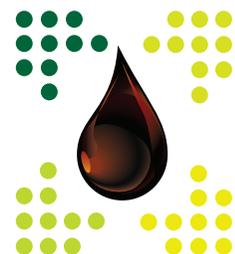


bioliquids refinery



BTG Bioliquids Refinery
Pyrolysis based biorefinery



Pyrolysis based refinery of biomass

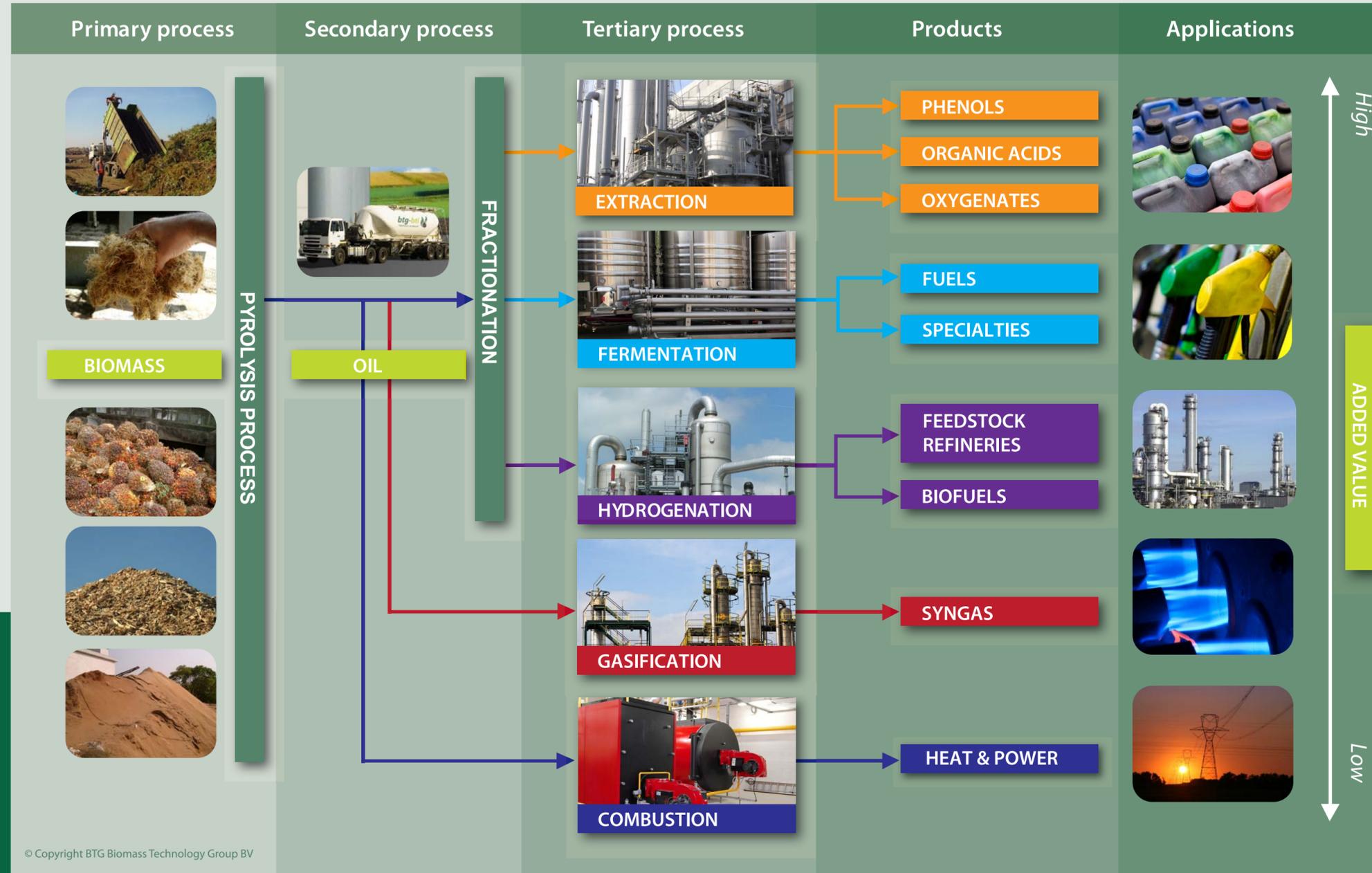
Pyrolysis oil and technologies

Pyrolysis oil is the product of heating of biomass without oxygen. Pyrolysis technology in its most traditional and simple form is heating oak or beech resulting in a dense smoke for smoking fish or meat. Cooling the dense smoke results in an oil called pyrolysis oil. Biomass is a natural product that contains carbon. Examples are wood, straw and other organic residues or by-products of agriculture.

Biorefinery based on pyrolysis of biomass is an important step in the transition towards a sustainable economy. The BioLiquids Refinery makes maximum use of the existing infrastructure of our agriculture and the (petro)chemical industry, facilitating a smooth and cost-effective greening of our economy.

Biobased Economy

- > The Dutch Government has formulated a target of replacing 30% fossil raw materials by biomass in the year 2030
- > The chemical industry has set a target of 50% greening in 25 years
- > This requires a transition process that will be revolutionary and that will take the next decennia
- > The goals are less emissions of greenhouse gases and less dependency of fossil oil, coal and natural gas



The resulting BioLiquids Refinery fits with the existing refineries as pyrolysis oil can (partially) replace crude oil. Especially for the Netherlands it offers interesting opportunities as the existing refinery infrastructure can be used in co-refining modes.

The possibilities for biorefinery are presented in the scheme. Like a crude oil based refinery, a range of products can be produced using standard refinery units. The basis is the fractionation of pyrolysis oil. Fractionation results in various qualities of oil needed for further upgrading into fine chemicals, petrochemicals, automotive fuels and energy.

Ultimate goal is maximum valorization of the pyrolysis oil at the lowest possible costs.

Advantages of BioLiquids Refinery

- > Decentralised production of the pyrolysis oil in regions where abundant biomass is readily available
- > Cost-effective transport of liquid pyrolysis oil to existing large scale processing units
- > Linking agriculture and (petro)chemical industry
- > Minerals are kept in the country of origin

The roadmap to BioLiquids Refinery

BTG Biomass Technology Group bv foresees a great future in 'greening' the (petro)chemical industry and energy production. Pyrolysis is a technology suitable for converting biomass into an uniform and clean oil. The technology has been further developed and scaled-up by BTG since 1993. BTG has a strong worldwide acknowledged reputation in this field. BTG has demonstrated a pyrolysis oil production facility on a semi-commercial scale in Malaysia (8 million liter/yr) based on agro residues. Through its daughter company BTG BioLiquids (BTG-BTL), a new facility is being developed and implemented with a capacity of 20 million liters of renewable oil annually in Hengelo, The Netherlands. This facility will be a first step in the transition process towards a biobased economy, in which the BioLiquids Refinery concept will play an important role.

THE ORIGIN OF PYROLYSIS-BASED BIOREFINERIES: ROADMAP

Proof of principle



2009 - 2013

Pilot Biorefinery
(2t/day)



2010-2015

Demonstration
Biorefinery
(5t/h)



2015-2020

Full scale Biorefinery
(>15t/h)



2020 ->



BTG Biomass Technology Group BV

P.O. Box 835

7500 AV Enschede

The Netherlands

Tel: +31 53 486 1186

Fax: +31 53 4861180

Web: www.btgworld.com &

www.btg-biorefinery.com

Visiting address:

Josink Esweg 34

7545 PN Enschede

BTG BioLiquids BV (BTG-BTL)

Contact: Gerhard Muggen

Office: +31 53 486 2287

Mob: +31 6 2073 9802

E-mail: office@btg-btl.com

Web: www.btg-btl.com

