

**TRAINING: AN ESSENTIAL LEVER FOR DEVELOPING EFFECTIVE ENERGY MANAGEMENT****DOSSIER**

At the end of the Grenelle (forum) on the Environment, ambitious objectives were drawn up in the areas of energy efficiency of buildings and renewable energy.

**For new buildings**, the set deadlines are imminent: in 2010, thermal regulations will switch directly to the level Très Haute Performance Energétique (THPE) –Very High Energy Performance– in 2012, new housing at the level Basse Consommation d'Énergie (BBC) –Low Energy Consumption– must become the norm (that corresponding to the Effinergie standard of 50 kWh/m<sup>2</sup>.yr), and the objective for 2020 is the widespread use of passive new houses or energy-plus houses.

**As for renovating existing buildings**, the work involved is colossal: renovation of 800 000 of the most rundown social housing properties, the incorporation of ambitious objectives into urban renewal programmes, financed by ANRU –the National Agency for Urban Renewal– (80 or 50 kWh/m<sup>2</sup>), setting up financial tools (low interest loans, tax incentives...) to create strong demand with the goal of renovating 400 000 properties a year.

**With regard to renewable energy**, the Grenelle has allowed the European objective of 20% of renewable energy in final energy consumption by 2020 to be just sufficiently reaffirmed.

In order to attain these objectives, the requirements with regard to employment and training are colossal!

With respect to renewable energy, the Syndicat des Énergies Renouvelables (SER) –Renewable Energy Association– has estimated these requirements at **220 000 jobs by 2020**. The President of the Republic, in his closing speech at the Grenelle, announced the creation of 100 000 jobs and new training programmes by 2012 in the building sector.

Training will be essential. Quantitatively, but also qualitatively, because today some professions are almost non-existent whereas the requirement is considerable (external insulation, draught-proofing...).

**Regional climate - energy plans and local recommendation**

Since 2005, **the Rhône-Alpes Eco-energies Cluster** set up a "training" task force made up of some forty specialised training bodies. According to Sylvain Wadier, the task force's coordinator, **"the lack of qualified staff is already perceptible and is one of the main obstacles to promoting good practice. The lack of well-trained technical sales representatives and fitters will quickly lead to unregulated practices and poor results!"**.

The work carried out by the task force has allowed a directory for the training offer in

the Rhône-Alpes region to be created, which is regularly updated and available on the Cluster's Internet site. Two surveys have also been financed by the Cluster, with a view to obtaining an accurate picture of companies' training requirements. They were carried out on renewable energy companies in the Rhône-Alpes region and on building companies in the Rhône county. It now remains to be seen how the offer and the demand can be most effectively balanced. This work allowed the number of jobs that must be created over the period 2005-2010 in the areas of renewable ener-

gy, energy management and green building to be estimated at 13 000. Training requirements are, for their part, estimated at 5000 places per year in our region. The task force's objectives for 2008-2010 are assisting bodies in setting up new training offers as well as taking a census of new training providers in companies. Indeed, qualified trainers are now highly sought after and can no longer meet the growing demand.

To find out more: [www.ecoenergies-cluster.fr](http://www.ecoenergies-cluster.fr)

**The Tenerrdis** (New Energy Technologies Renewable Energy Rhône-Alpes Drôme Isère Savoie) Competitive Cluster has also worked on the task in the field of new energy technologies with its Jobs / Skills / Training action programme. Three work areas were selected: making the initial and continuing education offer clearer, from

CAP (vocational training certificate) to BAC +8 (8th year of higher education), throughout the entire energy requirements area by creating a "web" portal; launching a prospective study to estimate companies' requirements; launching an international "benchmark" for training organisation and financing practices.

**"The main objectives are to encourage collaboration between actors in employment and training and to match the offer to the demand with regard to skills and training"**, states Guillaume Brousseau, the programme coordinator.

To find out more: [www.tenerrdis.fr](http://www.tenerrdis.fr)

In addition, the **Rhône-Alpes Region** has incorporated the issue of training into its energy management and renewable energy regional development plan. It encourages

actions in the area of energy education, technical establishments who wish to develop training programmes in these areas of activity and contributes to developing infor-

mation and training advisors and professionals.

**Concrete initiatives in the Rhône-Alpes region**

Given the difficulty in changing practices, training programmes seem an excellent idea. **The local energy agency for the Grenoble metropolitan area** has launched, as part of the SESAC (Sustainable Energy Systems in Advanced Cities) Concerto programme, "CONCERT-ACTION" training programmes. The companies selected to take part in the projects, as part of Bonne's ZAC (mixed development zone) planning and development, are subject to specific training. This training is intended not only for the design teams, but also for workers, with a practical demonstration sequence on the ZAC worksite. Plans have been made with GRETA1 of Grenoble, the Isère BTP (Building and Public Works) Federation and financing

bodies, to organise sessions. In Lyon, as part of the Confluence development, the same plan has been implemented by the local energy agency for the Lyon metropolitan area. Moreover, for the 8th year, ALE (the Local Employment Development Agency) is providing, in collaboration with the école d'architecture de Lyon (Lyon Architectural College) a 25 day continuing education course on HQE® (High Environmental Quality) architecture.

To find out more: [www.ale-lyon.org](http://www.ale-lyon.org) / [www.ale-grenoble.org](http://www.ale-grenoble.org)

Architects are, of course, well placed to initiate change, the Ecoles Nationales Supérieures d'Architecture (ENSA) – **National Architectural Colleges of Grenoble, Lyon and Saint-Etienne** are involved. Every year, these three colleges award the Diploma in Architecture to 250 students who receive basic training incorporating energy issues. In addition to environmental quality of buildings in the strict sense, the architectural colleges cover, more broadly, issues relating to sustainable development: landscape studies, territorial assessment, integration of buildings in their environment, consultation...

**"The three architectural colleges have already considered combating the greenhouse effect and taken into account sustainable development requirements, without waiting for the conclusions of the Grenelle (forum) on the Environment"**, asserts Mathilde Chevrel, Vice-Principal of the National Architectural College of Lyon. ENSA of Lyon has developed a Masters course called "Strategy for fair and sustainable development" applied for by 80% of students as their first choice.

To find out more: [www.lyon.archi.fr](http://www.lyon.archi.fr) / [www.grenoble.archi.fr](http://www.grenoble.archi.fr) / [www.st-etienne.archi.fr](http://www.st-etienne.archi.fr)

**EDITORIAL**

Roger Léron,  
President of  
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With regard to energy efficiency, we have now progressed from discussion by experts and one-off actions to the affirmed and desired general agreement of a large political and technical majority. Indeed, the many task forces, decentralised debates and other contributions organised within the scope of the Grenelle on the Environment allowed many operational projects to be launched in December 2007.

These concern notably the areas of building and the development of renewable energy, which are our main weapons, together with the control of travel, in the fight against climate change and the predicted depletion of fossil resources.

Now that everyone is in agreement about the need to act and the objectives, work can begin and the task is enormous!

Progressing from words to actions implies having available trained people, from the craftsman to the architect; so one can wonder whether the main obstacle might in fact be a lack of skills and jobs in the sectors concerned.

The Regions, owing to their skill in the area of professional training, have a key role to play.

The development of professions and practices is no easy matter. It cannot be achieved in a few days. An ambitious training program must therefore be developed as a matter of urgency in the areas of building and renewable energy.

The magnitude of the task is such that it can only be effectively achieved with an affirmed political desire.

## DOSSIER CONTINUED

More training is necessary and the Institut National de l'Énergie Solaire (INES) – **National Institute of Solar Energy** – based at Savoie Technolac, is working towards this goal. For four years, its training centre, INES Education, has provided approximately 900 trainees per year with continuing education. The priority target market is designers (architects and design offices), mainly on the subject of thermal solar energy and photovoltaics but also, broadly speaking, on the subject of energy efficiency of buildings. The

Skilled tradesmen and merchants are keen to participate in the challenge. The demand at **Néopolis** is proof of this. A training organisation of INEED\* (A regional resource centre for green building, the organic industry and clean technologies) Rhône-Alpes – CCI (Chamber of Commerce and Industry) Drôme, Néopolis offers, notably, continuous professional training leading to qualifications such as the CAP (vocational training certificate) in carpentry, timber construction, works management in timber construction, and salesperson-advisor in eco materials. For two years, the partnership between Néopolis and some twenty regional

**Rhônealpennergie-Environnement** has worked for a long time on training programmes. In its time, the network of "energy saving managers/advisors", of local authorities, via the ARPEGE (Coordination of the Network of New Jobs for Rational Energy Management) network, was trained by the regional agency and its partners. Still targeting local governments, the training offer was mainly created with CNFPT (National Centre for the Management of Territorial Service) of Lyon and Grenoble. In 2008, three training courses were run by Rhônealpennergie-Environnement: Managing electricity demands, Solar energy in public buildings, Heating operating contracts. Through its many projects, the agency is also

training of teachers is also an important aspect.

**"A partnership with the Department of Education aims to train "resource teachers" from different academies at INES. About one hundred teachers from vocational schools have already taken this course"**, explains Etienne Couvreur, Director of INES Education.

To find out more: [www.ines-solaire.com](http://www.ines-solaire.com)

companies has allowed 25 professionalisation contracts to be set up to prepare the CAP sandwich course in carpentry and timber construction. For the year 2007-2008, two training programmes, unique in France and financed by the Rhône-Alpes region and the European Social Fund, have been set up, allowing 18 salespersons-advisors in eco materials and 14 eco builders to be trained. \*INnovation for Sustainable Economics and Environment in the Rhône-Alpes region

To find out more: [www.neopolis.fr](http://www.neopolis.fr)

led to develop more specific training programmes. It is evident, many test projects relating to training have been launched over the past few years in the Rhône-Alpes region and some are already a victim of their own success. Given the now unanimously recognised stakes, a dual challenge must be taken up by companies, training organisations and financing bodies: quality and increased training.

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## EXPÉRIENCES

**Local Climate Plan: Greater Lyon gets involved!**

**For 15 years, Greater Lyon has participated, notably in the area of reducing energy consumption, through its two urban ecology charters (1992-1995 and 1997-2001), then in 2004 with the setting up of a local Agenda 21.**

The second strategic orientation of the latter concerns combating greenhouse gas emissions and has notably been extended to the local level by the setting up of a Local Climate Plan. The aim of this tool is to allow the authority to identify throughout its territory the main activities responsible for greenhouse gas emissions then, in collaboration with all local actors, to create a policy and action programme to reduce greenhouse gas emissions and energy consumption.

**Climate Plan Objectives: to extend European and national objectives to a local level**

**By 2020:** a 20% reduction in energy consumption and greenhouse gas emissions with 20% of energy consumption provided by renewable energy (6% in 2007 over Grand Lyon).

**By 2050:** greenhouse gas emissions reduced by a quarter. To meet these ambitious

objectives, Greater Lyon Climate Plan aims, from 2008, to initiate a prospective analysis aimed at considering all the cultural, social and economic changes required and proposing an initial action plan at the end of 2008.

**Greater Lyon wishes to act:**

– **as the owner of public buildings and moveable assets**, as a public service operator, through its own skills in sanitation and drinking water, road systems, cleanliness;

– **as a promoter of public policies**, through its skills in housing, travel, town planning, environment. According to a national assessment, 15 to 20% of greenhouse gas emissions are directly dependent on the public policies enforced;

– **by its capacity to bring together all the institutional and social and economic actors**, such as the territorial "director". Involving institutional actors (district councils, social landlords, hospitals, transport organising authorities, professional unions...), private actors (SMEs-SMIs, housing companies...) and community actors will be a key theme of the action plan.

**The analysis, 1<sup>st</sup> stage of the Climate Plan**

The analysis took place from 2005-2006.

It highlighted:

– **The origins of greenhouse gas emissions.** The eight million tonnes of CO<sub>2</sub> emitted yearly\* throughout the territory of Grand Lyon originated respectively from the sectors of industry (38% of emissions), commercial and residential buildings (33%) and transport and travel (29%).

– **The potential for developing renewable energy.** In 2007, in Grand Lyon, the share of renewable energy in energy consumption was 6%. Sources of renewable energy over the territory of Grand Lyon represent 2700 GWh, i.e. over two times the production of 2007. The largest sources concern the energy wood, photovoltaics and thermal solar energy sectors. By taking advantage of all the potential identified, Greater Lyon will only be able to cover 10 to 15% of its consumption by renewable energy. Only an ambitious policy to reduce energy consumption will allow it to go beyond this.

**Examples of actions already taken**

– **The Concerto Programme:** building, in the Lyon Confluence area, 680 high energy performance (50 kWh/m<sup>2</sup>.year) properties,



80% of the energy consumption of which is ensured by renewable energy.

– **The "sustainable housing" and "offices" of Grand Lyon frames of reference:** developed with Ademe and the local energy agency (partner of the Grand Lyon Climate Plan), they define notably low energy consumption requirements (50 kWh/m<sup>2</sup>.yr) and use of renewable energy (20%) for new buildings and also build social and private housing as well as offices.

– **The inclusion in procurement contracts of social criteria and objectives** to reduce impacts on the environment.

– **The tree charter**, created to preserve and develop trees in towns.

\*Value calculated for year 2003

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**Duchère: renovation and conversion of the energy plant to wood energy**

**Created at the beginning of the 1960s, the residential area of the district of Duchère (Lyon 9), representing 5 000 equivalent properties, was up till now heated, via a 6.4 km network, by a central energy plant operating 80% on coal and 20% on fuel oil. Heat was distributed to the 56 substations by high temperature water.**



In 2003, the need to backfit these installations as well as the City of Lyon's desire to get involved in renewable energy, led the district council to transform the energy plant with low pressure heat production from

biomass. Opened in November 2007, this new installation uses yearly 80 000 m<sup>3</sup> of clean recycled wood from the Lyon urban area (including 3000 tonnes/yr of City of Lyon waste wood). In addition, related products originating from primary wood processing shall also be able to be used. Economically and socially, the purchase of wood fuel contributes to the development of the energy wood sector and the creation of local jobs.

From an energy and environmental point of view, this energy plant allows 60,000 MWh, i.e. 5 170 toe/yr of fossil energy to be replaced by wood and prevents 24,500 t/yr of CO<sub>2</sub> emissions. To this favourable carbon balance, should be added the significant reduction of sulphur oxide emissions.

It should be noted that the High Quality Environmental standard® was taken into account from the design process stage and guided the technical choices. Many compen-

satory measures were implemented in order to reduce the impact of the installation on the environment: landscape integration (low chimney, positioning of buildings...), air protection (cyclone and filter bag), water and soil protection (waste water drainage channels, hydrocarbon separators, and water

treatment), protection against noise (vegetated sound barriers, acoustical treatment), safety (gas safety, fire detection...).

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**Some statistics****Power of boilers:**

2 boilers, 7 MW each  
2 gas/fuel combined boilers, 13 MW each.  
1 natural gas boiler, 13 MW

**Annual consumption of wood:**

22,700 tonnes  
Biomass fuel ensures 80% of requirements, the auxiliary is ensured by natural gas (19% of requirements) and heavy oil, with very low sulphur content (1%), provides emergency backup.

**Cost:**

€15,250,000 including tax  
Grants: Rhône Alpes Region €590,000  
ADEME €1,009,656  
ERDF €1,009,656

**Type of operation:** leasing contract**Support:**

Rhônealpennergie-Environnement assisted the City of Lyon with its supply analysis and the technical study for this project.