



LSB

Leaders of
Sustainable
Biofuels



Industry platform driving
development of advanced
biofuels in Europe

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Leaders of Sustainable Biofuels
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Member Companies



UPM Lappeenranta Biorefinery

Key facts

- Product: Renewable diesel & naphtha
- UPM investment: 179 M€
- Capacity: 100,000 tonnes/a
- UPM patents and applications: 200
- Employs 250 persons (incl. indirect)



ENVIRAL Slovakia



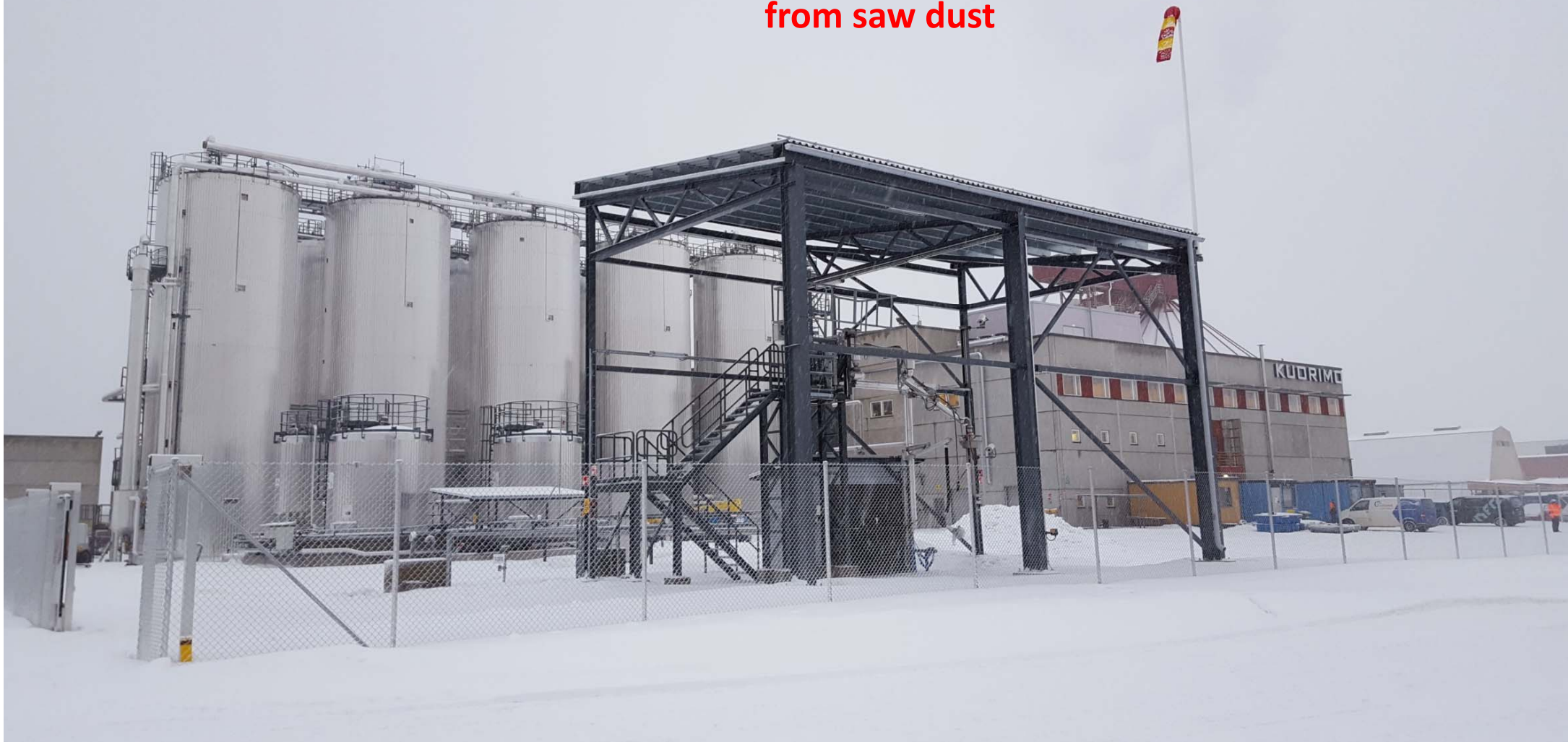
Strategic investment into 2G cellulosic ethanol production

- Location: existing premises of Enviral
- Licensor: Clariant Producte (Deutschland) GmbH
- Production capacity: 50.000 T/Y of cellulosic ethanol from straw
- Biomass to be consumed: 340.000 T/Y
- Installed CHP capacity: 74 MWt
- Installed steam turbines capacity: 15 MWES
- Start-up of ethanol production: 1Q 2020
- Project performance: „Well-to Wheel“



ENVIRAL

St1 Cellunolix® (Kajaani)
Advanced lignocellulosic advanced ethanol
from saw dust



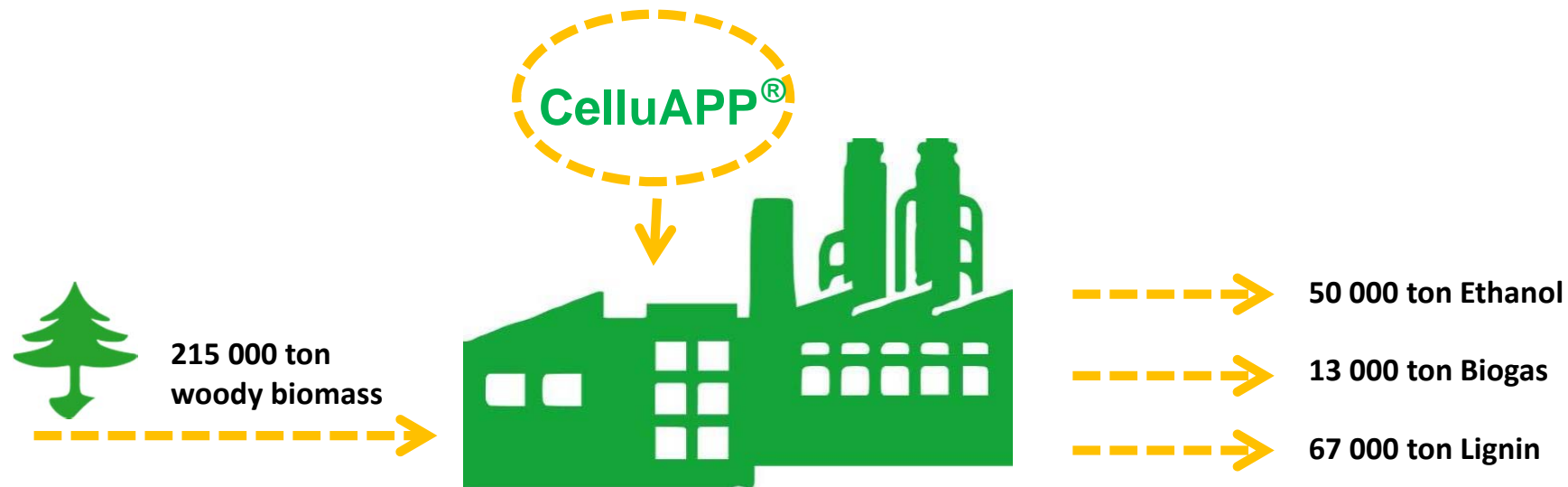


ENERKEM ALBERTA BIOFUELS WORLD'S FIRST COMMERCIAL MSW-TO-BIOFUELS AND CHEMICALS FACILITY



Production capacity: >40M litres / yr
Products: ethanol & methanol

Advanced BioEthanol- prestudy commercialization in Nordic countries



KAIDI: Kemi project status

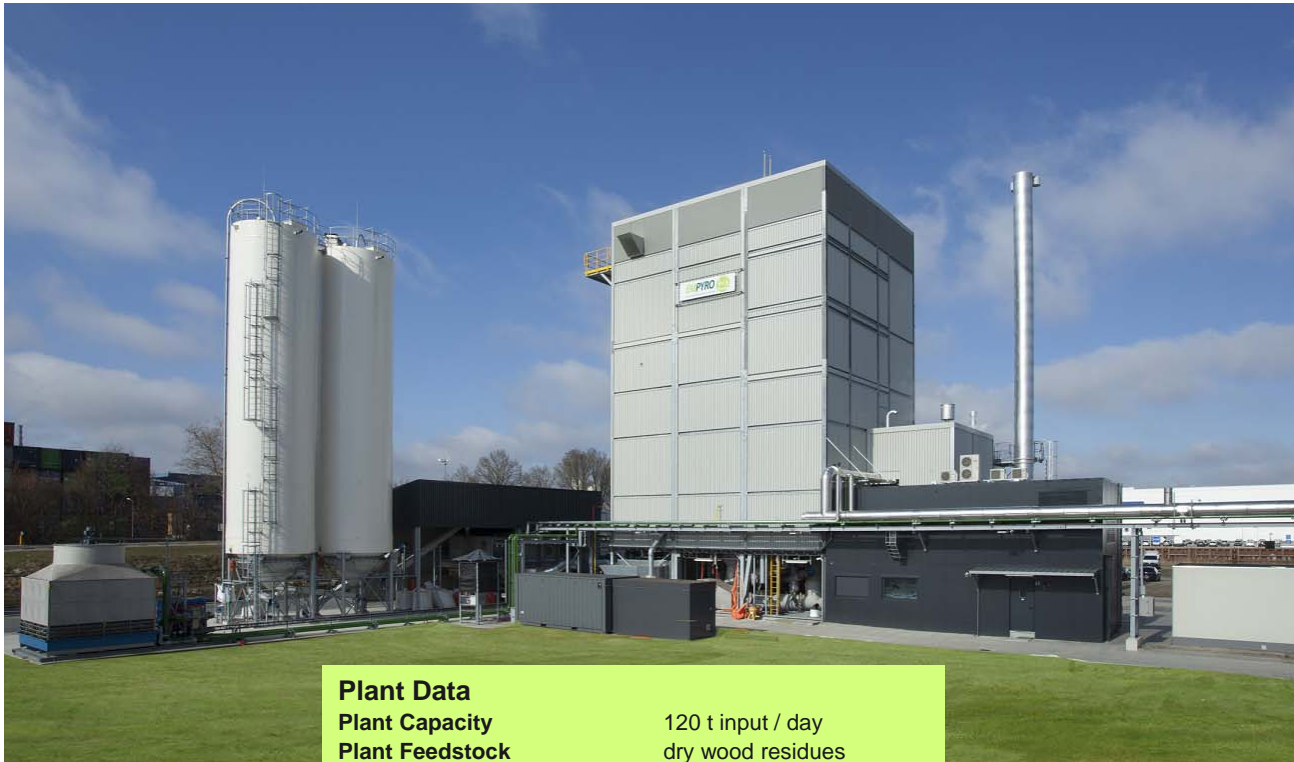
- 2015
 - Project planning starts
- 2016
 - Kaidi Finland is established and Carl Haglund nominated as the CEO
 - Stakeholder work and planning continues
 - Environmental permit submitted
- 2017
 - Main site acquired in Ajos, next to Kemi harbor
 - Stakeholder work and project planning continues
 - Close monitoring to RED II and LULUCF
- 2018
 - Environmental permit expected during Spring
 - Close monitoring to RED II





Commercial Demo

Empyro Plant in Hengelo, the Netherlands (since 2015)



Plant Data

Plant Capacity	120 t input / day
Plant Feedstock	dry wood residues
Plant Output per year	
• Oil	20 million litres
• Electricity	2,200 MWh
• Steam	80,000 tonnes
• CO2- eq. reduction	24,000 tonnes

UPM studies the feasibility of possible new Biorefinery in Kotka, Finland



Environmental impact assessment (EIA) for a possible biorefinery in Mussalo, Kotka, Finland has been started and takes approximately 1 year

The proposed second UPM biorefinery would

- produce approximately 500,000 tonnes of advanced biofuels
- use several new sustainable feedstocks different from UPM Lappeenranta Biorefinery
 - e.g. solid wood biomass and *Brassica carinata*
- have partly different technology: conversion of solid biomass and hydrotreatment
- Biofuels regulation decisions to be made by Finland and EU will impact the future investment consideration



Kotka, Mussalo, Finland – the area of dismantled power plant formerly run by Pohjolan Voima

Advanced biofuels: Multiple benefits



- High GHG savings
- Immediately usable in existing fleet
- Stimulate industrial innovation in Europe
- Build a bridge to bio-based chemicals
- Domestic raw materials, European technology



LSB calls for sufficient predictability for investors



- **A dedicated Annex IX part A based target from 2021** to create investor confidence and unleash investments
 - LSB objects the Council proposal to introduce advanced biofuels mandate only as of 2025
- **Climate action requires ambition:** high ambition requires incentives and wide feedstock basis to invest in measures that reduce emissions – multipliers and double-counting should not be introduced if their impact is a significant reduction of the ambition level of the mandate.
- **Increased GHG savings threshold from $\geq 60\%$ to $\geq 65\%$ for new biofuels installations after 1.1.2020** is an acceptable and aggressive sustainability criteria

Policy requests

- **Annex IX part A feedstock list as agreed in the ILUC directive** to show policy continuity and long-term regulatory stability for the investor community
 - LSB objects to the European Parliament position that that removes “biomass fraction of mixed municipal waste” as a feedstock in Annex IX part A
- **Cascading and respecting the waste hierarchy** are principles to which Member States should adhere to as much as possible. However, in the case of fighting transport emissions strict legal application of these principles could be counterproductive as local circumstances on existing use of certain feedstocks varies greatly.



Driving **cleaner** traffic

The Biofore Company  UPM

