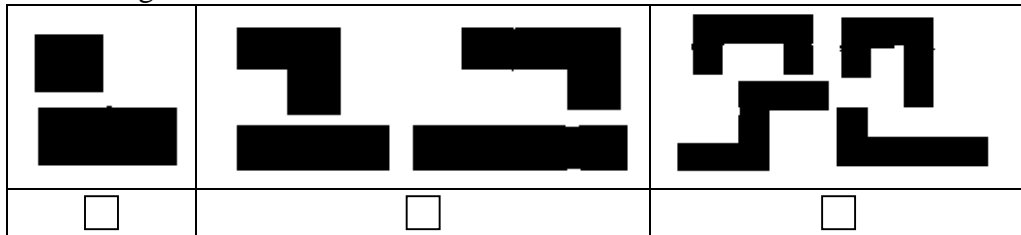




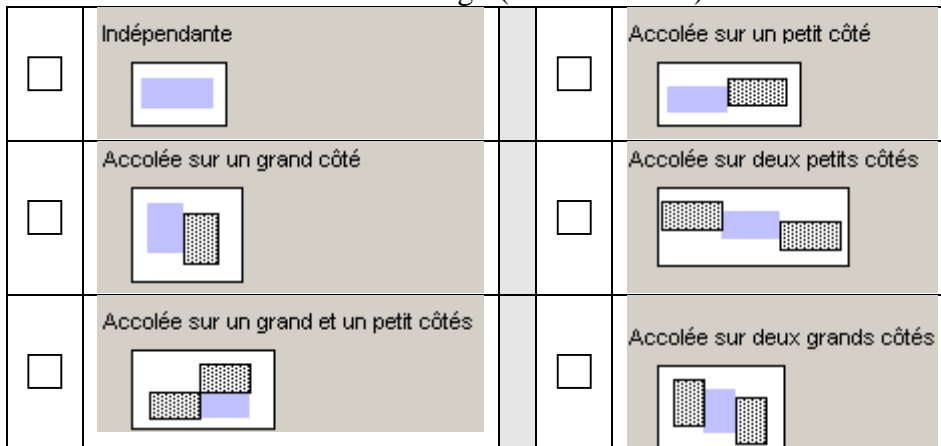
**WORKSHOP – Groupe 2**  
**Synthesis of each country’s operating mode for the EPD + IR.**  
**EPD**

**1) Go around the building**

- a. taking pictures
- b. building form



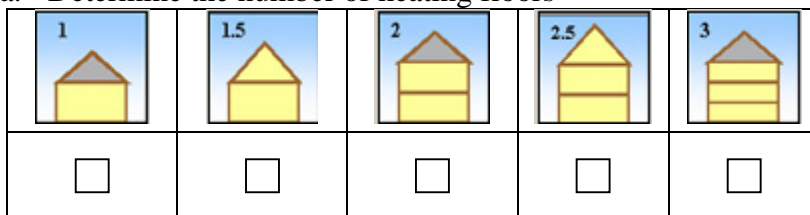
- c. type of construction
- d. building age
- e. condition
- f. building orientation : north, south, east, west
- g. presence masks
- h. Environment around the building : (semi-detached)



- i. Occurrence of chimneys.

**2) Inside the building**

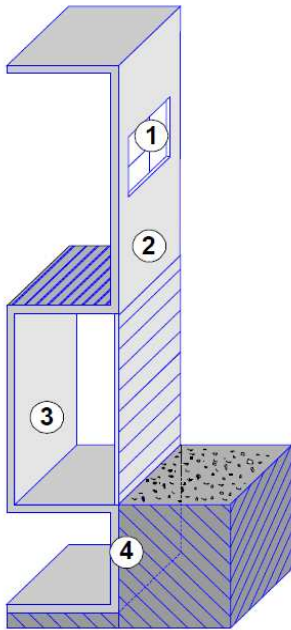
- a. Determine the number of heating floors



- b. Determine the mode of heating (source, production and emission)
- c. Determine the mode of hot water production
- d. Determine the occurrence of ventilation equipment



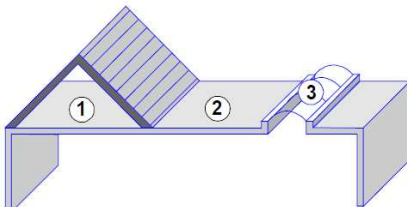
### 3) Make the building plans - plotting



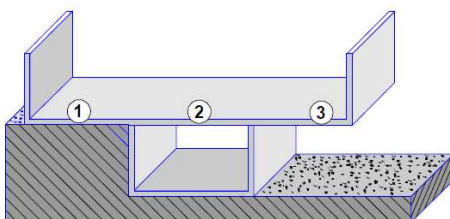
a. On the outside, measure the length, width and overall height of the building

b. Inside, at every floor and in each room :

- i. Measure the length width and height ceiling
- ii. Measure the thickness of the walls to the outside ② and unheated volume③ and determination of their composition
- iii. Measure the dimensions of windows and type identification : single, double, triple, presence of shutters, airtightness
- iv. Measure the dimensions of doors, type identification, presence of shutters, airtightness
- v. Measure the dimensions of French windows, type identification, presence of shutters, airtightness



vi. ceiling and its composition : surface losses or not



vii. floor and its composition : surface losses or not

viii. heated or not

### 4) Analysis : calculations, rankings

a. Area :

- o global area
- o heating area



European Year of Volunteering 2011



1995-2010  
Leonardo da Vinci Programme  
15th Anniversary

b. Heat loss surface :

Walls	Composition	Area	U Coefficient
Wall 1			
Wall 2			
Wall 3			

Cealings	Composition	Area	U Coefficient
Cealing 1			
Cealing 2			
Cealing 3			

Floors	Composition	Area	Coefficient
Floor 1			
Floor 2			
Floor 3			

Windows	Composition	Area	Coefficient
Window 1			
Window 2			
Window 3			

Doors	Composition	Area	Coefficient
Door 1			
Door 2			
Door 3			

c. Thermal equipments :

- 1 – Type of heating system
- 2 – Type of hot water production
- 3 – Climatisation : Y/N
- 4 – Type of ventilation : natural/mechanic

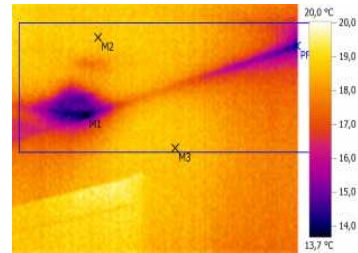
**5) simulation EPD software**



## Thermography IR

IR Camera for :

- analysis of walls
- analysis of roofs
- analysis of floors
- analysis of thermal bridge
- analysis of air permeability
- detection of moisture



**TO SUMMARIZE : AN IR INSPECTION IS A SPECIFIC EXAMINATION**

Operation mode :

- necessary to have temperature gradient between outside and inside : 15 °C
- be careful with the reflection (window)
- for external insulation picture views are realised from outside
- for internal insulation picture views are realised from inside

Emissivity :
Outside Temperature[°C]:

### INFRARED CAMERA pictures survey

Picture N°	Ref. jpeg	Reference : room and target	Target T°	Inside T°	Apparent Reflected Temperature	Relative Humidity
			°C	°C	°C	%
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						

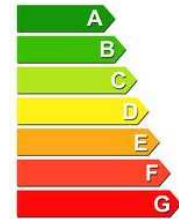
**Apparent Reflected Temperature (ART) : Special measure with emissivity  $\epsilon = 1$**



## EPD / Thermography

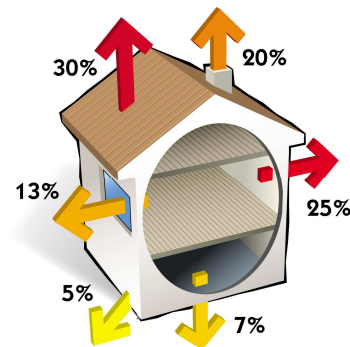
### 1. regulatory EPD :

- o certificate about actually level consumption
- o specific pictures with camera IR can give qualitative informations about insulation (existing or not – continuous or not)



### 2. EPD + : EPD + Thermography :

- Goals :
  - o recommandations for renovation
  - o Energy saving
- Identification of leakage (the main)
- Recommandations adapted of leakage : **SCENARIO**
- Economie Analysis : renovation or not (global/partial) : **SCENARIO**



#### Scénario

Measures	Economies	Investment	Return On Investment	Project EPD
Measure 1	€	€€€	⊕⊕⊕	<i>Logement économe</i> ≤ 50 A 51 à 90 B 91 à 150 C 151 à 230 D 231 à 330 E 331 à 450 F > 450 G <i>Logement énergivore</i>
Measure 2	€	€€	⊕⊕	
Measure 3	€	€€€€	⊕	