ASBP The Alliance for Sustainable Building Products

Relationship between insulation thickness, energy savings, condensation risk and maximising ROI

Martin Twamley, STEICO UK Ltd

Natural Fibre Insulation Summit 2023

Thursday 12th October, 2-4pm, Online

NATURAL FIBRE INSULATION GROUP

Or as I like to call it……

Unlocking the Enigma:

Delving into the Enigmatic Dance of Insulation Thickness, Energy Euphoria, Condensation Secrets, and ROI Mastery

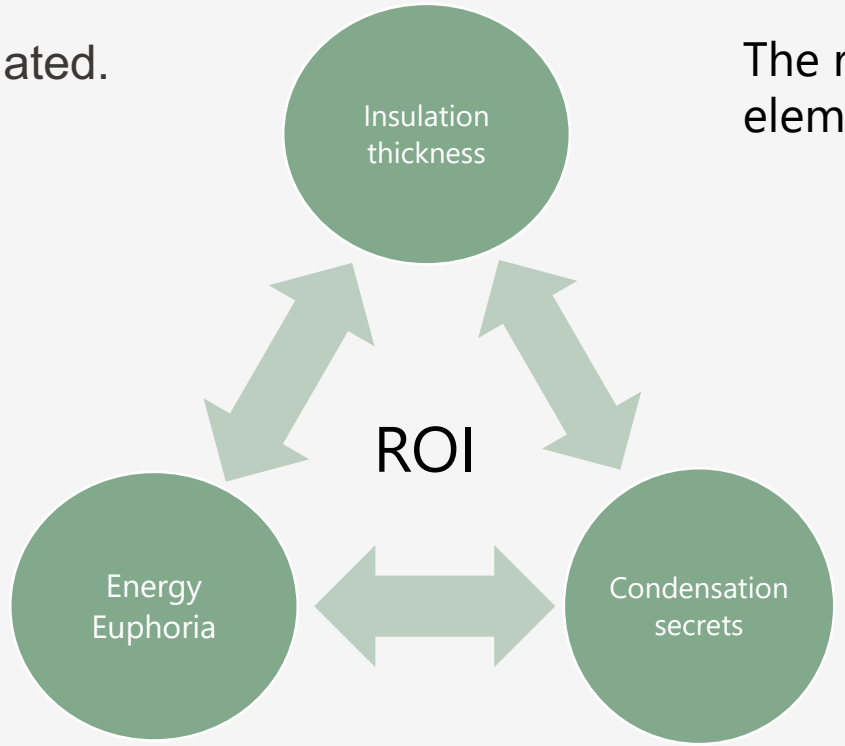
(credit to ChatGPT)

This does highlight a key issue…..

Unlocking the Enigma:

Delving into the Enigmatic Dance of Insulation Thickness, Energy Euphoria, Condensation Secrets, and ROI Mastery

……..these factors are all inter-related.



The right balance between these elements ensures a sensible ROI

There is of course much more to consider…….

.....particularly for IWI systems :

Ease of installation

Impact on room size

Thermal performance

Payback period

Comfort

Cost

Air quality

Reducing moisture risks

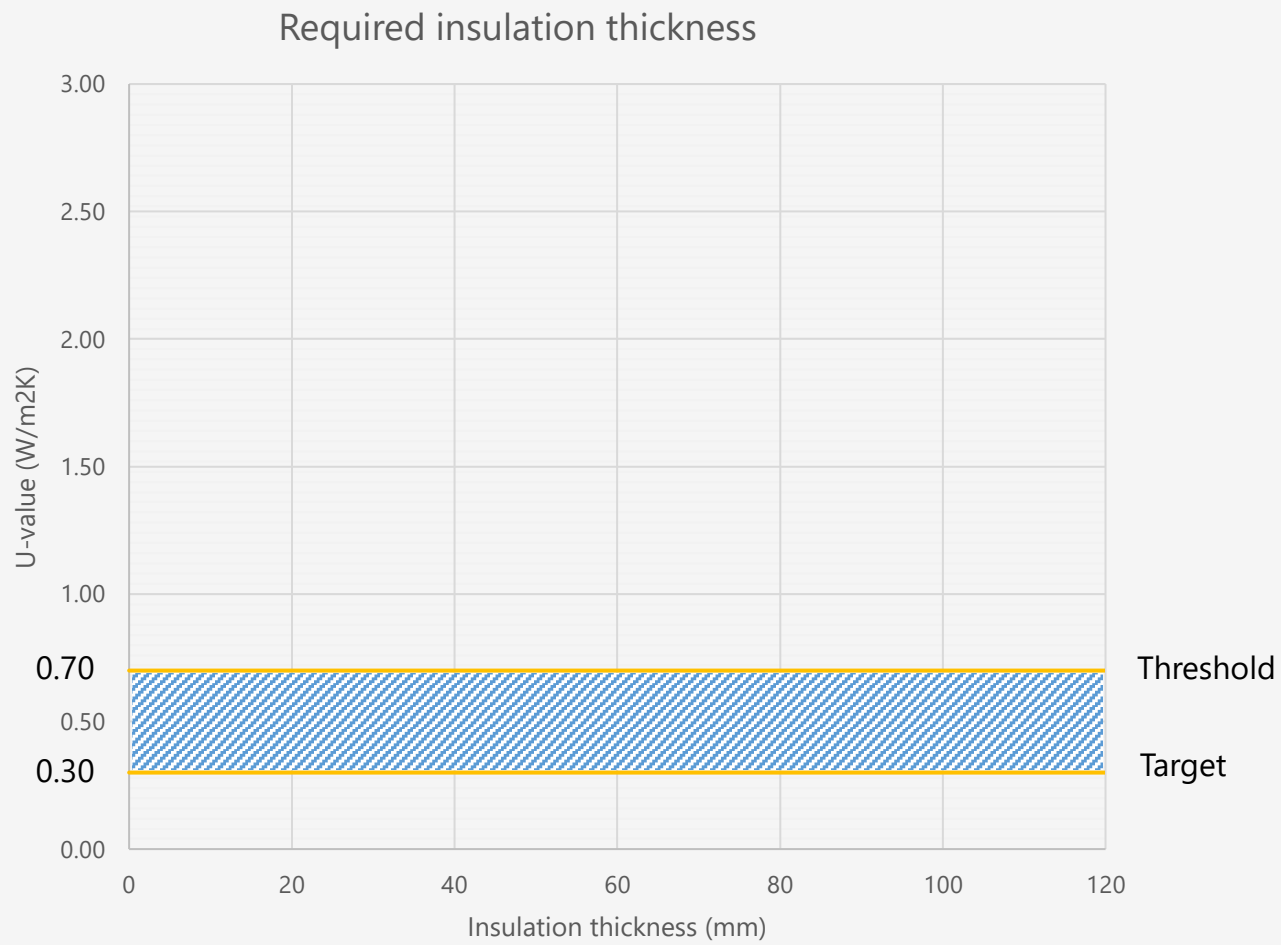
Reducing petro chemicals

Carbon storage

Health

Everybody will have different priorities but a robust long term solution will address as many of these issues as possible. The Building regulations focus predominantly on Thermal performance.

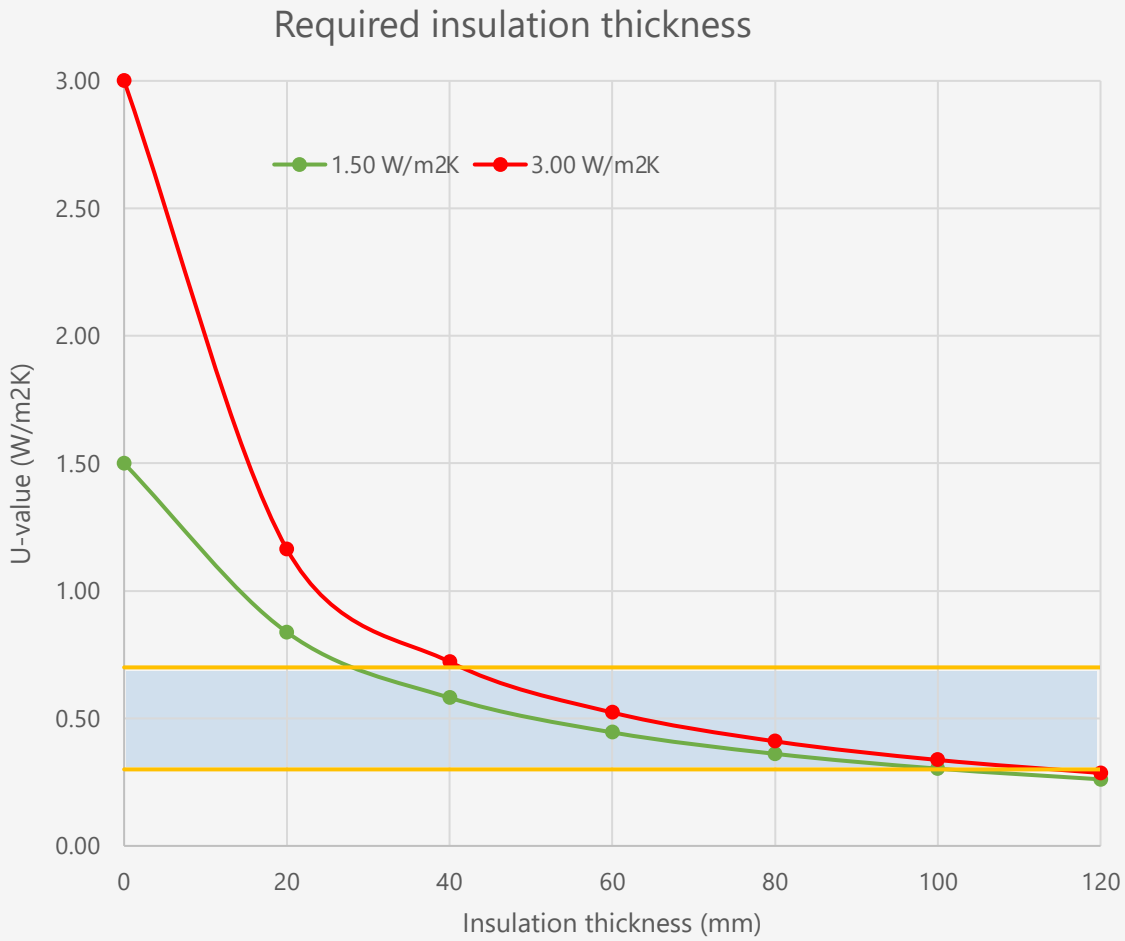
Performance requirements – U-values



The Building Regulations lays out a required thermal performance of 0.30W/m2K for walls with a threshold value of 0.70W/m2K.

In layman‘s terms this means the performance level can be anywhere within this zone but there needs to be compelling arguments for not achieving a U-value of 0.30W/m2K

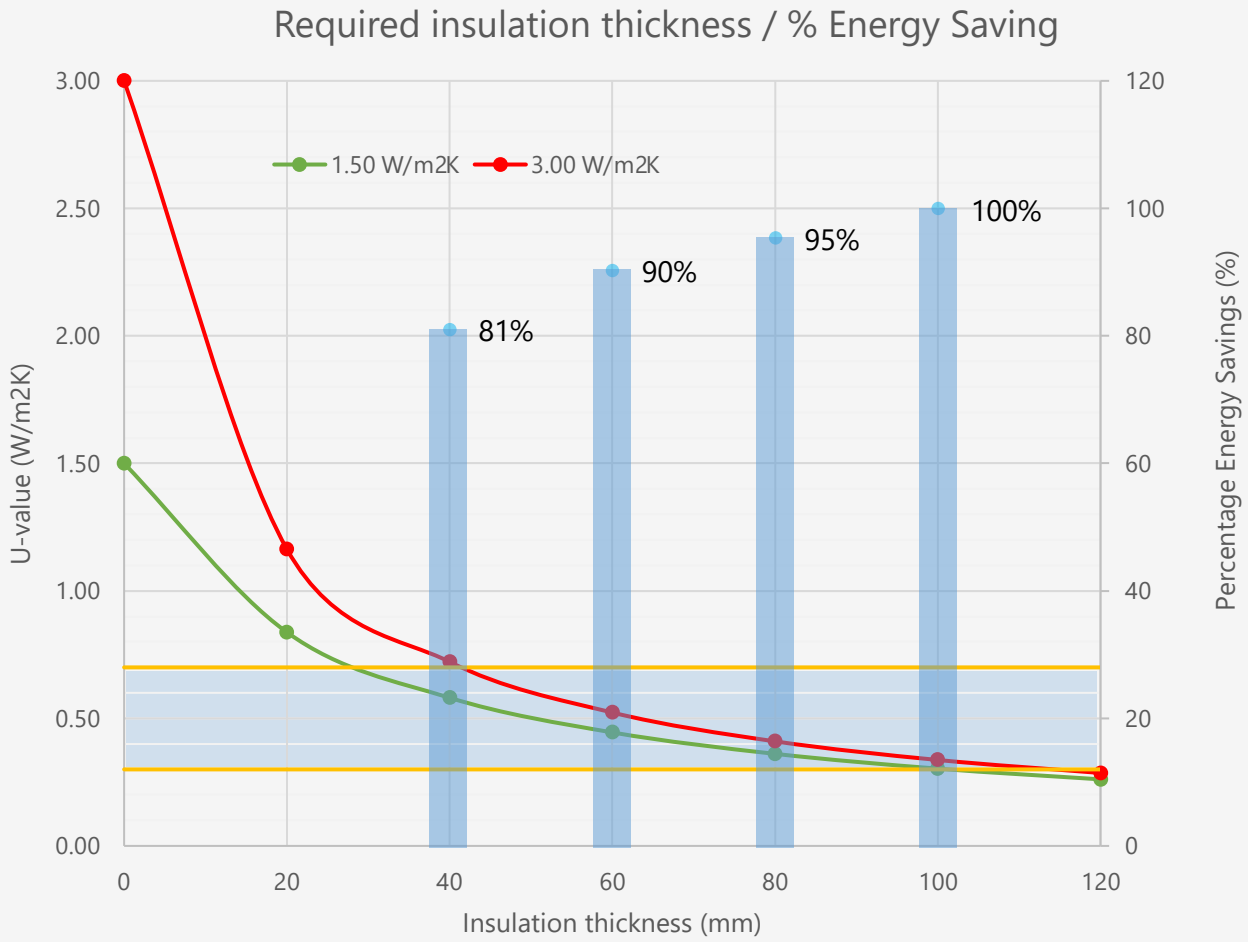
IWI with woodfibre



Depending on the type and thickness of the external wall (brick / stone etc) even a relatively thin layer of insulation dramatically improves the performance and we start to enter the Threshold zone with only 40mm of insulation.

A 60mm layer puts performance right in the middle of this zone

IWI with woodfibre – Energy Savings



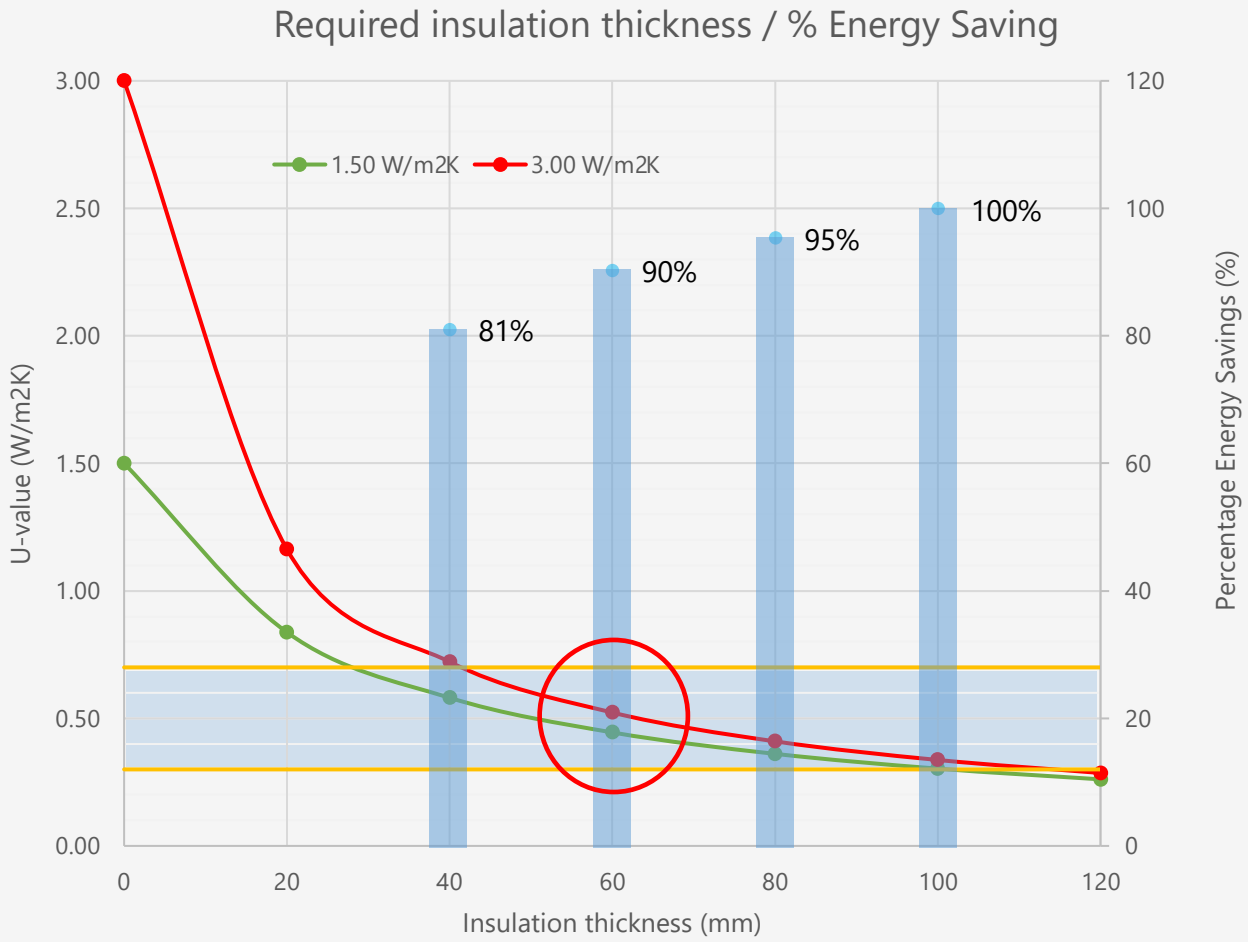
When we look at this in terms of energy savings we see that a thick layer, potentially greater than 100mm, gives us the required performance level of 0.30W/m2k but that a thinner layer also achieves a significant percentage performance improvement.

80mm = 95%

60mm = 90%

40mm = 81%

IWI with woodfibre …….the optimum thickness!



This highlights that there is a sweet spot for IWI that hits the majority of drivers

60mm of insulation achieves 90% of potential Energy Savings....

.....sits right in the allowable zone for Building Regs approval.

Is 60mm the right insulation thickness?

The simple answer is that it all depends on the key drivers for any project.

If you use 20mm..

Save space, save initial cost but thermal improvement is minimal and long term savings in energy bills aren't achieved

If you use 100mm…..

Thermal performance is much better and bills are much reduced but initial costs are high, room sizes are restricted and risks of condensation increase.

- A balance has to be drawn between all the relevant issues and therefore more detailed analysis through programs such as WUFI can help the process. Being fully aware of al the relevant issues is key……. ……therefore

What’s the best approach?

Happy Reading !!!

A recent European study looked at the process of assessing existing buildings and then evaluating them in terms of façade renovations and internal insulation systems.

2.5 years of work……

…….its only 171 pages total !!


cornet

CORNET: IN2EUROBUILD - CONSISTENT EUROPEAN GUIDELINES FOR INTERNAL INSULATION OF BUILDING STOCK AND HERITAGE

Guideline part 1: **Building Assessment**

Project number: 247 EBG
Duration: 01.05.2019 to 31.12.2021

Dresden University of Technology
Institute for Building Climatology (IBK)

Fraunhofer IBP
Fraunhofer Institute for Building Physics
Holzkirchen (IBP)

Buildwise
Buildwise

IHD
Institute for Wood Technology Dresden (IHD)

30. November 2022


cornet

CORNET: IN2EUROBUILD –

CONSISTENT EUROPEAN GUIDELINES FOR INTERNAL INSULATION OF BUILDING STOCK AND HERITAGE

Guideline part 2: **Façade Renovation and Interior Insulation**

Project number: 247 EBG
Project duration: 01.05.2019 until 31.12.2021

Dresden University of Technology
Institute for Building Climatology (IBK)

Fraunhofer IBP
Fraunhofer Institute for Building Physics
(IBP) Holzkirchen

Buildwise
Buildwise Belgium

IHD
Institute for Wood Technology Dresden (IHD)

30. November 2022

https://www.tihd-dresden.de/de/forschung/projekte/

Thank you

m.twamley@steico.com

www.steico.com

STEICO
engineered by nature