

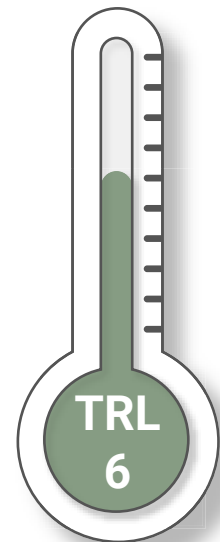
GO-GRASS

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PRACTICE
ABSTRACT

Process for manufacturing grass cellulose to substitute wood cellulose in paper products



Technology
readiness level:



Target group

- Manufacturers of production technology for the bio-based sector.
- Companies in the business of collecting and processing biomass.
- Clients of **Schut papier** or other paper companies that want to strengthen sustainability by using biobased material in their product like printing companies, designers of packaging material.
- Local/regional authorities, rural communities and nature organisations that want to keep in charge of collecting and treating their own biomass

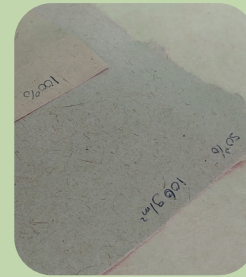
Benefits and impact

Paper made with wood fibres has more environmental impact. By replacing part of it with grass fibres we help reduce the environmental impact of the paper industry, we reduce the cost of producing paper and it has a high versatility to develop different kind of paper products (tissue paper, cardboard and newsprint.) The innovative process developed for utilising grass fibres in papermaking may have applications beyond the paper industry.

The knowledge, techniques, and technology can potentially be transferred to other markets, such as packaging, textiles, or biodegradable materials, thereby expanding the impact and commercial potential of the project. The carbon footprint is at least 10 times lower than wood cellulose.

Description

The digestion technology used in the Dutch demonstration site is well-known. The process variables for the digester have been developed, and the process for extracting the grass fibres from the digestate is new. The different process steps need further upscaling and development to increase the fibre production. This is also necessary to realise a positive business case.



Watch the [demo site video](#)



Challenges

The process is creating a high value for a low quality/waste product, fostering the substitution of wood cellulose in the paper industry, diminishing cutting of trees, and improving the carbon footprint of paper. Until now digesting of grass in Europe has not focused on producing grass-based cellulose for the papermaking industry. The focus was mainly on biogas production.

The current challenge in utilising grass fibres for papermaking lies in achieving the necessary removal of lignin while ensuring that the resulting fibres possess the desired fibrillating properties and exhibit effective dewatering behaviour. It is crucial to achieve these outcomes without the presence of sugars and protein in the fibres. The project aims to overcome the limitations associated with the lignin of grass fibres, allowing their effective utilisation in the papermaking process. The successful lignin removal, combined with desired fibrillating and dewatering characteristics, is essential for producing high-quality paper products from grass cellulose fibres.

Solution

The production technology for grass cellulose is a batch process. It starts with a dry digester and deploys several following steps to isolate and upgrade the grass fibres. The main innovation is the production process represented by the following order of the different process steps and the relevant process variables. The main innovations in the project lie in its scalable process, the use of grass fibres as a novel material, the potential for transferability to other markets, and the tailored applications for specific conditions. Grass-based paper products can offer comparable or superior properties in terms of strength, printability, and recyclability compared to conventional paper products.

Team and contact

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