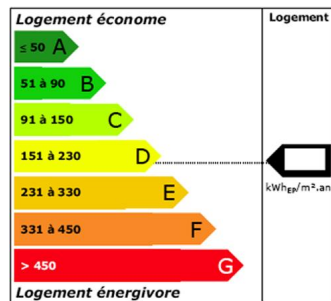




# THERMOVALORISATIONS

## SLIVEN, 27 avril 2010



Sébastien Chevet

Quercy Energies, Local Energy Agency



# Quercy Energies : Local Energy Agency



**Non profit organization  
Created in 1991**

✓ **180 members : architects, office studies, heating specialists, farmers, organizations, local authorities, people.**



✓ **11 office workers and experts in 2010.**

**22 agencies in France  
> 300 agencies in Europe**



**14 agencies in Bulgaria  
4 agencies in Belgium  
10 agencies in Finland**



## Quercy Energies : activities

### ➤ Energy efficiency :

- Public buildings (diagnosis, measurements, consumption control)
- Tackling Fuel poverty in social housing and training by economic and family advisors
- Public information (answering service, visit, meeting)



### ➤ Renewable energy :

Project development and site supervision : Solar energy and Wood energy

⇒ Quercy Energies advises contractors and customers to make decisions.



## Energy Performance Diagnosis

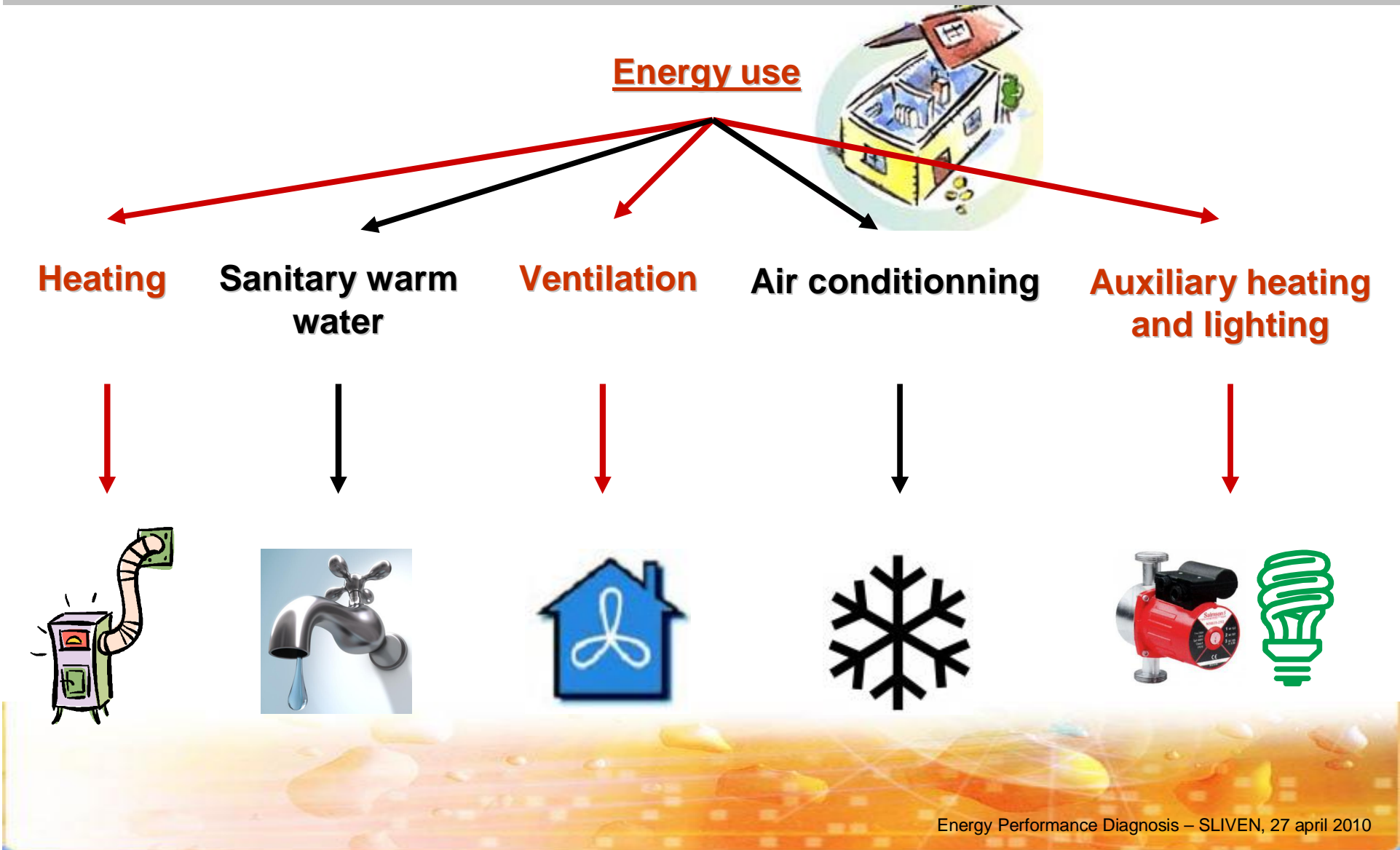
⇒ The French EPD comes from the European directive on building energy efficiency (n°2002/91, january 2003). The main objective is to reduce energy consumption of the new and current buildings.

### EPD objectives :

- Inform the future owners or lodgers about their next housing energetic consumption and expense ;
- Inform the future owners or lodgers about the housing climate impact ;
- Inform about housing energy label (primary energy) and climate label :
  - Label A : performant housing
  - Label G : inefficient housing
- Advice about energy-saving work.



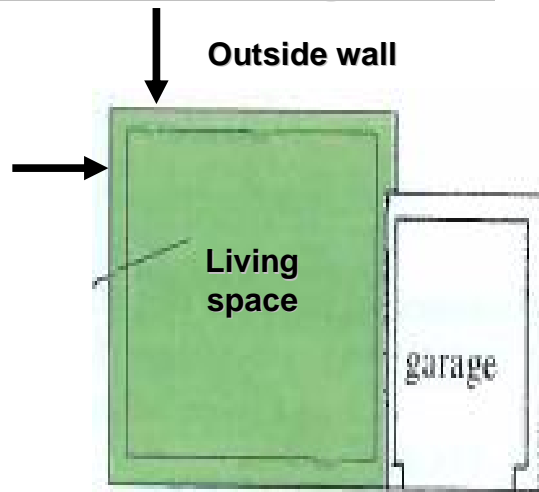
# French Energy Performance Diagnosis





## French Energy Performance Diagnosis

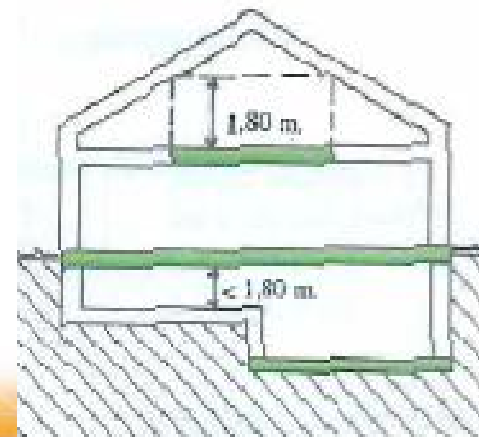
### Reference living space :



The reference living space is calculated on the thickness of the outside wall.

### Except :

- floor and roof unconvertible space
- height lower than 1.8 meter





## French Energy Performance Diagnosis

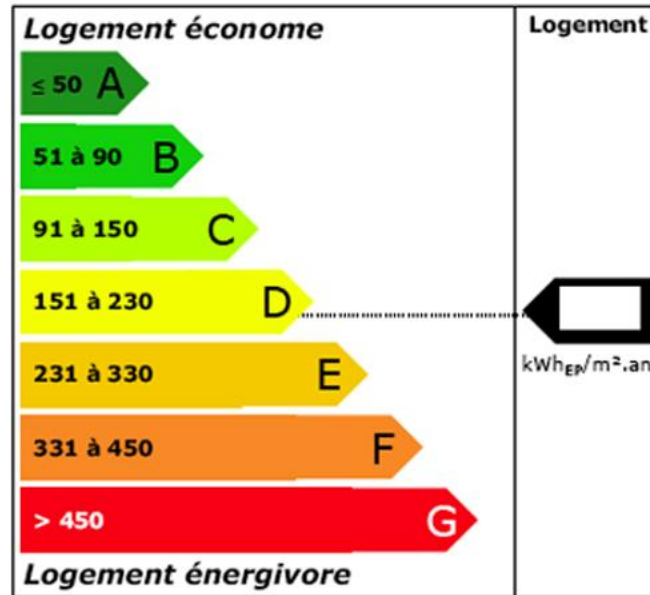
### EPD application fields :

- **Compulsory for sales : since november 2006 (on residential and tertiary buildings) ;**
- **Compulsory for rents : since july 2007 (housings) ;**
- **Compulsory for new buildings : if the building permit has been obtained since july 2007 ;**
- **Compulsory for public buildings : since january 2008 if the living space is larger than 1000 m<sup>2</sup>, and if it is occupied by local authority departments receiving more than 200 persons. The EPD will have to be posted in the building hall.**
  - *Temporary buildings, independent buildings of less than 50 m<sup>2</sup>, historic monuments and industrial or agricultural buildings are not concerned by EPD.*
  - ⇒ **The EPD is valid 10 years even if saving energy work are made.**
  - ⇒ **Since november 2007, the diagnosticians must be certified.**

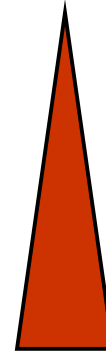


## Energy and climate label

### Housing energy label

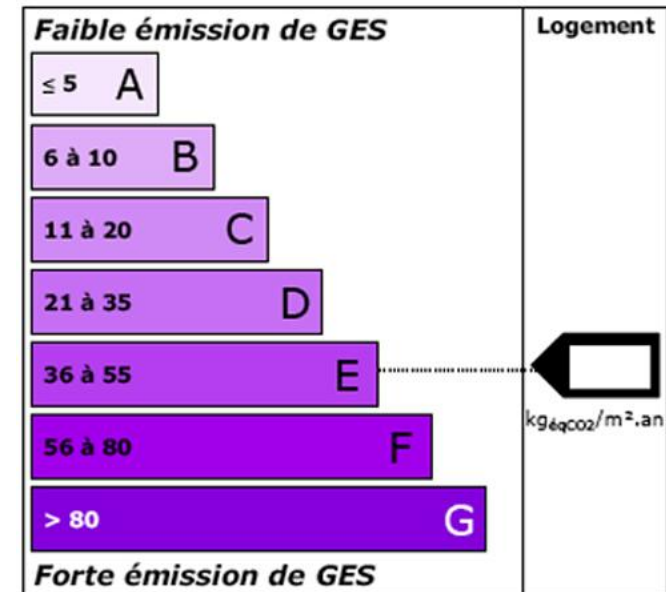


efficient



inefficient

### Housing climate label

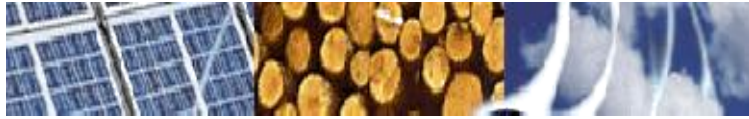


✓ 3 label models for the public buildings according to their activity :

- office buildings, schools... → usually no activity on the weekend
- hospitals, old people's homes... → permanent activity, important energy needs
- gymnasiums, theaters... → variable activity

⇒ Consumption labels and climate labels are different





## Energy Performance Diagnosis Coefficients

### ✓ Coefficients of primary energy :

The electricity coefficient of primary energy depends on the systems of production of every country.

→ 80% of the French electricity is produced by the nuclear energy.



**French electricity coefficient of primary energy = 2.58**

→ *It's an arbitrary value adopted between the source of the incumbent operator (EDF) and the national energy agency (ADEME).*

**Other French coefficients of primary energy = 1**

### ✓ Climate coefficients :

- gas : 234 gCO<sub>2</sub>/kWh
- fuel : 300 gCO<sub>2</sub>/kWh
- wood : 13 gCO<sub>2</sub>/kWh
- coal : 384 gCO<sub>2</sub>/kWh



- heating network : 320 gCO<sub>2</sub>/kWh
- electric heating : 180 gCO<sub>2</sub>/kWh
- other electricity use : 40 gCO<sub>2</sub>/kWh



## Realization of Energy Performance Diagnosis

**For all EPDs a building visit is necessary**

**EPDs for the sale or rent of individual housing :**

- **Construction before 1948 : average consumption over a 3 year period**
- **Construction after 1948 : method of calculation « 3CL »**

**EPDs for the sale or rent of collective housing :**

- **Construction before 1948 : average consumption over a 3 years period**
- **Construction after 1948 with individual heating : method of calculation « 3CL »**
- **Construction after 1948 with collective heating and energy counter : average consumption over a 3 years period**

**EPDs for the public building :**

→ **Average consumption over a 3 years period**

**EPDs for the new building :**

→ **According to the energetic study results**



## Limits and prospects for Energy Performance Diagnosis

**In absence of information, we can chose values by default about insulation coefficients.**

**The 3CL application accepts unknown wall surface.**

**The seriousness of the diagnostician is important.**

**⇒ These points impact on the final results which can be different from the reality.**

**The use of the infrared camera should allow to show the building defects like inefficient insulation or air infiltration.**

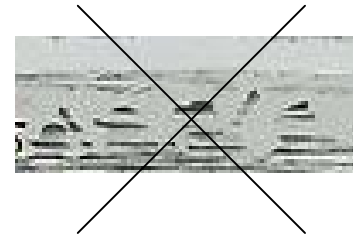
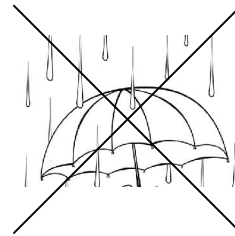
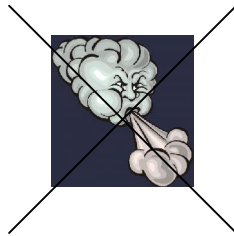
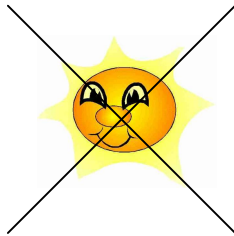




## Infrared Camera

The ideal conditions to use the camera are :

→ No sun, no wind, no rain and no fog because these parameters impact on the infrared image



→ A temperature difference between the inside and the outside higher than 10°C



Quercy Energies has been using the infrared camera for three years. This equipment is really effective to sensibilize people.



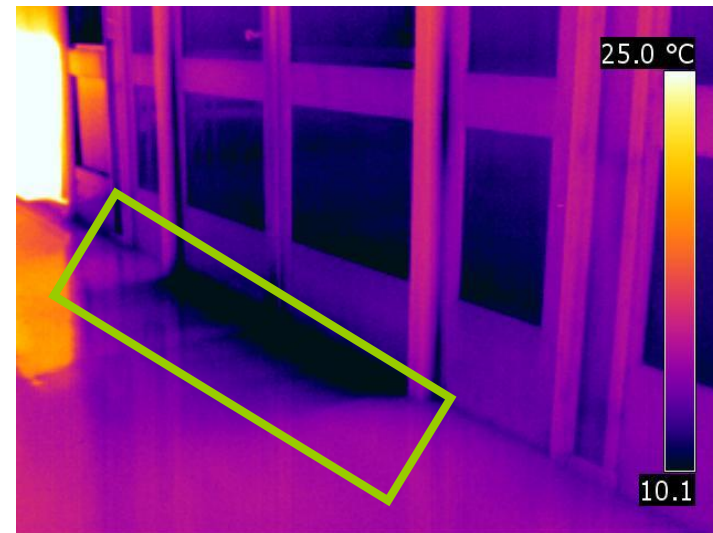
## Examples of Infrared Pictures



**Part of wall not isolated  $\Rightarrow$  increase of the consumption**



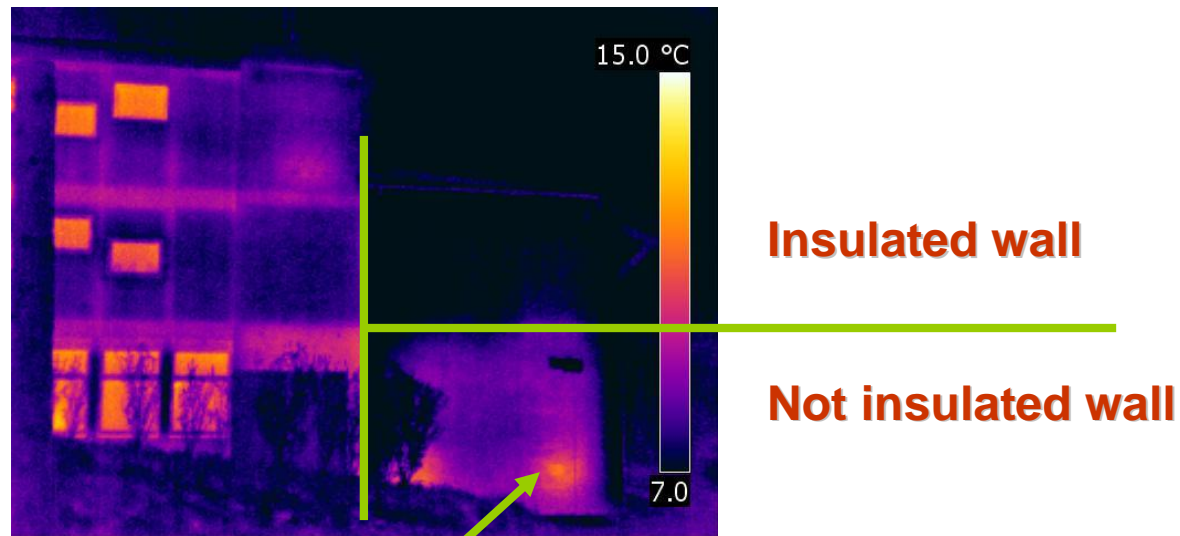
## Examples of Infrared Pictures



**Air infiltration under the door  $\Rightarrow$  increase of the renewal air flow**



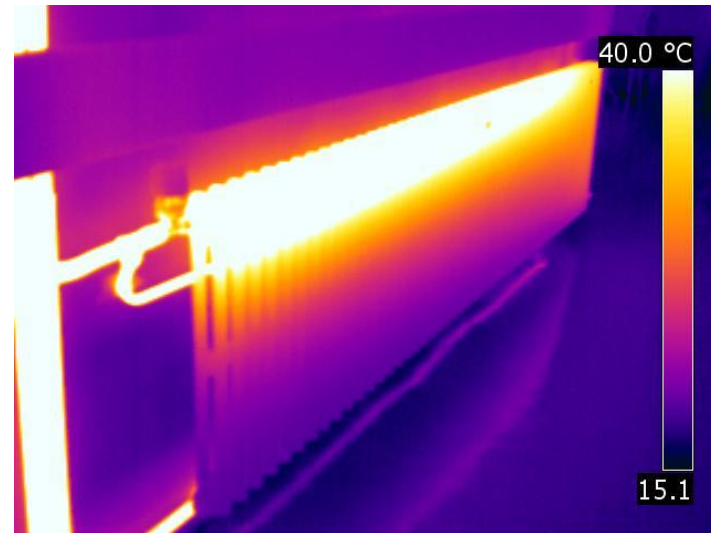
## Examples of Infrared Pictures



**The camera shows the conduct of the wall with and without insulation.**  
**→ Without insulation, we see the radiator's place.**



## Examples of Infrared Pictures



**The heat distribution of the radiator is not uniform.**





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