

INDU-ZERO

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03-12-2019



**Smart
Renovation
Factory**

Interreg
North Sea Region
INDU-ZERO

European Regional Development Fund



EUROPEAN UNION

Achtergrond

- Interreg NSR (Noordzee regio) project
- Totaal budget 4,4 Miljoen
- Start project juli 2018 - Duur 3 jaar tot juli 2021
- 15 projectpartners in totaal 30 personen
- 6 landen uit Noord Europa
- 5 leden adviesraad

Partners en adviesraad



Hoofdstappen in het project

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- Rapportage woningvoorraad op website - **gereed**
- Ontwikkeling renovatie pakketten - **lopend**
- Ontwikkeling productie proces, fabriek en logistiek - **lopend**
- Showcases renovaties in 6 landen - **lopend**

Woningvoorraad

Onderzoek woningvoorraad

3 archetype huizen tussen 1965 - 1975



Rijtjeshuis 2-onder 1 kap

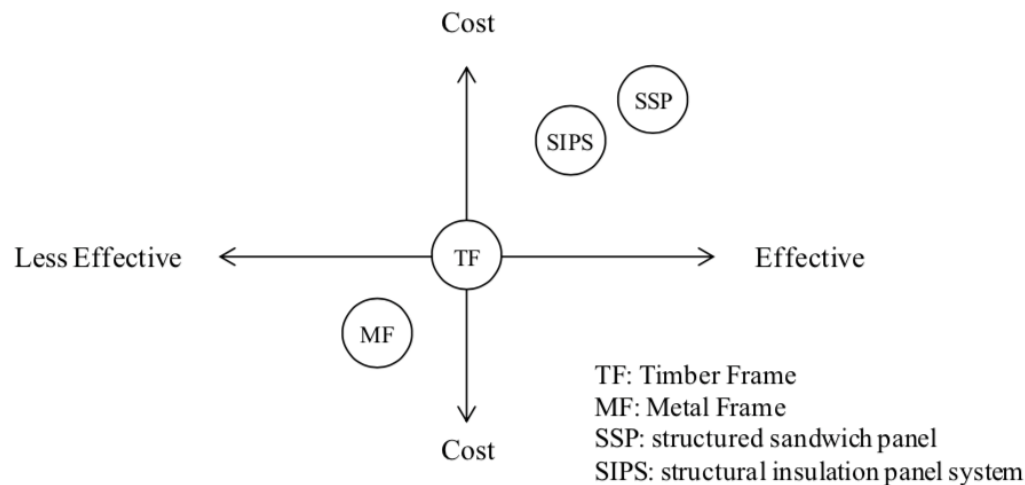
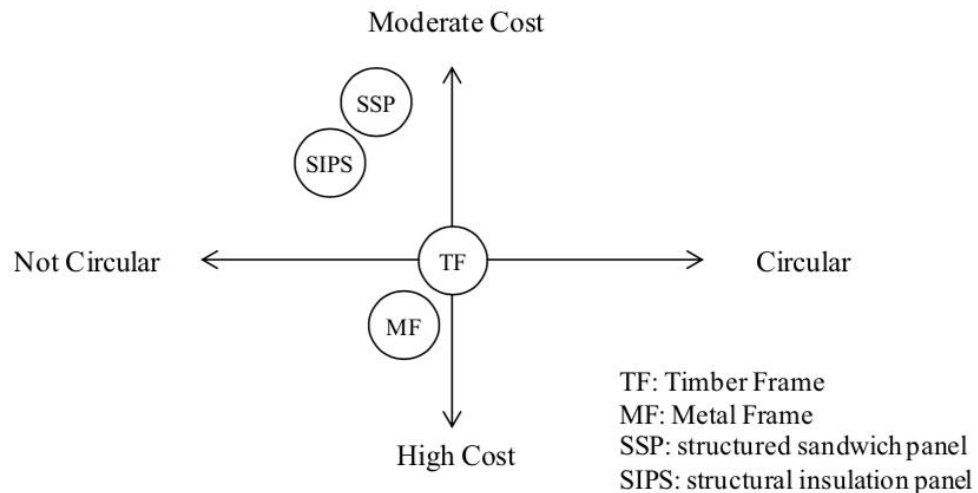


Portiekflats

Ontwikkeling van de renovatie pakketten

Ontwikkeling van de renovatiepakketten

- **SSP (Sandwichpanelen): Beste voor wat betreft kosten en effectiviteit**
- **Houtskelet en Sandwichpanelen scoren gelijk op circulariteit (uitkomst korte Life cycle analyse)**



Ontwikkeling van de renovatie pakketten

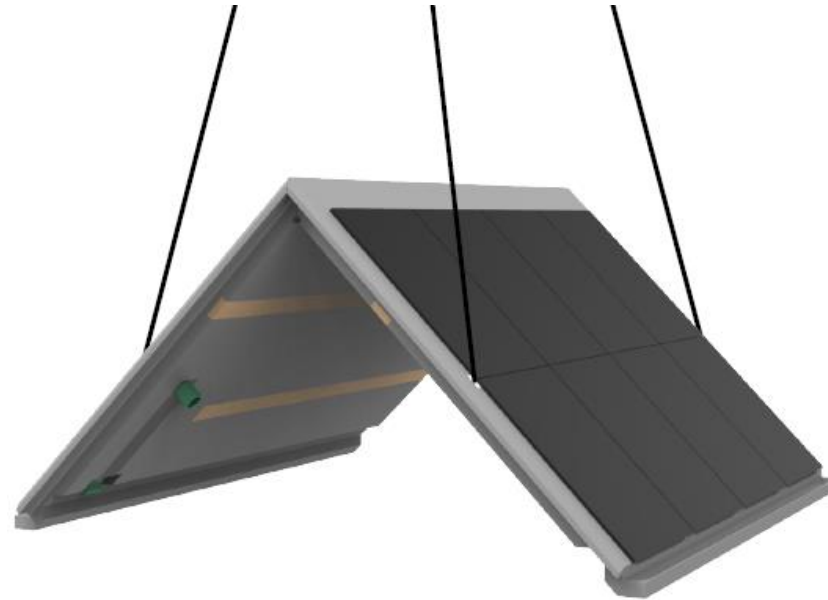
Façade

(Sandwichpaneel met EPS)



Dak

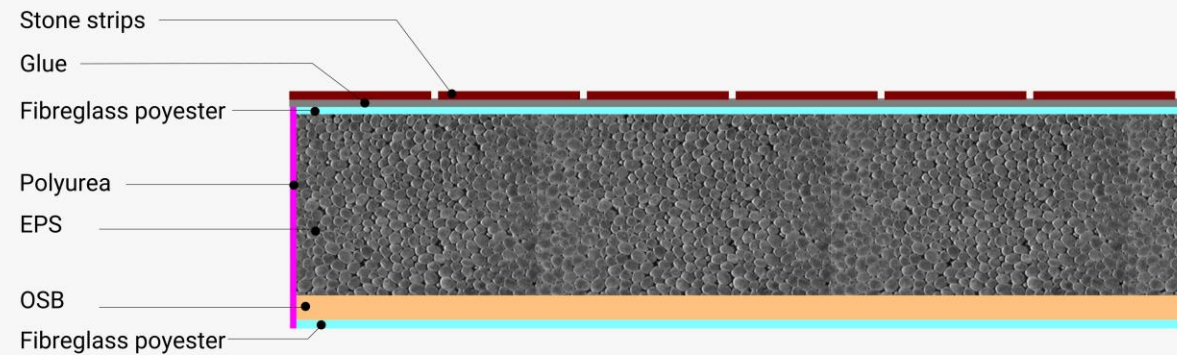
(Sandwichpaneel)



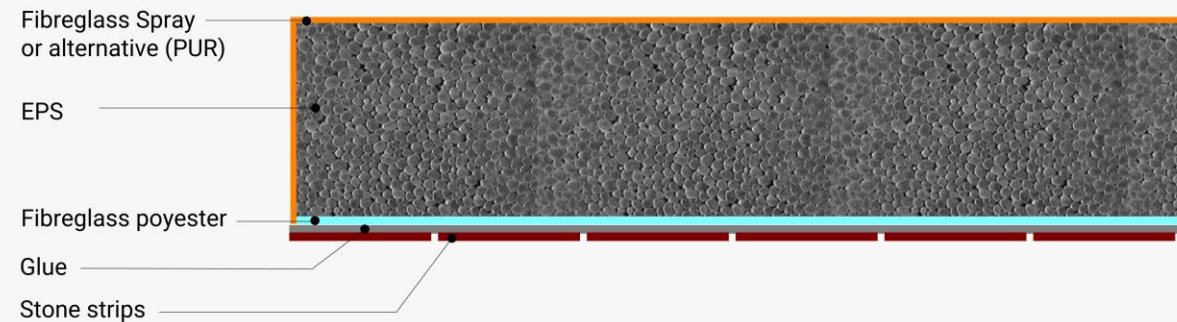
Ontwikkeling van de renovatie pakketten

Panel / Section construction

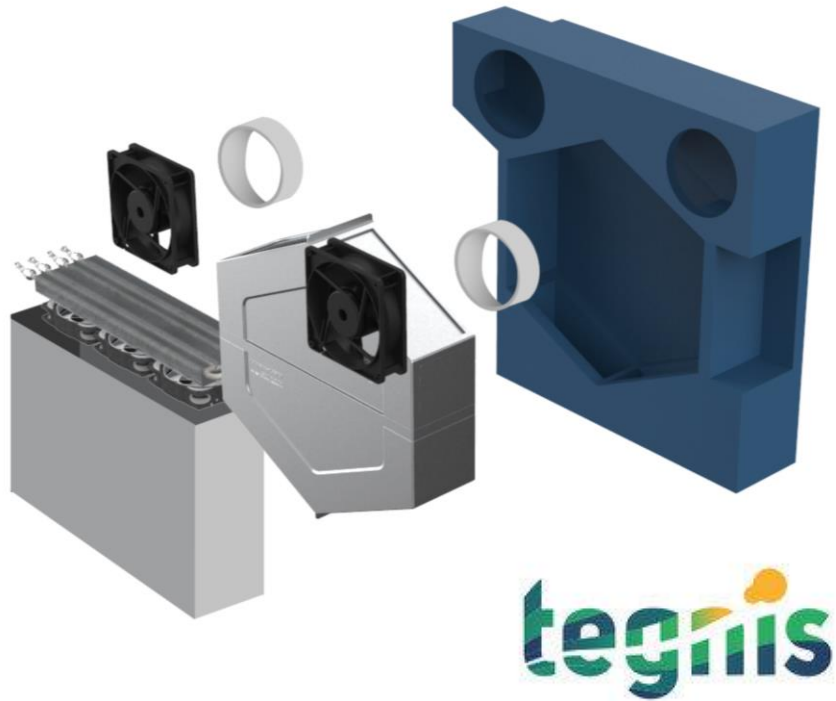
CURRENT RC PANEL



CONCEPT PANEL

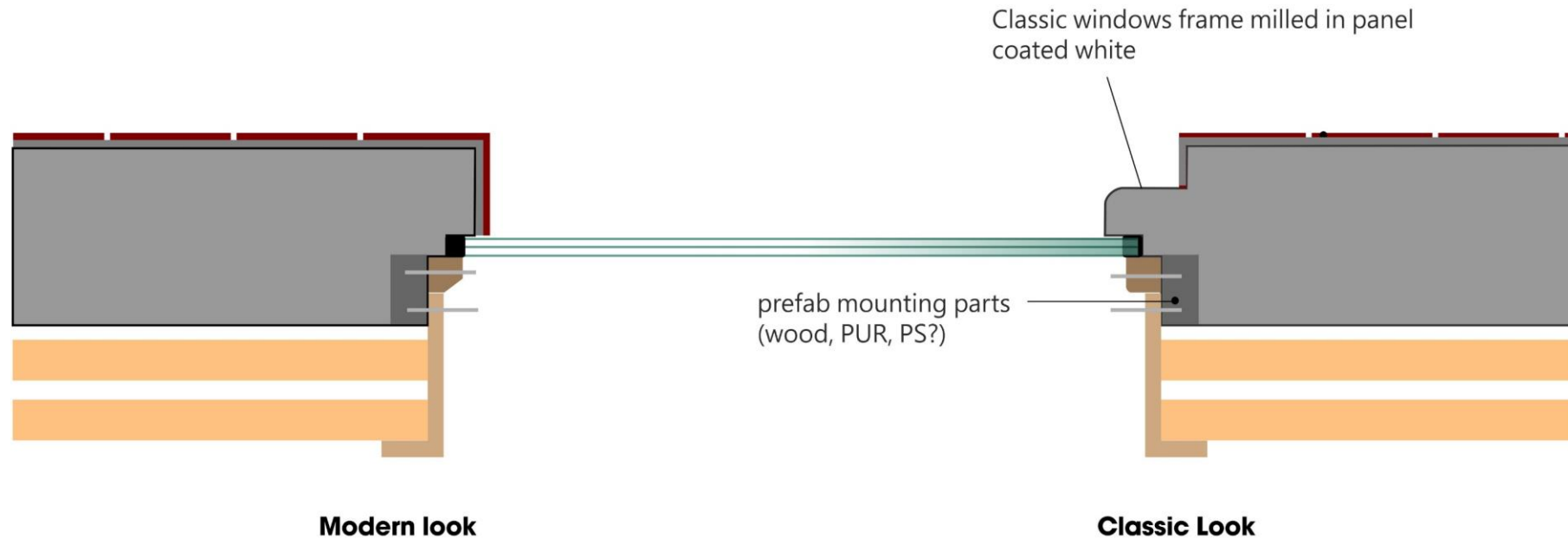


Ontwikkeling van de renovatie pakketten



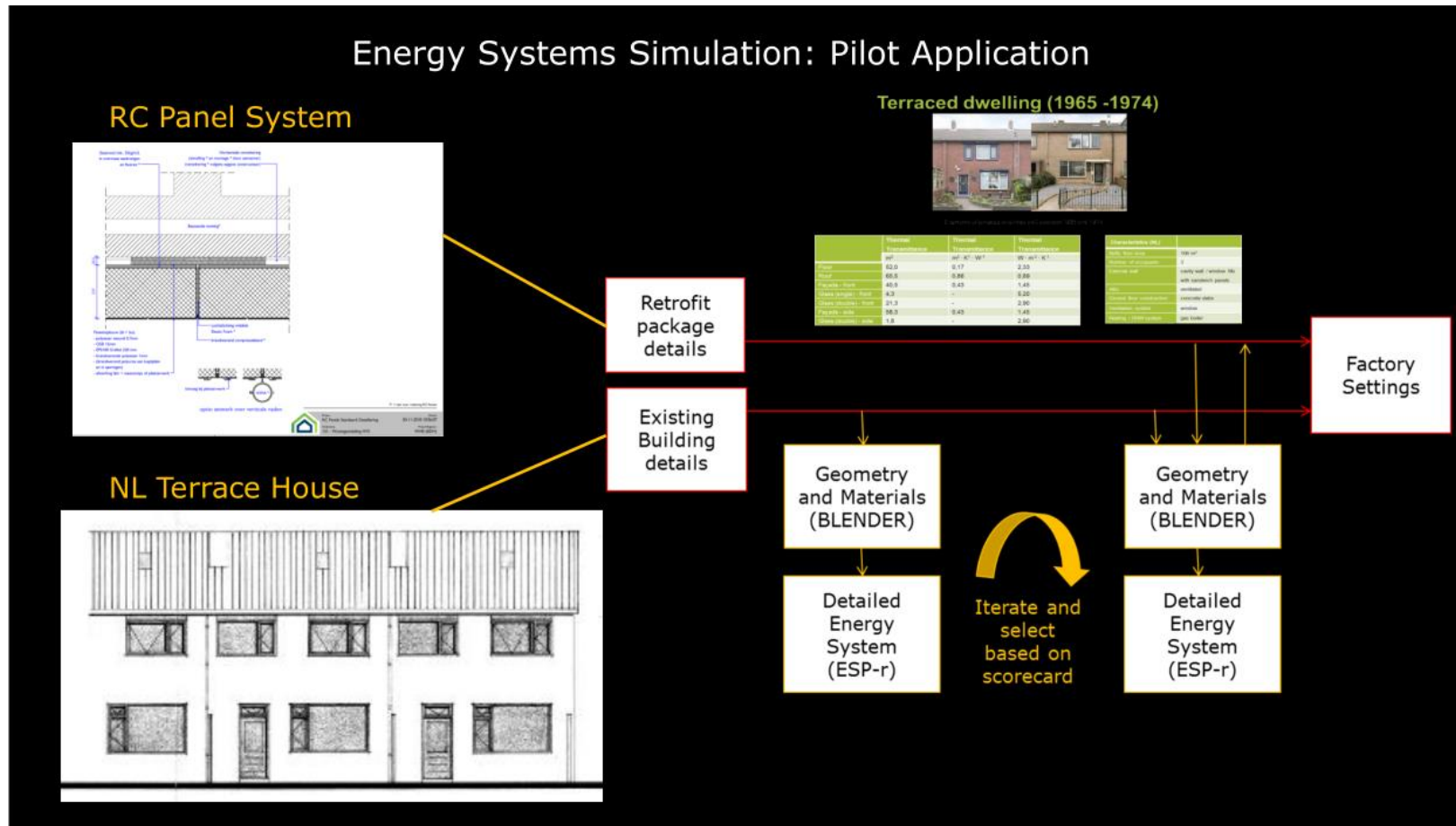
Ontwikkeling van de renovatie pakketten

Window / Construction



Strathclyde university

Blender model and ESP-r model

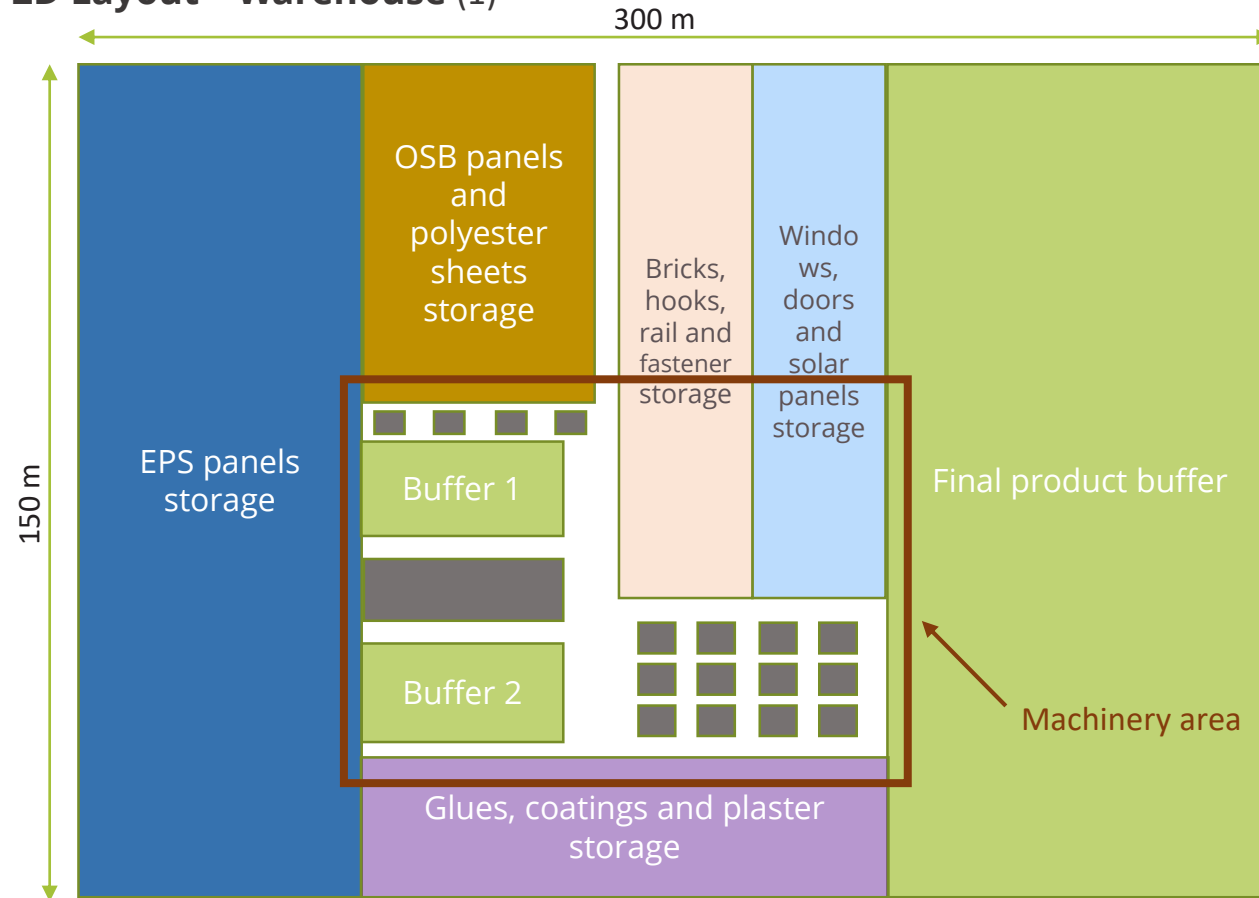


Ontwikkeling van de fabriek

Ontwikkeling van de fabriek

Infrastructure

2D Layout – Warehouse (1)



Current blueprint design of the smart factory INDU-ZERO

Property: xx

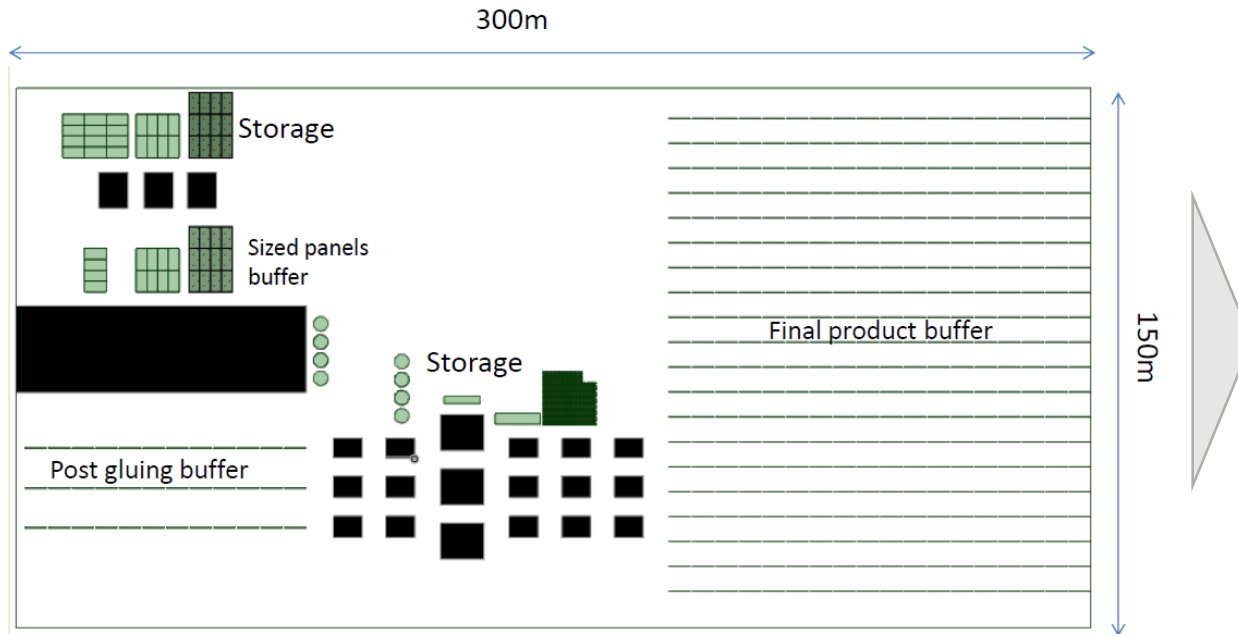
Factory: 45.000 m² = 4,5 ha

Source: University of Strathclyde

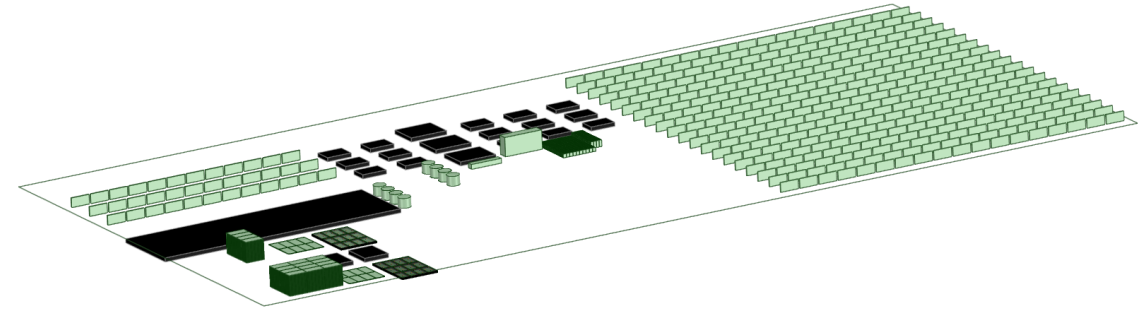
Ontwikkeling van de fabriek

Infrastructure

2D Layout - Warehouse (2)

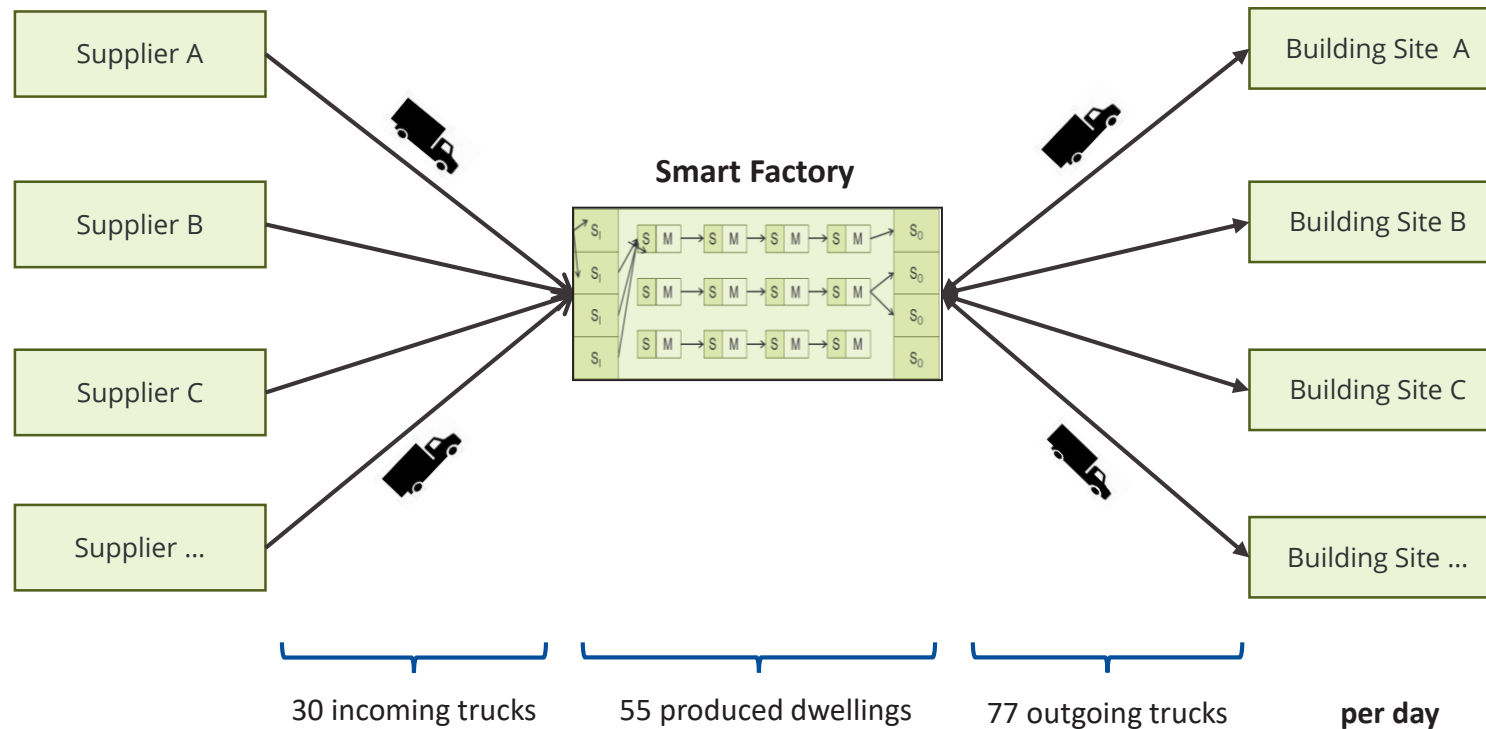


Source: University of Strathclyde



Inbound/Outbound logistics

How do we handle more than 100 truck arrivals per day?



Showcases

Tijdspad

6 showcases huizen van de archetypes

Groep 1 – Nederland / België

- Gereed in het 4^{de} kwartaal 2020



Groep 2 – Duitsland / Groot-Britannië / Zweden / Noorwegen

- Gereed in het 1st kwartaal 2021



Belemmeringen

Belemmeringen

- INDU-ZERO wordt zowel als kans als ook als bedreiging gezien
- Open source van het project  belemmert samenwerking met nieuwe ontwikkelingen vanuit de industrie
- Vraagbundeling woningbouwcoöperaties voor langere termijn is een uitdaging!

Take home message

Take home message

**Industrial Net Zero renovations for half the
current price!**

- <https://northsearegion.eu/indu-zero/>
- *INDU-ZERO newsletter*
- *Webinars*
- *Reports*

Problem



Sustainable housing
too slow, too expensive

THE SOLUTION WITH INDU-ZERO

Problem



Sustainable housing
too slow, too expensive



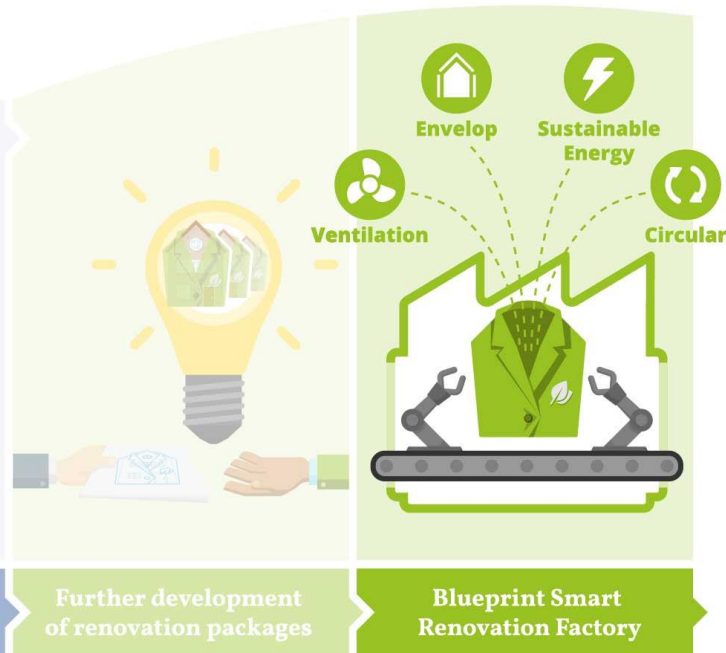
Further development
of renovation packages

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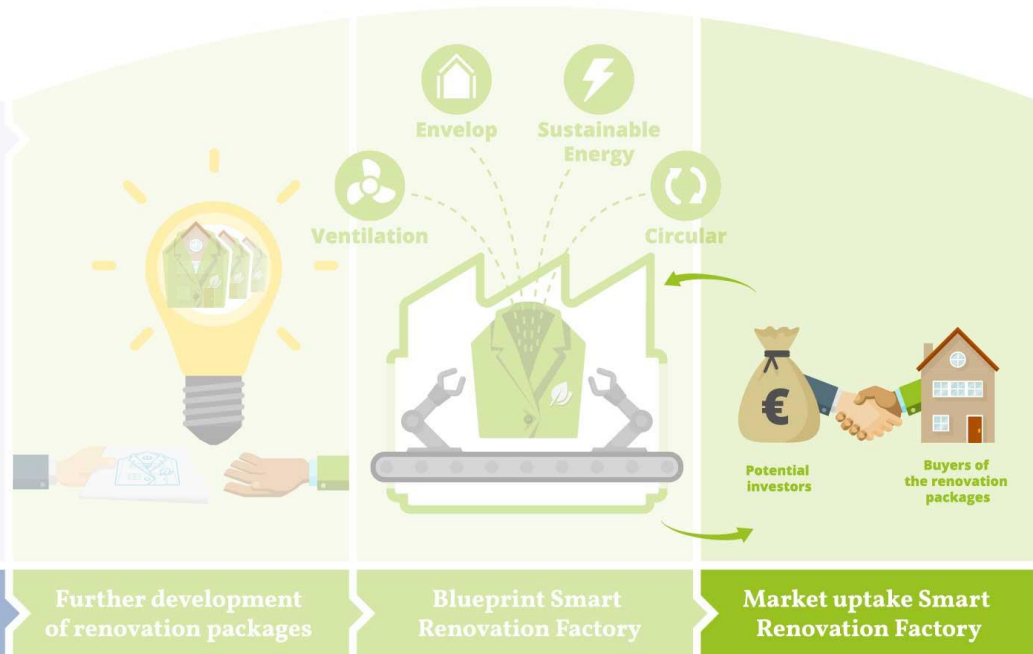


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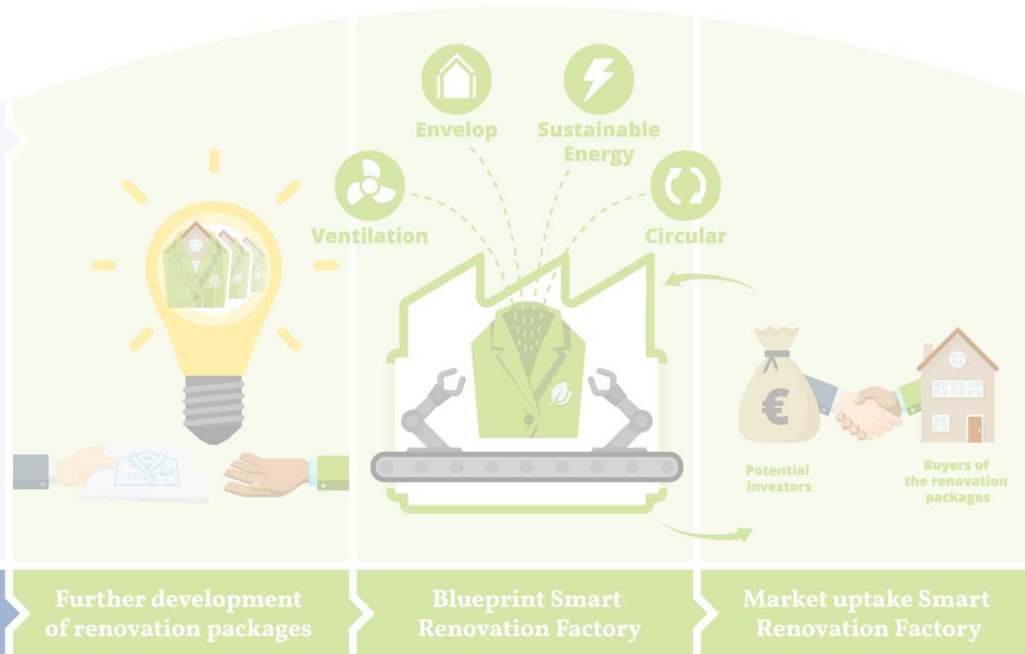


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Further development
of renovation packages

Blueprint Smart
Renovation Factory

Market uptake Smart
Renovation Factory

Future perspective



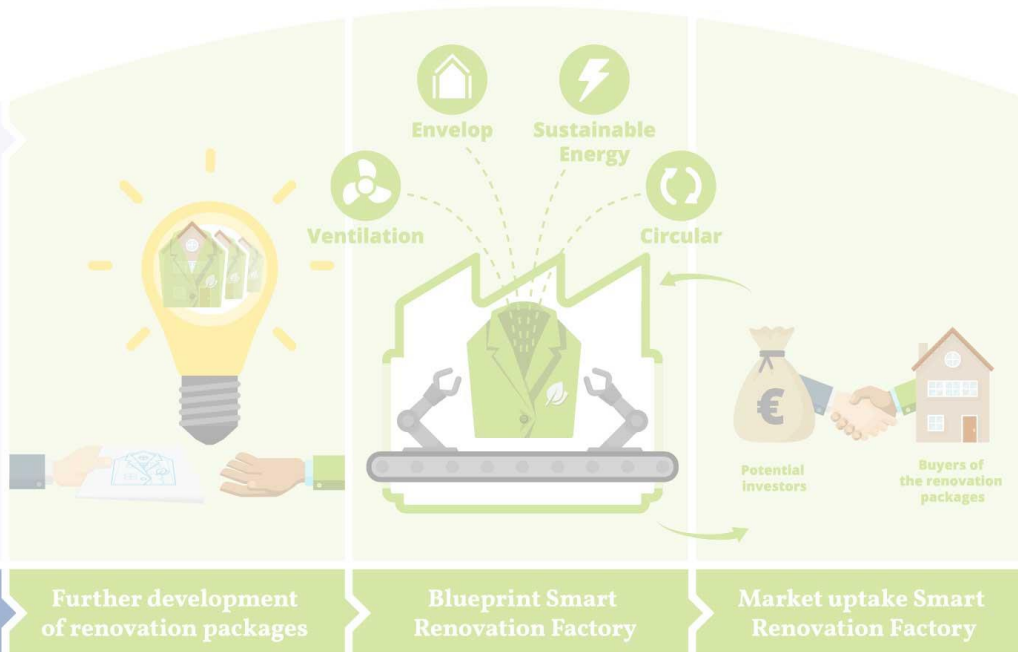
Factory building in NSR

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Renovation houses

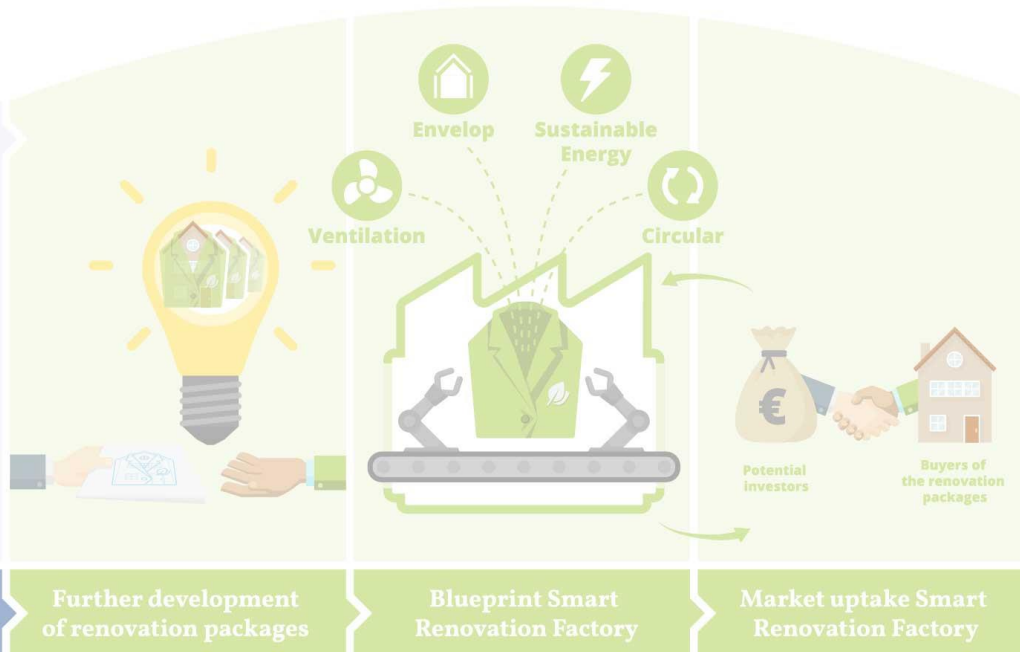
22 MM
houses
in 2050

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Renovation houses



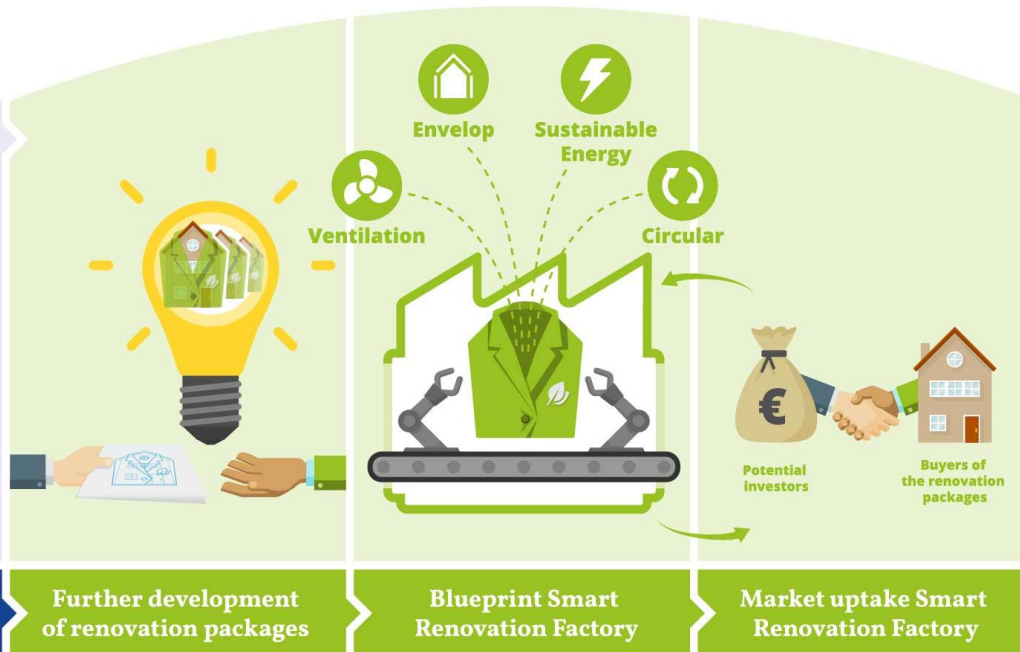
Future proof houses

THE SOLUTION WITH INDU-ZERO

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Future perspective



Factory building in NSR



Renovation houses



Future proof houses

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