

PROVIDES

PROcesses for Value added fibres by Innovative Deep Eutectic Solvents



Summary

PROVIDES will develop a new, sustainable and techno-economically feasible pulping technology for wood and agro-based lignocelluloses. Using a new class of solvents, known as deep eutectic solvents (DES), offers the ability to reduce process energy intensity at least 40% and investment costs by 50% over existing chemical pulping technology.

DESs have the unique ability to dissolve, and thus mildly fractionate, lignin, hemicellulose and cellulose at normal temperature and pressure, allowing for further processing into high added value materials.

The overall aim of PROVIDES is to provide tools that encourage radical innovations and a move towards low-energy mild pulping processes, which provide high quality cellulose, hemicellulose and lignin fractions.

<http://www.providespaper.eu/>

Type of Action:
Research & Innovation Action

Value Chain: VC2 – forest-based

Start date: 01 July 2015

End date: 31 December 2018

BBI JU contribution: €
1.079.551

Objectives

- To develop a radically new, sustainable and techno-economically feasible pulping technology for wood and agro-based lignocellulose raw materials based on deep eutectic solvents (DES)
- Via DES: to decompose lignin, hemicellulose and cellulose at low temperature and atmospheric pressure for further processing into materials and chemicals with a high added value.
- To transfer the scientific findings in novel lignin dissolving DES to a process concept level that can be evaluated in relation to the current pulping and product fractionation processes.

Expected impacts

- Achieving technological breakthroughs spurring innovation across cellulose-based sectors.
- Reducing process energy intensity by at least 40% as compared to traditional pulping processes.
- Reducing investment costs by 50% as compared to current pulping installations, thanks to a pressure-free layout and a simplified chemical recovery.
- Strengthening the market position of current wood-based products (e.g. paper, board) as well as new applications with a high added value in the textile and chemical industries.

Achievements & milestones

New sustainable pulping technologies

10 October 2018

The vision of the pulp and paper industry is to significantly reduce carbon dioxide emissions while improving energy and resource efficiency. Hence, a European initiative has developed a breakthrough technology for greener pulp production. [Read more](#)

Project coordination

- Stichting S-ISPT, PPP (The Netherlands)
- Sappi Netherlands Services BV (The Netherlands)
- WEPA Nederland BV, Van Houtum (The Netherlands)
- Voith Paper GmbH & Co. KG (Germany)
- Holmen Aktiebolag (Sweden)
- Metsä Fibre Oy (Finland)
- Omya International AG (Switzerland)
- Parenco BV (The Netherlands)
- The Navigator Company (Portugal)
- Smurfit Kappa Nederland BV (The Netherlands)
- Stora Enso Oyj (Finland)
- UPM-Kymmene Oyj (Finland)
- Centre Technique de l'Industrie des Papiers, Cartons et Celluloses - CTP (France)
- Crown Van Gelder NV (The Netherlands)
- DS Smith Packaging Netherlands BV, DSSmith DeHoop (The Netherlands)
- Buckman Laboratories (Belgium)
- Technische Universiteit Eindhoven (The Netherlands)
- Mondi AG (Austria)
- Zellstoff Pöls AG (Austria)
- Mayr-Melnhof Eerbeek BV (The Netherlands)
- Eska Graphic Board BV, (The Netherlands)
- Teknologian tutkimuskeskus VTT Oy (Finland)
- Universiteit Twente (The Netherlands)
- Universidade de Aveiro (Portugal)
- Celulose Beira Industrial, SA (Portugal)
- SCA Tissue France (France)
- Valmet Technologies Oy (Finland)

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