

Biobased bouwen is bouwen met de natuur

ir. Max Drath MSc



ing. Laurens Taal




**Aveco
de Bondt**
onderzoekt ontwerpt adviseert


Verbindt en creëert

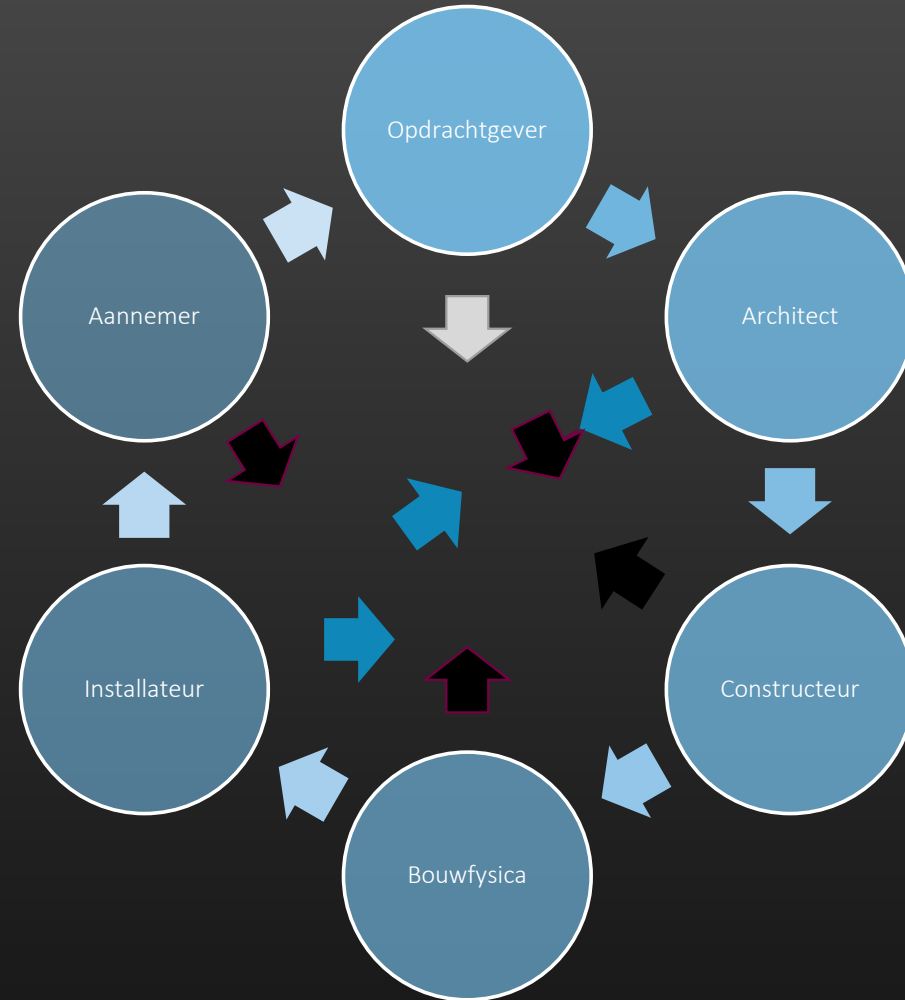
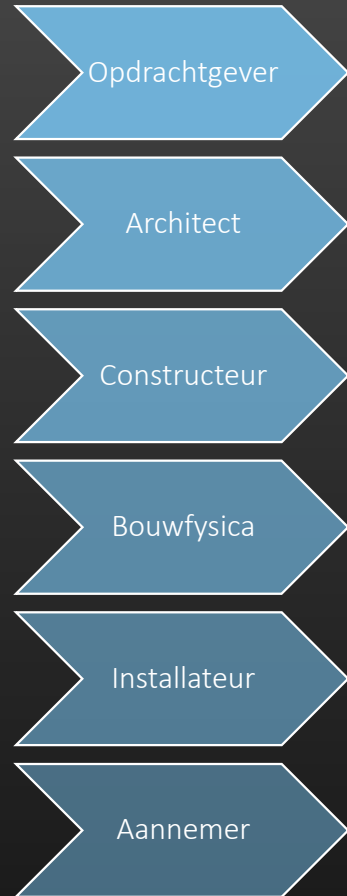




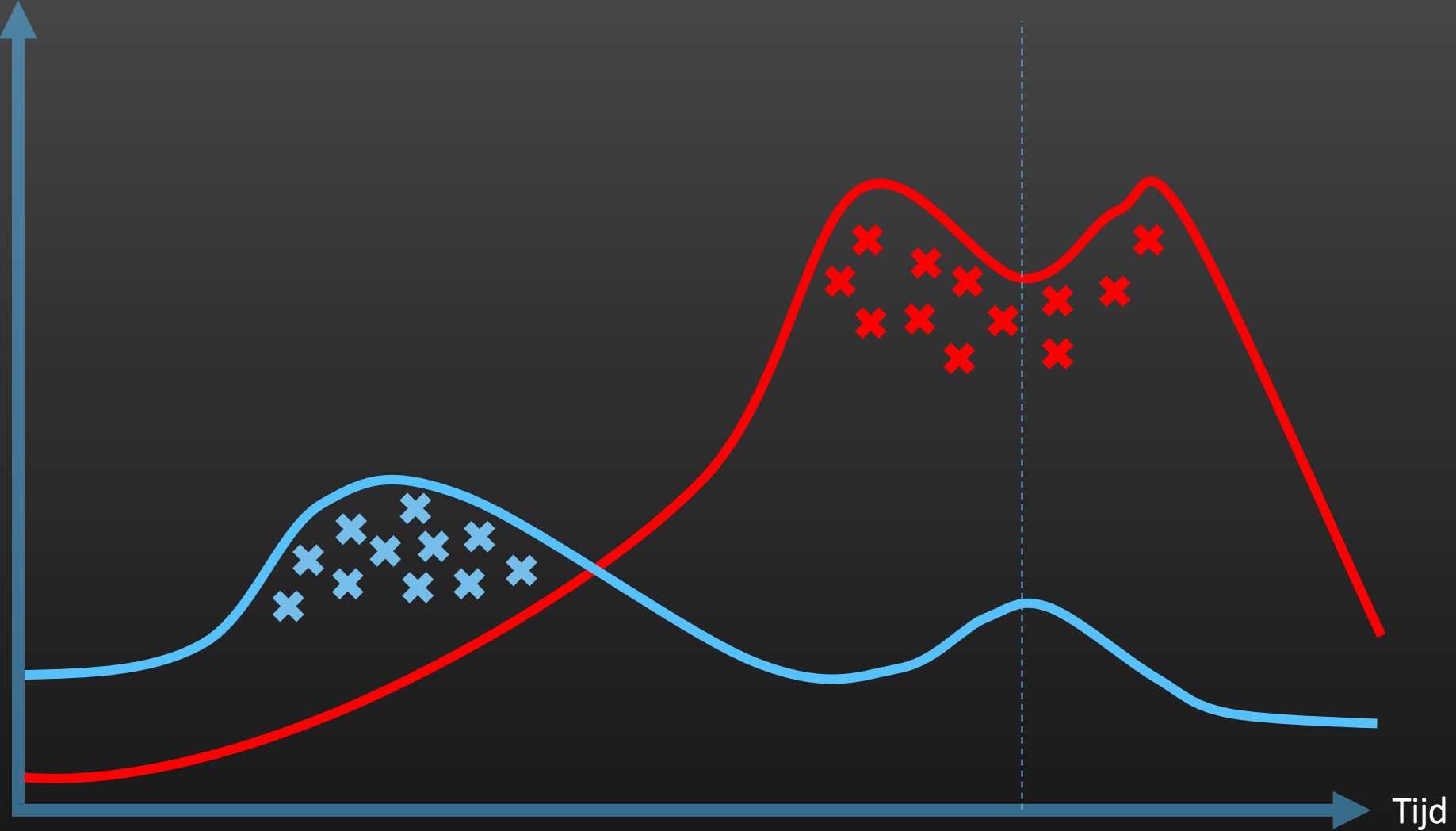



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Bouwbesluit



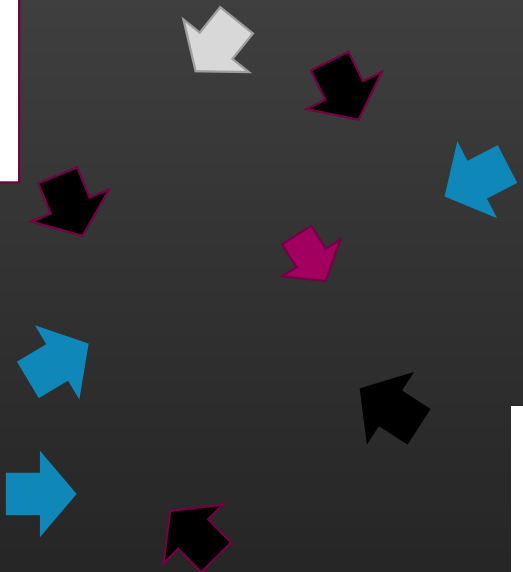
Project
Resources



Deadline

Tijd

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Growing Pavilion



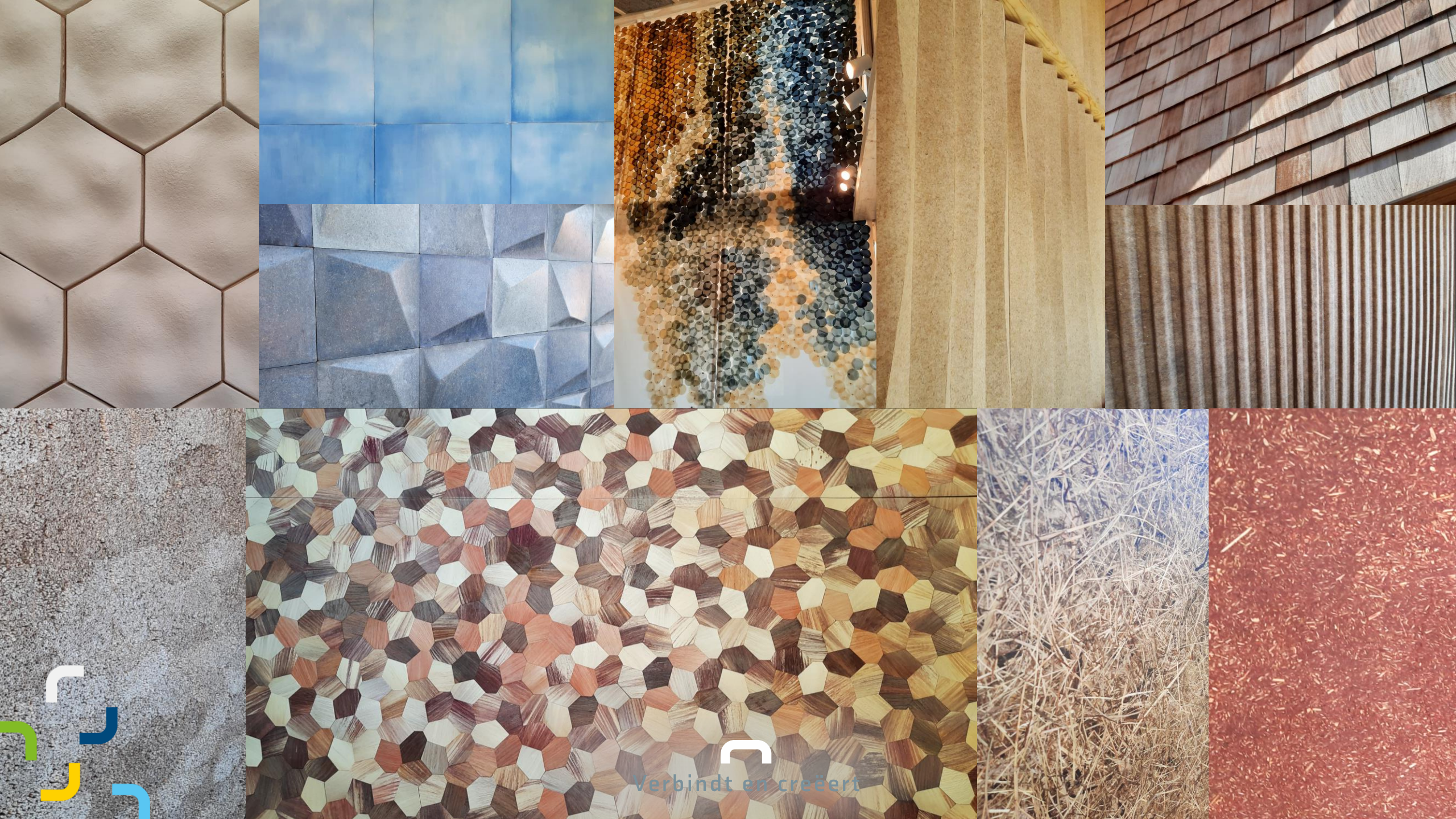
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The Exploded View



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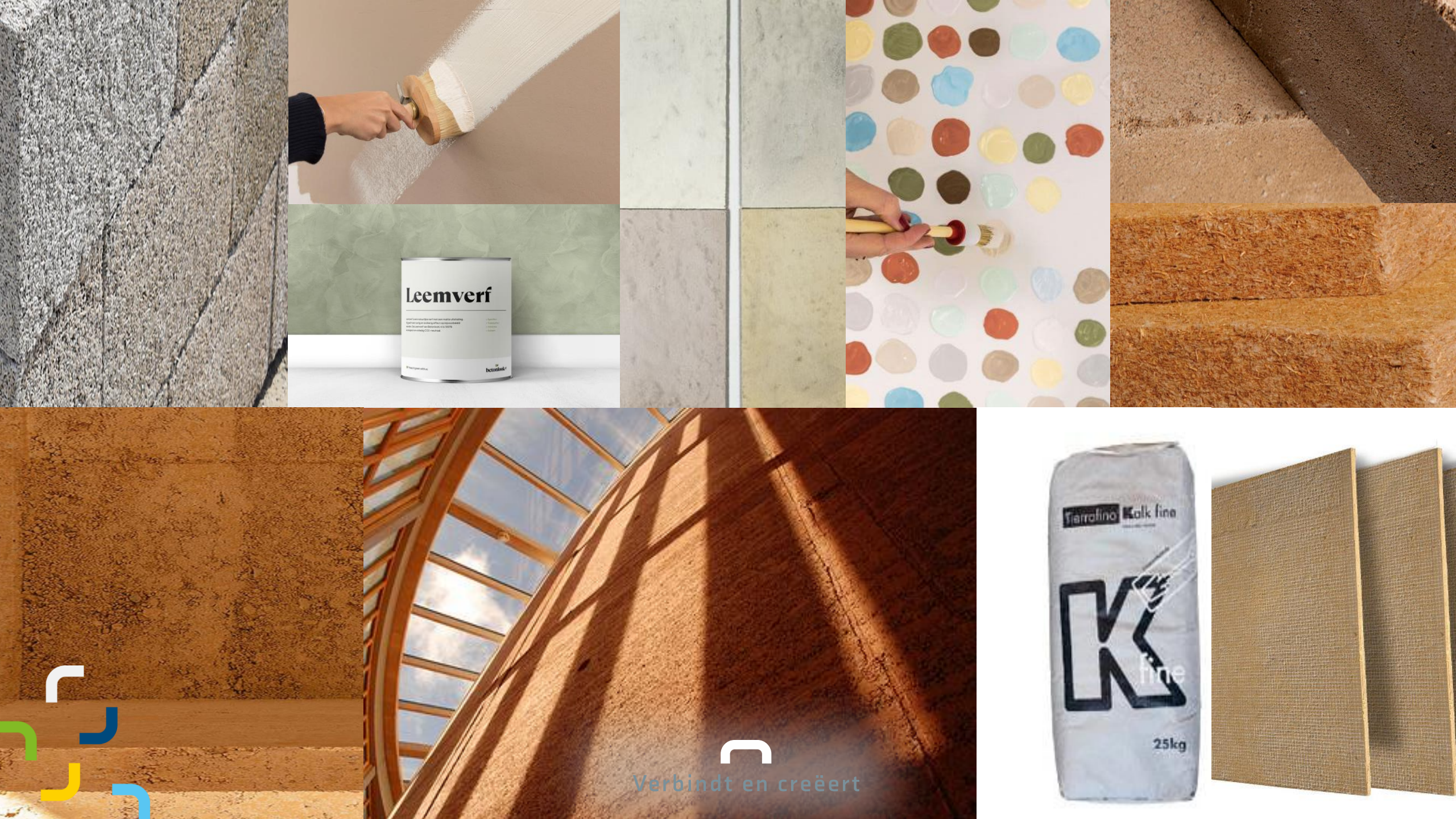


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Dampopen & Biobased bouwen



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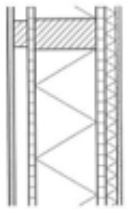
leemverf

Terraflino Kalk fine
fine
25kg

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Constructies

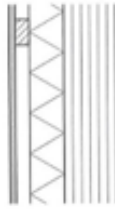
Houtbouw dampopen



HSB of staal
met voorzetgevel



Massief hout
zonder isolatie



Massief hout
met isolatie

Natte constructies dampopen



Massief (klimaatwand)
Leemwand of kalkhennep



Isolerende baksteen
of blokstenen



Baksteen met kalkmortel

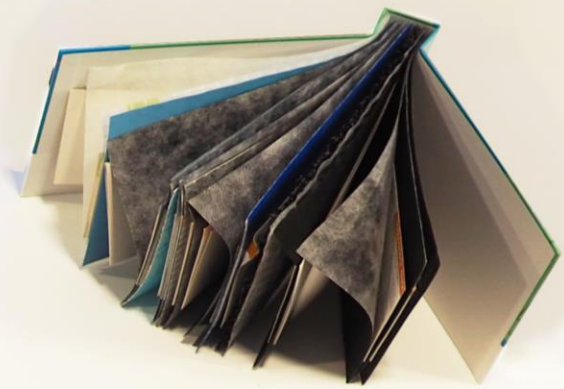
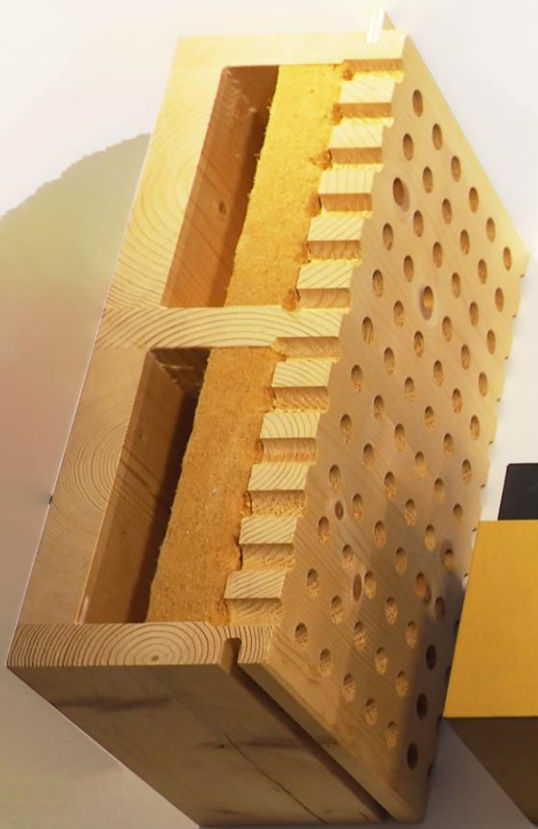
Natte constructies dampdicht



Beton prefab
modulair en demontabel

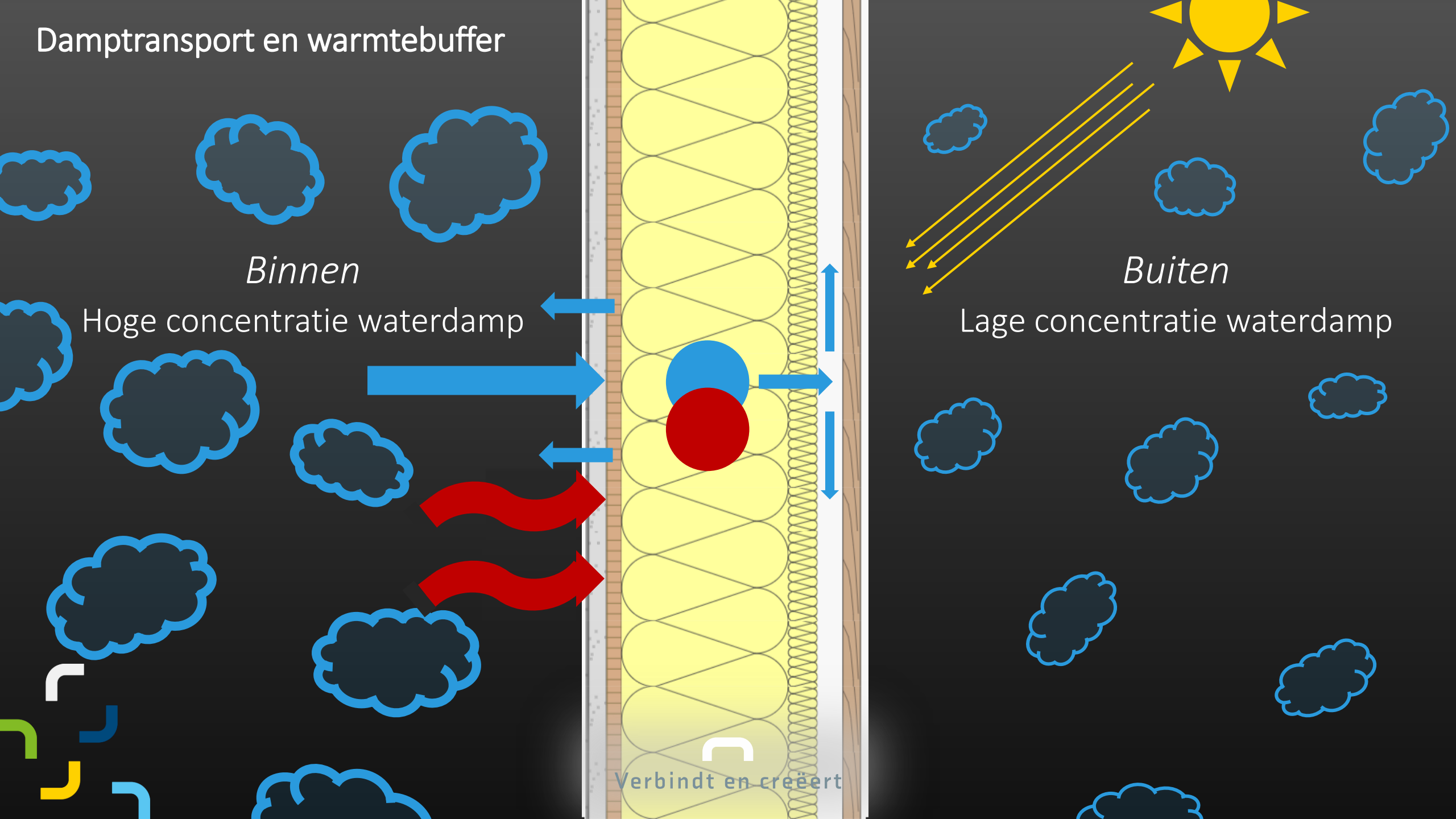


Schuimbeton prefab
modulair en demontabel



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Damptransport en warmtebuffer



Hoe beginnen wij?

toekomsthuis- BGmuur - alternatief

Buitenwand
aangemaakt op 17.5.2022

Thermische isolatie

$R_c = 3,39 \text{ m}^2\text{K/W}$

NTA 8800 Renovatie*: $U < 0,64 \text{ W/(m}^2\text{K)}$



Vochtbescherming

Droogreserve: $402 \text{ g/m}^2\text{a}$

Droogt 2 dagen

Condenswater: $7,8 \text{ g/m}^2$

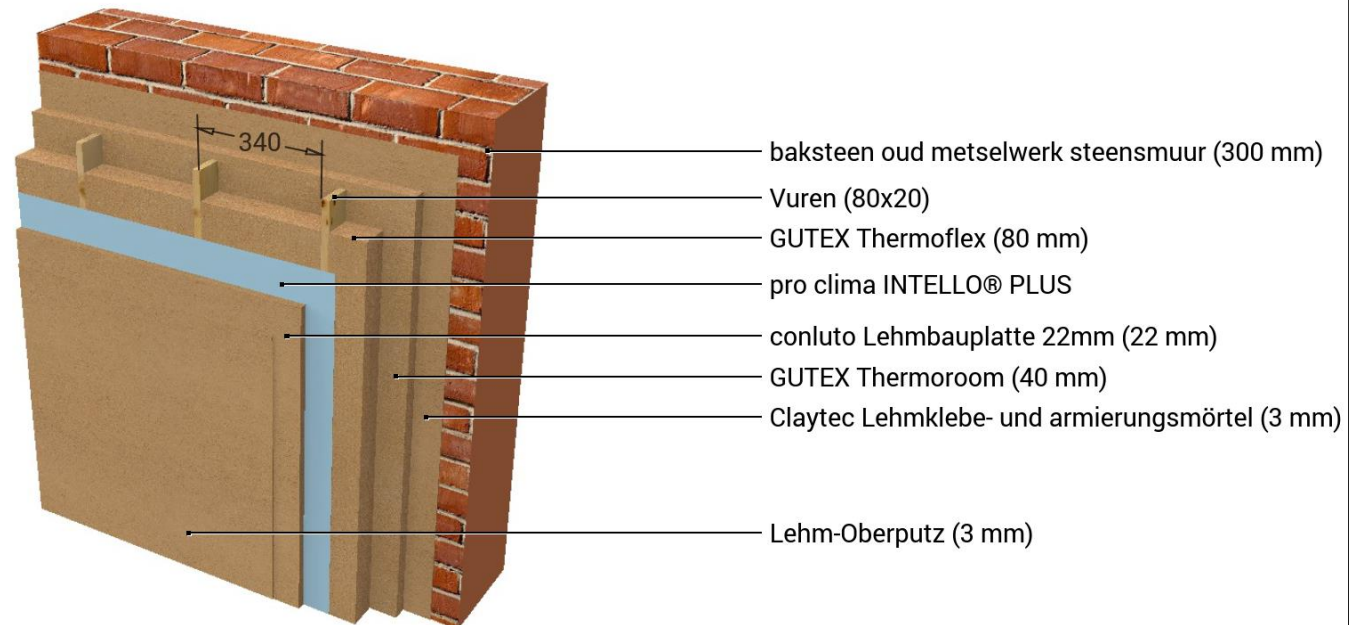


Hittebescherming

Temperatuur amplitude demping: >100

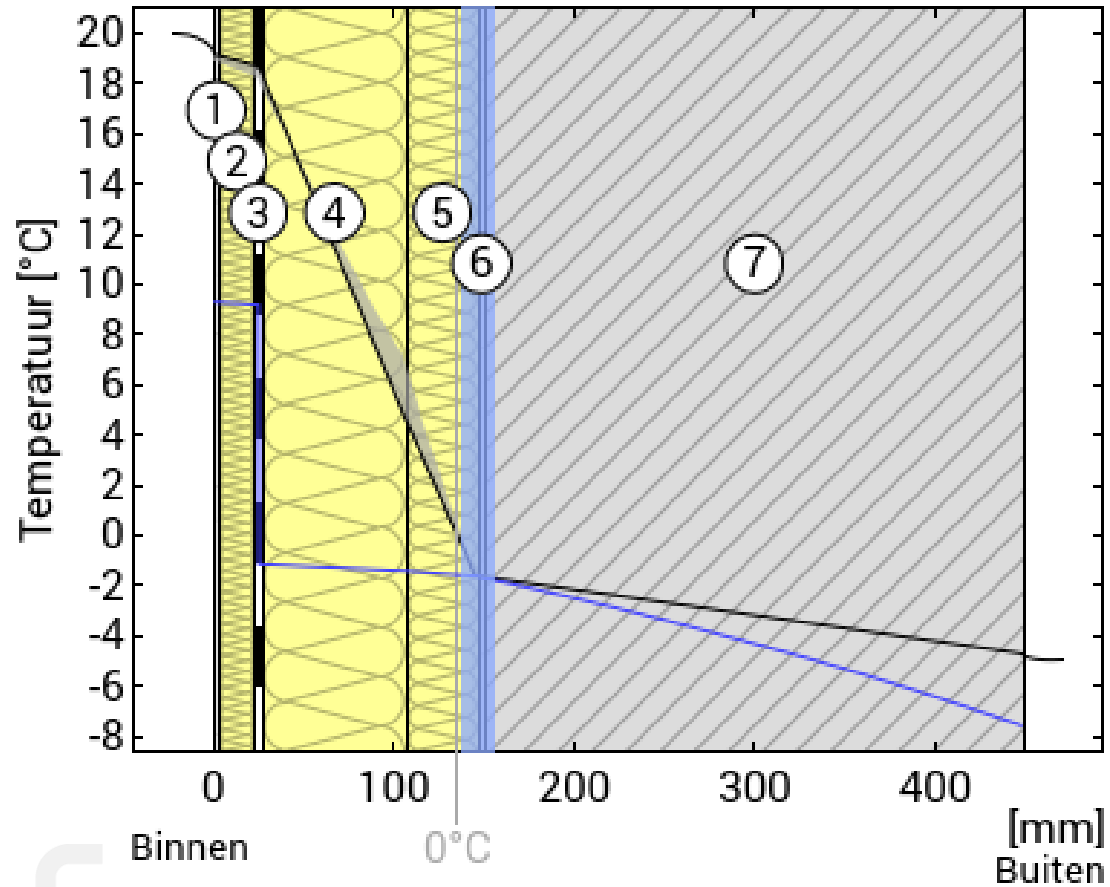
Faseverschuiving: niet relevant

Warmtecapaciteit binnen: $88 \text{ kJ/m}^2\text{K}$

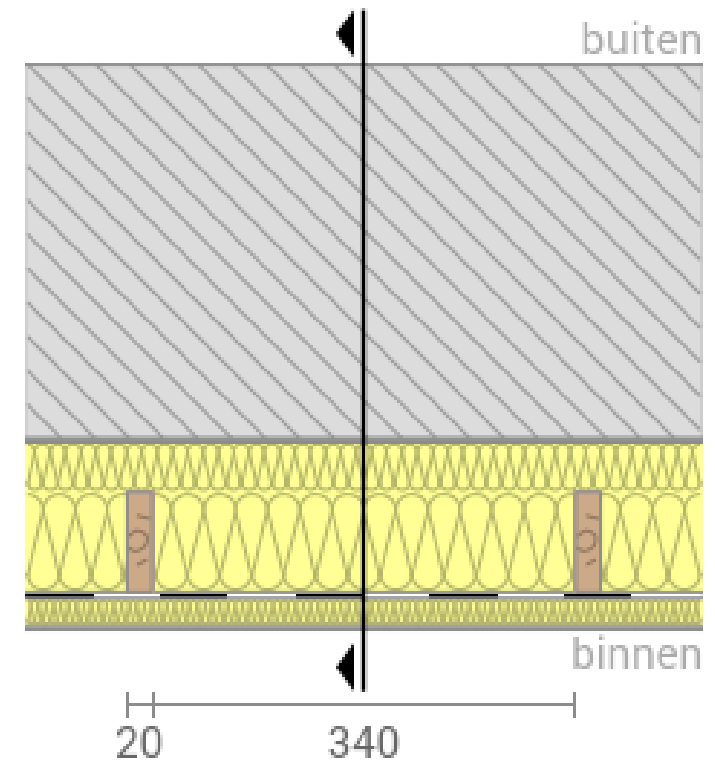


Vochtontwikkeling en temperatuurverloop

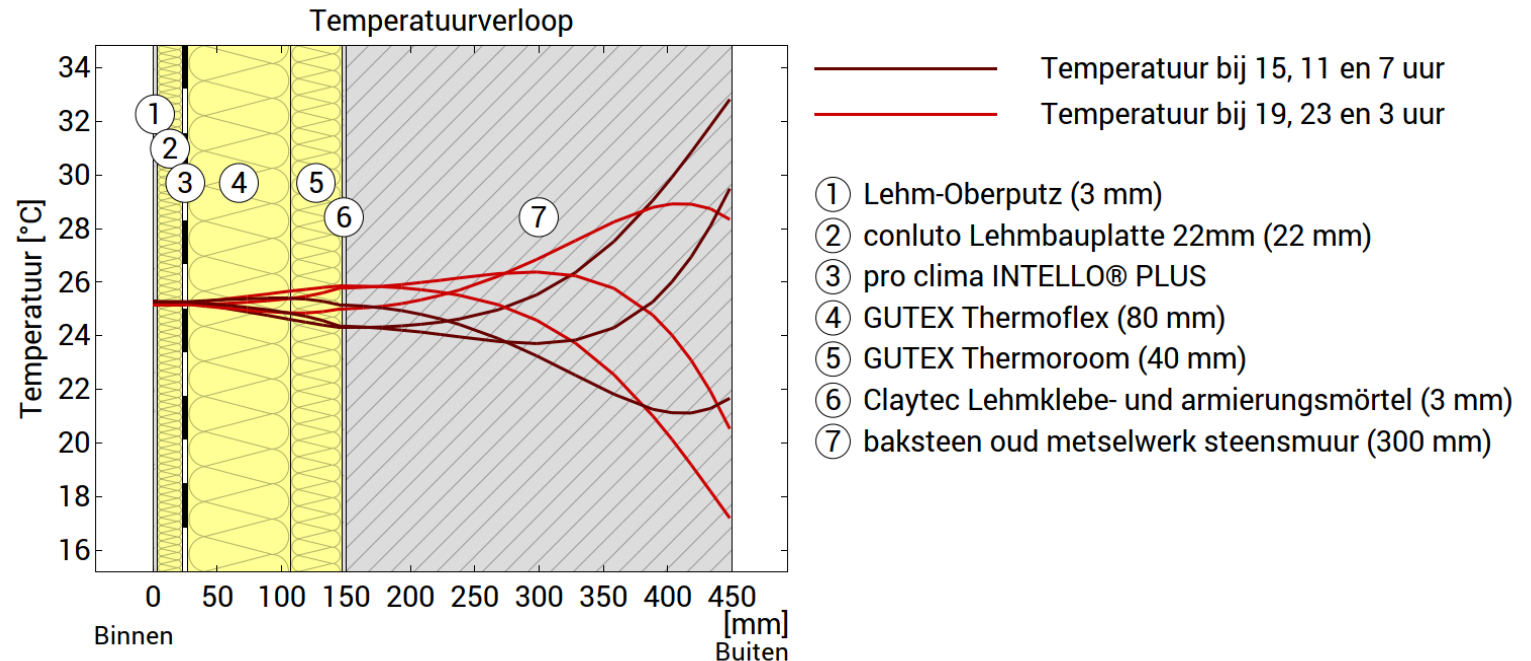
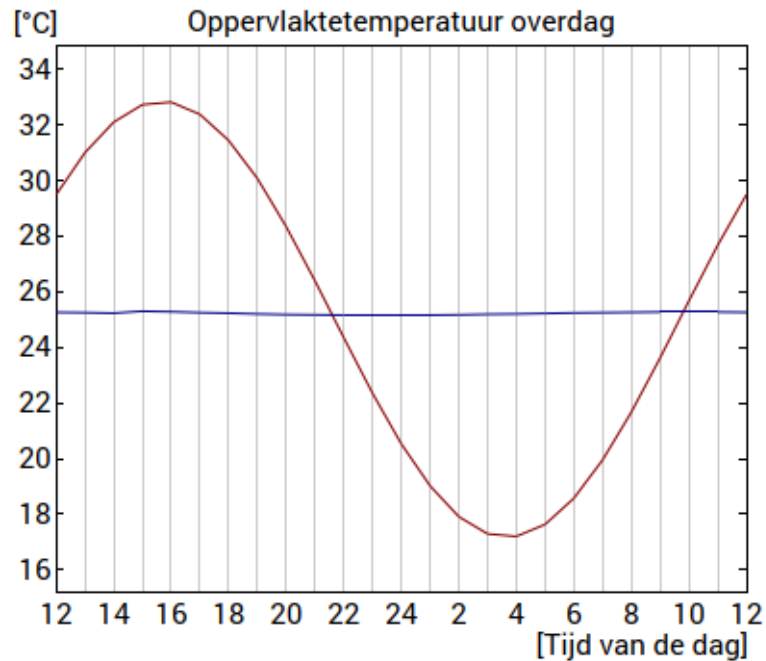
Temperatuurverloop



- Temperatuur
- Dauwpunt
- Condenswater



Faseverschuiving tegen oververhitting



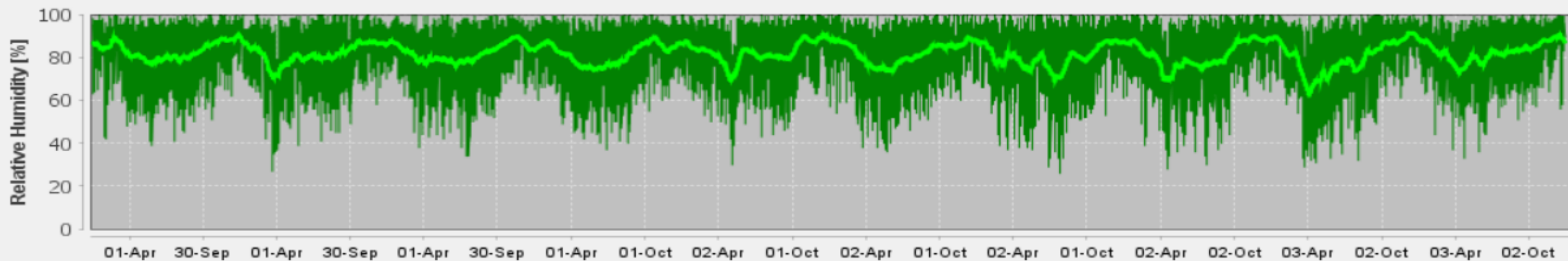
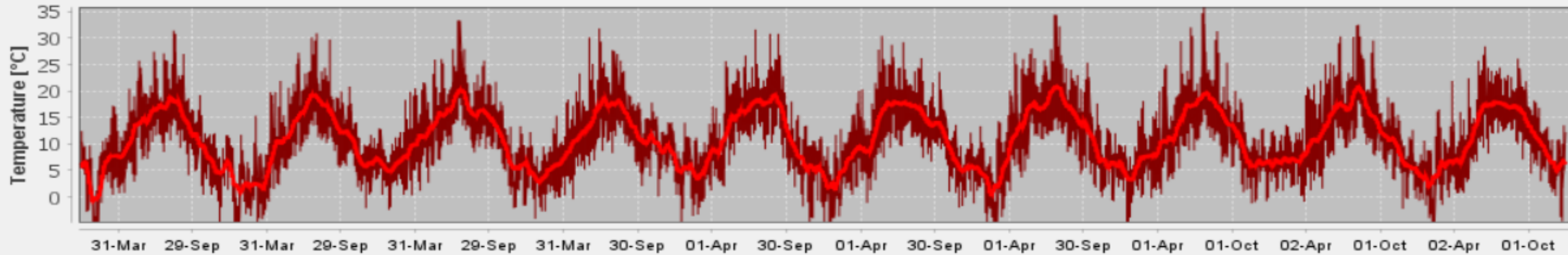
Hygroscopische berekening

1: Bepalen opbouw constructie

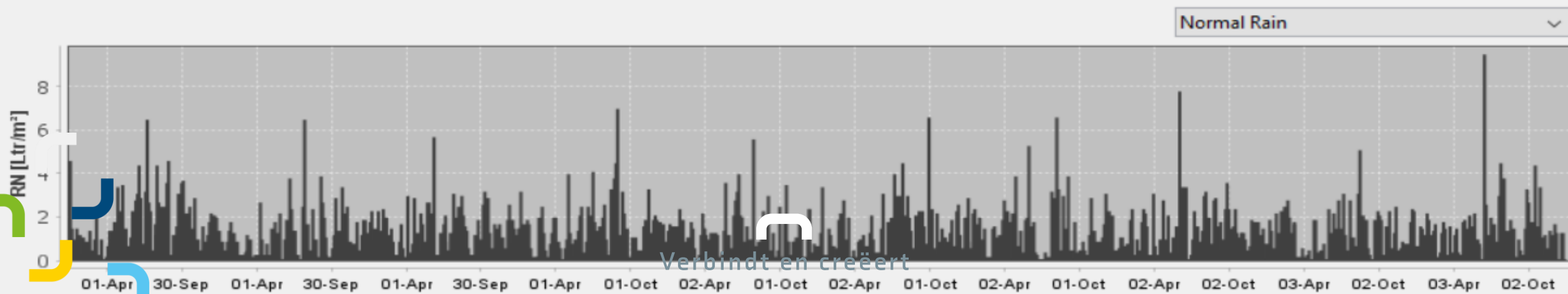
2: Hygroscopische simulatie in WUFI

- Periode van 10 jaar (2012-2021)
- Regen- en zonbelasting op de gevels zijn belangrijk
- Materiaalgegevens zo goed mogelijk inschatten
- Varianten studies/gevoeligheid



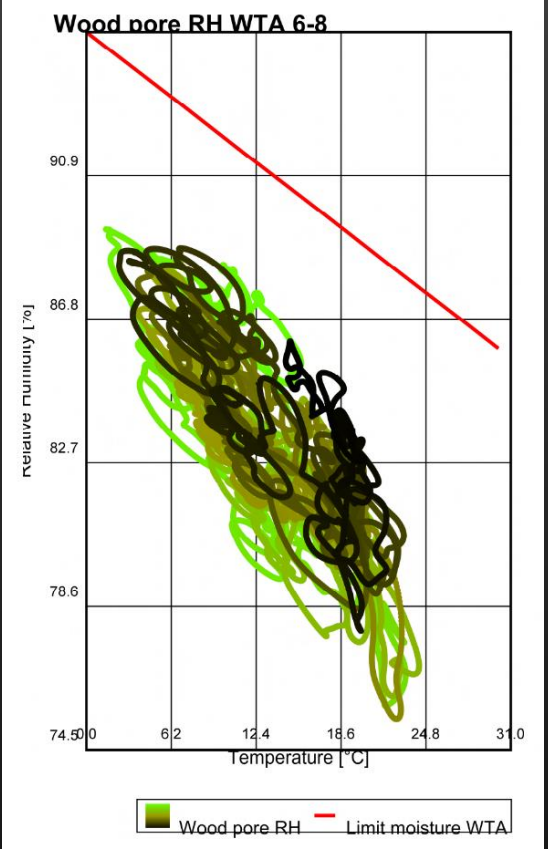
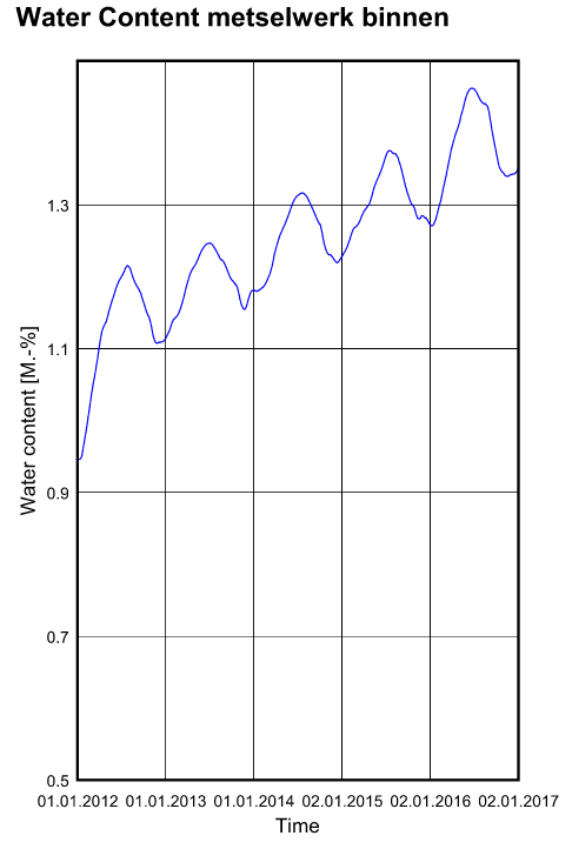
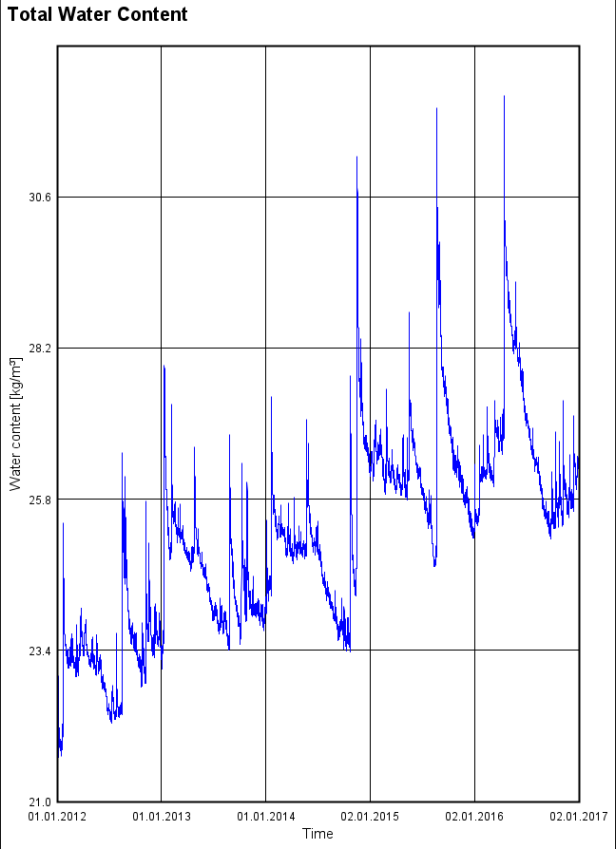
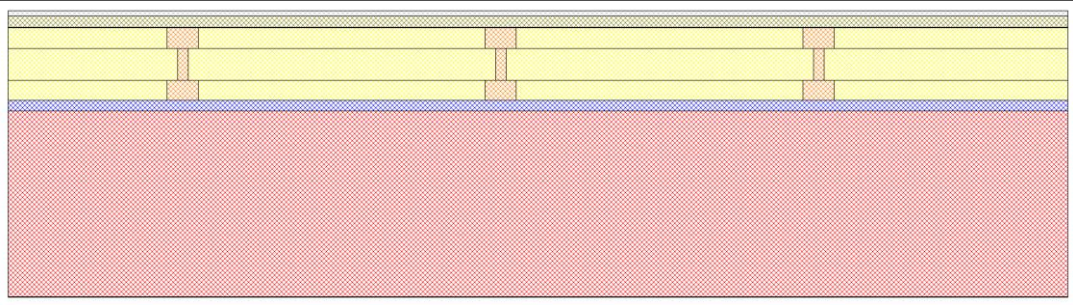


Additional Data Diagrams



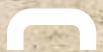
Hygroscopische simulaties

WUFI 2D en Plus



De stip op de horizon




Verbindt en creëert

Laten we beginnen en het samen doen!

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