

INDUCT

Publieke samenvatting / Public summary

Aanleiding

Climate targets call for industrial feedstock, products and processes to become climate neutral and circular. Introducing circularity into established material supply chains holds the promise of averting the depletion of finite raw materials, minimizing carbon emissions generated during the processing of said materials, and mitigating landfill waste. While laminated glass finds increasing application in automotive and building sectors (current market size: 22 billion \$ and growing with CAGR of 7.4%), its end-of-life management poses challenges for recycling. Existing recycling techniques are energy-intensive, and do not allow re-use of glass for window applications, leading to limited adoption and a significant portion of laminated glass ending up in landfills. Hence, there arises a need for radical recycling processes that have a low energy consumption and cost and enable reuse of old glass sheets for the production of new windows, therefore promoting circularity of laminated glass.

Doelstelling

- Advance the TRL for inductive heating for glass lamination and delamination from current TRL3 (established proof of concept) to TRL4 (lab testing of prototype components and process).
- Assess and verify technical, economic and environmental advantages of implementing the inductively heated laminated glass recycling and glass lamination (INDUCT) process in a renewable-dominated energy system.
- Provide a concept for an industrial inductive heating setup tailored for glass (de)lamination and a roadmap outlining how to progress from lab to pilot scale demonstration and

Projectinformatie / Project information

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Algemene informatie / General information

Penvoerder / Secretariat

Nederlandse Organisatie voor toegepast-natuurwetenschappelijk onderzoek TNO

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industrial production after completion of the INDUCT project.

Korte omschrijving

Activities will enable us to laminate glass plates and separate them at the end of their lifetime in a technically, energetically and economically efficient way. INDUCT will yield new circular safety glazing market-ready before 2034. - Magnetic nanoparticles will be surface functionalized to ensure efficient integration in polyvinyl butyral (PVB) and polyolefin elastomer (POE) polymer films. - Masterbatches of magnetic nanoparticles in PVB and POE will be produced by TNO. - Nanocomposite POE and PVB films will be produced via extrusion by Yparex and TNO, respectively. - 40x40 cm²-sized laminated glass samples will be produced by Yparex and window demonstrators will be produced by GSF. - TNO will demonstrate (de)lamination using inductive heating for the POE and PVB glass laminates. - Ambrell will deliver a concept for an industrial inductive heating setup that can be implemented at a glass processing line for lamination and delamination of glass. - An analysis will be undertaken to compare the technical, economic, commercial, organisational and political benefit of this technology to alternative (de)lamination and flat glass recycling techniques

Resultaat

- Demonstration of inductive heating for glass (de)lamination on lab scale (40x40 cm² demonstrator window). - Concept for an industrial inductive heating setup tailored for glass (de)lamination. - Roadmap for scale up of inductively heated glass (de)lamination to pilot and industrial scale.

De data in deze applicatie is afkomstig van de Rijksdienst voor Ondernemend Nederland (RVO) en wordt in samenwerking met de Topsector Energie ontsloten.

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