

Opportunities in standardization of heating and cooling systems related to recast EPBD



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The Energy Performance of Buildings Directive (EPBD) is respecting the subsidiarity principle: the Member States decide on the detailed requirements and methods.

In recast EPBD, to strengthen some of the provisions to make the impact is more effective, first steps towards a more harmonised approach are made. The EU Commission will also establish some common methods and schemes. The recast EPBD gives opportunities, especially for heating and cooling systems, to show their energy efficiency European wide and create new fields where European standards can be applied directly.

This article present the opportunities in standardisation for heating and cooling systems related to the common methods and schemes of recast EPBD.

Strengthen the status of standardisation in recast EPBD with respect to the subsidiarity principle

The legal basis of the Energy Performance of Buildings Directive (EPBD) is Article 175(1) of the EC Treaty (principle of subsidiarity). EPBD does not set EU-wide levels, but requires Member States to lay down the detailed requirements and relevant mechanisms.

Buildings are considered as a key matter of competence for local, regional and national authorities. In the recast EPBD it is again left

to Member States to determine the detailed requirements and ways to implement them. Regional approach requires to take national / regional boundary conditions, like outdoor climate and individual building traditions, into consideration. The background of this ruling is that buildings do not travel.

If buildings do not travel, products, services and workers do! Construction products, appliances, services are an important part of the EU internal market. Nowadays many workers and businesses are not limited to a single country.

With the increasing mobility of workers and number of businesses with operations across the EU, measures creating more comparable national regulatory conditions would decrease the administrative burden and increase opportunities for productivity gains for them.

The European industry is in favour to change the legal basis of the EPBD from Article 175 (1) to Article 95 in order to make the application of the content more binding. But in the recast EPBD the demand of the European industry has not been followed. The establishment of a common approach that creates the basis for coherent and reinforcing mechanisms for efficiency improvements, while Member States retain control over setting the individual requirements and ways to implement them, has been maintained.

To establish the common approach and to help Member States in the transposition of the EPBD on national level, the Commission supports the use of CEN standards. A first mandate has been given to CEN and a second mandate, linked to the recast EPBD, is in preparation.

Even if the use of CEN standards in the recast EPBD is still optional, recast EPBD requires that the Commission shall establish methodologies and schemes which Member States shall adopt. The methodologies will be based on CEN standards. The status of CEN standards is strengthened and new direct application possibilities are created.

The common methods and schemes of recast EPBD creates new direct application for European standards

Even if some countries already allow using European standard based methods to fulfil the requirements of national regulations, in the "old" EPBD the European standardization affected above all indirectly the national methods. The standards were amended or only partly taken over. This created differences between the European standards and the national methods which did not permit to develop common tools (software). As the CEN standards were not referenced and not directly applicable, professionals continued to be trained and work with national methods. The European standards were not very well known and only partly used.

In the recast EPBD, the development of common methods and schemes is announced. The objective is to establish methods to compare the approaches and effort made in the Member States related to energy efficiency. The comparison can only be made by using common methods. Therefore it is expressly stipulated in the recast EPBD that these methodologies should be based on standards. The common methods and schemes provide new direct application fields for the standards. The standards will be known and used.

The common methods and schemes offer also interesting applications to HVAC professionals, industrials, services and software developers. The standards and tools can be used within the frame

of EPBD, in professional practice for the energetic optimization of buildings and for marketing of heating, cooling, ventilation and other building services systems.

The new opportunities for heating and cooling systems

The recast EPBD is underlining the importance of heating and cooling systems by new articles. These articles are providing opportunities to demonstrate the positive contribution of heating and cooling systems to the overall energy performance of the buildings. They are related to common methods and schemes based on European standards.

Article 5: Calculation of cost-optimal levels of minimum energy performance requirements

The Commission shall establish by 30 June 2011 a comparative methodology framework for calculating cost-optimal levels of minimum energy performance requirements for buildings and building elements. The comparative methodology framework shall be established in accordance with Annex III of the Directive and shall differentiate between new and existing buildings and between different categories of buildings. The comparative methodology framework shall enable Member States to determine the energy performance of buildings and building elements, the economic aspects of measures related to the energy performance and to link them by identifying the cost-optimal level.

In annex III it is stipulated that the comparative methodology framework should be based on relevant European standards related to this Directive.

EN 15459 "Economic evaluation procedure for energy system into buildings" elaborated by CEN TC 228 "Heating of system in buildings" should be the basis for the transposition of this article.

The calculation of the energy efficiency precedes the computation of the cost optimum. As the calculation of the energy efficiency is linked to the existing CEN standards finally the whole CEN package has to be used. In recast EPBD it

articles

is required that the calculation of the levels at optimal costs of minimum requirements must be so detailed that also individual components are counted.

Heating and cooling industrials could use this method as marketing support of their products. Economic calculations provide a powerful incentive for undertaking energy conservation measures. Easy to use and "stand alone" software should be created. The software has to be structured in such a way that the individual component is taken into account in the overall energy performance but without complicating the input data.

Article 8: Technical building systems

Member States shall, for the purpose of optimising the energy use of technical building systems, set system requirements in respect of:

- ▶ the overall energy performance,
- ▶ the proper installation,
- ▶ the appropriate dimensioning,
- ▶ the adjustment and control,

of the technical building systems which are installed in existing buildings. Member States may also apply these system requirements to new buildings.

System requirements shall be set for new, replacement and upgrading of technical building systems and shall be applied so far as they are technically, economically and functionally feasible.

Recast EPBD underlines the importance of proper installation and dimensioning and asks that requirements are set for them. These are new topics in recast EPBD. In the "old" EPBD dimensioning was mentioned but not system requirements were set.

For heating and cooling systems the system requirements in respect of the overall energy performance are interesting. This could help to show the contribution of the heating and cooling systems to the overall energy use. Specific minimum requirements for heating and cooling



systems could also help to trigger modernization of less energy efficient heating and cooling systems.

EN 15316-1 "Method for calculation of system energy requirement and system of efficiencies" defines the total energy efficiency of technical building systems for heating and domestic hot water. These indicators could be extended for cooling and ventilation. The consideration of the recoverable losses must be defined. The link with the inspection procedures should be made.

Article 11: Energy performance certificates

The Commission shall, by 2011, in consultation with the relevant sectors, adopt a voluntary common European Union certification scheme for the energy performance of non-residential buildings. Member States are encouraged to recognize or use the scheme.

The common certification scheme was asked by building promoters working all over Europe. Heating and cooling professionals should pay

attention that the contribution of HVAC systems is taken into account and reported on the certificate. The template of the certificate should be elaborated in cooperation with the concerned professionals. The result of the certification should be determined by using CEN standards.

This approach creates the possibility of a common European method in parallel to the existing national methods and open the European market for software and services based on the CEN standards.

Article 14 / 15 / 16: Inspection and reports of heating and air-conditioning systems

Existing buildings and systems have the most important impact on energy consumption. Identifying the weak points of energy consuming systems (screening) and highlighting possible improvements (tailored information) is the first necessary step to improve the energy performance of existing heating systems.

The inspection was for many years the last requirement of the EPBD transposed on national level. The implementation of inspection schemes has been ignored in many MS's. The recast EPBD tries to improve this situation. It is recommended that the results of the inspection should be taken over in the building certification.

Especially for technical building systems inspection is important because this can be a trigger for investments in innovative techniques.

The inspectors encounter problems due to national registration, methods and certification, which are barriers for European-wide circulating of services were developed. Uniform methods (standards) could help to improve this situation.

To simplify inspection common tools should be created.

Adjustment of the methods of EPBD and EuP

In the EPBD and in the EuP (Energy using Product directive) a system approach has been developed for the evaluation of products.

The system approach proposed by the EuP is difficult to reference for third countries, since this is not based on standards. For the manufacturers it would be however interesting that also third country takes over the labelling developed by EuP.

When revising the CEN standards possible links between EuP and EPBD should be taken into consideration. The current EuP system, if already in place, is not always using the procedures as laid down in the current EPBD standards, this situation should be considered when revising the EPBD standards.

Conclusions

Recast EPBD offers interesting opportunities to promote heating and cooling systems. They will be taken into account in the revision of the related standards under the second mandate. It is remembered that already for the first mandate most of the standardization work items were related to heating and cooling systems.

But there will be a problem of timing between the national transposition of recast EPBD, which is scheduled for 2012, and the beginning of the revision of the standards which will probably officially start in 2011.

The heating and cooling professionals have to propose solutions and communicate on them in 2011 in order to give information to the Member States how the future standards will look like, what will be the outcomes and associated tools.

References

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