

HQE : the French Green Building approach

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HQE is the acronym for “Haute Qualité Environnementale”, i.e. High Environmental Quality (of Buildings). The French « cultural exception » concerns not only culture products, like books and movies, but also Green Buildings, since the French building construction field doesn't speak about “green buildings” or “sustainable buildings”, but about “HQE buildings”.

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WHERE DOES HQE COME FROM ?

In the seventies and the early 70s, “bio-climatic architecture” and renewable energies were promoted by a handful of pioneers, architects and engineers, supported by the French Ministry of Housing through calls for tenders like “H2E85” (Low Energy Housing for year 1985), while the oil high prices raised a legislation making a minimal thermal insulation of housing mandatory in 1974, reinforced and completed in 1982 and 1988.



¹ The term “green building” is considered in France as somewhat demagogic and too politically connoted. On the other hand, one considers that it is possible to speak about sustainable built environment (sustainability includes environmental, social, economic and gouvernance dimensions), but that we can only speak about the environmental quality of buildings.

Photo 1 : Warehouse “Les 3 Suisses” (Hem, 59) achieved in sept 96.
(photo Rémy Souchon, 3 Suisses)

During the early 90s, the lack of national voluntary policy to maintain pressure for energy savings and to promote renewable energies use despite the breakdown of oil prices, joined to several counter-performant thermal solar plants due to optimistic theoretical yield calculation, sizing errors, lack of practice of handworkers, lack of maintenance, lack of training courses in architectural schools, made green building design to regress significantly, excepted a few brilliant private initiatives like the warehouse of the mail order selling company “Les 3 Suisses”.

During the late 90s, thanks to the recent success at the polls of the French ecologists allowing their participation into several local and regional executive assemblies, and into government (Ministry of the Environment), and to the growing concern of public opinion as well as industry and services managers for sustainable development, Green Buildings are meeting a real success again. The French Ministry of Housing launched in 1993 a 5 years expert working group, the ATEQUE (Atelier d’Evaluation de la Qualité Environnementale des bâtiments = Building Environmental Quality Assessment Workshop) and twelve “REX HQE” (HQE Experimental Realisations in social housing) totalising 584 dwellings, whose construction occurred between 1994 and 1998.

HQE : A GROWING SUCCESS, MAINLY FOR THE PUBLIC MARKET



Photo 2 : HQE High School Leonard de Vinci at Calais (achieved in sept 98,
1st French project presented at GBC2000). West facade : restaurant.
Photo Isabelle COLAS, architect, Calais.

This success appears mainly through public orders from regions like Nord-Pas-de-Calais, Ile-de-France, Alsace, Limousin, and more recently Rhône-Alpes, Champagne-Ardennes, Midi-Pyrénées, Provence-Alpes-Côte d'Azur and Centre for "HQE" secondary and high schools, regional headquarters or various public buildings construction or retrofit. Some public or semi-public housing builders recently started HQE collective housing construction, while several projects of HQE hospitals and clinics were initiated.



Photo 3 : HQE High School Leonard de Vinci at Calais. Internal street.
Photo Isabelle COLAS, architect, Calais.

THE HQE ASSOCIATION : A FRENCH SPECIFIC ANSWER TO THE DEMAND FOR GREEN BUILDINGS

The HQE Association (AHQE), a non-profit organization, has been created in 1996 by representatives of the main stakeholders of the building construction field (see the list of members table 1). Its broad representativity gives to AHQE a great legitimacy : its publications reflect the common will of the French construction field regarding the environmental quality of buildings and the sustainable development of the built environment, which gives to the French situation its specificity.

The members of the HQE Association

The market, suppliers, regulators and experts are fully represented. In July 2000, the AHQE had 38 members, active members (organisations), honor and associated members. Active members are the followings :

Market contracting bodies

Suppliers designers, control offices, construction firms, building products manufacturers, etc.

Regulators public authorities

Experts technical centers

Others associations promoting the development and the practice of the HQE approach

Market (contracting bodies) :

- ARENE Ile-de-France (*Agence Régionale de l'Environnement et des Nouvelles Energies*), Environment and new energy agency for the Ile-de-France region
- Conseil Général du Bas Rhin, general council of the Bas Rhin region
- Conseil Général de l'Hérault, general council of the Hérault region
- Conseil Régional d'Alsace, regional council of Alsace
- Conseil Régional d'Aquitaine, regional council of Aquitaine
- Conseil Régional du Centre, regional council of Centre
- Conseil Régional de Champagne-Ardenne, regional council of Champagne-Ardenne
- Conseil Régional de Haute-Normandie, regional council of Haute-Normandie
- Conseil Régional du Limousin, regional council of Limousin
- Conseil Régional du Nord-Pas-de Calais, regional council of Nord-Pas-de-Calais
- Conseil Régional de Poitou-Charentes, regional council of Poitou-Charentes
- Conseil Régional de Rhône-Alpes, regional council of Rhône-Alpes
- UNHLM - DMOP (*Union Nationale des HLM - Direction de la Maîtrise d'ouvrage et du Patrimoine*) National Union of Low Cost Housing Organisations
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Suppliers (designers, control offices, construction firms, building products manufacturers, etc.)

- AIMCC (*Association des industries de Produits de Construction*) construction products industry association
- CAPEB (*Confédération de l'Artisanat et des Petites Entreprises du Bâtiment*) confederation of building industry artisans and SMEs
- CICF (*Chambre des Ingénieurs-Conseils de France*), French consultants-engineers Chamber
- CNDB (*Comité National pour le Développement du Bois*), National Committee for the promotion of Wood usage
- COPREC Construction (*Comité professionnel de la prévention et du contrôle technique dans la construction*), Professional Committee of prevention & technical control in the construction sector
- CROAIF (*Conseil Régional de l'Ordre des Architectes d'Ile-de-France*), Ile-de-France Regional Council of Architects
- FFB/DAT (*Fédération Française du Bâtiment - Direction des Affaires Techniques*) French building federation, technical affairs office
- FILMM (*Syndicat national des Fabricants d'Isolants en Laines Minérales Manufacturées*), French syndicate of producers of manufactured mineral wool insulation
- ICEB (*Institut des Conseillers Environnement pour le Bâtiment*), environmental advisories institute for the building industry
- SER (*Syndicat des Energies Renouvelables*), Union of Renewable Energies
- UNSFA (*Union Nationale des Syndicats Français d'Architectes*) National Federation of the French Architects Union
- UNTEC (*Union Nationale des Economistes de la Construction et des Coordonateurs*)

French union of construction economists and coordinators

- UBP (*Union des syndicats de la Plasturgie BTP*) union of French plastics technology syndicates for the building and public works industry

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Regulators (public authorities) :

- MATE – D4E (*Ministère de l'Aménagement du Territoire et de l'Environnement - Direction des Etudes Economiques et des Evaluations Environnementales*) French ministry of territorial planning and the environment. Economical studies and environmental assessment office
- MCC/DAPA (*Ministère de la Culture et de la Communication / Direction de l'Architecture et du Patrimoine*), Ministry of culture & communication / Direction of architecture & heritage
- METL - DGUHC (*Ministère de l'Équipement des Transports et du Logement -Direction générale de l'Urbanisme de l'Habitat et de la Construction*), French ministry of equipment, transport and housing, office of urban housing and construction
- MIES (*Mission Interministérielle de l'Effet de Serre*) Inter-ministry mission for greenhouse effect
- MIQCP (*Mission Interministérielle pour la Qualité des Constructions Publiques*) Inter-ministry mission for the quality of the public constructions
- PUCA (*Plan Urbanisme Construction Architecture*), urban construction and architecture plan

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Experts (technical centers) :

- ADEME (*Agence de l'Environnement et de la Maîtrise de l'Energie*) the French environment and energy agency
- CERIB (*Centre d'Etudes et de Recherches de l'Industrie du Béton*) Study & research center of the precast concrete industry
- CSTB (*Centre Scientifique et Technique du Bâtiment*), French building research establishment
- CTBA (*Centre Technique du Bois et de l'Ameublement*) Technical center of wood and furniture
- CTTB (*Centre Technique des Tuiles et Briques*), French tile and brick research establishment
- Association Qualitel

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Others (associations promoting the development and the practice of the HQE approach) :

- ABAQUE Réunion (*Association pour le bâtiment et la Qualité Environnementale à la Réunion*) Association of department of Réunion for the Building and the Environmental Quality
- AJENA (*Association Jurassienne pour la diffusion des Energies Alternatives*) Association of department of Jura for diffusion of alternate energies
- ARCHINOV (*Association des architectes et de leurs partenaires pour développer l'innovation*) association of architects and their partners for developing innovation
- Association Alsace Qualité Environnement environmental quality association of Alsace
- Comité 21, Committee for the 21th century
- Ecopôle : *Maison de l'Environnement*, House of Environment, Nantes
- FFNE (*Fonds Français pour la Nature et l'Environnement*), French Fund for Nature & Environment

THE ACTIONS OF THE HQE ASSOCIATION

Through the active work of its members, the HQE Association is developing several actions :

- to elaborate reference texts to provide ground rules
- to produce thematic report, such as *buildings and health*,
- to participate in international debates concerning sustainable development themes,
- to participate in and to encourage sustainable building operations,
- to publish and co-publish documents,
- to create regional resource centers, testing labs and information offices for sustainable building operations,
- to host and participate in information ² and training operations,
- to answer questions from professionals and the general public.
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WHAT IS THE ENVIRONMENTAL QUALITY OF A BUILDING (FORMAL DEFINITION) ?

The environmental quality of a building corresponds to the characteristics of the building, of its facilities (products & services) and of the rest of the plot of the construction or retrofit of the building, which give to it the ability to fulfill the needs for mastering its impacts on the outdoor environment and for creating a comfortable and healthy indoor environment.

HOW TO IMPROVE THE ENVIRONMENTAL QUALITY OF A BUILDING ?

Persistent efforts must be made for upstream.

Realizing the environmental quality of buildings and taking part in the sustainable development of the built environment :

- **Eco-localising**, to safeguard the best possible relationship between the site and the use of the building.
- **Eco-planning**, to define specifications integrating the 14 targeted process methods listed below into demands adapted to the operation and its budget.
- **Eco-designing**, to arrange and configure the building, to select the construction techniques (i.e. construction processes, systems and products) that adhere to the environmental demands in the specifications;
- **Eco-realizing**, to organize a low nuisance construction site;
- **Eco-managing**, to operate the building in a way that ensures a satisfactory sustainability of its environmental characteristics.

Adopting the following environmental management principle for each of these phases :

- To encourage a concerted approach among all parties as early as possible;
- To check that environmental concerns are addressed by the right people at the right time;
- To adapt technical solutions to the specifics of the operation.

² The HQE Association has coordinated the French participation to Sustainable Building 2000, an international meeting held in Maastricht (NL) in october 2000.

14 TARGETS FOR ACHIEVING THE ENVIRONMENTAL QUALITY OF BUILDINGS

Mastering the environmental impact on building exteriors

ECO-CONSTRUCTION

1. Harmonious relationship between the buildings and their immediate environment
2. Integrated choices of construction processes and materials
3. Low nuisance construction sites

ECO-MANAGEMENT

4. Energy management
5. Water management
6. Waste management
7. Repair and maintenance management

Creating a satisfactory indoor environment

COMFORT

8. Hygrothermic comfort
9. Acoustic comfort
10. Visual comfort
11. Olfactory comfort

HEALTH

12. Sanitary conditions of indoor spaces
13. Air sanitary quality
14. Water sanitary quality

IS « HQE » A TRADE MARK ? A STANDARD ? A BUILDING OR DESIGNER OR PRODUCT LABEL ? A CERTIFICATION SYSTEM ?

The sigle « HQE » is neither a standard, nor a building label, but a future environmental management certification of construction operations

The acronym « HQE » has been protected by AHQE as a trade mark in order to prevent its misuse.

The objective of the HQE Association is to build up a certification process based on the reference text for the environmental management of building construction or retrofit operations. This reference text is derived from the ISO 1400x reference standard for the environmental management of product manufacturing or service supply.

It is not wished that the HQE becomes a standard because of its great complexity and of the lack of knowledge about the environmental impacts of buildings. Conversely, the reference text on the environmental management system can become a standard since it describes mainly administrative procedures and will be adapted from ISO 1400x³.

The “HQE approach” is and should remain a not compulsory, but voluntary commitment, taken by the contracting authority.

³ Adaptation is needed to fit the specificity of a building construction or retrofit operation : many stakeholders, limited-life activity.

Regarding stakeholders, there is no “HQE” architect or engineer, but people having followed training courses on the HQE approach validated by the HQE Association.

Regarding products, there is no “HQE” product, but a new French AFNOR standard helps manufacturers to give information on the environmental quality of their products and on their contribution to the environmental quality of the buildings where they are used.

WILL “HQE” RAISE A NEW JOB ?

It is not desirable that the HQE approach will be trusted by new specialists. Conversely, each stakeholder has to take part to the global HQE approach at its level. However, one can forecast that HQE advisors will remain necessary for several years to help contracting bodies to write down the specific environmental technical specifications for HQE operations and to build up the environmental management system and to supervise its use.

WHAT ARE THE NEXT MAIN ACTIONS TO BE DONE ?

The next priority actions of the HQE Association are :

- to finalize the environmental management reference text,
- waiting for that achievement :
 - to elaborate an assessment method for existing self-claimed « HQE buildings operations » in order to check the validity of their claim,
 - to define recommendations to the contracting bodies wishing to start an HQE approach,
- to validate the existing training courses introducing to the « HQE approach » and to elaborate the ones necessary for specific stakeholders (e.g. contracting bodies)
- to elaborate the “explicit definition of the HQE”, i.e. the quantitative requirement levels for each parameter defining the quality for each target, depending of the type of operation (construction or retrofit), of building (housing, office, school, etc.), of climate, etc.
- to follow and if possible to participate to the work of ISO/TC59/SC3 “Functional/user requirements & performance in building construction” , especially regarding the 2001 program related to sustainable buildings⁴.
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CONCLUSION

The confrontation of the original approach of green buildings adopted by the French construction stakeholders with those used in other countries can lead to fruitful comparisons, regarding the concerted participation of all concerned parties as well as the way the environmental quality of buildings is defined and coupled with an environmental management system of building construction operation. We hope that this paper will inspire some foreign colleagues to undertake such comparisons and to take the French experience of green buildings construction into account while elaborating new international reference documents.

⁴ N422 : Terminology related to sustainability, N446 & N448 : Assessment of impact from & environmental declaration of building products, N450 : sustainability indicators