ASSOCLIMA Position Paper


Assoclima and its Members welcome the work done by the Consultant and the possibility for stakeholders to collaborate to the Regulations’ revision, thanks to the different WGs’ meetings planned in the first half of this year.

In particular we would like to provide input for the working group 2 “Testing” as regard to supply temperatures.

The Consultant proposal to increase the medium supply temperature from 55°C to 65°C is opposed by all the European associations and manufacturers and Assoclima supports their conclusions and thinking, already submitted with different position papers.

High temperature heat pumps supplying 65°C water temperature represent a niche market and do not represent the vast majority of systems and applications.

The proposal to increase the testing temperature results is not in line with the goals of the Energy Performance of Building Directive (specifically Article 8 of the Directive 2018/844/EU). Furthermore, medium temperature heat pumps are needed for renovated homes with lower heating demand.

So, increase the medium temperature of heat pumps is not a long term solution and doesn’t look to the best efficiency of the complete system serving the building.

According to this, we would like to propose to the Consultant a different point of view, considering also the future development of the building market and the needs of the warmer climates of Europe, which represent a primary market for heat pumps.

First of all, please take care that not all the hydronic heat pumps are suitable for the high temperature of radiators and is not correct to force an efficient equipment to work within a non-efficient environment.

Usually, heat pumps are “reversible” and shall provide both heating and cooling, in some situations at the same time (e.g. office buildings with particular expositions). Furthermore, not all the hydronic heat pumps are suitable for the floor heat exchanger, when operates in cooling mode; without any doubts, the common installed radiators are not suitable for the cooling operation, at the usual chilled water temperature, because they are not provided with condensate drain basin.

In the current practice of space heaters, reversible heat pumps, which in summer work with water DT 12/7°C, are coupled to hydronic terminals, circulators and plants designed and regulated for a medium temperature of 40/45°C.

In fact specifications, commercial price lists, offers, orders, tests between customer and manufacturer are based on the 40/45°C temperature and related flow rates. Manufacturers have then to double test their products, one set of testing for their customers and another one for the ecodesign efficiency.

So, the 55°C class don’t represent their real life application.

According to what above, we suggest to keep the today’s values of 35°C and 55°C for low temperature heat pumps and medium temperature heat pumps and combi-heat pumps, in order to match the needs of the deep renovated or new buildings and the needs of colder climates and sanitary hot water’s requests.
In addition, we suggest to introduce the intermediate class of 45°C water supply temperature in order to meet the requirements of a larger amount of buildings and needs, such as tertiary or soft-renovated buildings, especially in the warmer climates of middle-south Europe, where heat pumps are widely used for both heating and cooling and where their market shows promising scenarios of growth.

We think that with these 3 classes of temperatures the whole application world of heating heat pumps can be covered, reflecting more the reality and allowing installers and designers to choose the best performance application for each condition.

There are also technical aspects that must be taken into consideration when proposing the new 45°C water supply temperature intermediate class:

- The low 35°C class with DT 30/35°C today represents the best efficiency, in fact $\eta_s = 125\%$, as per current ecodesign minimum requirement, but it is more indicated for h24 operating floor heating systems. These systems, in fact, are less flexible and don’t have enough controllability in case of non-predicted heat loads whether external or internal (e.g. sudden sunshine, sudden crowding of people, simultaneous use of machinery such as copiers). In these cases the result is an increment of the ambient temperature with waste of energy and loss of human thermal comfort.

- The 55°C class with DT 47/55°C can actually work with the hydronic terminals, that can modulate promptly in order to respond faster to variable loads, but with an efficiency loss from $\eta_s = 125\%$ to $\eta_s = 110\%$, as shown by the current ecodesign minimum requirements.

- Introducing the new 45°C class allows the same flexibility and the same fast modulation without wasting of energy and at the same time improving the efficiency. Please consider that today this temperature is already tested by the manufacturers so it will not further complicate the testing procedures and we already have a large database that can be used also to develop the new ecodesign minimum requirements and energy labelling classes. We are at complete disposal to provide all the useful data.

- Looking at the LCC of the equipments, it can be said that the internal components of reversible appliances work better with an intermediate temperature of 40/45°C because it is more similar to the summer conditions and for sure less onerous than 47/55°C, where the components, being more solicited, will have a shorter life.

**Conclusions:**

According to what reported in our position paper, we kindly ask the Consultant to keep the 55°C supply water temperature and to introduce the intermediate class of 45°C supply water temperature. This, in addition with the low temperature, will represent more the real life applications of heating heat pumps and will contribute to more energy savings thanks to better-performing applications.

Date: 05/05/2020

ASSOCLIMA  
Technical Secretariat