

## REGULATION ON EnEV IN REALITY

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The 1<sup>st</sup> February 2002, the regulation on energy savings (EnEV) came into effect in Germany.

The regulation on EnEV aims to reduce the CO<sub>2</sub> emissions by 25% in Germany by 2005, in relation to the situation in 1990. Its coming into effect in 2002 automatically cancels previous regulations on the heat consumption and the heat sources.

The Regulation on EnEV is completed with norms DIN V 4701 – 10 (source's design) and DIN V 4108 – 6 on building constructions. In disagreement with previous norms and regulations on EnEV, the Regulation considers consumption of primary energy sources (for heating, generation of hot water, ventilation etc.) and not need for heat.

The Regulation on EnEV is a basis for a complex evaluation of the heat sources and building constructions. The Regulation provides the formula for calculation of maximum facultative consumption of primary energy sources in relation to the ratio  $A / V$ , where  $A$  is the outer area of the building and  $V$  is heated volume of the building.

This value must not be exceeded and the architect or designer has to take note of it in his design. Maximum loss value for passage of the heat through the building's walls is defined in connection to  $V / A$ , too.

Determination of the heat need for heating and generation of hot water will be assessed according to parameter  $e_p$ , which gives a ratio between consumption of the primary energy sources and the generated utility (heat for heating, generation of hot water). If the  $e_p$  is too high (high consumption of the primary energy sources, e.a. electric heating), there is a need of building's insulation of high quality.

The impact of the Regulation on architects and designers is the necessity of prompt and complex evaluation of the relation between used equipment of heat devices in buildings and used building construction. Until now, the building construction and heat sources were considered according to separate provisions and therefore the

new Regulation on EnEV may seem too complicated. In reality, by its scope, the Regulation will allow general energy evaluation of the buildings. Furthermore, the Regulation on EnEV is more than a simple regulation or directive; it provides the architects not only with flexible tools for energy savings, but it is also a groundwork for new approach to overall building solution. The person who decides to use the renewable energy sources, will be eligible for alleviations concerning the building constructions, based on the Regulation on EnEV.

The architects and designers possess new opportunities, but where to start? The basis for the first draft may be these seven steps:

1. Determination of the ratio  $A / V$
2. Calculation of maximum facultative consumption of primary energy sources
3. Calculation of annual heat need, according to DIN 4108
4. Calculation of need of hot water, according to EnEV
5. Calculation of the parameter  $e_p$
6. Check of the use of primary energy sources (point 2)
7. Conclusion

The calculation of maximum facultative consumption of primary energy sources, on the basis of  $A / V$  (found out in point 1), is defined by two formulas in compliance with generation of hot water: either with central or individual heating for the consumers.

The value of maximum facultative consumption of primary energy sources, defined in this way, must not be exceeded and is a basis for architect's and designer's exploration. It is now up to architects and designers, which combination of heat (energy) sources and building construction to choose, so that consumption of primary energy sources will not exceed the calculated value.

Apart from this criterium, there is just one limiting condition in the EnEV: the value of coefficient of heat passage through building's wall. This one can be achieved through usually used building constructions.

Calculation according to EnEV leads to the conclusion, that it is more useful to have central generation of hot water, because it represents lower quantity of heated water and lower consumption of primary energy sources for pumping of the hot water.