



***SDHplus***  
**Solar District Heating in Europe**

*WP2 – SDH enabling buildings with high energy performance*  
*Task 2.1 – Survey and horizontal review of the existing models*

**D2.2 – Information sheet on  
building legislation and district heating**



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**Country**

France

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1. *How DH is accounted for in the calculation of energy performance of buildings according to national laws, with specific attention to SDH.*

**The building code « RT2012 » applied to buildings**

RT 2012 (thermal standards to be applied since 2013) establishes the energetic performances and the thermal characteristics for newly construct building. The requirements concerning multi-dwelling housing building are presented below:

- ✓ Bioclimatic loads (Bbio): this criterion describes the minimum building energy efficiency requirement, regardless of its heating system. It ensures that basic Bio-climatic design (orientation, compactedness, natural lightning, efficient insulation, etc...) is taken into account from the start.
- ✓ Summer confort (Tic) : this criterion represents the maximum allowed indoor temperature on a sequence of 5 hot days,
- ✓ Primary energy consumption (Cep) : The primary energy consumption is calculated for the five following loads: heating, DHW, cooling, lighting and ventilation / heating auxiliaries. The objective for all new building is to be lower than an average of 50 kWh<sub>PE</sub>/m<sup>2</sup>.year. This set value is adjusted according to several criteria: application (office, dwelling, etc..), geographical location, altitude, dwelling area. This modulation leads to a requirement of Cep between 40 and 75 kWh<sub>PE</sub>/m<sup>2</sup>.year.  
Another criteria related to the greenhouse gas emission of the heating device leads to a modification of the set value. Then, for a housing building connected to a district heating, the Cep requirement value is increased as follow:
  - + 30% for DH with CO<sub>2</sub> emission equal or lower than 50 g<sub>CO<sub>2</sub></sub>/kWh
  - + 20% for DH with CO<sub>2</sub> emission between 50 and 100 g<sub>CO<sub>2</sub></sub>/kWh
  - + 10% for DH with CO<sub>2</sub> emission between 100 and 150 g<sub>CO<sub>2</sub></sub>/kWh

DH above 150 grams per kWh sold benefit of no modification in the Cep.

### **District heating in the « RT2012 »**

The Cep modification coefficient (or “bonus”) presented above for “green” district heating has several benefits. First, the builder can save investments costs by reducing measures to reduce the primary energy consumption. The energy consumption is slightly higher, resulting in a better economical efficiency for DH, but without changing the economical and environmental relevancy of RES DH compared to other heating solutions. This incentive measure allows for example to ensure that most buildings in a new Eco district are connected, increasing the economical and environmental advantages of RES DH for stakes holders, and especially decision makers who are in most cases local authorities.

This “green” DH bonus is also a good opportunity for builders to achieve better thermal performances, as it makes it simpler to reach the performance of RT2012 labels (very efficient building label, passive label, etc..) which enables investors to obtain tax advantages.

For new district heating or those which have a deep change in their energetic mix (by replacing an old fossil fuel boiler by a biomass boiler for example), another method is to be used. This method, named “Titre V”, implies for the DH operator to present its project in front of a national committee who decides which CO<sub>2</sub> emission is to be taken into account according to the technical specifications of the project (see appendix 1).

#### *2. Practical example of calculation.*

In the calculation method of the RT2012, the thermal solar energy is taken into account in deduction of the building consumption (for DHW mainly). According to the average consumption and cover ratio, it increases the maximum allowed primary energy consumption (Cepmax) of about 20%.

If solar energy is integrated to the energetic mix of the district heating, there is not such a deduction. At the utmost, if solar implementation allows the CO<sub>2</sub> emissions to descend below 150 grams / kWh, it increases the maximum consumption by only 10%, even if the carbon balance is far better with this solution. In most cases where solar brings only 5 to 10% of the DH heat production, it will make no difference.

#### *3. Standard methods and software tools usually used for such normative calculations.*

The national technic and scientific building committee (CSTB) is in charge of developing the building code calculation method. Several software based upon the method are developed by private companies (Clima-Win ; DISCEPOLO ; CYPECAD MEP ; DesignBuilder ; Lesosai ; Visual TTH ; ArchiWIZARD ; Pleiades+Comfie, module RT2012 ; U2Win RT 2012).

#### *4. Limits and opportunities for SDH according to the existing methodology.*

As shown above, it is more incentive for the builder, on a RT2012 point of view, to implement solar on a building instead of developing SDH.

The necessity to go through the “titre 5” process is also an important difficulty for new DH, and hence new SDH which represent an interesting opportunity in new Eco district. For example, the

project presentation in front of the committee must include the list and characteristics of all the buildings that will be connected to the network. This implies for the DH operator to obtain signed agreements for the connections beforehand from all builders, without being able to tell them which “green bonus” they will get by doing so, or even to guarantee if they will get one.

*5. Possible improvements for the methodology and for the current legislation.*

AMORCE has asked for an evolution allowing the same benefit for the builder between SDH connection and solar HTW installation, but chances to obtain it are quite low until now. The necessity to adapt the building code to zero energy building by 2020 gives an opportunity to get out of the current approach which takes only the building into account, towards a wider approach including the surrounding buildings and the district, hence giving more opportunities to DH and SDH.