

BIOCHAR FOR SOLVING THE ENVIRONMENTAL CHALLENGES



PUHI

Down to Earth Climate Tech



*Going to the museum  
of “Fossile lifestyle”  
and learning...*



*...How we made waste part of  
the solution!*



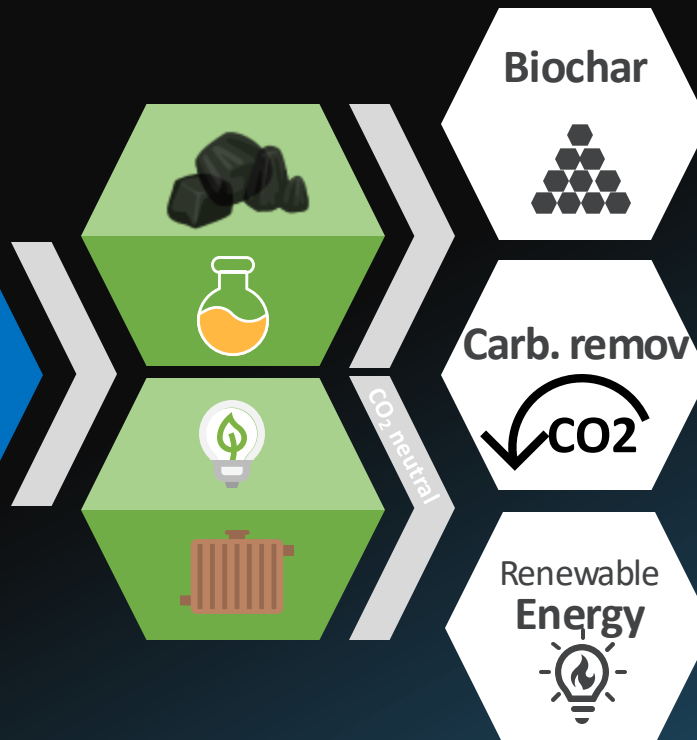
# PUHI SOLUTION

## BIOCHAR ACCESSIBLE TO INDUSTRY

**BIOCHAR FIXES..**  
.. animal health and  
increases productivity

### INPUT

- Waste Biomass
- Side stream biomass
- Recycled Biomass



### OUTPUT - BIOCHAR

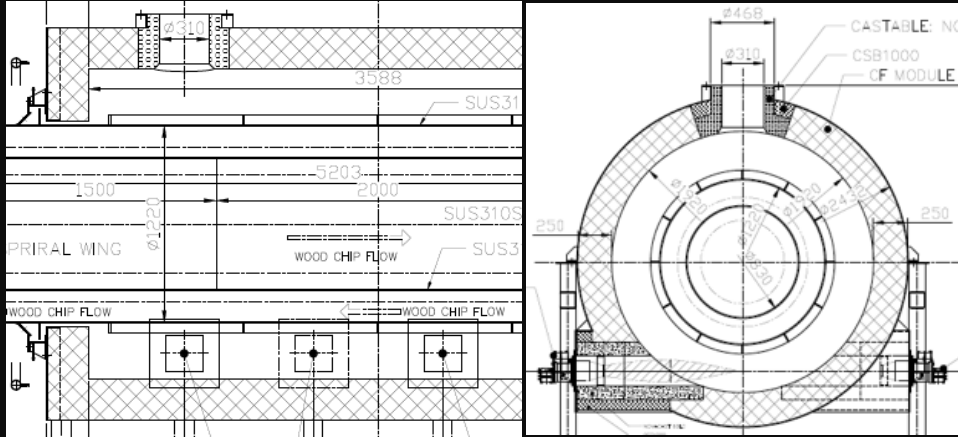
- Removes Carbon/CO2
- Replace Fossil Coal
- Soil Fertility & Yields
- Cleans water and soil
- Remove/filter PFAS
- ..and so much more...



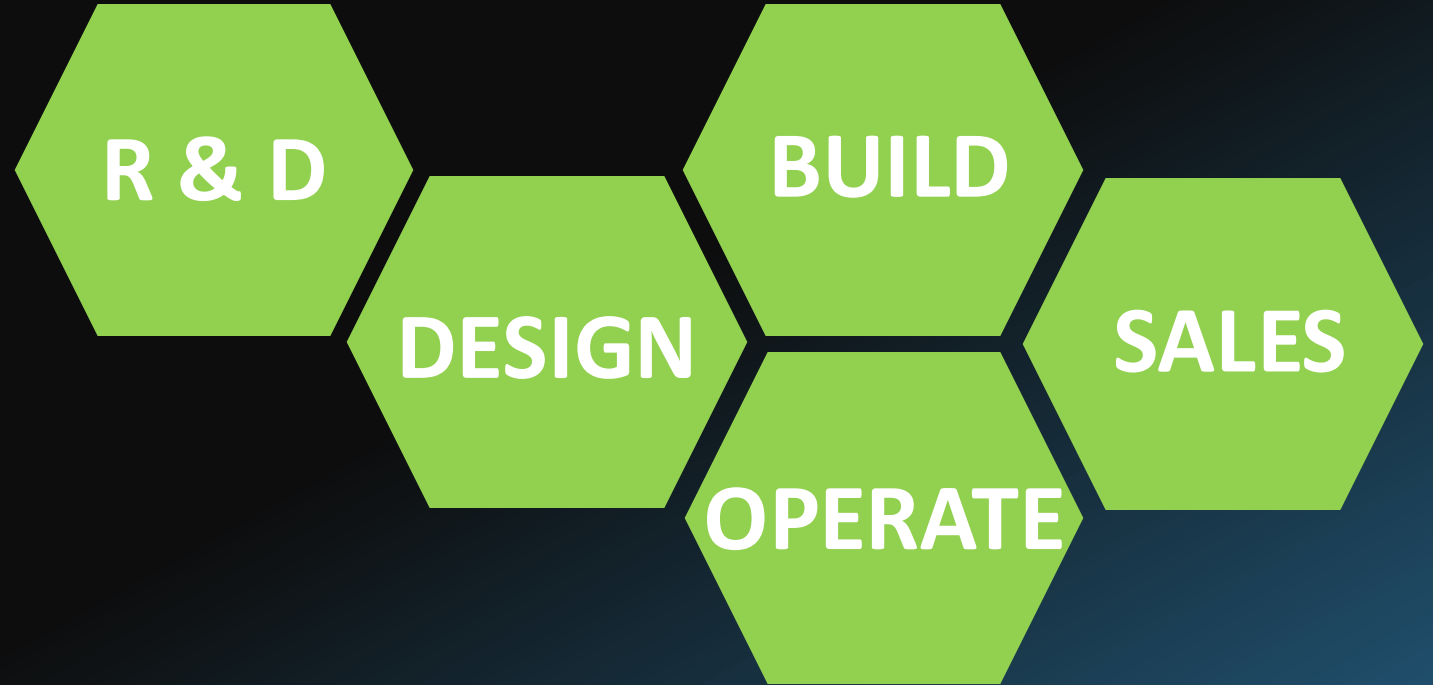
# BIOCHAR & PUHI

## FULL ECO SYSTEM OFFERING

**BIOCHAR FIXES..**  
..fertilizer runoff by  
holding nutrients in  
the soil



”Rotary Kiln” - since 1891  
Complemented with PUHI  
IPR & Innovations



Complete Biochar Eco System  
&  
Supply Chain

# BIOCARBON APPLICATIONS

## CURRENT & FUTURE USE CASES

- Air and gas filtration
- Soil remediation
- Agroforestry
- Animal feed additive



- Landscaping
- Horticulture
- Animal husbandry
- Water management

- Construction materials
- Techno-Chemical industries
- Water filtration & management

### PUHI BIOCHAR PRICE

#### ESTIMATE

- |                     |                          |
|---------------------|--------------------------|
| - Soil improvement: | 900 €/t                  |
| - Feed Grade:       | 1 500 €/t                |
| - Technical char:   | 2 000€/t                 |
| - Metallurgy:       | 900 €/t (Target 550 €/t) |

# BIOCHAR MARKET

3 YEARS PRODUCTION SOLD OUT

PUHI Contracts signed and under negotiation

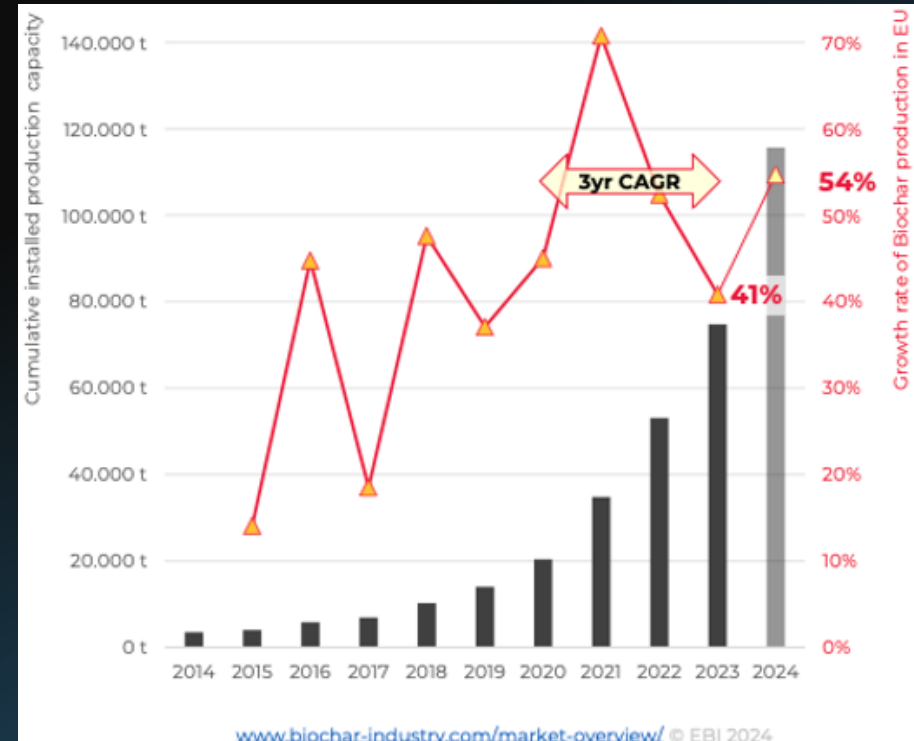
Agricultural industry, Construction Industry, Metal industry

GLOBAL MARKET 2030 > 3 Billion €

## ANNUAL REVENUE / MACHINE

	SMALL	LARGE
Biochar capacity	2 000 t/a	10 000t/a
Biochar	1.7 M€	8.6 M€
Carbon Removal	TBD k€	TBD M€
Energy	TBD k€	TBD M€

**BIOCHAR FIXES..**  
.. polluted soil by  
immobilizing  
contaminants



EBI, European Biochar Market Report 2023-2024

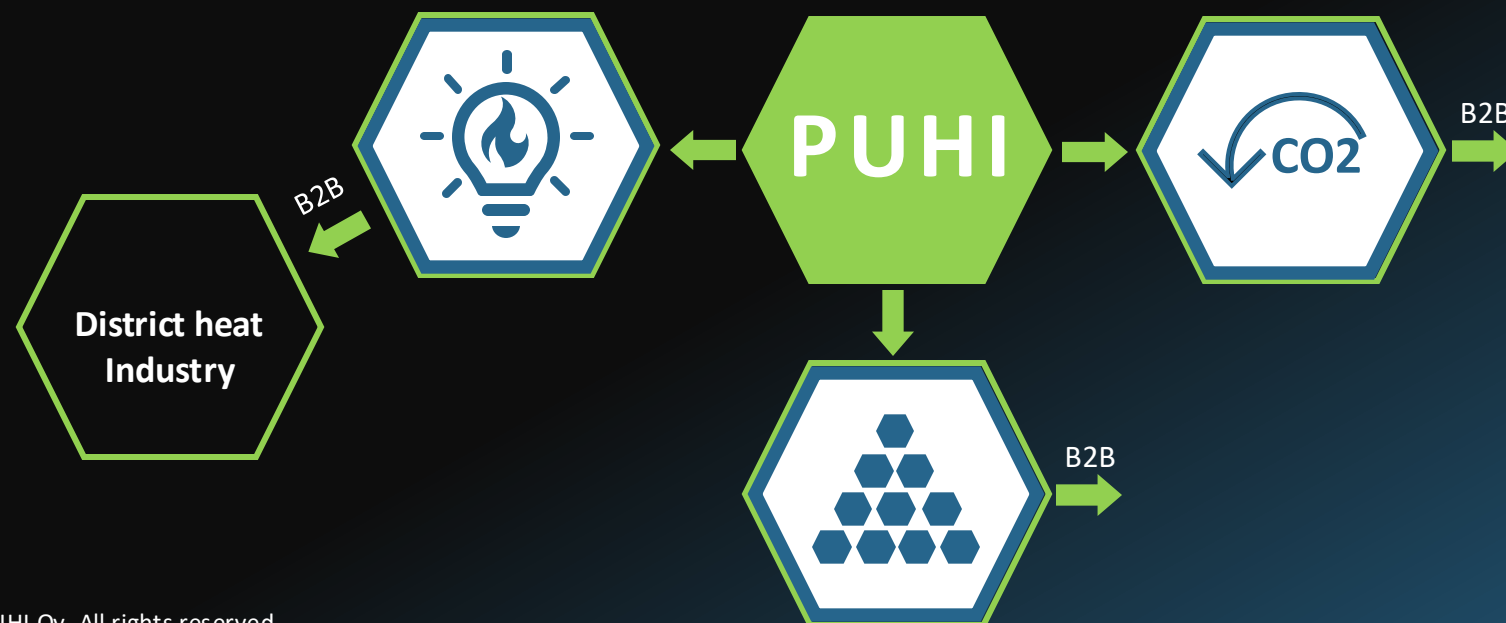


# PUHI Factory 1

## PILOT MACHINE – HÄMEENLINNA - FINLAND

### UP TO 2000 t/a BIOCHAR

- 1. Energy: up to 8 000 MWh (35€/MWh)
- 2. BioChar: up to 2 000 t (900 €/t)
- 3. Carbon Removals: up to 6 000 CORC (150€/pcs)



# PUHI – R&D Services

## PYROLYSIS R&D – TEST – VERIFY - PRODUCE

### BATCH REACTOR

- Suitable feedstock
- Initial parameters
- Biochar properties



### CONTINUOUS REACTOR

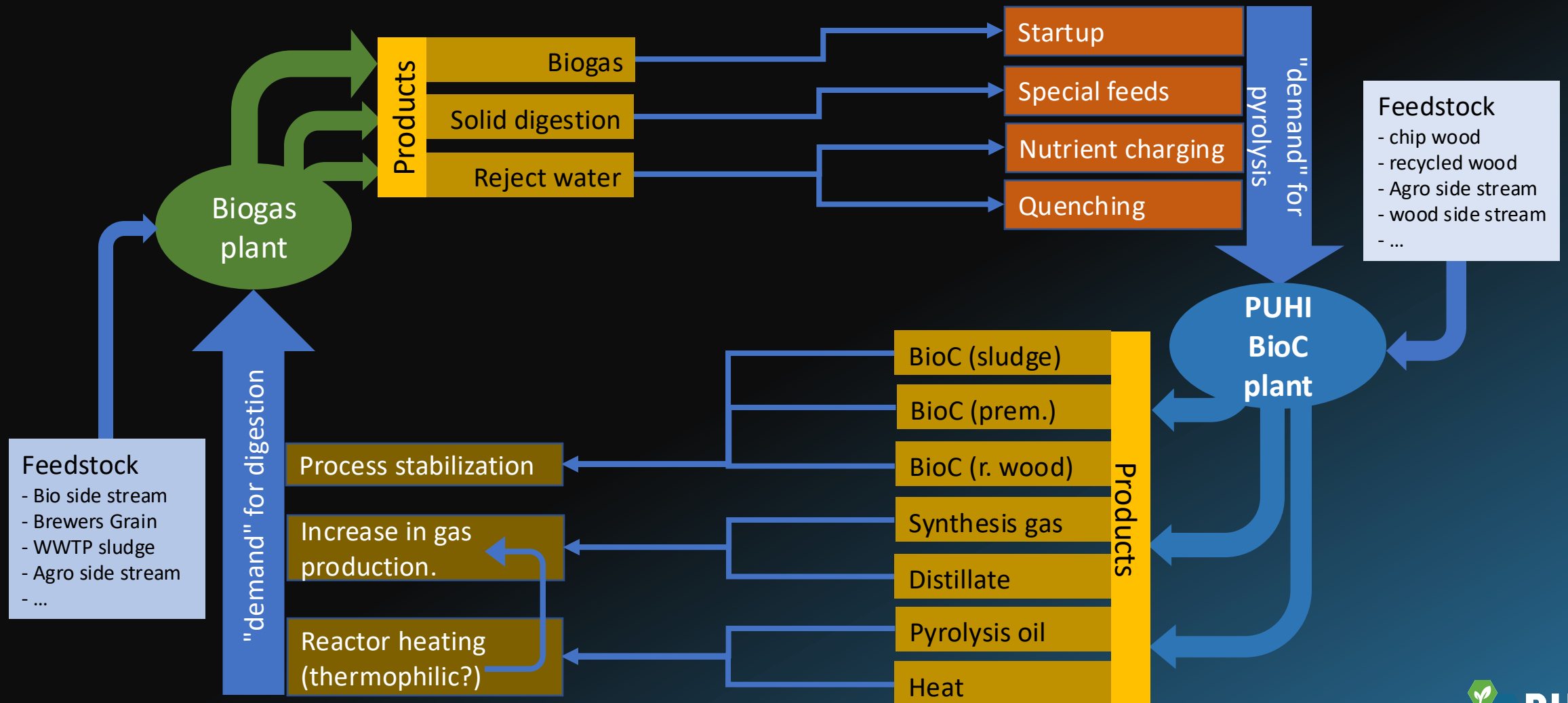
- parameter definition
- Pre-production verification
- Small batch production





# BIOCHAR & BIOGAS

## PROCESS SYMBIOSIS & SYNERGIES

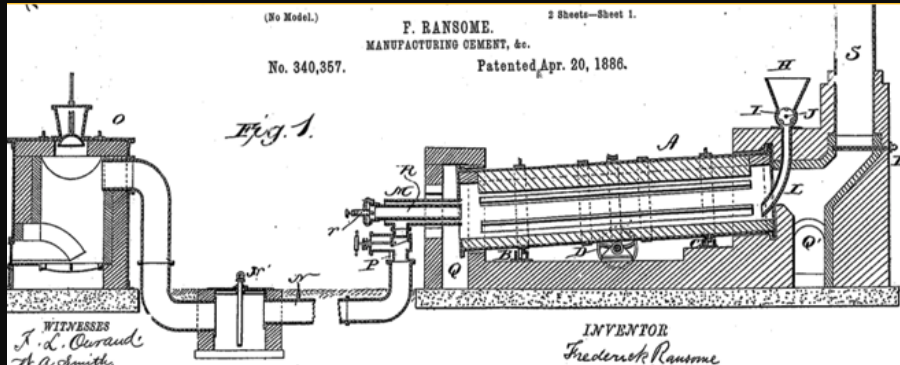


# PUHI – TECHNOLOGY

Biochar fixes..  
...contaminated  
soil

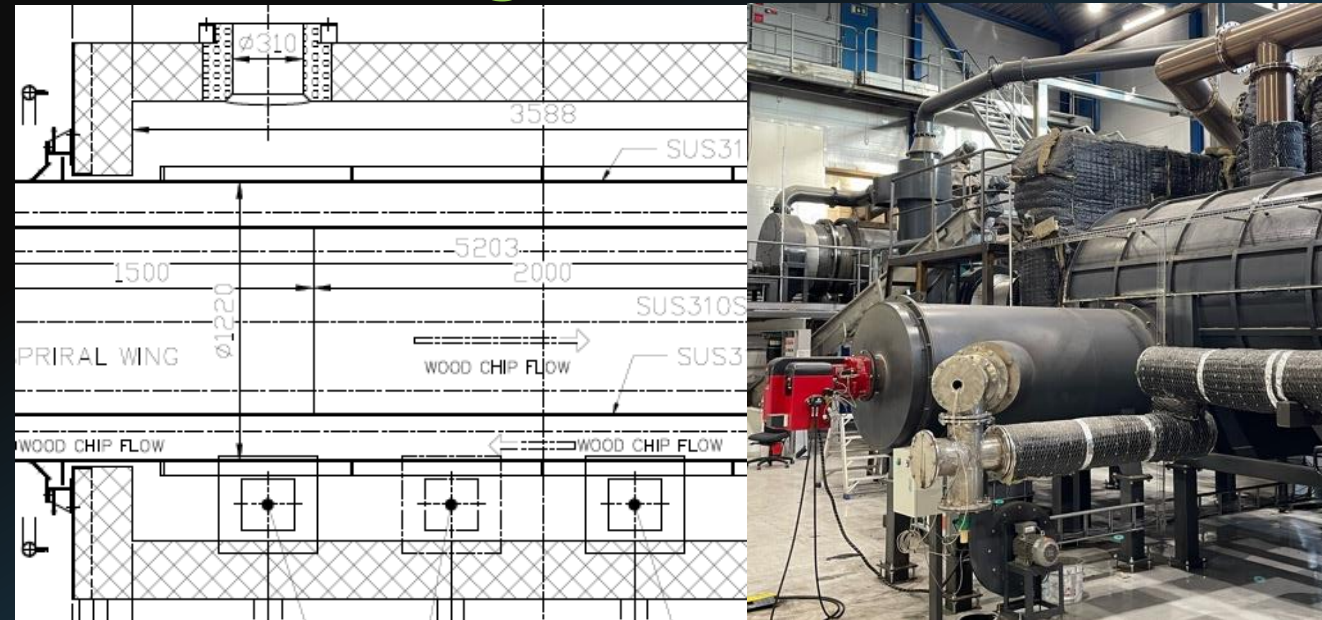
REINVENTING THE BUSINESS NOT THE WHEEL

## ROTARY KILN (since 1891)



[History of Rotary Kiln](#)

## PUHI Design 2024 iteration 1



Several years of process experience has resulted in optimized solution

# PUHI BATCH RETORT

## REINVENTING THE BUSINESS NOT THE WHEEL

**Batch reactor for farms/businesses**

### Specifications

**Capacity:** 1 400 litres (1,4m<sup>3</sup>)

**Output:** appr. 500 litres (0,5 m<sup>3</sup>)

**Material:** EN1.4841 (In heat connections) EN 1.4301 (rest) S235 (frame)

**Weight:** 950 kg

**Height:** 3100 mm

**Foot print:** 1660 x 1900mm

**Pyrolysis time estimate:** Full load 12 h appr. (6h pyrolysis 6 h cooling)

**Initial heating:** Wood logs (rocket stove)





Biochar fixes..  
.. polluted soil by  
immobilizing  
contaminants

- Accelerate Circular Economy
  - market is ready
- Biochar use increasing
  - customers are ready
- Proven technology
  - technology is ready
- Pilot factory is already established
- Scalable & Replicable business model

*Wouldn't it be FANTASTIC if...*

*..we dared tell our children  
what we accomplished?*

[www.PUHI.fi](http://www.PUHI.fi)

[www.linkedin.com/company/puhi](https://www.linkedin.com/company/puhi)



# PUHI

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