

Energy efficient ventilation for NZEB in Mediterranean countries.

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SUMMARY

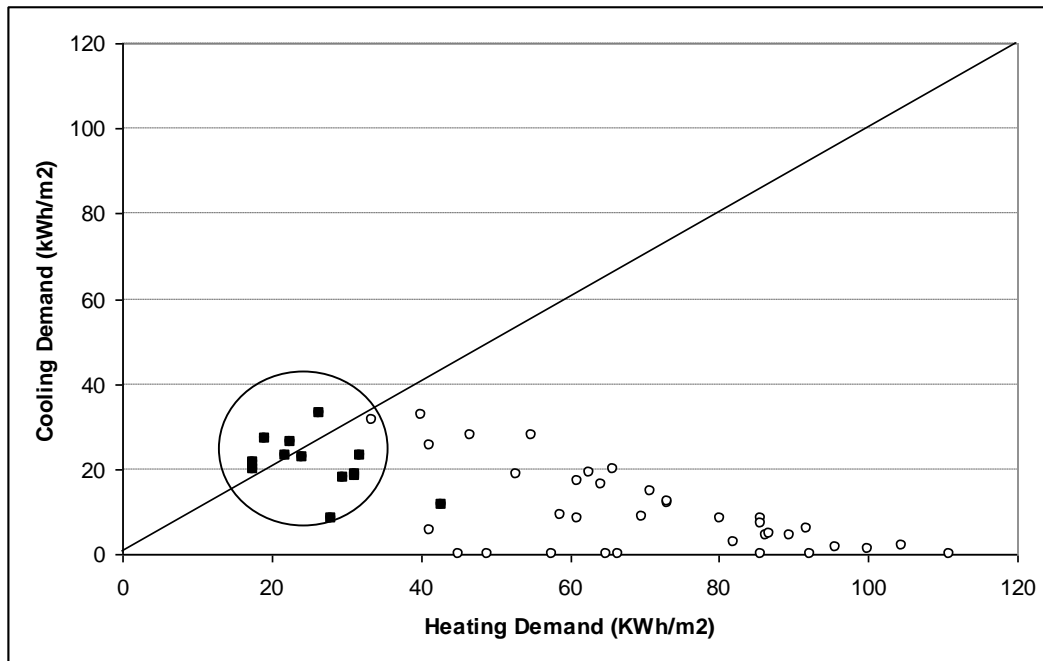
In the definition of the nZEB, the use of only one requirement is misleading. Different requirements are combined to a coherent assessment of an nZEB and to fit the definition given by the EPBD (2010/31 /EU) in article 2. In this presentation, we focus on the first requirement reflecting the performance of the building envelope characterised by the energy needs for heating and cooling.

Reaching the requirements on energy needs for NZEB is a gradual process that is obtained by a roadmap that includes the technologies to be used (the qualitative catalogue) and the variants to take into account for every technology (the quantification of each catalog item).

Usually the most representative and mature technologies in a given country would be listed first. These technologies are typically insulation of opaque components and windows (for heating purposes) and solar control (for cooling purposes). The variant to choose for each technology (or the emphasis to put on it) is a cost-benefit problem whose solution is obtained by the concept of cost optimality (minimal life cycle cost over the lifetime).

The initial cost of the different technologies is not very different from country to country but the associated energy savings are very climatically dependent. Consequently, the energy needs requirement of nZEB in different climates will not always be based on the same technologies and undoubtedly will never be based on the same variants for those technologies who have in common.

Figure shows the typical values of the energy needs for heating and cooling of new single-family dwellings built according to the 2006 Spanish regulation. The results are for the capitals of the 50 provinces. In black appear the Mediterranean locations (in the coast or less than 100km inland).



It can be seen that the heating and cooling needs of buildings in locations of Mediterranean climate exhibit a common pattern characterised by low heating needs (compare to other Spanish locations) and relatively high cooling needs often with a ratio cooling/heating close to the unity.

In the presentation we will examine for these climates the opportunity of energy efficient ventilation technologies covering air-tightness, demand control ventilation, balanced ventilation with heat recovery and night ventilation (for cooling purposes).