



Partnership Proposal

Commercialization of Biorefinery's Lignin Material

Biorefinery

Operating company

Nordfuel Oy

Lignin material consulting company

Brightplus Oy

investment budget refinery

- 400 000 000€
- Renovation of premises of former Nordfuel peat power plant

Refinery production



Ligin



Bioethanol

tons per year

60500 230 000

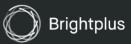
tons per year

Biogas

150

GWh/a





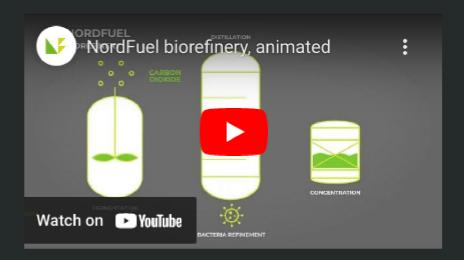
Lignin Material Status

Raw Materials

- Sawdust produced as a byproduct of the sawmill industry, logging residues from the forestry as well as small-diameter wood from young stands
- Volume about 350,000 tons (dry weight) per year
- The raw material is procured from a radius of 150 kilometers

Ligning separation processing

- Enzymatically hydrolyzed lignin
- 2 process option: NFL101 and NFL102
 - Technical data sheets available for both
- There is a possibility to influence the properties within the options



Raw material base process : NFL101 and NFL102



Partnering Proposals

Purchase agreement for co-development lignin

Partner's responsibility

- Specifies the choice of lignin NF101 or NF102
- Lead product development for lignin processing
- Lignin purchase agreement

Nordfuel's responsibilities:

- Helps achieve the features of Lignin's product goals
- Reserve the capacity in accordance with the purchase agreement

Purchase agreement for NF lignin

Responsibilities of the partner

· Lignin purchase agreement

Nordfuel's responsibilities:

- Delivery lignin material in accordance with the specification (TDS)
- Reserve the capacity in accordance with the purchase agreement







Partner production start

Profitable production with lignin-derived end products

Cooperation agreements signed

The parties co-development of biorefinery

Partner discussions

Brightplus Oy chosen to consult in managing the lignin derivatives and cooperation partners

Partnering decision Strategy decision: partnership with lignin production



Production start

2026

2024

2023

2022

2016

Bioethanol +60kt, Biogas +10kt Lignin +100kt

Technology finalization

The cooperation partner influences the choice of technologies

Environmental permit

Q1/23 all permits in force

Key process selection

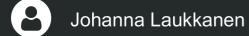
Setting production volumes of materials

Project start

The decision to transfer from power plant operations to bioethanol production

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