark ignition engine producing electricity which is injected into the EDF network. For an investment of 1.4 million euros and a power greater than 1 MW, this equipment allows the methane contained in biogas to be recovered, which was previously burned in high temperatures flares. The plant's annual production is estimated at 8,200,000 kWh, i.e. the equivalent of the energy requirements of about 1,800 homes.

Rhônealénergie-Environnement has supported the operator in setting up funding for this project.

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