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materials
for architecture

THE CHALLENGE TO SPECIFY A LOW CARBON RECYCLED THERMAL AND ACOUSTIC INSULATION IN NEW BUILD AND REFURBISHMENT CONSTRUCTION

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Certificate in Social Phenomenology

Recovery Insulation Ltd.
www.inno-therm.com

Recovery Insulation™ Ltd.

in partnership with *Schools & Homes Energy Education Project Ltd./SOLAR-ACTIVE.*

MISSION STATEMENT

“If you improve quality costs will go down and value goes up”

W.E. Deming



Recovery Insulation Ltd established in 2002 by Schools & Homes Education Project/Solar-Active as a company/social enterprise to have manufactured a thermal/acoustic low carbon non-itch insulation made from the reuse/recycled cotton/denim sourced and manufactured by EBS Le Relais Metisse.





Consideration CO₂ emissions

Homeowners, professionals
e.g. quantity surveyors often
do not take into consideration
CO₂ emissions in the
manufacturing supply chain
when purchasing an insulation
with price most often being
the deciding factor.

Specifying insulation

In the specification of a thermal insulation by e.g. quantity surveyors and homeowners what are the reasons why often they do not take into consideration the CO₂ emissions used in the manufacturing supply chain?

Why is consideration only given to u-values, thermal performance and primarily cost.

VALUE OF AN LCA

An LCA is invaluable in showing the lifetime carbon costs of a product and highlights where significant quantities of carbon emissions are released and where emissions could be reduced.

Specifying insulation

What are the economic benefits in specifically a monetary value of a low carbon insulation in its procurement supply chain?

Essential to understand the full economic benefit of a LC insulation.

Specifying insulation

We are often miss-informed that conventional insulation is cheap since it is subsidized and create a budget based on this miss conception.

Low carbon insulation

How can we become sensitized to consider that a low carbon insulation is more energy saving when taking into account energy use in the supply chain?

CAN YOU SNUGGLE UP TO YOUR INSULATION?

Meet the new kid on the block . . .
Greenwood Cotton Insulation. This
revolutionary, natural insulation is made
from recycled textile fabrics. That's great
news for the environment, but it doesn't
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soft to handle, it's really snuggable. And,
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- Installs in Traditional Manner
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areas of the United States.
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BENEFITS TO UK

It is beneficial for UK to recycle cotton/denim that is ordinary sent to landfill or exported.

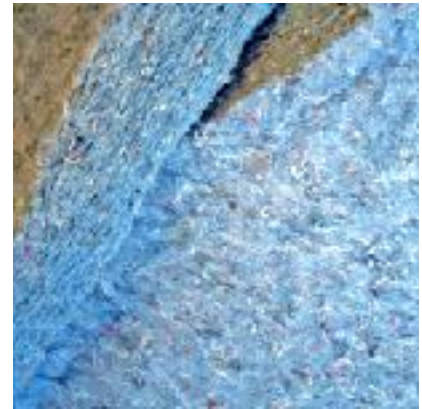
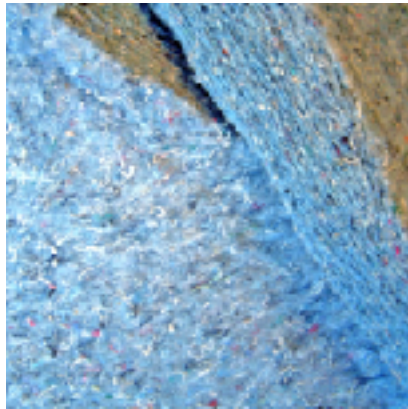
Srivasta, S.K., (2008 found that sound decisions that combine supply chain management and environmental concern are required for firms to make decisions.



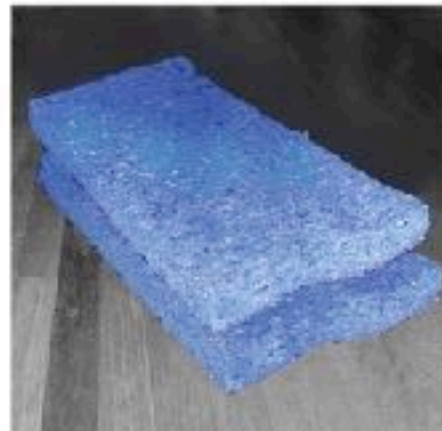
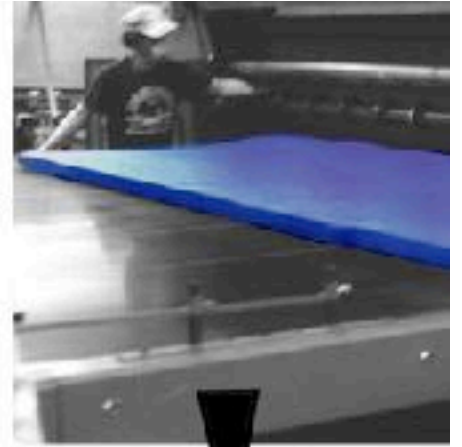


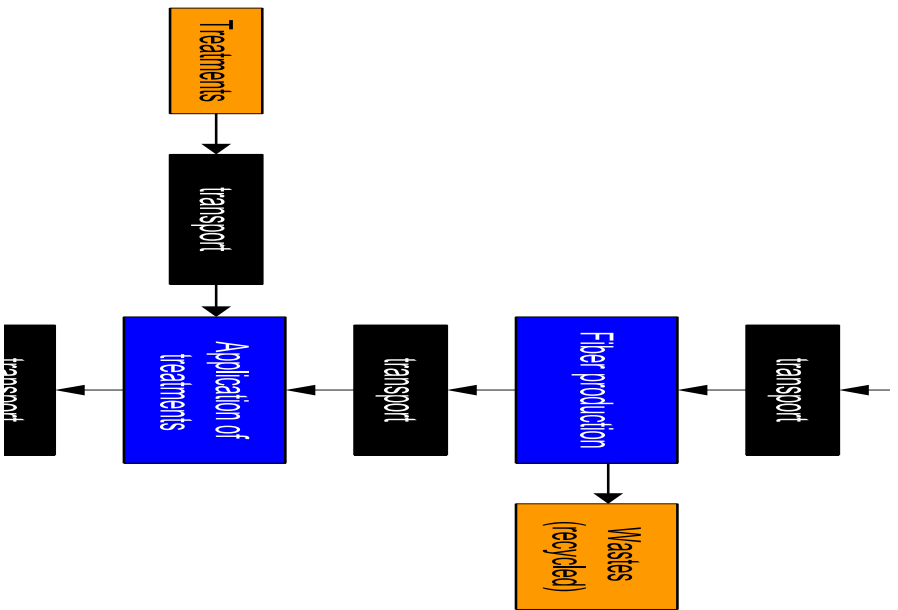
Manufacturing Process

Inno-therm®/Metisse® is a low carbon thermal/acoustic insulation
manufactured from 80% recycled denim/cotton
[85% is denim – 3 jean's/m² for 100mm thickness]
no melamine or phenolic resins.

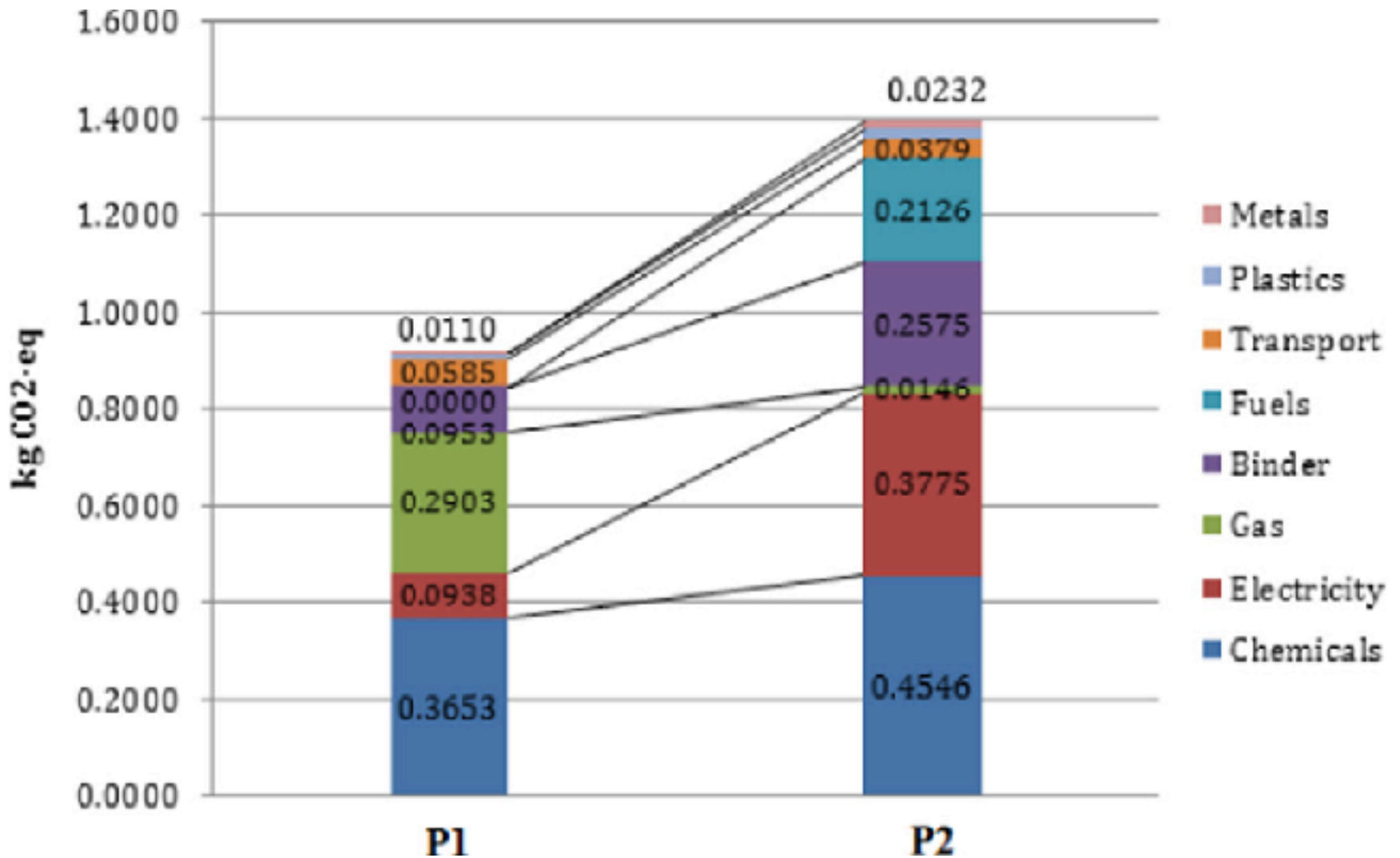


MANUFACTURING PROCESS

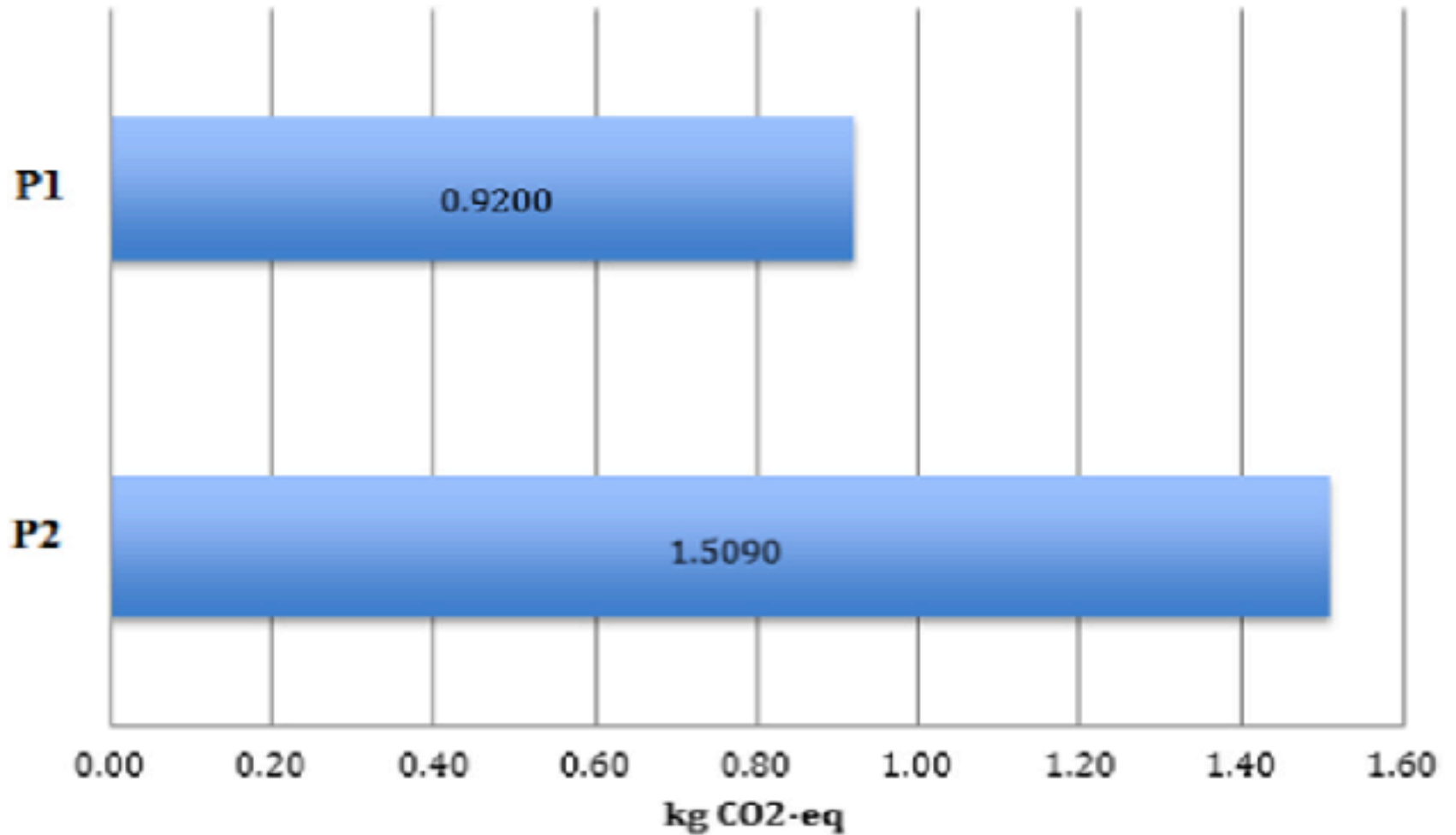




Breakdown of carbon emissions hotspots in P1 and P2 supply chains.



Comparative levels of emissions by P1 and P2 supply chains.



The outcome of two analyses of Inno-therm insulation identified that carbon emissions were lower with conventional products.

Principles of a Circular Economy.

Energy use in the supply chain and full life cycle costs needs to be taken into account to follow principles of a Circular Economy.

(Ellen Macarthur Foundation, 2013)

In an economy that no longer has a cost for CO_2 why should developers care about low carbon products?

“I cannot imagine a better material for the majority of thermal insulation requirements. As its installation requires the minimum of skills and no specialist safety equipment during the process.”

Jonathan Clennell, Home owner



There is a correlation between poorly conceived energy efficiency efforts, indoor air quality, and the rise in asthma and allergic diseases in the U.K. (Sharpe et al., 2015).

Insulating materials can have negative environmental effects as they influence air quality and can increase indoor pollution (Spengler and Sexton, 1983).

LOW CARBON BUILDING PROJECTS

- 1. South Yorkshire Energy Centre, Sheffield
- 2. Genesis Eco-Building – Somerset College of Design & Technology
- 3. Torfaen (South Wales) Eco Building
- 4. Hemphill Hall, Nottingham (a listed building refurbishment)
- 5. The Materials and Engineering Research Institute [MERI], Sheffield 'eco-house' project.
- 6. [Barnsley College Think Low Carbon \(TLC\) Centre](#)
- 7. Bradford Enterprise Park in conjunction with Modcell
- 8. Eve Saint Lauren Oxford St. refurbishment
- 9. Cultybraggan Camp, Hut 1, Comrie, Perthshire
- 10. Castle Hill School, North Yorkshire – **straw bale**



*“With INNO - THERM we have found a product that happily answers four of our objectives as the product is manufactured in the UK, creating employment opportunities and producing an environmentally friendly insulation. In fact as **INNO - THERM has slightly better thermal properties we were able to reduce the timber stud sizes, which in turn offset some of the cost while still achieving very good U - values.**”*

Nick James - White Design Architects

whitedesign



DEMONSTRATIONS

Hempshill Hall Refurbishment, Nottingham

“We used INNO - THERM because of its environmental credentials. It was a breathable product which was cheaper than other naturally based insulation materials, while proving suitable for the application. The recycled content was also a factor which we saw as favourable.”

Gil Schalom-Mark Stewart Architects



The Torfaen Eco-building is designed to promote innovation and sustainable building practises through their use in the realisation of this ground breaking project. INNO - THERM forms part of the buildings insulation in line with the project's environmental obiectives





“We used INNO - THERM because of its environmental credentials. It was a breathable product which was cheaper than other naturally based insulation materials, while proving suitable for the application. The recycled content was also a factor which we saw as favourable. While it had not been used a great deal over here we felt that its track record across the pond was sufficient.” Gil Schalom-Mark Stewart Architects

msarchitects







INNO-THERM lamda value of 0.039 W/
mK for both **20 kg/m³** and **25 kg/m³**
density products.

Translates into a typical U-value for
240mm depth of material = **0.16 W/ m²K**

R value - $.24/0.039 = 6.15$

U value - $1/6.15 = 0.16$

(270mm required based on 0.044 W/mK)

Installation and Fire Retardant

- No specialist handling equipment is required for installation
- Permeated with safe fire – retardant.
- The reaction to fire of the product is determined according to EN 1350-1. The fire rating is E.
- When the insulation is placed behind a facing (plasterboard or in particular Fermacell Gypsum - BA 13 in France) the fire rating is B.



Genesis is a £2.5 million educational resource that displays sustainable construction methods and materials. INNO - THERM is used within the project as a thermal insulation material.

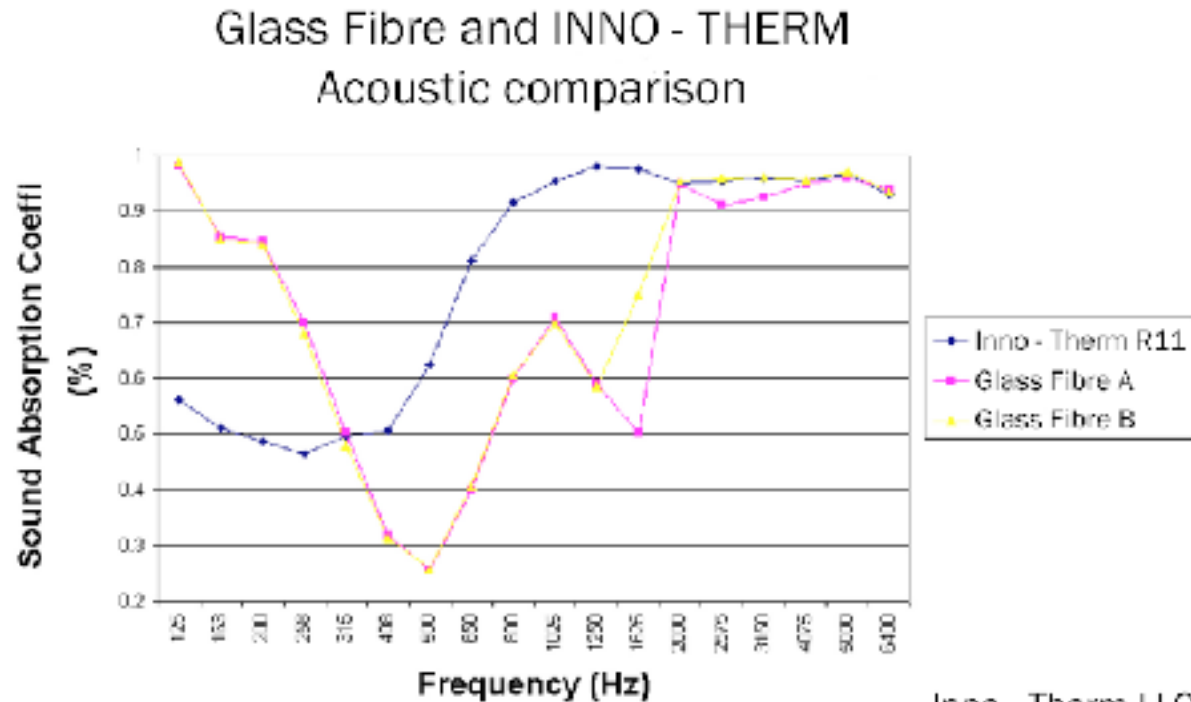




- Inno-therm installed for acoustic application [45 Kg/m³] with a high sound absorption (= 0.95) and the acoustic fading is 42 dB.

Acoustic Performance

INNO - THERM is 10% better than glass fibre in sound transmission



Inno - Therm LLC

Eko 45mm acoustic

- Eko 45mm selected by NBC for Pyeongchang Olympic Winter Games 2018, used by NBC at London Games 2012, re-used at Sochi Winter Olympics, 2014 and Rio Olympics 2016.
- “The acoustic product made a big improvement to their editing rooms and the difference they make was huge.”

20mm acoustic

- Used for setting-up music studios, [Amina Technologies](#) in their wall invisible speaker systems
- [Panel UK](#) in their screen systems.

W.E. Deming (1994)

In a world where lower carbon and healthy buildings are valued.

“If you improve quality costs will go down and value goes up”.

Acknowledgments

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