

Commercial production of Pyrolysis oil from sawdust

**Experiences and opportunities for Pyrolysis oil production in Sweden
-the example of Pyrocell AB-**

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Points of presentation

- The Pyrocell plant in brief
- Experiences from 3,5 years of operation
- Pyrocell's position - opportunities & development needs

The Pyrocell Pyrolysis oil plant



Ownership

- Pyrocell is jointly owned by Setra and Preem.
- www.setragroup.com & www.preem.se

Technology

- Fast pyrolysis - technology

Feed stock

- The residual product sawdust from Pine (Pinus Sylvestris)

Production & products

- Annual target quantity 25,000 tons, continuous operation
- 14 Employees incl. Management , shift work 24/7
- Product 1: FPBO: Certified according to ISCC EU & Plus, sold to Preem refinery.
- Product 2: Steam: Used for drying of sawdust, excess steam sold to Setra sawmill.

Markets

- Biofuels for the transport sector – core business

Uniqueness with Pyrocell plant

- Integrated sawdust flow with sawmill
- Integrated steam flow with heating plant & sawmill
- Integrated supply chain - rail transport* from Gävle to refinery
 - Co-processing at refinery in catalytic cracker (FCC) with other types of fuel

**Connection to nearby Gävle harbour and highway E4 as an option*

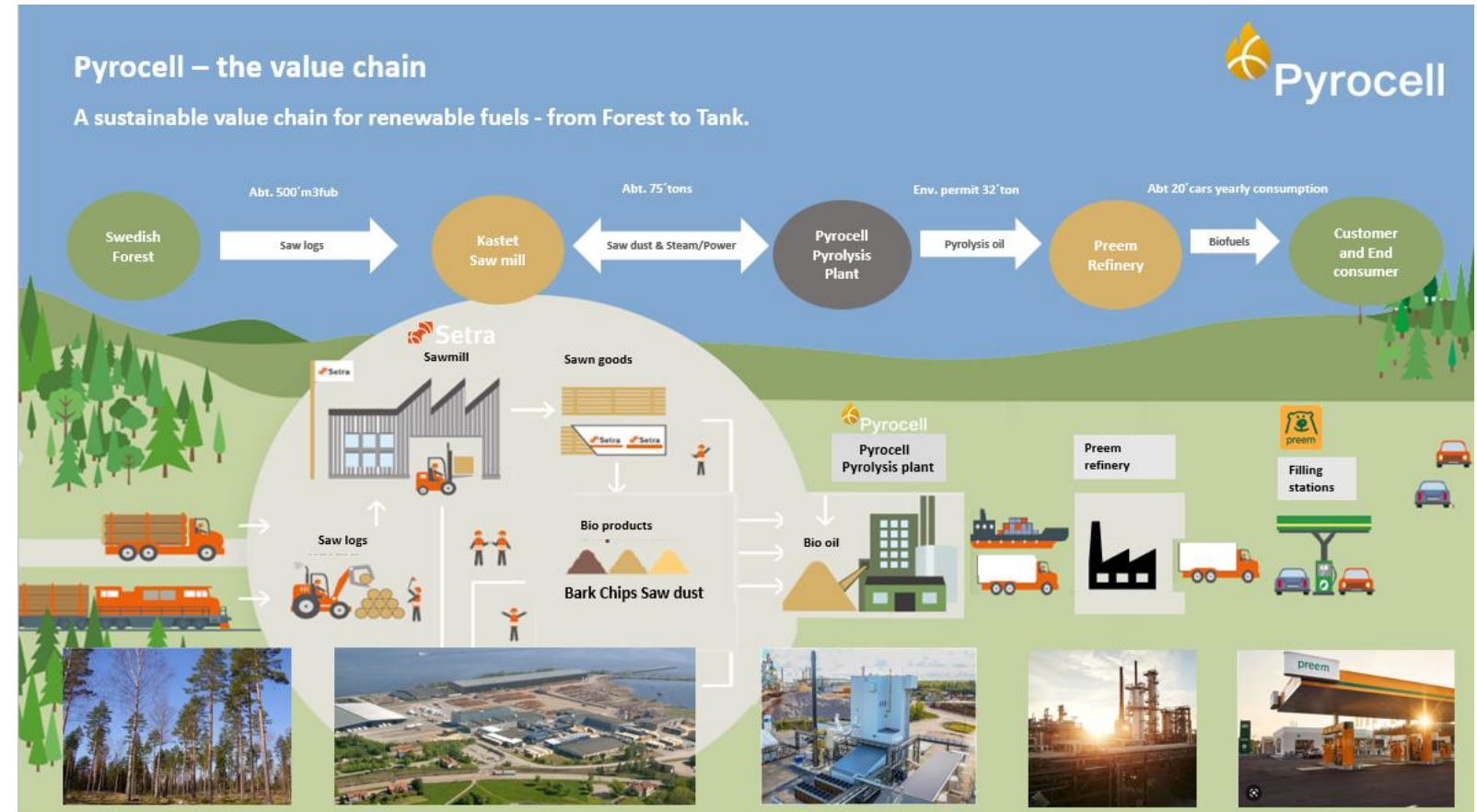


Experiences

Pyrocell's first 3,5 years of operation



- S: Safety & Health
- Q: Quality & Yield
- P: Performance
- C: Compliance
- E: Economy



Experiences and outcome – YTD

Objectives & Indicators	High-lights		Marker
S: Safety & Health <i>(Risk observations, accidents, illness)</i>	- So far, no incidents have resulted in injury with absence. - In practice, no sick leave, short or long.		LTA
Q: Quality & Yield <i>(Specification & mass/energy yield)</i>	- Sawdust & Oil quality - Energy yield	➡ On-specification ➡ Better than preliminary calculation	
P: Performance <i>(% on-stream, tons/h on stream)</i>	- Availability - Productivity	➡ A journey, lessons learned! (focus) ➡ In line with preliminary calculation	 
C: Certification <i>(ISCC EU & Plus)</i>	ISCC EU & + (plus)	➡ Obtained certificate in April 2023 ➡ Renewed in January 2025	
E: Economy <i>(Capex, EBITDA/EBIT)</i>	- Capex - Opex - EBIT/EBITDA margin YTD	➡ No additional Capex ➡ Predictable, stable operation ➡ In line with expectations	Funding
			C/F is priority

Our position – opportunities and needs

Pyrocell and its owners have a unique, sustainable value chain → *from forest to tank*

- Locally produced *sawdust* - a pyrolysis oil *factory* - a *green product* as feed-stock to *Lysekil refinery*
 - *Biofuels for the transport sector is our core business.*
- Contributes to reducing CO2 emissions by up to >97% compared to fossil oil

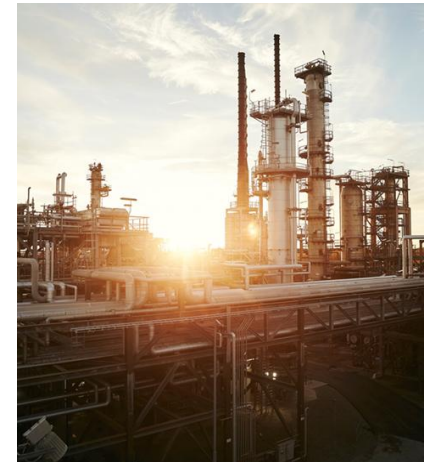
Need for upgrading of the Pyrolysis oil via different steps of refining into ideally “green crude”

- There is need for *upgrading technology* that reduces *metals, oxygen/water*.
- Integrated upgrading technologies, preferably with *existing infrastructure* meaning *low Capex*, is key!
 - Upgraded oil or “refinery compatible feedstock” - enables *increased throughput* of Pyrolysis oil in the refinery as well as *strengthens the competitiveness* of pyrolysis oil

Development areas - hand in hand with owners, *customers & research institutes*

Upgraded oil increases the value of the oil and opens new market opportunities;

- | | |
|-----------------|-----------------------------|
| • Aviation Fuel | SAF |
| • Chemistry | Various applications |
| • Metallurgy | Various applications |
| • Heating | Customizations at end users |



Pyrocell - contributes to the transition to a sustainable society for real **from Forest to Tank**

Thank you!

