



Saving energy in *practice*, NOT JUST IN THEORY

Knauf Insulation is aiming to help the building chain get the most out of the saving potential of insulation.

KNAUF INSULATION believes its role is not only to produce energy-saving products but also scientifically test how these products perform once they are installed.

As a result of years of intensive studies, the company is now at the cutting edge of research into building energy efficiency and insulation covering everything from assessment and installation to detailed monitoring and data analysis.

Recently, in collaboration with the University of Leuven in Belgium, as well as the Belgium Building Research Institute Knauf Insulation has been monitoring the impact on heat

loss, in an unoccupied Belgian home designated for social housing that was fitted with Knauf Insulation's SUPAFIL® Cavity Wall 034 and SUPAFIL Loft.

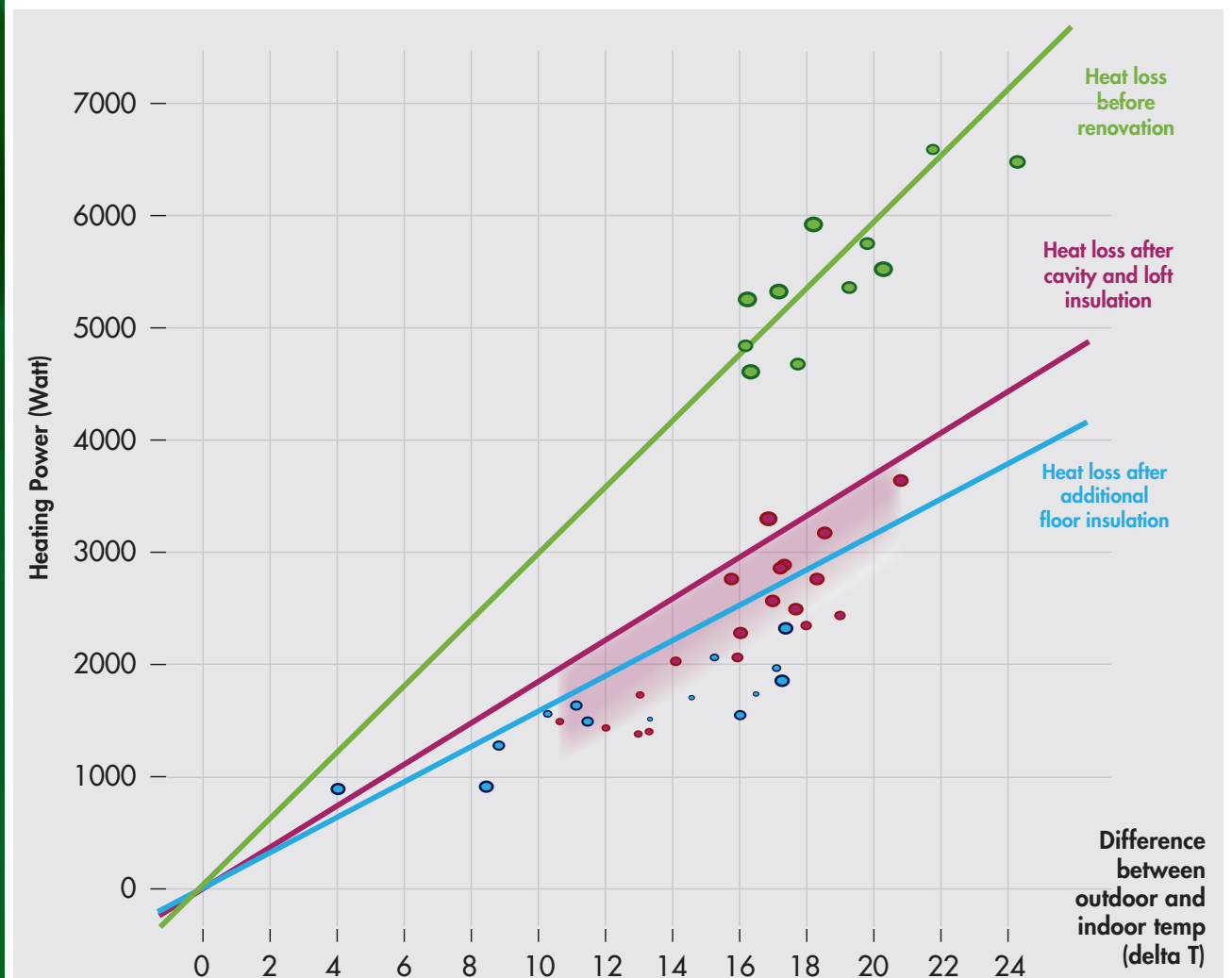
When it comes to the performance of products there can be no management without measurement. That is why this study – one of many we have carried out – was so important. Knauf Insulation's building physics team is examining the performance of the company's products in situ.

The main objective was to understand the performance after insulation has been installed not just the theory. We wanted to

50%
Simply insulating your home with cavity, loft and floor insulation has been proven to cut heat loss by up to half

Left to right, Geert Bauwens, PhD student KU Leuven, Professor Staf Roels, KU Leuven, Frederic Delcuve, Building Physicist at Knauf Insulation and Geoffrey Houbart, Innovation & Project Manager at Knauf Group

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SHOWING HOW MUCH ENERGY IS SAVED THROUGH VARIOUS DEGREES OF RENOVATION

This test house revealed a heat loss reduction of almost 50% through installing cavity, loft and floor insulation. Before insulation was installed the house lost 296.55 W/K (green line); after cavity and loft insulation was installed, that dropped significantly to 185.63W/K (red line) a saving of 37.4%. In a third step, the experiment measured the heat loss after floor insulation was also installed, and saw that an additional 27.79W/K, that's 9.3%, was saved (blue line).

measure the effectiveness of products in situ, but importantly we wanted to understand the importance of installation and compare the data we collated with calculated performances using dedicated software.

The results

The expected values were in line with what was delivered by our insulation. As we tested the house at different stages of insulation – without, in the wall, the roof and the floor – we could also quantify the influence on heat losses at every stage. That's important because the owner of a house can then understand exactly the energy saving benefits at every stage. Without insulation, the heat loss from the test house was 296.55W/K but after the cavity wall and loft were insulated this dropped to 185.63W/K and after the floor was insulated the heat loss dropped in total to almost 50% to 157.84W/K (see graph).

Learnings

Insulation does perform as expected when it's installed correctly and this underlines the importance of good installation practices to ensure optimal performance. The test also highlighted the importance of paying close attention to

'constructive details' of those areas, for instance, where walls connect to floors or ceilings. This is where good training is important.

Impact of occupant behaviour

A building can be well insulated but the people inside might not be managing it well. For example, there might be a 'rebound effect' where because a house is well insulated people think they can heat it up more. So education is important. We need to understand our energy use at home by monitoring our thermostats and energy bills. But, the most important message of all is if we improve the fabric of our buildings we improve our comfort and ultimately reduce energy consumption.

Future developments

It would be interesting to see a form of certification that could be awarded to companies on the basis of on site diagnostic testing carried out in their houses. Both the social housing sector and private sector are interested in seeing that heat loss values are also the real values of insulation. We also need to do wide-scale testing. And then more advanced testing for different types of buildings that exist.