

Proven Bio-Energy Solutions by Modular WoodRoll® Technology

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Taking bioenergy forward!



24-25 janv/jan 2024 Nantes FR



l'événement Biotransition / the Biotransition event



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2	The Höganäs project
3	WoodRoll® modularity



Company history

- 
2006–2010
 - The WoodRoll® technology invented and Cortus Energy is founded. The technology is confirmed on a small scale (150 kW)
- 
2011–2013
 - ½ MW gasifier followed by verifying all sub-processes in the WoodRoll®.
- 
2014–2015
 - The plant in Köping is upgraded to a complete reference and test plant. WoodRoll® fully integrated. Design of first commercial 6 MW modular WoodRoll® plant is initiated
- 
2016-2017
 - Basic engineering is performed for two 6 MW WoodRoll® plants (the projects in Höganäs and Japan), strategic cooperation agreement is signed with Forest Energy (Japan), the Höganäs project is granted SEK 47.6m in subsidy and the project in California USD 5m.
- 
2018-2023
 - The construction of the 6 MW WoodRoll® together with Höganäs. Commissioning & Start-up is ongoing.
 - Cortus has financed this plant and will deliver energy gas on a 20 years contract.

2024 Project pipeline

Green H₂/CO₂ DE, FR, JP ½ & 6 MW Hydrogen from biomass	Green Power USA, FR, SE Multiple projects, 3 -16 MW _{el} , 20 years PPA
Green Natural Gas-SE/FIN/EU 6 and 20 MW gasifiers for cat-process to SNG/RNG	Green char & carbon, SE, EU Tests ongoing!
Green Methanol SE/NO/EU/JP Multiple 20 MW gasifiers for cat-process for Methanol	Green Diesel NO Multiple 20 MW gasifiers FTc cat-process for diesel

HÖGANÄS
Industrial reference plant, 6 MW modular WoodRoll, **Showcase for clients!**

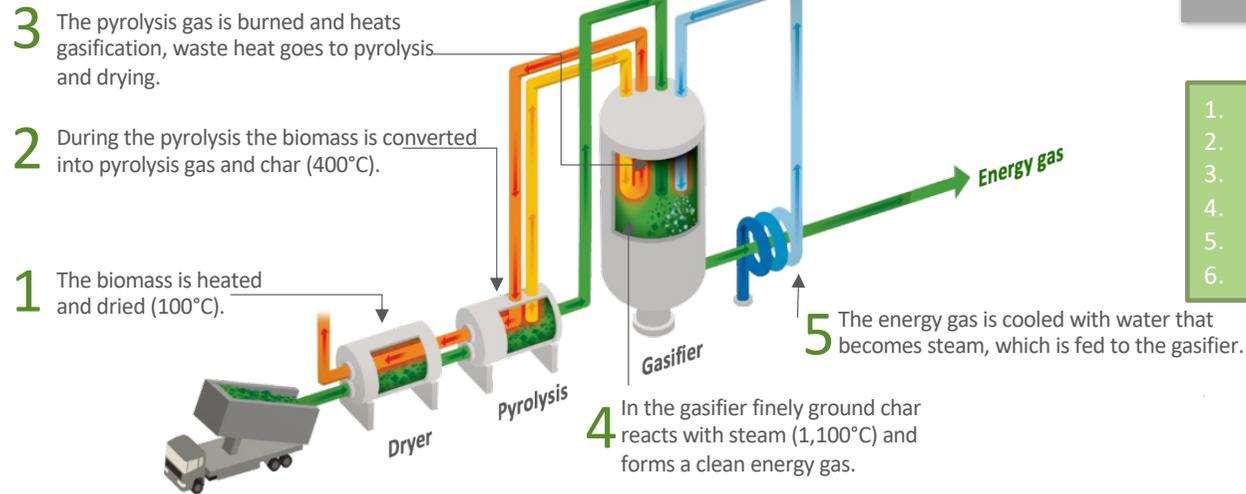
KISTA
HQ & Engineering office

KÖPING
500 kW pilot facility "Moth balled"

33 Employees

WoodRoll® – A Breakthrough & Patented Gasification System

A proprietary & fully integrated gasification process



Strong patent protection

6 PATENT FAMILIES

162 confirmed patents

1. Gasification process
2. Hydrogen from gasification
3. Indirectly heated gasifier
4. Steam/char injector in WR
5. Biocoke process in WR
6. Pure hydrocarbons from WR



FEEDSTOCK OPTIONS

Wood



- ✓ Wood chips, bark
- ✓ Saw dust, recycled wood
- ✓ Branches, roots and tops

Crops



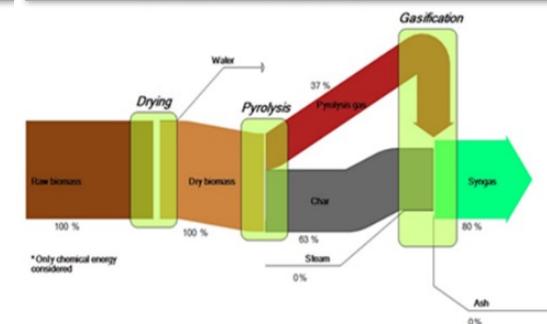
- ✓ Vine tree
- ✓ Vine cutting
- ✓ Stem with leaves
- ✓ Roots

Industrial waste

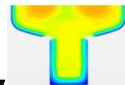
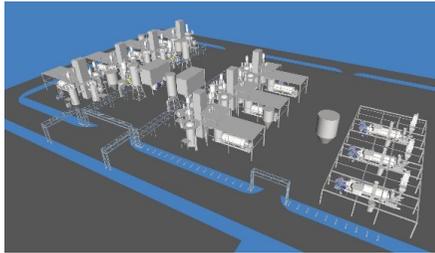


- ✓ Fiber sludge
- ✓ Chemical sludge
- ✓ Furniture manufacturing

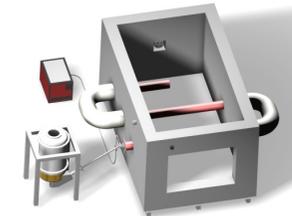
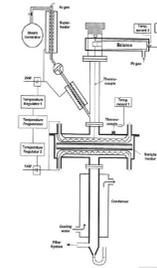
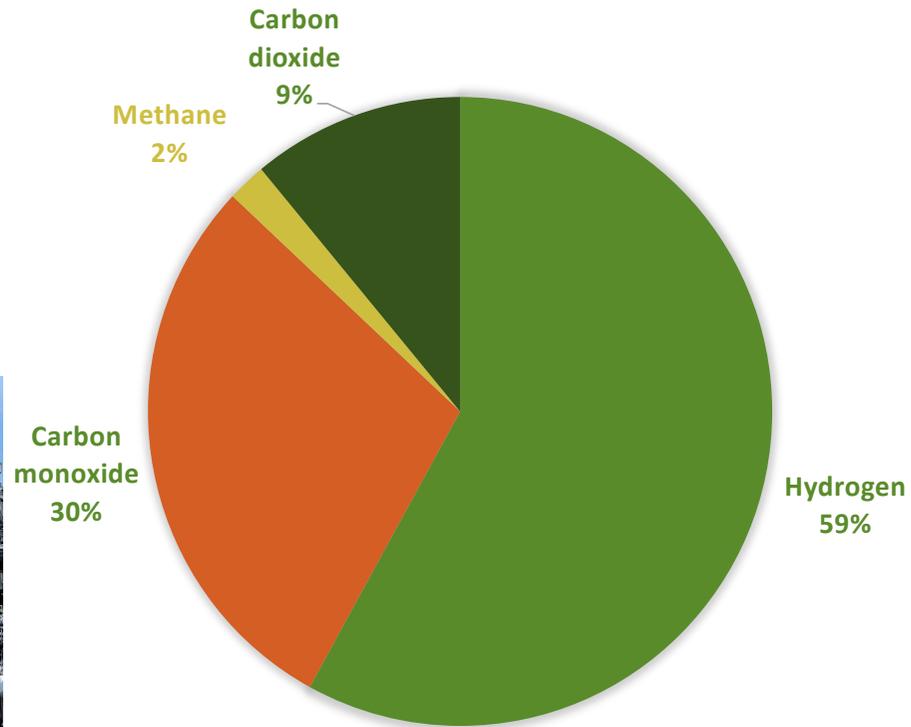
ENERGY BALANCE – 80% YIELD



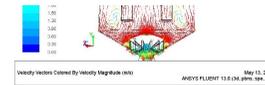
WoodRoll® – gasification development until today



ULTRA CLEAN SYNGAS



ANSYS



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Biomass gasification – a key part of a renewable future!



Waste biomass is available and, on many places, local



High energy prices in the EU, both Natural gas and Electricity



High prices for CO2 emissions



Industrial demand for Green energy and chemicals



Green transport fuels demands are rising quickly



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6 MW plant in Höganäs with Cortus as Main contractor

Startup ongoing

PLANT SUMMARY

- 
6 MW plant for syngas delivery
 - Use within industrial processes with high hydrogen requirements
- 
20 year off take agreement
 - Agreement with Höganäs AB, price index adjustment every 3rd year
- 
10,000 tones CO₂ reduction
 - Existing supply of energy origins from fossil fuels; coal, oil and natural gas
- 
20 MW expansion possibility
 - The industrial plant in Höganäs has demand for additional syngas, in addition to 6 MW plant now to be started



Blue chip customer and partners

CUSTOMER

Höganäs 

A producer of specialized metal powders, used in a range of applications, from welding and surface coating to water treatment and iron fortification in foodstuff.

1797
Established

>3 000
Customers

75
Countries

12 256 MSEK
Revenues 2022

2 400
Employees

17
Production facilities

515,000 tons

World's largest metal powder producer

PROJECT PARTNERS

SSAB

ABB

outokumpu 

 **SVEASKOG**

 **Energimyndigheten**

Swedbank 

ALMI
FORETAGSPARTNER

 **SÖDRA**

KLIMAT KLIVET
Lokal klimatstrategi för hållbarhet

 **calderys**

 **CORTUS ENERGY**

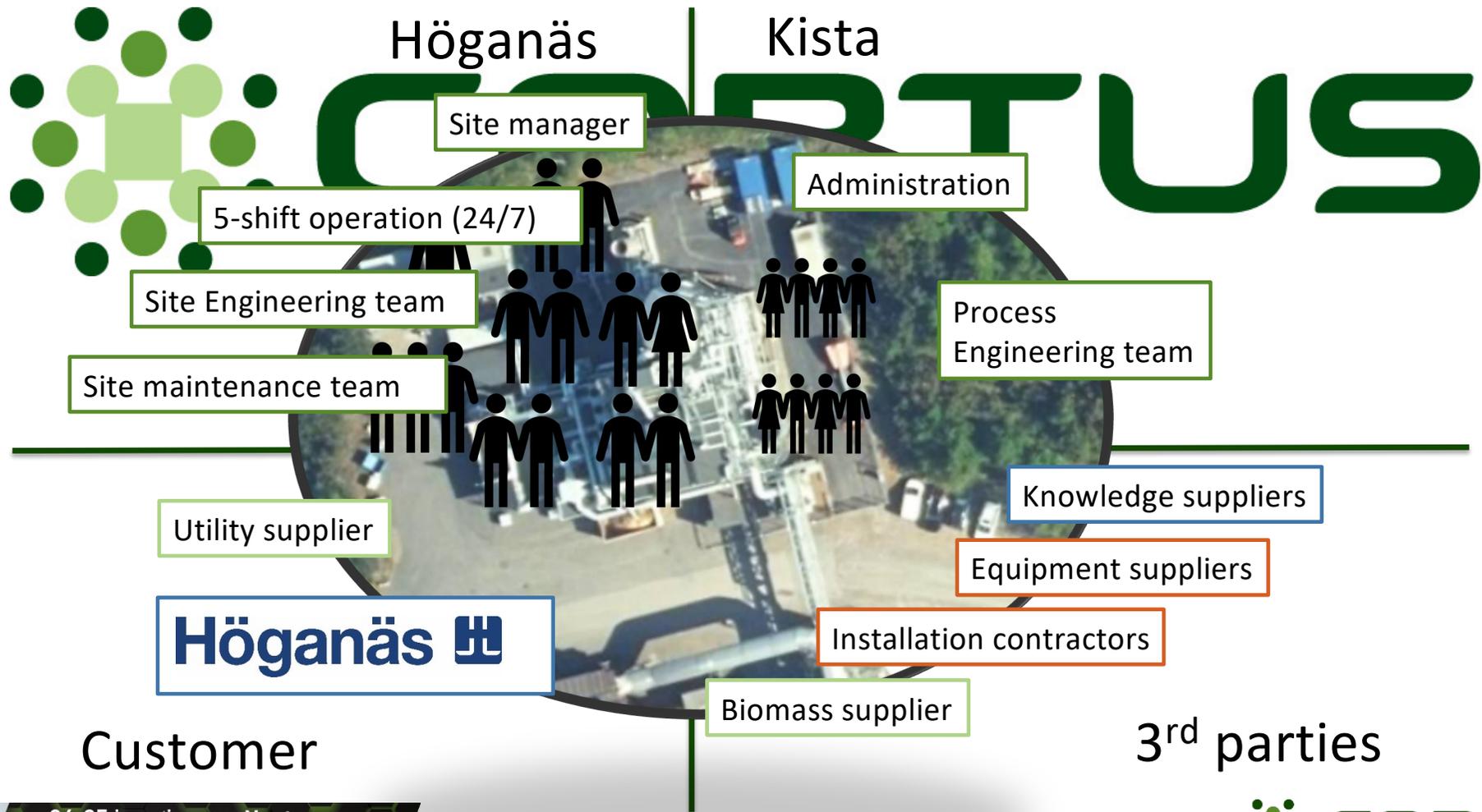
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Höganäs Plant – Solid foundation for growth

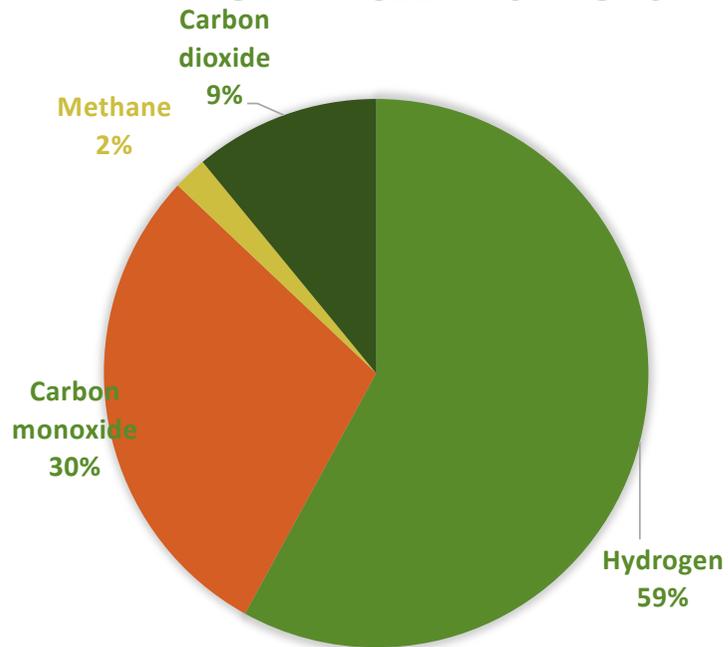


Achievements during 2023

Day-time operation (education of operators) with syngas to Höganäs AB

Certification of bio-char achieved (EBC) and delivery of about 150 ton biochar to customers

ULTRA CLEAN SYNGAS



The fascination of Quality

Certificate

Number of certificate: CC-0033

Cortus AB
Isafjordsgatan 32C
16440 Kista
Sweden

Operator number: CSI-000480

The biochar produced of the mentioned company are certified according to the following standards:

EBC European Biochar Certificate



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Other historical achievements

Production of bio-coke for metallurgical applications



Catalytic hydrolysis of pyrolysis gas producing renewable oil



Converting syngas in a catalytic methanation reactor and upgrading the methane to biogas quality

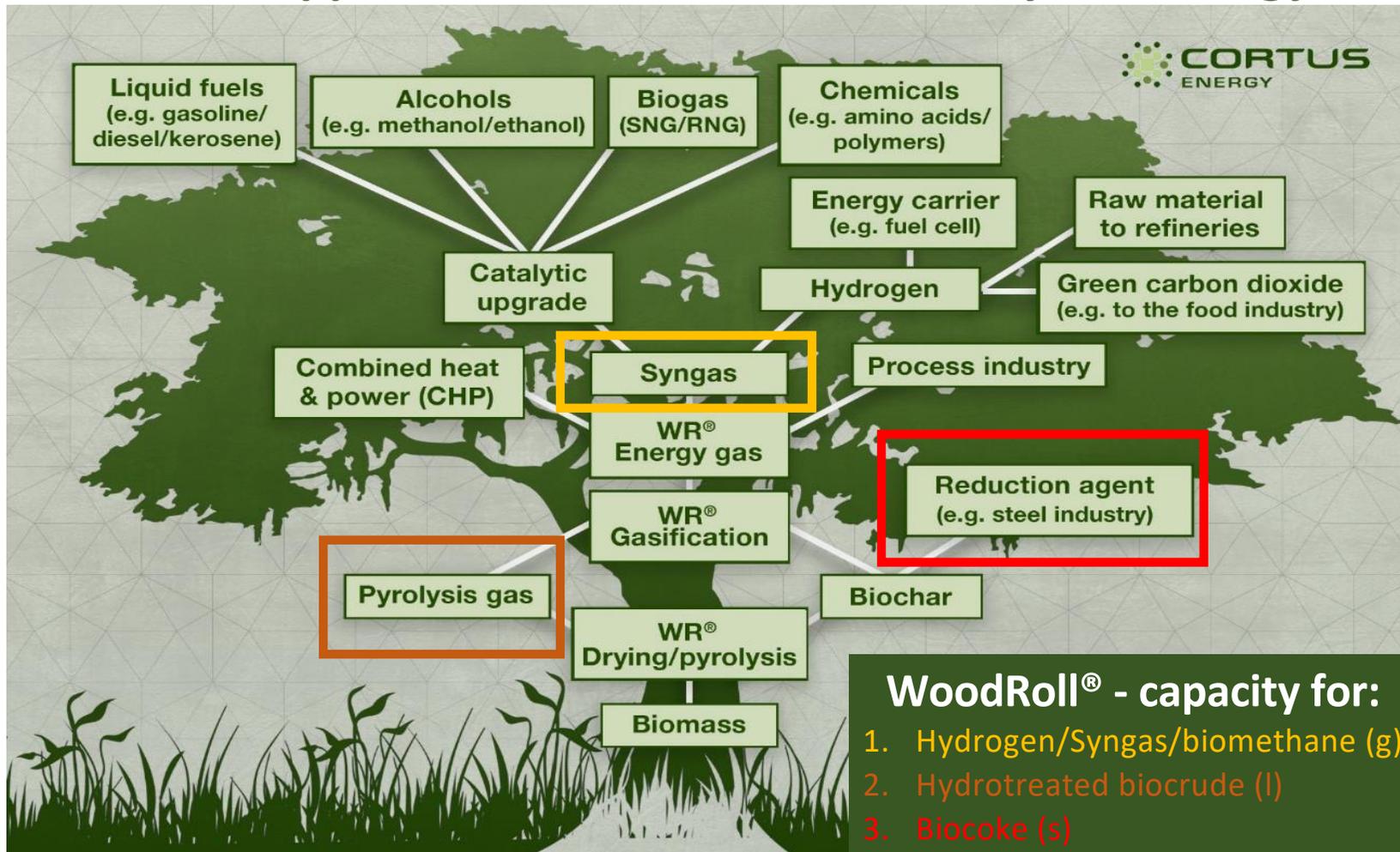


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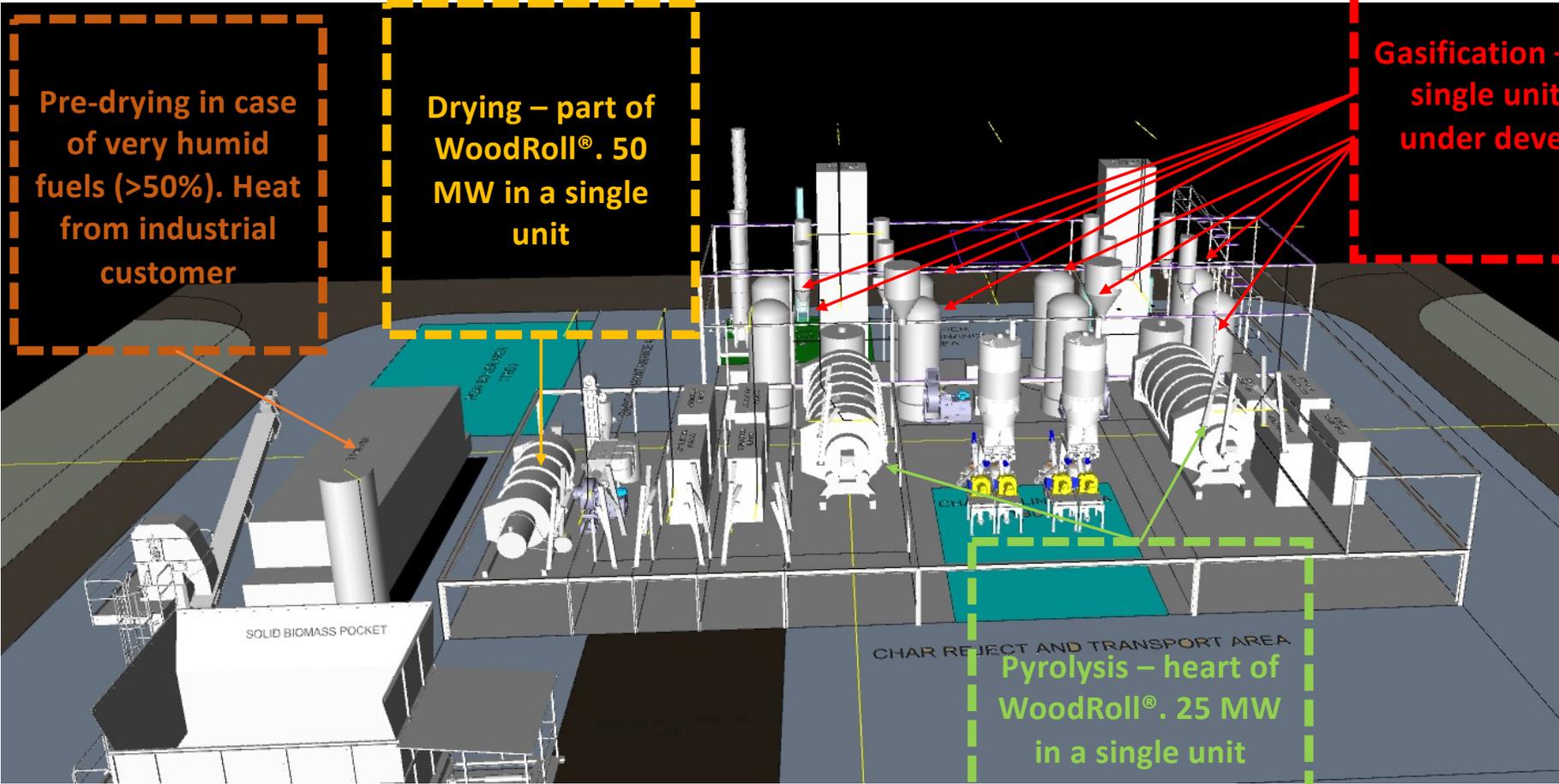
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WoodRoll® application tree – true biorefinery technology!



WoodRoll® – Modularity, in sizing and application



WoodRoll® – Modularity, in sizing and application

