



# Biosyngas for a **fossil-free** tissue production

Gasdagarna 2023



# 296 MILLIONS TON....

Only from the paper industry

“ Those who do not perform in terms of sustainability today are not allowed to play ”

## MAIN ISSUE

---

Tissue industry's dependence on fossil gas.

---

# Why can't we just switch to renewable energy?

## Reducing CO2 in the paper industry

Criteria	Quality of heat	Cost	CO2 impact	Accessibility	Maturity
Natural gas/gasol	●	●	●	●	●
Biogas (digestion)	●	●	●	1	●
Bio LPG	●	●	●	2	●
Electricity	●	●	3	●	●
Combustion of biomass	4	●	●	●	●
Hydrogen	●	●	●	●	●
<b>Meva Energy Gasification</b>	●	●	●	●	●

(1) Digestion is only possible at water treatment plants and large plants that have access to sludge

(2) Bio LPG is a by-product from the production of HVO. Even if the global resources of bio-oil were to be used for HVO production it would only include which would be about 2% of the global demand for gasol

(3) Depends on the CO2 footprint of the national electricity mix

(4) High soot and particulate emissions and limited capability for high temperature applications



# GREEN TISSUE PRODUCTION

Touched by Meva Energy

# Meva at a glance

Unique, proven and patented biomass gasification technology

## Overview

- Developer of a world leading gasification technology for renewable energy production.
- Technology based on small fraction fuels in a uniquely efficient and profitable way.
- Founded in 2008 as a result of biomass gasification research at Luleå University of Technology
- Proven in full scale plant in Sweden
- Backed by EU investor InnoEnergy, the Swedish Environmental Protection Agency the Swedish Energy Agency and Just Climate.
- Commercial agreements with furniture producer IKEA and the tissue producer Sofidel
- Global green tech investor Just Climate invests in Meva Energy.

## Application within targeted segments



High quality process heat (e.g. tissue drying, ceramics and glass)



Power and low temperature heat (e.g. furniture MDF, sawdust and bark)

<p><b>38</b> Employees</p>	<p>Accepts <b>MDF and other fine fraction biomass</b></p>	<p>Cost efficient <b>On site generation Independent energy supply</b></p>
<p><b>5</b> Patent families</p>	<p>EUR <b>&gt;100bn</b> Estimated market opportunity</p>	<p><b>ANDRITZ</b> <b>KTH</b> <b>InnoEnergy</b> <b>Power Generation</b> <b>2JCP</b> <b>RISE</b> Technology partnerships</p>



1) LCOE for the first commercial project: IKEA Zbaszynek

# Renewable biosyngas production

For everthing that is touched by a flame

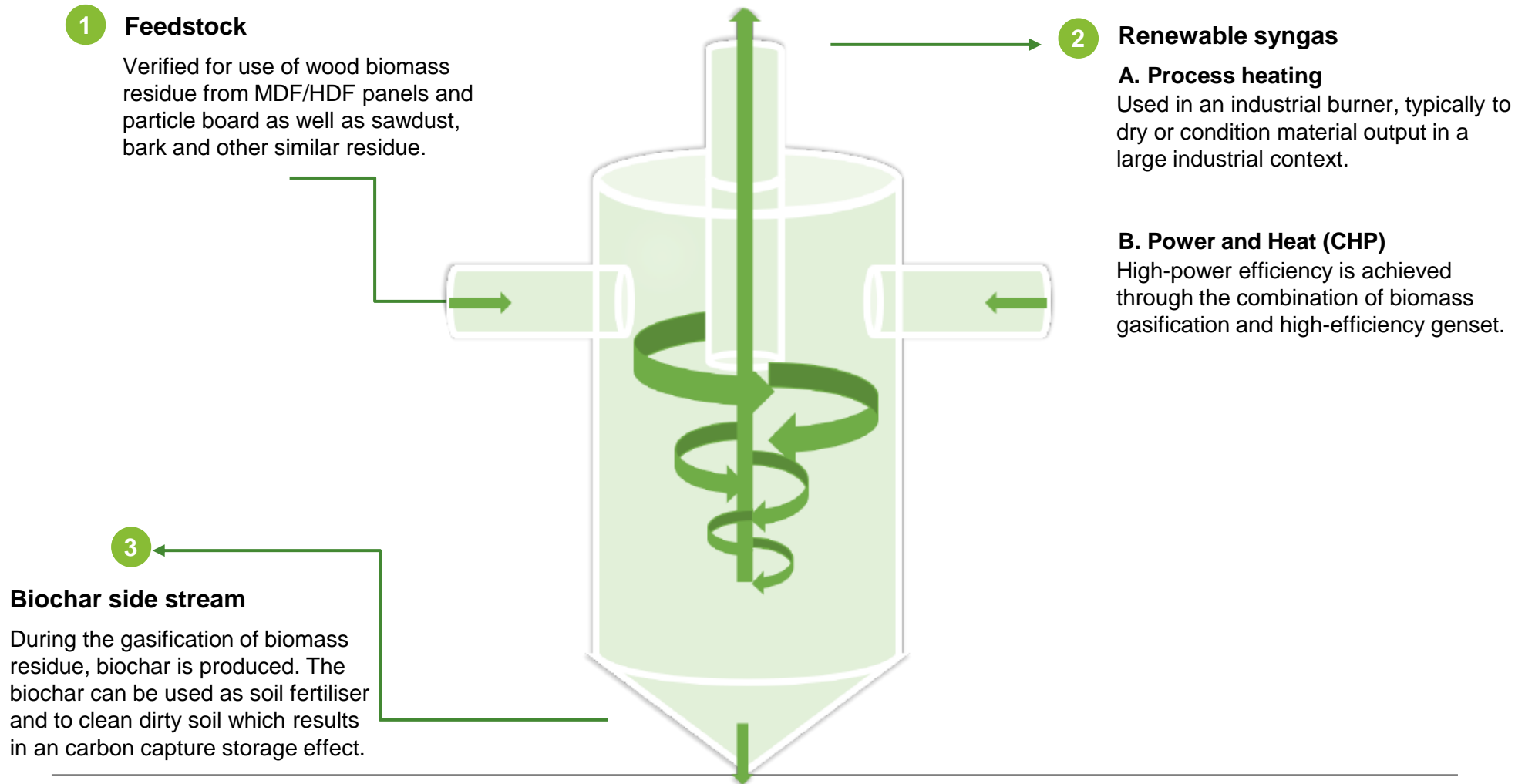
## **BIOSYNGAS**

---

A main product of gasification and majority product of high temperature pyrolysis carried on any biomass, residues and waste.

# Unique technology for renewable syngas production

Meva's technology turns biomass residue into clean and stable fuel







# Sofidel Kisa mill, Sweden

## Replacing fossil gas with renewable syngas for tissue drying

### Description

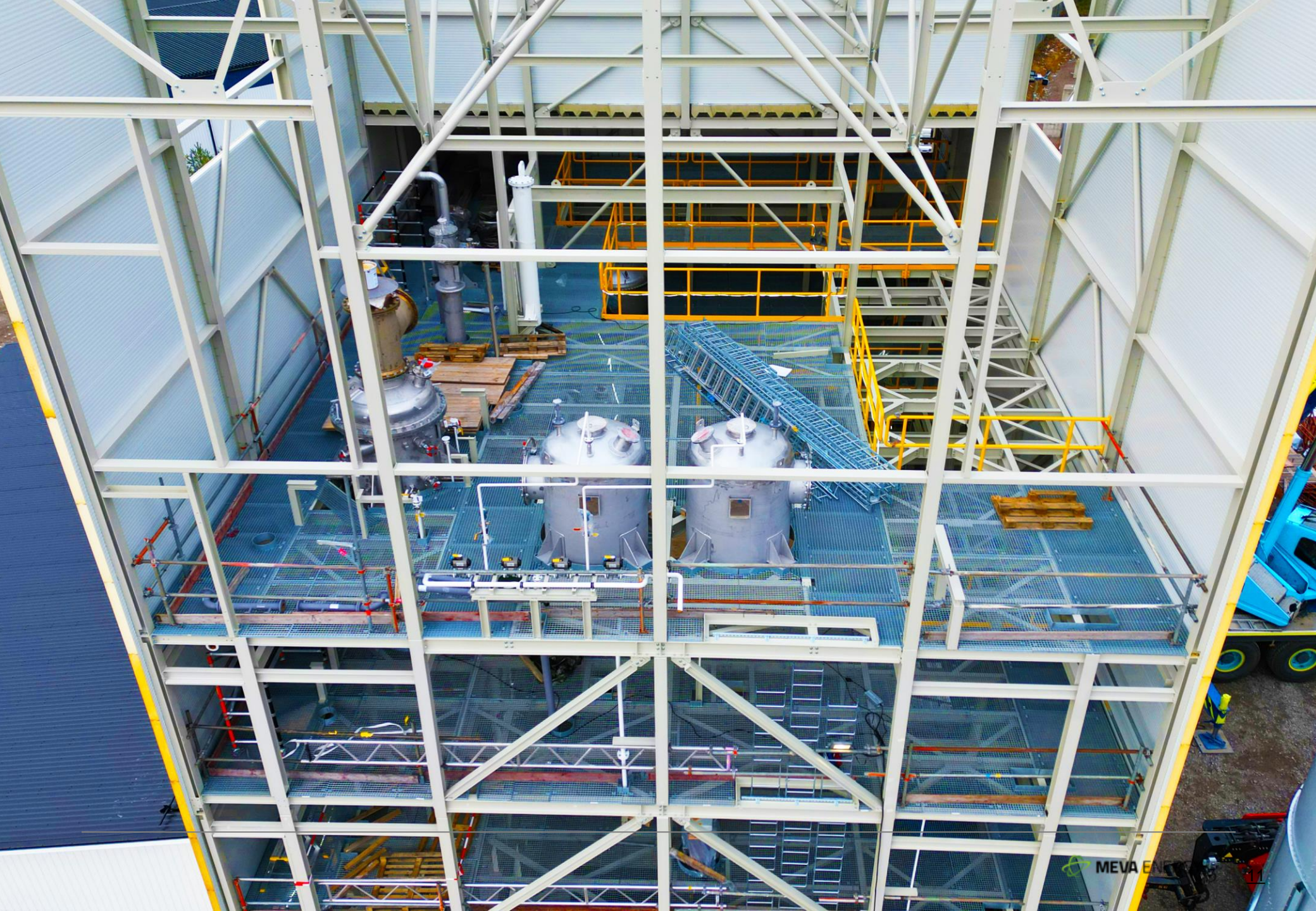
- Europe's second largest producer of tissue paper in terms of capacity with 35 production plants.
- Replacing fossil LPG for process heat generation to tissue drying through industrial burners
- Long term supply contract of renewable syngas starting 2023 at their factory in Kisa, Sweden
- Annual CO<sub>2</sub> reduction of >10,000 tonnes, making it the world's first fossil free tissue mill.
- 4,5 MW renewable gas capacity
- Full redundancy keeping LPG as back-up
- Andritz multifuel-burners installed to enable both syngas and PG combustion 0-100% seamless interchangeably



# Sofidel Kisa mill, Sweden

A glimpse of the project



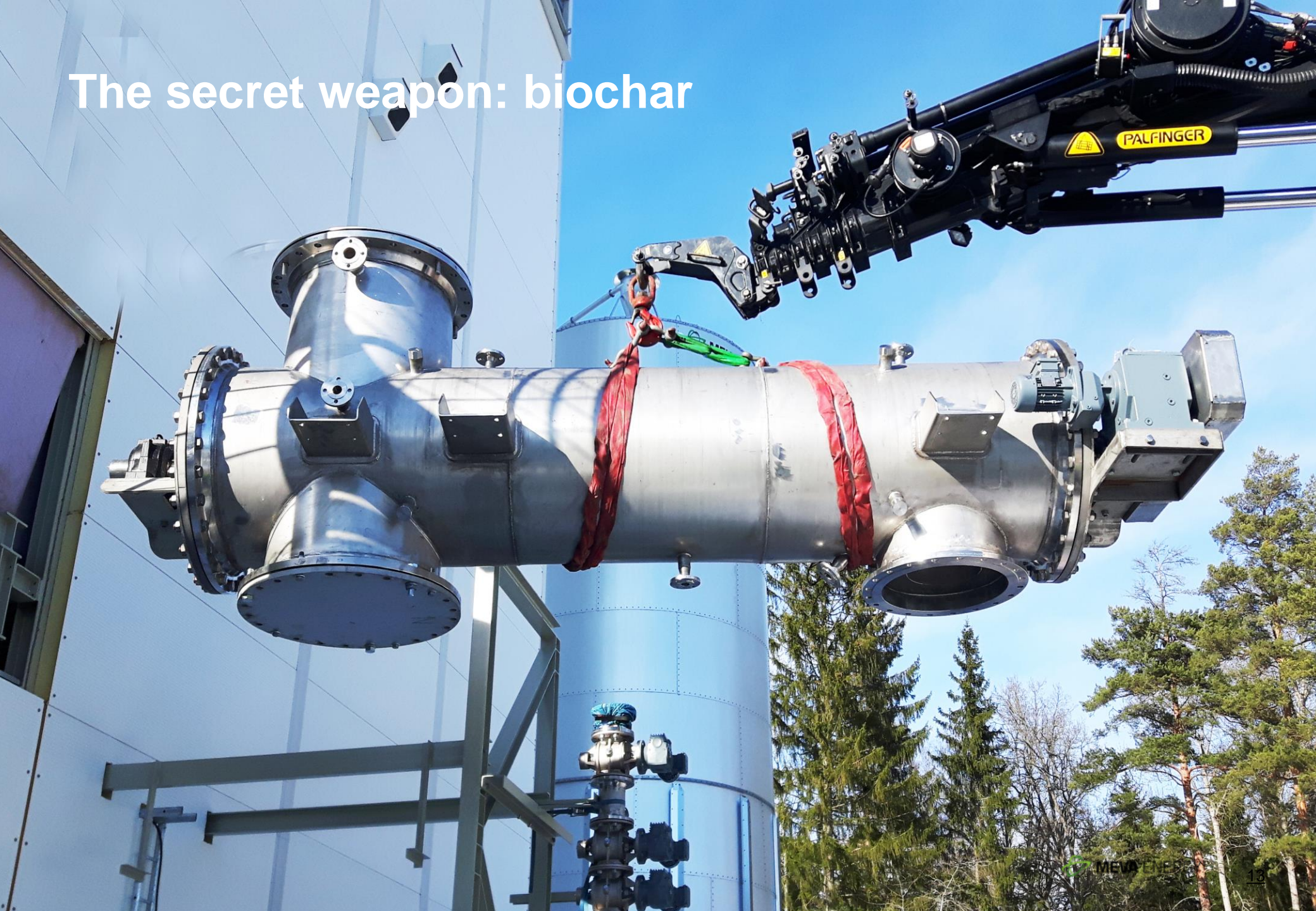


# Sofidel Kisa mill, Sweden

A glimpse of the project



The secret weapon: biochar



# Carbon neutral energy source

Touched by biochar



## BIOCHAR

---

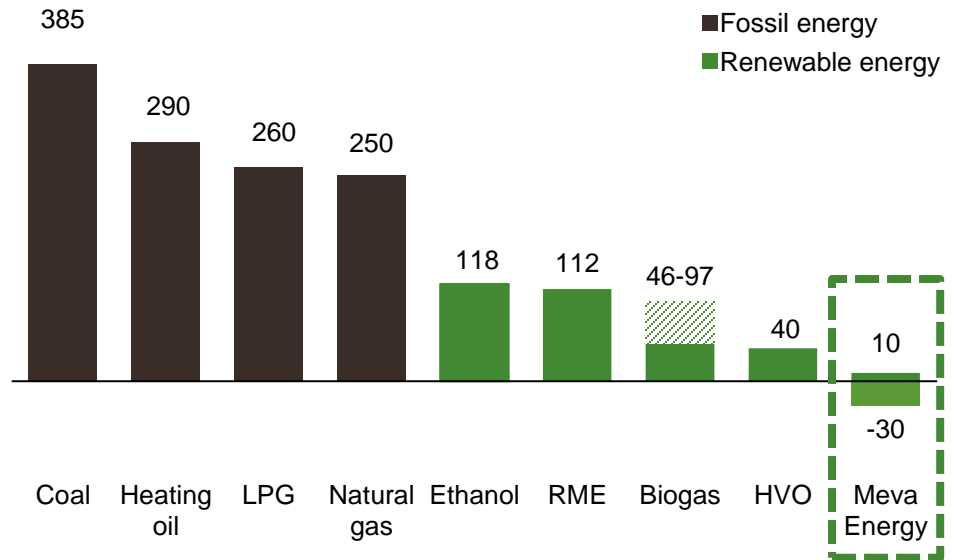
As a side-stream from our gasification process, biochar is generated. Biochar is not only an income. It also act as a carbon sink and decrease the CO<sub>2</sub> footprint of the plant.

# Meva will have a significant positive climate impact

## Negative CO<sub>2</sub> footprint enabled by biochar production

- Negative CO<sub>2</sub> footprint and truly fossil free production by producing renewable syngas based on wood residue and generating biochar.
- The biochar effectively offsets the CO<sub>2</sub> resulting in a carbon footprint in the range of -30 to 10 g CO<sub>2</sub>/kWh and a better performance compared to other biofuels.
- Pre-studies indicate that each Meva installation enables a CO<sub>2</sub> emission reduction in the range of 7,000-13,000 tonnes per year of operation and a CO<sub>2</sub> storage in biochar annually of ~1,300 tonnes.
- A global roll-out of the CHP application reaching 10% of the feedstock market is estimated to have a climate potential of 75m tonnes CO<sub>2</sub> annually by WWF.

Fossil CO<sub>2</sub> footprint (g/kWh)



Meva Energy strategically aligned with several of the United Nation's agenda 2030 goals



# Switching from LPG/natural gas to renewable syngas

## What is required?

- Burner for low quality gas
- Flow of biomass
- Back-up solution





# How do you see your energy supply in the future?



# Green tissue production

**Touched by Meva.**

**Elsa Kayser**

Marketing and Communications Officer

[elsa.kayser@mevaenergy.com](mailto:elsa.kayser@mevaenergy.com)

