EPBD implementation in 
Austria
STATUS AT THE END OF 2012

1. Introduction

In Austria, Energy Performance Certificates (EPCs) had been issued since 1998 in some of the ‘Länder’ of the Federal Republic, using the space heating demand (‘HWB’, referring only to the building envelope) as a central element for the definition of requirements. A (simple) regular inspection of heating systems was also already in use. Both regulations were differing widely among the 9 ‘Länder’. So, the implementation of the Directive 2002/91/EC on the Energy Performance of Buildings (EPBD) offered the opportunity to start a harmonisation process within Austria, to develop a common calculation methodology, to implement further elements like Heating Ventilation and Air-Conditioning (HVAC) systems, and to enhance regular inspections.

The implementation of the EPBD recast (2010/31/EU) led to a complex calculation methodology, including an ‘energy efficiency factor’. It has to be mentioned that the requirements for subsidised buildings had always been very ambitious, nearly fulfilling the 2020 requirements of the building code already in 2012.

2. Energy performance requirements

2.1 Progress and current status

The building regulations in Austria fall under the responsibility of the nine Austrian regional states, the ‘Länder’. Starting from different energy requirements in the respective building codes, the ‘Länder’ and the federal state agreed on the development of a harmonised implementation of the EPBD in 2006. This process is managed by the Austrian Institute of Construction Engineering (OIB) and by a working group of representatives of the nine ‘Länder’, who agreed on common methods and requirements, fixed in OIB guidelines which had to be implemented in the respective ‘Länder’. In this way, the OIB guidelines serve as the basis for the harmonisation of building regulations and may be used by the ‘Länder’ for this purpose. The declaration of a legal obligation of the OIB guidelines is subject to the ‘Länder’. The first guidelines were finalised in 2007, and the regulations in the ‘Länder’ came into force between January and May 2008.

The regulations, based on the OIB guideline 6, 2007 issue, included all types of buildings, both residential and non-residential, both new and major renovations. The requirements mainly covered the heating and cooling demand (useful energy), as well as the final energy demand related to space heating and domestic hot water. For the space heating demand, the guidelines enclosed a tightening by January 2010. In addition, requirements on building elements, as maximum U-values, were stated. The requirements were revised after just a few years, and the 2011 issue of the OIB guidelines was adopted (see next subchapter). While the requirements for major renovations remained unchanged, the maximum accepted space heating demand in new buildings was tightened.
A survey of the requirements for residential buildings from 2007 to 2012 is given in Table 1. The results of the current tightening are shown in Figure 1. A picture over all tightening steps up to future Nearly Zero-Energy Buildings (NZEB) is given in Figure 4.

The recast of the guidelines also contains some smaller adjustments and additional indicators, without implicating any further tightening, but establishing a basis for redesigned Energy Performance Certificates (EPC) and future plans, as described later in this report.

2.2 Format of national transposition and implementation of existing regulations

With the adoption of the EPBD recast in 2010, Austria proceeded on its way towards new and retrofitted NZEBs by tightening the OIB guideline 6 ‘Energy economy and heat retention’ (covering the minimum requirements of the Austrian energy performance indicators), as well as the OIB guideline ‘Energy performance of buildings’ (covering the calculation methodology framework).

Both documents were amended in October 2011. For calculation details, the latter refers to a new set of Austrian standards (ÖNORM B 8110-6, ÖNORM H 5056-5059) which has been revised before March 2011. By having issued the OIB documents at the end of 2011, the technical transposition of the recast EPBD was finished, and the legal implementation started. Carinthia has already fully implemented the new OIB documents since October 2012 in its construction law. Vienna, Vorarlberg and Styria did the same by January 2013. The other Austrian ‘Länder’ will follow.

Regarding the implementation of the EPBD recast article 12, ‘Issue of energy performance certificates’, the Austrian Energy Certificate law was renewed in April 2012. This federal law regulates the duty of the seller or renter to submit an EPC to the buyer or tenant when selling or renting buildings and building units, according to the new provisions of the recast EPBD.

For the implementation of the EPBD recast article 17, ‘Independent experts’, regularly updated lists of qualified and/or accredited experts/companies will be published by the Ministry of Economy, Family and Youth on the basis of the federal trade and civil engineering law by January 2013.

For the implementation of the EPBD recast article 18, ‘Independent control system’, the nine ‘Länder’, being responsible for the building codes, had already installed control systems when

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**Figure 1:** Required maximum space heating demand for new residential buildings [kWh/m²·year, vertical axis], depending on form factor A/V (horizontal axis). Source: Erläuternde Bemerkungen zur OIB-Richtlinie 6, Ausgabe Oktober 2011 (www.oib.or.at).

**Table 1:** Required maximum space heating demand and maximum U-values for new residential buildings and for existing buildings in case of major renovation. Source: OIB-Richtlinie 6, Ausgabe April 2007 and Oktober 2011 (www.oib.or.at).

<table>
<thead>
<tr>
<th>Year</th>
<th>Type</th>
<th>Maximum value</th>
<th>But not exceeding</th>
<th>Extract: Building elements (all buildings and periods)</th>
<th>Maximum U-values [W/m²·K]</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>New buildings</td>
<td>26 * (1 + 2.0/ℓₚ)</td>
<td>78.0</td>
<td>Outer walls</td>
<td>0.35</td>
</tr>
<tr>
<td>2010</td>
<td>Major renovation</td>
<td>25 * (1 + 2.5/ℓₚ)</td>
<td>87.5</td>
<td>Floors over outdoor air</td>
<td>0.20</td>
</tr>
<tr>
<td>2012</td>
<td></td>
<td>25 * (1 + 3.0/ℓₚ)</td>
<td>54.4</td>
<td>Doors without glass</td>
<td>1.70</td>
</tr>
<tr>
<td>2007</td>
<td></td>
<td>34 * (1 + 2.0/ℓₚ)</td>
<td>102.0</td>
<td>Roofs</td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td></td>
<td>25 * (1 + 2.5/ℓₚ)</td>
<td>87.5</td>
<td>Ground floor or cellar ceiling</td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td></td>
<td>25 * (1 + 3.0/ℓₚ)</td>
<td>87.5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

ℓₚ is defined as the characteristic length of a building, which is the reciprocal value of the form factor A/V.

Energy demand is related to conditioned gross floor area, including outer walls.
implementing the first EPBD. Some ‘Länder’ started controlling the subsidised residential buildings (like Styria in 2008), thus gaining experience and giving advice to the issuers in order to enhance the quality of EPCs. Some installed a central database (like Carinthia and Vorarlberg), providing mandatory upload of EPC data in their building codes. A (different) control system exists in each of the ‘Länder’, but now efforts are being made to harmonise them. A central national database is in preparation (‘Gebäude- und Wohnungsregister’ (GWR)), where all EPC data will be registered, finally offering the possibility to install a common quality management system for all ‘Länder’.

2.3 Cost-optimal procedure for setting EP requirements

Several institutions initiated studies to establish the cost-optimal levels of minimum Energy Performance (EP) requirements for buildings and building elements. So far, results are available only from the Austrian Energy Agency. The analysis focuses mainly on single-family houses and multi-storey residential buildings. The investigation relates to both new and existing buildings. For the calculations, reference objects were defined. These reference objects are representative of typical Austrian buildings. Different construction methods (solid brick construction, lightweight wood construction and solid wood construction) and heating systems (wood pellet, condensing gas and heat pump technology) have been considered. Also, renewable technologies have been integrated in the examinations (solar thermal systems). On the basis of the reference building for a new single-family house, the preliminary results are illustrated in Figure 3 (examples given for solid brick construction and lightweight wood construction).

For single-family homes, different thermal building standards (space heating demand 15, 35 and 52 kWh/m²·year useful energy) and different energy technologies concerning heating and ventilation have been considered. These design variants were observed with and without thermal solar systems, and with and without supply and exhaust air ventilation systems with heat recovery (in the Figure marked as MV = ‘Mechanical Ventilation’). The calculations show that the cost-optimal design variant is a specific space heating demand of 52 kWh/m²·year (gross floor area) in combination with a gas condensing system (yellow spots). However, the cost difference (global costs) to the design variant with a space heating demand of 15 kWh/m²·year in combination with the air heating system (air to air heat pump with supply and exhaust air ventilation system) is very small (red spots) and, compared to the gas systems, this design variant has much less primary energy consumption.

Compared to the basic systems, the global costs of the variants with a solar thermal system are only slightly higher, but have much less primary energy consumption. The combined systems (heating system and supply and exhaust air ventilation system) show the highest global costs. Nevertheless, the global costs can be reduced considerably through high thermal quality of the building envelope (space heating demand 15 kWh/m²·year; red spots) and use of an air heating system, according to the ‘Passive House’ concept.

Regarding the different construction methods, it can be said that there is no difference concerning the cost-optimised variants. The cost relations among the different design variants are the same for all construction methods. The current calculations of the Austrian Energy Agency show that, for new buildings, the cost-optimised variants correspond to the magnitude of the numbers in the national plan (see next subchapter).

2.4 Action plan for progression to NZEB

In November 2012, the national action plan was still under preparation. An OIB draft of the 29th of October 2012 describes the present results. The ‘Länder’ agreed on using the four following indicators to describe the overall EP of a building:

> Space heating demand (‘Heizwärmebedarf’ (HWB)).
> Energy performance factor (‘Gesamтenergieeffizienz-faktor’ (IGEE), an indicator related to the overall final energy demand). An IGEE value of 1 corresponds to a reference building fulfilling the OIB 2007 requirements.
> Primary energy demand (‘Primärenergiebedarf’ (PEB)).
> CO₂ emissions (‘Kohlendioxidemissionen’ (CO₂)).

Four indicators have to be met: HWB, PEB, CO₂ and energy performance (not the
Figure 3: Global costs (vertical axis) and primary energy demand (horizontal axis) for different energy standards (space heating demand) and various technical solutions (list on the right). Examples related to new single-family homes with solid brick construction (top) and with lightweight wood construction (bottom).

GCB = gas condensing boiler
HP = heat pump
WPB = wood pellet boiler
AHS = air heating system
Sol = solar thermal system
MV = mechanical ventilation system.

The same as fGEE). However, the agreement includes that the EP criterion, expressed as overall final energy demand (‘Energiebedarf’ (EEB)), could be fulfilled in two different ways:

- The first way is to meet the dynamically tightened requirements on space heating demand (HWB) by using a predefined default technical building system.

- The second way is to meet the dynamically tightened energy performance factor (fGEE). In this case, the space heating requirements are not tightened, but the technical building system has to be more efficient in order to meet the final energy requirements. Gains from renewable energy production on-site or nearby can be taken into account.

It is important to be aware that all mentioned indicators (apart from the HWB) also cover the energy demand related to household electricity or electricity needed for the regular operation of a building, respectively, including all lighting and technical equipment, but not production devices.
In the calculation methodology, the corresponding values are fixed.

Minimum EP requirements on these four indicators are related to the Austrian reference climate, but the ‘Länder’ can adapt the requirements to climate on-site. Conversion factors for primary energy and CO₂ are defined in the OIB guideline 6, 2011 issue. The primary energy factor is the total of the factors for the renewable and the non-renewable share. The agreed numbers for stepwise tightening of the minimum requirements for residential buildings are shown in Tables 2 and 3. Table 2 applies to new buildings, while Table 3 is valid for major renovations. The results, expressed in gradually decreased space heating demand, depending on the building’s compactness, are illustrated in Figure 4.

Minimum EP requirements and milestones for non-residential buildings will be designed along the same lines, but the negotiations on that were not yet completed by November 2012.

Summing up, the Austrian way to define NZEBs is to design a combination of four different main requirements, which, all in all, result in very energy efficient buildings, taking into account a robust building envelope (HWB), the overall energy efficiency (fGEE), resource conservation (PEB) and climate protection (CO₂). From 2020, for new buildings, this will normally mean a space heating demand on the ‘Passive House’ level – or even lower, in case of more compact

Table 2: Minimum energy performance requirements for new residential buildings.

<table>
<thead>
<tr>
<th>Year</th>
<th>HWB_{max} (kWh/m²·year)</th>
<th>EEB_{max} (kWh/m²·year)</th>
<th>f_{GEE, max} [-]</th>
<th>PEB_{max} (kWh/m²·year)</th>
<th>CO₂_{max} (kg/m²·year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>16 × (1 + 3.0 / \ell_s) using default HTEB_{max}</td>
<td>0.90</td>
<td>190</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>2016</td>
<td>14 × (1 + 3.0 / \ell_s) using default HTEB_{max}</td>
<td></td>
<td>180</td>
<td>28</td>
<td></td>
</tr>
<tr>
<td>2018</td>
<td>12 × (1 + 3.0 / \ell_s) using default HTEB_{max}</td>
<td></td>
<td>170</td>
<td>26</td>
<td></td>
</tr>
<tr>
<td>2020</td>
<td>10 × (1 + 3.0 / \ell_s) using default HTEB_{max}</td>
<td></td>
<td>160</td>
<td>24</td>
<td></td>
</tr>
</tbody>
</table>

Table 3: Minimum energy performance requirements for existing residential buildings in case of major renovation.

<table>
<thead>
<tr>
<th>Year</th>
<th>HWB_{max} (kWh/m²·year)</th>
<th>EEB_{max} (kWh/m²·year)</th>
<th>f_{GEE, max} [-]</th>
<th>PEB_{max} (kWh/m²·year)</th>
<th>CO₂_{max} (kg/m²·year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>23 × (1 + 2.5 / \ell_s) using default HTEB_{max}</td>
<td></td>
<td>230</td>
<td>38</td>
<td></td>
</tr>
<tr>
<td>2016</td>
<td>21 × (1 + 2.5 / \ell_s) using default HTEB_{max}</td>
<td></td>
<td>220</td>
<td>36</td>
<td></td>
</tr>
<tr>
<td>2018</td>
<td>19 × (1 + 2.5 / \ell_s) using default HTEB_{max}</td>
<td></td>
<td>210</td>
<td>34</td>
<td></td>
</tr>
<tr>
<td>2020</td>
<td>17 × (1 + 2.5 / \ell_s) using default HTEB_{max}</td>
<td></td>
<td>200</td>
<td>32</td>
<td></td>
</tr>
</tbody>
</table>

Note for both tables
f_s is defined as the characteristic length of a building, which is the reciprocal value of the form factor A/V. Other abbreviations are described in the text.
Four indicators have to be fulfilled, see the text.

Figure 4:
Decreased space heating demand [kWh/m²·year gross floor area, vertical axis], depending on form factor A/V [horizontal axis], as a result of tightening minimum EP requirements for residential buildings according to the national action plan.
Left: new buildings.
Right: major renovations.
buildings. Nevertheless, it will not be required to build a ‘Passive House’. Implementing other very efficient energy measures, it will be possible to have a building envelope which does not meet perfectly all the ‘Passive House’ requirements. The Austrian NZEB definition is not related to a specific concept like the ‘Passive House’. This will allow the application of different approaches, as long as these ensure at least the same overall energy efficiency. On the other hand, building according to the ‘Passive House’ concept will not be enough to meet all indicators in every case. Other energy efficiency measures—like solar collectors or bioenergy—will be necessary.

2.5 Other relevant information
A large share of new buildings and major renovations in the Austrian residential sector get a support for housing (‘Wohnbauförderung’). All nine ‘Länder’ provide support programmes. The conditions to get such subsidies have always been stronger than the requirements in the building codes, related both to energy and other building qualities. Therefore, many—in particular newer—buildings in Austria provide a better energy performance than that required in the building codes. This system with special subsidies for even higher energy efficiency of residential buildings will continue in the future, as agreed by the ‘Länder’ and the federal state.

As shown in the following graphs, until recently, the subsidised homes had a marked share, up to 90%, for new houses. The last years, however, this percentage is reduced to below 50%, while the share of privately financed housing units has increased, especially for single-family homes.

Until 2010, the total expenditures of the ‘Wohnbauförderung’ for new and renovated homes in the nine Austrian ‘Länder’ rose to about 2,500 M€, but fell by approximately 10% in 2011.

3. Energy performance certificates
In Austria, the Energy Performance Certificate (EPC) has to be issued by a person authorised according to the relevant rules and regulations of the trade, by an accredited inspection authority or by a person who has been certified on the basis of cooperation in the building trade. They can be chartered engineering consultants with relevant authorisation, engineering agencies within their trading license, master builders and master carpenters, general legally accredited experts of relevant expertise, as well as technical departments of public enterprise bodies. In addition, the certification bodies in the ‘Länder’ may certify people for the purpose of issuing EPCs.

In 2010, there were about 4,000 recognised qualified experts in Austria, ranging from chimney sweepers to licensed consulting engineers or architects (‘Ziviltechniker’). So far, there is no federal register of experts for Austria. In connection with the independent control system, some of the ‘Länder’ will implement their own database.

3.1 Progress and current status on sale or rental of buildings
In some Austrian ‘Länder’, EPCs existed for many years before implementing the EPBD. Therefore, such certificates are well known in Austria, but mostly relating to new buildings. Since the 1st of January 2009, it has become mandatory to submit a certificate when
buildings or building units are sold or rented out. The certificate is based on the different but harmonised regulations in the nine ‘Länder’, while the obligation to submit the certificate is provided for in a federal law, the ‘Energieausweis-Vorlage-Gesetz’ (EAVG). The background for the latter is the fact that such obligations are regulated by civil law and not by building regulations. Civil law is a federal issue in Austria, and the ‘Länder’ are not in charge of that.

According to the EAVG issued in 2009, a copy of the certificate had to be physically delivered, and not only shown to the buyer or renter. Submission also applies to protected buildings; in general, the submission cannot be waived. The new EAVG, which came into force on the 1st of December 2012, clarifies more precisely that the contracting parties are not allowed to agree on something different. In addition, the new law introduces penalties in case of infringement. The fine can be up to 1,450 €. The first EAVG did not include sanctions. Therefore, only about 20% of the existing buildings upon sale or rent had a certificate before 2012 under the former law. Up to date, experience with the new EAVG is not yet available.

3.3 Implementation of mandatory advertising requirement – status
Under the first law regarding the issue of EPCs, the EAVG, it was not required to advertise the energy performance indicator. The new EAVG, which came into force on the 1st of December 2012, states this obligation and introduces penalties in case of infringement. The fine can be up to 1,450 €. Up to now, there are only few examples of advertising and, due to the date of implementation of the new law, the corresponding statistics are not yet available.

3.4 Information campaigns
As already mentioned, EPCs existed in some Austrian ‘Länder’ for many years before implementing the EPBD. Therefore, such certificates are well known in Austria. Nevertheless, in the run-up to the introduction of the EPBD EPCs, comprehensive measures to inform the public and professionals were taken in all the Austrian ‘Länder’. In the period 2008 – 2010, representatives and experts of all the ‘Länder’ governments, regional energy agencies, as well as of the chambers of commerce and the chambers of engineers have been present in more than 3,000 events, fairs, seminars and workshops, disseminating information on the certification process and the EPCs.

Information and training activities, like calculation courses, were addressed to different target groups; these activities are continuing. All the ‘Länder’ provide corresponding websites, brochures and so on. The same applies for the chamber of commerce and for trade associations. In particular, advisory activities in connection with the ‘Wohnbauförderung’ contribute to good information of the stakeholders.

4. Inspection requirements - heating systems, air-conditioning

4.1 Progress and current status on heating systems
In Austria, inspection obligations for boilers exist for more than 15 years. The frequency of inspections depends on the energy source and the size (power output) of the heating system. At present, the requirements of boiler inspections differ among the nine Austrian ‘Länder’. The present regulation will be replaced by a new agreement between the ‘Länder’ and the federal government of Austria. The new agreement has been presented to the ‘Länder’ on the 31st of January 2011.
According to the new agreement, heating systems have to be inspected, in order to guarantee that they meet the emission and efficiency standards according to the power output and the used energy source. These inspections have to be carried out after the start-up of the heating system and further on in defined time periods. Moreover, the emissions of heating systems with a power output over 10 MW have to be monitored continuously.

The new agreement differentiates between basic and full inspections of heating systems. In case of heating systems with a power output up to 400 kW, only basic inspections have to be carried out. The mandatory periods for basic inspections are shown in Table 4.

In case of heating systems with a power output above 400 kW, the first full inspection has to be carried out during four weeks after start-up. Further periodic inspections depend on the power output of the heating system. Mandatory periods for full inspections are shown in Table 5.

Heating systems with a power output above 400 kW also need to undergo a basic inspection at least once a year. This basic inspection is only waived in the year when a full inspection is carried out.

After each inspection, a report has to be prepared by the auditor. Basic inspections have to be carried out by an official expert, or an organisation or expert who can show detailed expertise in this field. A basic inspection can be carried out by authorised craftsmen, licensed consulting engineers or architects (‘Ziviltechniker’), and accredited inspection authorities. Full inspections can be implemented only by official experts or organisations fulfilling the requirements of §14 of the ‘anti-pollution law’. At present, the detailed training requirements for experts who will be authorised to carry out basic and full inspections are under discussion within local and regional authorities.

Up to now, a quality control system for heating inspections is not implemented. The mandatory inspection report includes only little information, but local and regional authorities have to be informed if basic requirements (emission, performance or safety requirements) are not entirely fulfilled.

### 4.2 Progress and current status on AC systems

Obligations for the inspection of air-conditioning (AC) systems commenced as of the 1\textsuperscript{st} of January 2009. Requirements in regard to inspection reports for AC systems were introduced together with the obligation of the inspection itself. Austria consists of nine regional ‘Länder’, and legislation concerning inspection of AC systems is within their competence. Subsequently, the Austrian regional governments introduced nine regulatory frameworks which are slightly different in each of the nine ‘Länder’. Common inspection intervals are three, five, ten or twelve years, or a combination depending on the scope of the inspection. In some regions, a short inspection every three years is combined with a more comprehensive one every 12 years. In all nine ‘Länder’, AC systems from a 12 kW total rated output in a single building (refrigerating capacity) are to be inspected. If there are several systems in one building, their rated outputs are added up to establish if the 12 kW limit is exceeded.

#### Table 4: Inspection periods (basic inspections) according to power output and used energy source.

<table>
<thead>
<tr>
<th>Used energy source</th>
<th>Power output</th>
<th>Inspection period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural gas</td>
<td>Up to 26 kW</td>
<td>Minimum, once every fourth year</td>
</tr>
<tr>
<td>Standardised biomass and fossil fuel</td>
<td>Up to 50 kW</td>
<td>Minimum, once every second year</td>
</tr>
<tr>
<td>All energy sources</td>
<td>Above 50 kW</td>
<td>Minimum, once a year</td>
</tr>
</tbody>
</table>

#### Table 5: Inspection periods (full inspections) according to power output.

<table>
<thead>
<tr>
<th>Power output</th>
<th>Inspection period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Above 400 kW up to 1 MW</td>
<td>Only one full inspection after start-up</td>
</tr>
<tr>
<td>Above 1 MW up to 2 MW</td>
<td>Every fifth year</td>
</tr>
<tr>
<td>Above 2 MW</td>
<td>Every third year</td>
</tr>
</tbody>
</table>
### Table 6: Regulatory frameworks in regard to AC system inspections in Austria’s nine regional ‘Länder’.

<table>
<thead>
<tr>
<th>Province</th>
<th>Law/regulation</th>
<th>§</th>
<th>Time intervals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burgenland (Burgenland)</td>
<td>Burgenländisches Luftreinhalte-, Heizungsanlagen- und Klimaanlagengesetz 2008</td>
<td>§ 19b</td>
<td>3-year interval: &gt; 12 kW</td>
</tr>
<tr>
<td>Kärnten (Carinthia)</td>
<td>Kärntner Bauvorschriften</td>
<td>§ 50</td>
<td>3-year interval: &gt; 12 kW</td>
</tr>
<tr>
<td>Niederösterreich (Lower Austria)</td>
<td>NÖ Bauordnung 1996</td>
<td>§ 34b</td>
<td>10-year interval: &gt; 12 kW</td>
</tr>
<tr>
<td>Oberösterreich (Upper Austria)</td>
<td>Oö. Luftreinhalte- und Energietechnikgesetz 2002</td>
<td>§ 31a</td>
<td>1-year interval:  &gt; 50 kW</td>
</tr>
<tr>
<td>Salzburg (Salzburg)</td>
<td>Baupolizeigesetzes 1997</td>
<td>§ 19c</td>
<td>5-year interval: &gt; 12 kW</td>
</tr>
<tr>
<td>Steiermark (Styria)</td>
<td>Steiermärkisches Baugesetz</td>
<td>§ 93</td>
<td>1-year interval: &gt; 12 kW</td>
</tr>
<tr>
<td>Tirol (Tyrol)</td>
<td>Tiroler Heizungs- und Klimaanlagengesetz 2009</td>
<td>§ 11b</td>
<td>3-year interval: &gt; 12 kW</td>
</tr>
<tr>
<td>Vorarlberg (Vorarlberg)</td>
<td>Bautechnikverordnung</td>
<td>§ 46</td>
<td>3-year interval: &gt; 12 kW</td>
</tr>
<tr>
<td>Wien (Vienna)</td>
<td>Wiener Feuerpolizei-, Luftreinhalte- und Klimaanlagengesetz</td>
<td>§ 14a</td>
<td>3-year interval: &gt; 12 kW</td>
</tr>
</tbody>
</table>

There are annual inspections only in Upper Austria (rated output of more than 50 kW) and in Styria (all AC systems from a 12 kW rated output). Lower Austria introduced only one kind of inspections for all systems above 12 kW, where all inspections need to be conducted only once every 10 years.

The inspection is to be carried out according to ÖNORM EN 15240 (AC systems) and ÖNORM EN 15239 (Ventilation). Currently, ÖNORM H 6041, a supplement to these two standards focusing on the assessment of the energy efficiency of an AC system, is under development and due to be published in 2013. Inspections for all AC systems have to be paid by the end user or by the owner of the building.

Regional governments are in charge of compliance and control of AC inspections. In most provinces, the qualification of the experts responsible for carrying out the inspections is based on the Austrian trade law. According to this law, experts are allowed to carry out AC inspections provided that they possess a trade license for planning, installing, modifying, maintaining and auditing AC systems. Inspectors can also be accredited by auditing bodies, public authorities or engineering firms with relevant competencies. Training for inspectors is currently offered by private and public training institutes, as well as by the chamber of commerce.

5. Conclusions and future plans

Most of the articles (art. 2 to 13, except art. 5) of the recast Directive on the Energy Performance of Buildings (EPBD) are covered by the aforementioned Austrian Institute of Construction Engineering (ÖIB) guideline which has been already implemented in the building code of Carinthia, Vienna, Vorarlberg and Styria, and will soon be implemented in the building codes of the other 5 Austrian ‘Länder’, since they have already agreed to do so. The Nearly Zero-Energy Building (according to the ÖIB guideline 6) has been already introduced for subsidised residential buildings, and will become the standard in the building code requirements in 2020. The Austrian NZEB is normally a building with space heating demand at or below ‘Passive House’ level, but the requirements are not related to a specific concept – which will allow different approaches to be applied. Nevertheless, more than 11,800 ‘Passive Houses’ were already in use in Austria in 2010, and it seems as if this concept will become the widely-used new voluntary standard, at least as far as new residential buildings are concerned. As early as in 2008, 12.9% of all newly built residential units were ‘Passive House’.

Also, the regulations for the inspection of Heating Ventilation and Air-Conditioning (HVAC) systems are implemented in different laws. A common format of reports (art. 16) is still under
development, as well as the independent control system, which already exists in each of the ‘Länder’, but is not yet fixed by law.

As for the cost-optimal way of building, several methodologies have been developed, and they will be integrated into a single one, also including the available information offered by the Commission, until March 2013. The studies have shown that the mentioned requirements meet cost-optimality well, so there should be no problem to make the NZEB affordable - provided that long term calculations are made and accepted by the building industry, as well as by the owners and users. Because of the current lack of comprehensive information, the regulations for non-residential buildings will still have to be developed and may introduce new elements in the future, e.g. the role of smart meters and more differentiated requirements according to different use.

Finally, there is a new federal law to ensure the issuing of Energy Performance Certificates (EPC), including sanctions, since the 1st of December 2012. A central database is planned (some of the ‘Länder’ already have one), where all EPC data should be stored, thus offering to the users the possibility to profit from the existing experience. A quality management for EPCs is used in most ‘Länder’ as a basis for the independent control system.

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