

CLICKdesign - delivering fingertip knowledge to enable service life performance specification of wood

ForestValue Final Conference 28-29 Sept 2022 in Madrid

Project name/website: <https://bregroup.com/services/research/clickdesign>

Project acronym: CLICKdesign

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Project partners

- BRE, UK
- University of Göttingen, DE
- Lund University, SE
- VTT, FI
- InnoRenew CoE, SI
- FCBA, France
- Norwegian Institute of Bioeconomy Research, NO
- IRBI, France
- Hygiene Office, France
- University of Vigo, Spain
- FPInnovations, CA



- Total project budget 1 450 723 €

- Project start March 1, 2019, and end date June 30, 2022

Introduction

How long will
this wood
product last?

A reasonable
working life

Its in EN350, EN460,
EN335, EN1995, EN599
BS8417 ISO15686-10
guidance

The product
literature says....

?

- Struggle to answer questions about durability and performance of wood products
- Disadvantage timber
- Wrong product, wrong place
- Technical specifications in BIM and LCA include service life data
- A protocol to enable performance specification for wood
- From the complex, fragmented and general to the consolidated and specific in an accessible tool


Results

CLICK DESIGN *delivering fingertip knowledge to enable service life performance specification of wood*

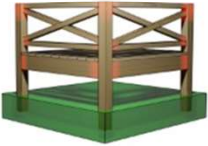


With European consumer expectations and construction professional direct input the project will develop a tool to enable appropriate digital specification of wood in construction based on a performance requirement that integrates material integrity (decay and termites) and aesthetic qualities.

Results




[Home](#) [Applications](#) [EDU-PAK](#) [Documentation](#)



Fungal decay

How does woody materials perform under different environmental conditions?


[Go to app](#)



Aesthetics

How does the color of woody materials change over time due to environmental effects?


[Go to app](#)



Termite mapper

Is your project in a termite-infested region and which national rules apply?

[Go to app](#)



Structural integrity

How does the material strength and capacity of timber change over time?

[Go to app](#)

Decay module

Model

Location

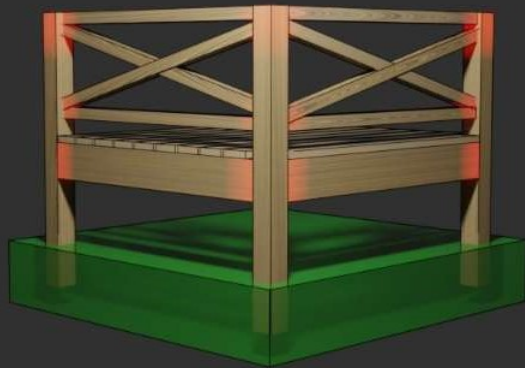
Detailing

Shelter

Material

Results

- ☐ Above-ground
- ☒ In-ground



Decay module

Model

Location

Detailing

Shelter

Material

Results

Append results

Loc	Species	Treatment	D _{E0_rel}	k ₁	k ₂	D _{E_rel}	D _{R_rel}	SL
59.4, 18	Norway maple / Sycamore	none	1	1.31	0.7	0.92	1.4	15.4
59.4, 18	Sitka spruce	none	1	1.31	0.7	0.92	2.3	25.2
59.4, 18	Scots pine	none	1	1.31	0.7	0.92	3.8	41.7
51, -2.6	Scots pine	none	1.73	2.29	0.57	2.24	3.8	17
51, -2.6	Scots pine	none	1.73	1.18	0.86	1.77	3.8	21.6

D_{E0_rel} = location;

k₁ = detailing (relative to horizontal board)

k₂ = shelter & splash (relative to horizontal board)

D_{E_rel} = exposure (relative to reference)

D_{R_rel} = resistance;

SL = service life (years);

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Aesthetics module

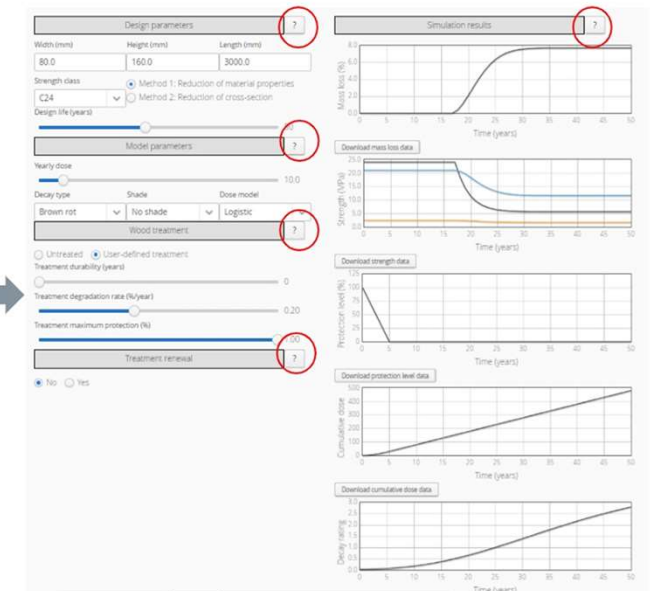


Integrity module

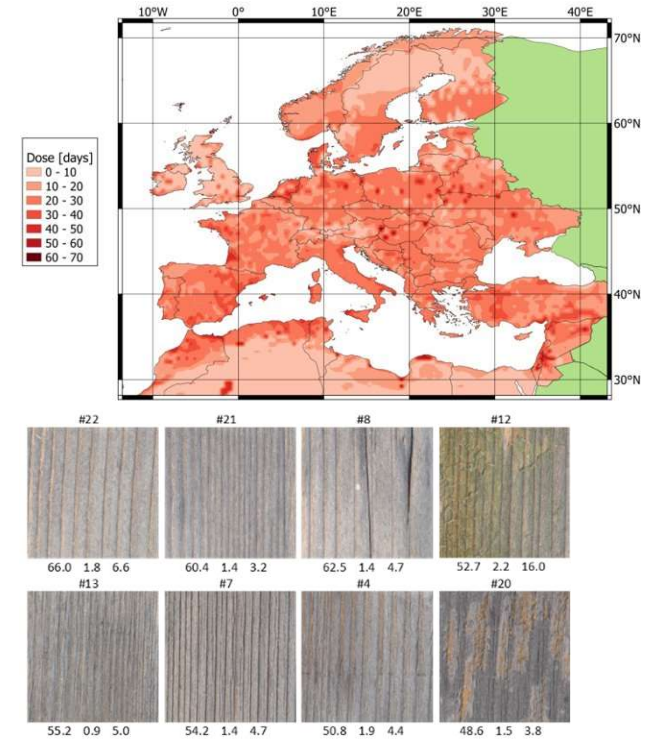
Termite module



Dose from Click Design tool



Results



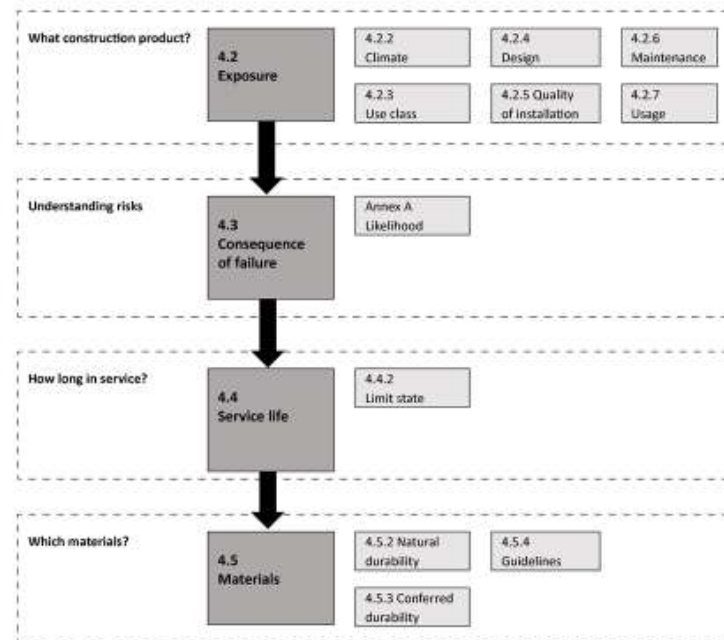
- **35** Scientific papers and book chapters
- **61** Conference papers and presentations
- **20** Magazine articles and blogs
- **33** Students
- **6** Awards and prizes



Impacts

- *First of its kind open-source implementable tool*
- *Algorithms for use and development for four modules*
- *Influenced EN460 development*
- *2 new projects developed inspired by CLICKdesign*
- *Supporting positive design and specification for wood materials*

prEN460:202X Durability of wood and wood-based products —Guidance on performance



The value of scientific cooperation



Simmering, Rabke, Tausendfreund, Schädeler, Reinhardt, Schulz, Selter, Bomers, Heinelt, Sievert, Stein, Dönni, Kovacs, Mayer, Daum, Schilling, Stellmach, Korinek, Peters, von Boch-Galhau, Acquah, Rabke, Adeyewa, Groseiller, Jochemsen, Van Niekerk, Marais, Emmerich, Sajinčič, Hosseini, Acquah, Ruhland, Leharivel

Unexpected peculiarities / barriers

- Why Wood & Service Life (3:13)
- Degradation Processes (5:49)
- Material Selection (6:38)
- Protection by Design (3:49)
- Maintenance & Conclusion (4:30)



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Simple public tool and professional tool – they would diverge and not talk to each other. Develop one tool with EduPak to support lay users.



COVID lockdown restricted validating models with real buildings. Innovative use of mapping data sources, plus mining existing exterior wood building databases, plus project extension.

Thank you!

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Website: <https://forestvalue.org/>

Twitter: <https://twitter.com/ForestValue2017>

LinkedIn: <https://www.linkedin.com/groups/12110816/>