

Sufficient opportunities for Low Temperature Systems (LTS) in renovation Haico van Nunen, Jelle Persoon – Bouwhulp Groep bv

Opportunities for installations with Low Temperature Systems (LTS) are clearly present in the current renovation practice. This is indicated by a study conducted by Bouwhulp Groep and Cauberg Huygen under order of Novem (Netherlands Agency for Energy and the Environment). The quality wanted in today's renovation practice has been the starting point of this study. Just like every other new kind of technique, the performances a principle wants to improve and the measures he is willing to take, form the basics of using LTS. This study makes it possible to direct the concept- and product development of LTS to make it suitable for the actual renovation practice.

The study resulted in a book of examples. This book includes example projects of executed renovations or feasibility studies. In each project is indicated which quality one wants to reach and how a suitable LTS-concept can enhance this quality. With a 'mirror of renovations' a renovation project can be placed with respect to the example projects. Then the opportunities for LTS in the specific project can be estimated by the use of the references.

In future energy provision, large scale implementation of LTS has an advantage, because the use of highly efficient and sustainable generation of energy is much easier with LTS. To promote this, last month, the Dutch government introduced a new subsidy for LTS. (R&O, November 2001)

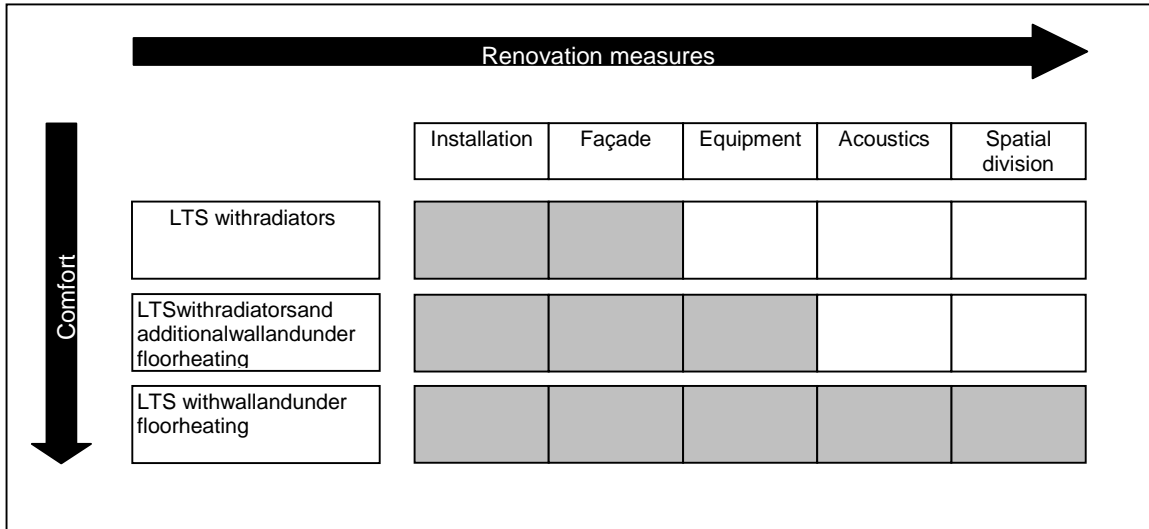
Within the current building practice, LTS is part of the new generation of heating systems. A large scale implementation of LTS in the building of new houses is within reach. With the existing buildings all this, is much more complex. For a start, within the supply of existing houses, the quality of the building services is more diverse. LTS-systems cannot be applied in every situation. Measures to the energy distribution system in most cases have to be combined with upgrading the total quality of energy installations. Within renovations there are opportunities, but implementing LTS on a large scale only takes place when principals (i.e. housing corporations) are convinced that with LTS, quality is added to the building.

The demanded quality of the building after renovation differs from project to project. Next to functionality are appearance, luxury, comfort and ease of operation terms that are related to quality. For each target group another color.

The quality leap one has to make with renovation is dependent on the quality that the existing houses offer. In discussions about renovation, components providing a functional quality are placed in the center. Building structure, spatial division, façade, roofing, kitchens and installations are examples of these components. LTS can only be put on the agenda if it is a logical part of the installation concept.

The task is clear: LTS only has a chance if installation concepts are being formulated that, next to improvements of the environmental performances and use of energy, provide a huge improvement of the level of comfort.

LTS combined with renovation measures



MIRROR WITH CHANCES FOR LTS

 EXAMPLE 3	 EXAMPLE 11	 EXAMPLE 1	RENEWING
 EXAMPLE 4	 EXAMPLE 6	 EXAMPLE 8	UPGRADING
 EXAMPLE 10	 EXAMPLE 12	 EXAMPLE 7	SPECIFIC ADDITION

CHANGE OF TARGET GROUP EXPAND OF TARGET GROUP CONTINUE TARGET GROUP

← DEMAND →

RENOVATION ↑

'Mirror of renovations' By placing the renovation project one is reviewing into the mirror, and compare it with the corresponding example, one can get an image about the implementation of Low Temperature Systems.

Comfort

Comfort is a word that describes a lot. In this article we distinguish:

visual comfort: the installations are not to be seen;

thermal comfort: thermal control of indoor environment;

acoustical comfort: are the neighbors or the traffic to be heard;

ease of control: controlling the installations and indoor environment.

The different LTS concepts each score in a different way on these aspects. A LTS-concept with a radiator scores on thermal comfort, health, indoor environment and energy use. A LTS concept that uses under floor- or wall heating scores mainly on extra thermal comfort, a high visual comfort and improvement of the acoustical performance.

The third option is a LTS system with radiators and an additional under floor and/or wall heating in specific rooms (i.e. bathroom, kitchen or living room). This way comfort is added in specific rooms.

Is LTS desired?

Implementation of LTS concepts in renovation depends on the need of the extra performances and the way the measures can be combined with the measures already planned in the renovation. A combination with the planned measures can improve the cost-quality ratio. This is caused by the reduction of extra costs and improvement of performances.

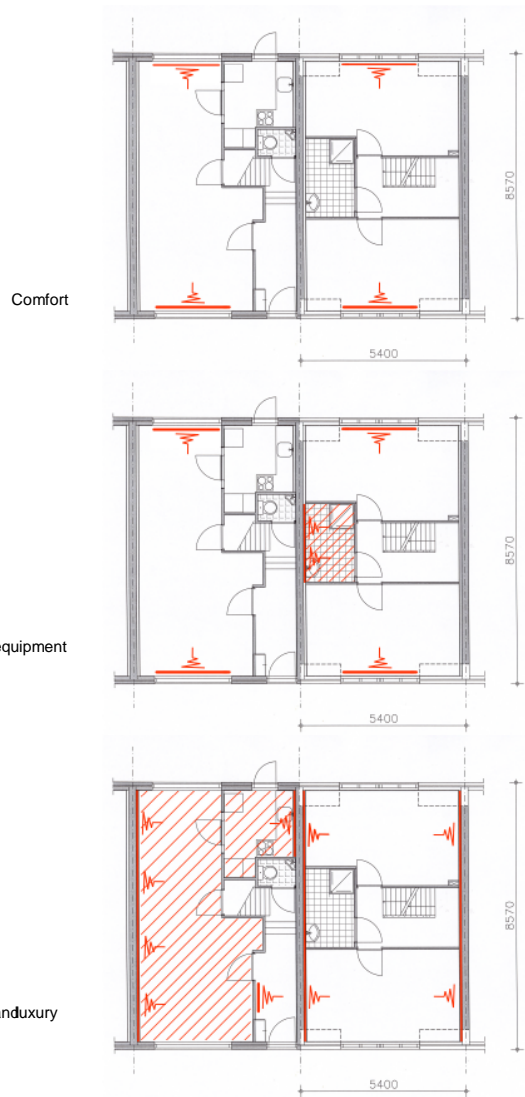
Measures on installation and façade give an excellent opportunity for a LTS-concept with radiators. When the spatial division of rooms is subject to changes and/or the acoustical performance is improved, under floor and/or wall heating concepts are applicable.

Example complexes

Twelve example projects are described. For each of these projects is indicated how a LTS concept can improve the performance. The extra costs a LTS concept implies are usual under 5% of the constructing costs, in most cases even under 2% of the constructing costs. Not every project has a chance for quality improvement by using LTS concepts. This mainly occurs in projects where the maximum needed capacity has to be diminished by insulating the building, before LTS can be introduced. (i.e. by replacing windows with HR++ windows) These extra measures are often not in accordance with the measures for renovation of specific components of a building, so LTS is not an option with these renovations. An example is the renovation of the appearance of a building (more luxurious) which will not create opportunities for the implementation of LTS.

Conclusion

The study indicates the opportunities for LTS. To make full use of these opportunities the LTS concepts must be further sharpened. The examples indicate that combining acoustical double walls with wall heating is likely to be successful. Suitable products and successfully realized example projects are a prerequisite for an actual implementation.



Criteria	--	-	0	+	++
comfort					
Visual					
Thermal					
Acoustical					
Easeofcontrol					
Healthandindoorenvironment					
Airquality					
Ventilation					
Energy					
Energyuseandenergyquality					
Energyinthefuture/sustainability					
Costs					
Investments					
Energycosts					
Maintenance costs					

Scorebeforerenovation
 Scoreafterrenovationwithtraditionalheatingsystemcombinedwithsolarpanels
 ScoreafterrenovationwithLTScombinedwithsolarpanel