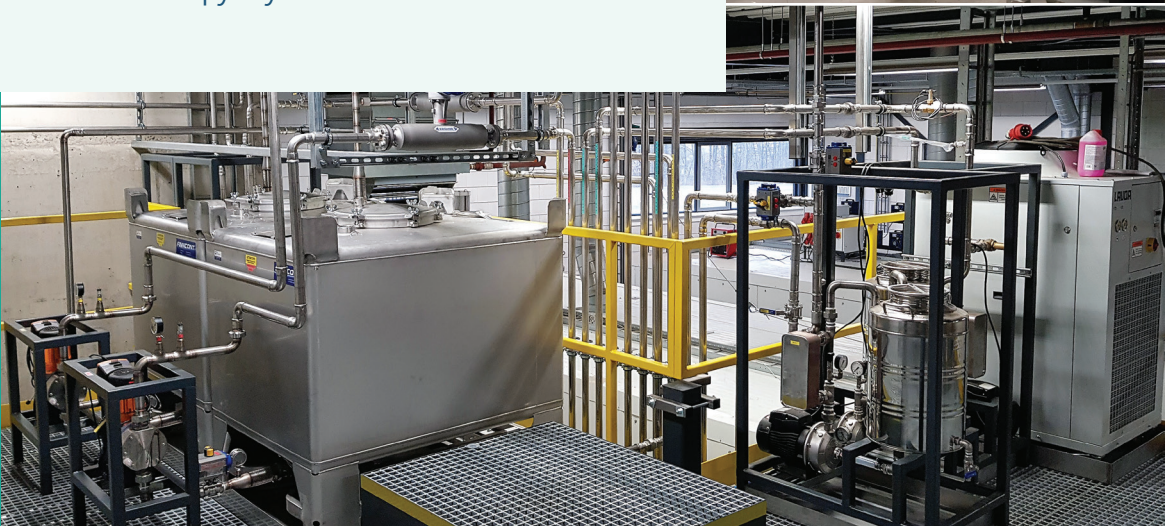
PILOT PLANT FOR EXTRACTING BIO-BASED CHEMICALS AND MATERIALS FROM PYROLYSIS OIL

BTG Biomass Technology Group have developed and built a thermo-chemical fractionation plant to transform all kinds of biomass into lignin, sugars and extractives – feedstock for bio-based products. In this approach, a short thermal treatment at elevated temperature (fast pyrolysis) is followed by a low temperature fractionation of the mineral free, liquid product (fast pyrolysis bio-oil) that keeps the key chemical functionalities intact in separate, depolymerised fractions. The plant has a throughput capacity of 3 tonnes per day of fast pyrolysis bio-oil.



DID YOU KNOW?

The plant is the first of its kind in the world. Until now pyrolysis oil has been used mostly for bioenergy, but this breakthrough enables it to be used for bio-based chemicals and materials. First assessments show products made from pyrolysis oil have a significantly lower environmental impact than their fossil derived counterparts. Wide scale roll out of this kind of biorefinery would contribute to new jobs and growth, especially in rural areas.

BTG BIOMASS TECHNOLOGY GROUP

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BIO4 PRODUCTS
Creating sustainable resources for process industry

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 723070.

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PYROLYTIC LIGNIN AND SUGAR FEEDSTOCKS FOR BIO-BASED PRODUCTS AND MATERIALS

BTG Biomass Technology Group have developed new feedstocks for bio-based products: pyrolytic sugars, pyrolytic lignin and extractives. The current focus of the sugars is in the production of sand moulding resins and modified wood. Pyrolytic lignin can be used as a raw material in the production of renewable bitumen, in various resins (as a replacement of fossil phenol) or bio-based paints. The extractives are a raw material for specialty chemicals, analogous to “pine chemicals” and similar in nature to tall-oil liquids, and could likely be used as co-feed to produce diesel like products by HDO.

DID YOU KNOW?

The feedstocks are new ingredients for bio-based products, derived from a unique biorefinery process developed by BTG. They can help replace fossil based raw materials, or increase the sustainability of renewable chemicals based on feedstock sourced outside Europe.

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BIO-BASED FOAM RESINS
FOR BUILDING INSULATION

Hexion has developed a new lignin-based phenol formaldehyde (PF) resin, with application in the construction sector. The resin has been developed specifically for the production of foam insulation products.

DID YOU KNOW?

In the new resin a portion of the fossil phenol has been replaced by pyrolytic lignin – a more sustainable, bio-based material. Initial testing shows the bio-based foams have improved material properties, including better fire performance and compression strength. Thermal conductivity is still good. The product has a lower environmental impact due to the reduced fossil content.

HEXION™

HEXION

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BIO-BASED MOULDING COMPOUNDS FOR HOUSEHOLD AND AUTOMOTIVE PRODUCTS

Hexion has developed new lignin modified moulding compounds. Via injection moulding these compounds can be transformed into any number of household products, for example pan handles, or parts for the automotive industry.

DID YOU KNOW?

The new compounds contain a large percentage of bio-based content, which was not previously the case, while maintaining excellent mechanical properties. By limiting the use of fossil resources this innovation could help to reduce the environmental impact linked to a whole range of business-to-business and consumer products.

HEXION™

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SUSTAINABLE CHEMICALS FROM RENEWABLE RAW MATERIALS

The basis of TransFurans Chemical's (TFC) products is Polyfurfuryl alcohol, a liquid biobased thermoset available in different viscosities and reactivities. Some of the markets TFC serves are: biocomposites for automotive and furniture applications, fire resistant composites for mass transport applications, wood modification and industrial adhesives for foundry, refractory and anti-corrosion.

DID YOU KNOW?

Though their collaboration with BTG in the Bio4Products project, **TFC has explored new products based on the pyrolytic sugar feedstock, focusing on sand moulding resins and wood modification.** By using local biomass TFC can reduce its reliance on biomass imported from outside the EU.

TFC
BIOMASS BASED CHEMICALS

TRANSFURANS CHEMICALS
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FAUNAWOOD - WOOD MODIFIED WITH WOOD, A CIRCULAR ALTERNATIVE TO CREOSOTE

Faunawood uses European pinewood impregnated with a special bio-based resin. The result is a durable, strong wood pole, perfect for various applications. The impregnation ensures the product is not damaged by wood rotting fungi and termites for at least 25 years. During production the poles are processed (debarked and pointed) to the end application, thereby making FaunaWood easy to install and use.

DID YOU KNOW?

New wood preservatives are in high demand as companies look for sustainable alternatives to creosote. Studies have shown that Faunawood contributes 82% less greenhouse gas emissions compared to fossil-based creosotes, and due to its lower toxicity is also 7.4 times less damaging to human health. Old wood poles can be reused to produce the modification resin – making Faunawood a truly circular product.

FORECO houtproducten

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