Heat pumps
– one of the key solutions for the heat supply

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The building sector, i.e. the operation of our buildings, is still the biggest consumer sector for energy in Europe. With a share of 40% of the total energy consumption it is much bigger than that for all kinds of transportation and all industrial manufacturing.

The building sector is dominated by existing buildings. The yearly volume of new buildings is less than 1% of the volume of existing buildings. It is an undisputed goal for Europe to drastically reduce the total energy consumption and to increase the share of renewable energy. If we all together want to achieve these goals, we have to take the necessary steps in the building sector and we have to take them primarily on the existing buildings. This will result in a huge volume of refurbishment projects. In the end we are heading for "nearly Zero Energy Buildings", the so called nZEB`s. Refurbishments down to that level need concepts for the building itself, i.e. the insulation and the tightness, and for the building services systems, i.e. for the heating, cooling and ventilation. The optimal solution for each building will need a case by case development of the appropriate concept. A lot of different solutions are possible, a lot of different components are and will be available.

Heat pumps are a very promising component for the heat supply. They offer the chance to reduce the demand for final energy. The achievable seasonal coefficient of performance (SCOP) is the determining factor. It is not only depending on the temperature levels on the heat source side and on the thermal system side, but on construction and running parameters of the heat pump itself. On the heat source side we discuss different sources such as outside air, what has the advantage of being available everywhere but the disadvantage of low temperatures in winter. This then makes combinations with solar energy interesting. On the heat pump itself, developments of capacity controlled compressors are very promising to improve the SCOP. All these new heat pump concepts need appropriate and agreed testing procedures. With those it will be possible to identify the energetic advantages. This is very important in view of necessary design data and furthermore in view of trustful performance data, what is vital for consumer information's in the market.

We in REHVA have no doubt that, from the engineering point of view, all the above mentioned goals can be achieved. The necessary know how is available from the European engineers.