WtEnergy
advanced solutions
CleanTech Company

hyield

# BIOGENIC WASTE TO H2 PLANT

## HYIELD Project – Building Europe's First Industrial-Scale Waste-to-Hydrogen Plant







**HYDROMINE WORKSHOP. October 2026**

# About Us

**WtEnergy** Advanced Solutions , is a Technological company for implementing Advanced Thermochemical Conversion Technologies to Energy and clean H2 from Biomass and Waste Fuels*.

**WtEnergy proprietary Cleantech** reduces the **Greenhouse Gases Emissions**, guarantees the **safe management of wastes**, allows the recovery of valuable materials, and **generate large economic savings for the companies**.

Our strength is **the Technology**, WtEnergy works directly with our partners: Engineering, Procurement & Construction Companies (EPC) and Energy Service Companies (ESCO); **who commercialize, build and implement** our technology **on their specific market and region.**



*(*) Waste feedstocks such as: MSW (RDF/SRF),Industrial Waste, MBM (Meat and Bone Meal),Poultry Litter, Biomass/Agricultural Residues, DSS (dry sewage sludge), Used Tires.*

# The reason: Growing Population, Increased Urbanization and Economic Growth…

## DRIVING 3 MAIN CHALLENGES



### Greenhouse Gases

Reducing the emission of carbon dioxide and other greenhouse gases is one of the greatest environmental challenges of our time



### Increasing Energy Demand

Growing population, increased urbanization rates and economic growth lead to an increase on the demand for more energy sources



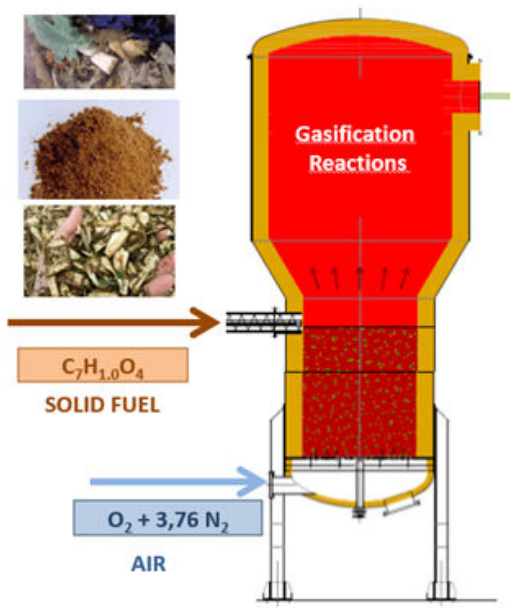
### Waste Management

In 2025 about 2.6 billion tonnes of waste are expected to be generated, challenging environmental and public health management in municipalities worldwide

**Cleantechs are called to solve these challenges, using Biomass,** Agricultural, Domestic & Industrial Residues as alternative fuels for Power and Thermal Applications

# WtEnergy Cleantech. Syngas generation

## Bubbling Fluidized Bed Gasifier




SYNGAS a 800 ºC

$H_2 + CO + CH_4 + C_2H_4 + CO_2 + N_2 + H_2O + C_nH_y$

**Gasification Reactions**

Oxidation Reactions

$C + ½\ O_2 \rightarrow CO$
$C + O_2 \rightarrow CO_2$
$CO + ½\ O_2 \rightarrow CO_2$
$H_2 + ½\ O_2 \rightarrow H_2O$
$CH_4 + 2O_2 \rightarrow CO_2 + H_2O$
$C_2H_4 + 3O_2 \rightarrow 2CO_2 + 2H_2O$

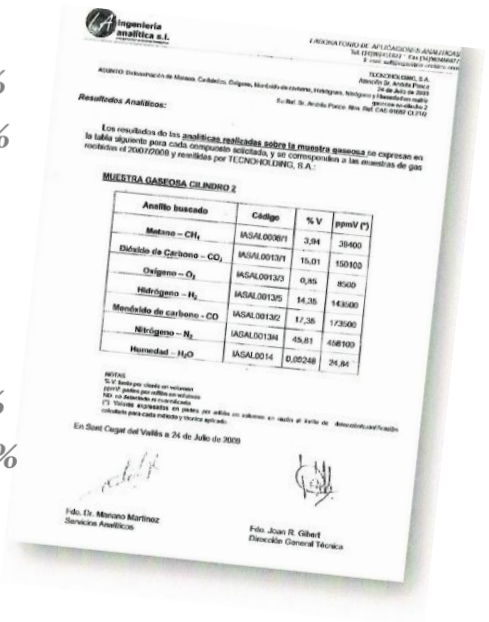
Reduction Reactions

$C + H_2O \rightarrow CO + H_2$
$C + 2H_2O \rightarrow CO_2 + 2H_2$
$C + 2\ H_2 \rightarrow CH_4$
$C + CO_2 \rightarrow 2CO$
$CH_4 + H_2O \rightarrow CO + 3H_2$
$CO + H_2O \rightarrow CO_2 + H_2$

- In the Gasification Process, only a 20 to 30% of the estichiometric air is used.
- Reduction and Oxyation reactions occurs simultaneisly.

## Syngas Composition (%vol)

| | |
|---|---|
| *Carbon monoxide* | *13-17%* |
| *Hydrogen (H2)* | *10-14%* |
| *Methane (CH4)* | *3-5%* |
| *Ethylene (C2H4)* | *1-2%* |
| *Ethane (C2H6)* | *<0,5%* |
| *Propane (C2H8)* | *<0,5%* |
| *Carbon dioxide (CO2)* | *15-17%* |
| *Nitrogen (N2)* | *45-50%* |



# HYIELD. Biowaste to H2. The Project




- Building Europe's first industrial-scale waste-to-hydrogen plant.
- WtEnergy main technological partner and consortium leader with an investment of 7 M€, and a CE grant of 4 M€.
- Cemex, Arcelor, Veolia among the industrial partners, end users of **green H2**.
- **400 tons per year green H2 production, scalable to 600 tpy.**

# HYIELD. Biowaste to H2. The Technology

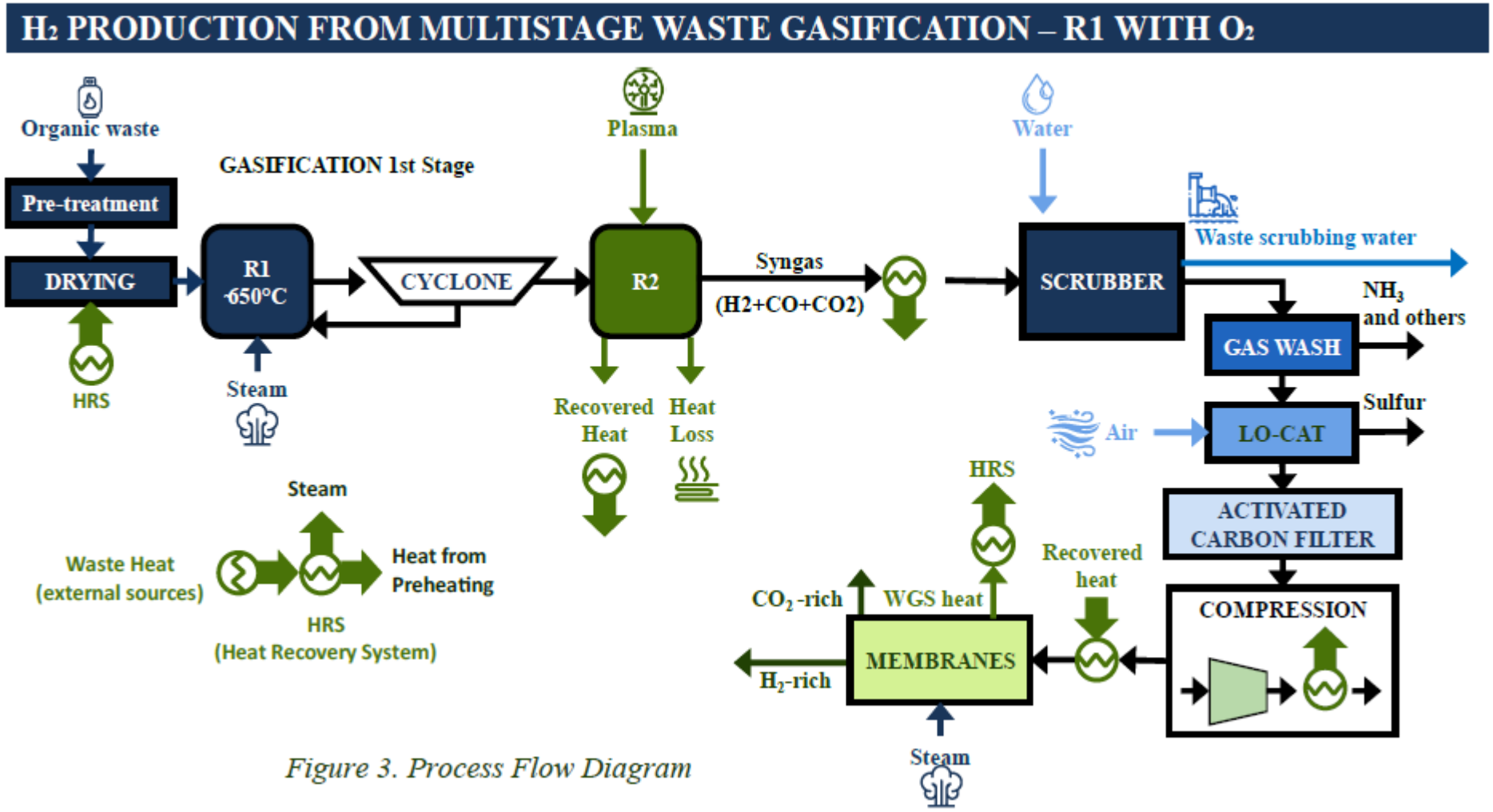



*Figure 3. Process Flow Diagram*

# HYIELD. Biowaste to H2. Long-term objectives



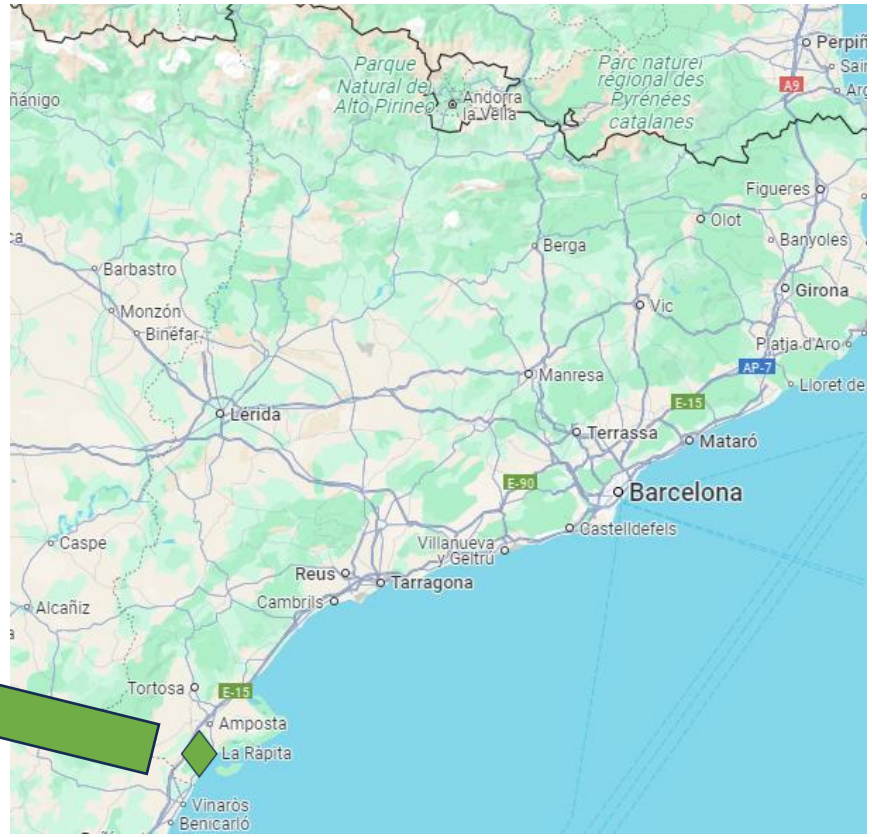

**ESTIMATED INVESTMENT IN BIOWASTE TO CLEAN H2.**

- 12 x 6000 tH2/y PLANTS
- 600-700 M€ INVESTMENT
- 1.2 million tons of biowaste treated.

- **TAM: 300 million tons of biowaste!!**

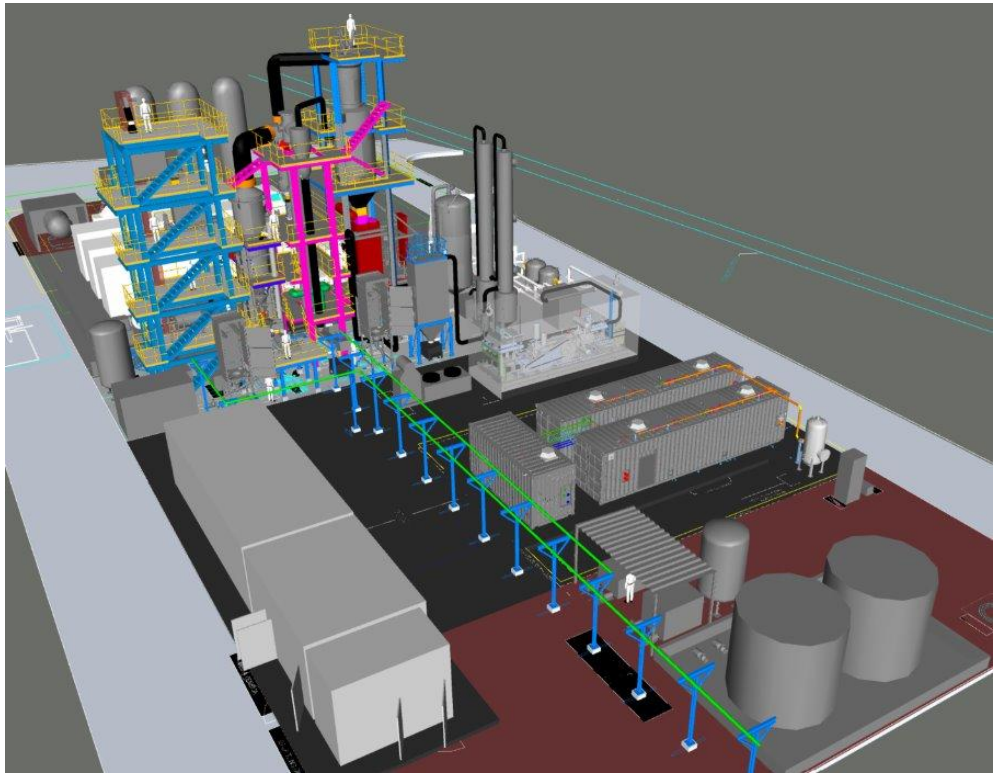
# HYIELD. Biowaste to H2. Where we are

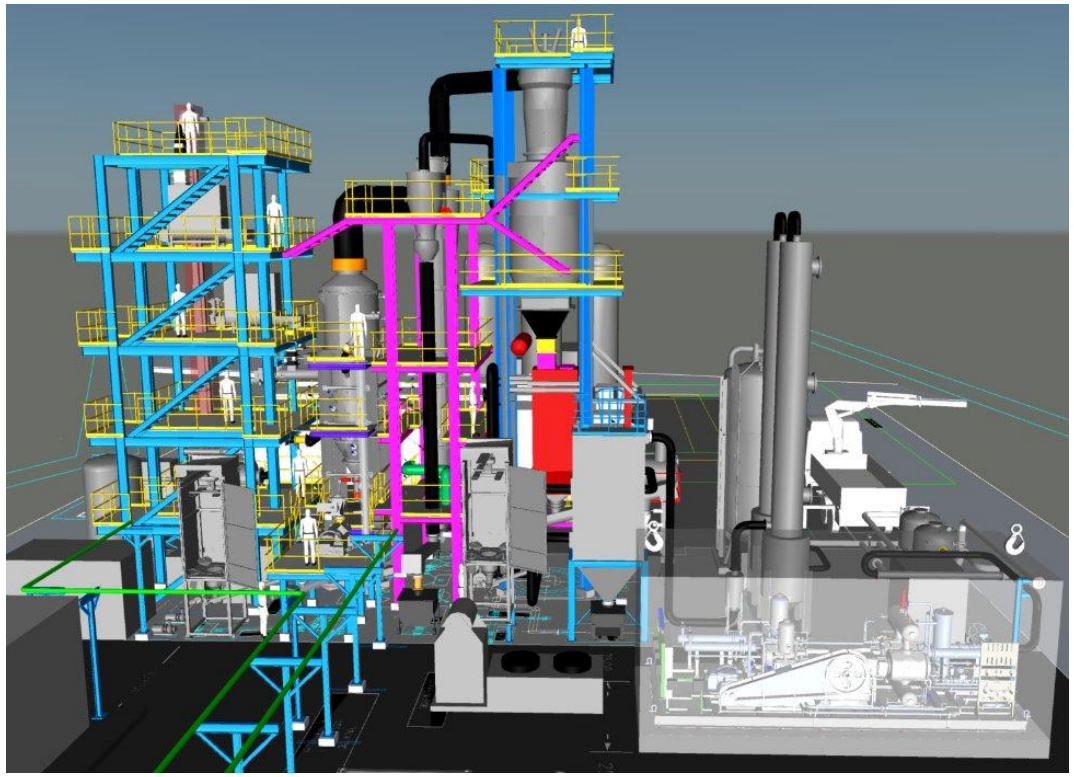


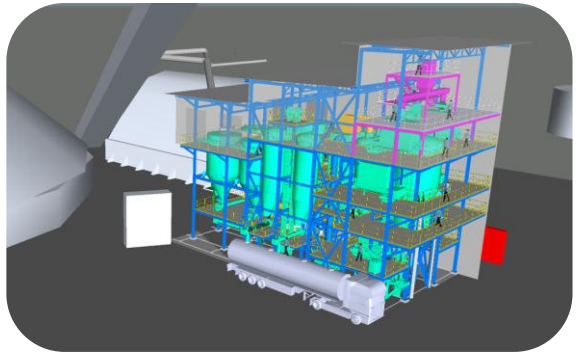

HYIELD biowaste-to-hydrogen plant to be built at CEMEX's Alcanar Plant (Tarragona), Spain.
[CEMEX Alcanar - Google Maps]

# HYIELD. Biowaste to H2. General layout





# Reference Plants with WtEnergy Gasification Technology



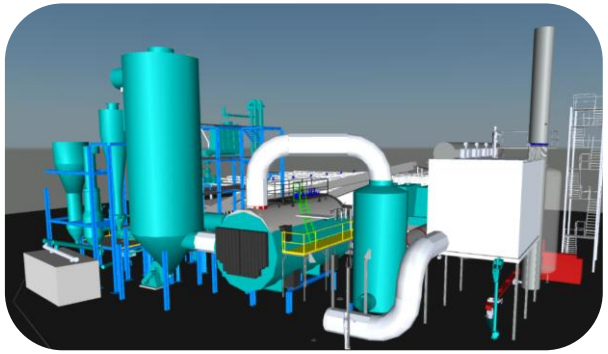
**SRF Gasifier Plant**
30 MWth syngas to cement kiln. Spain.
Under design



**MBM Gasifier Plant**
25 MWth steam. St Langis lès Mortagne France, Under Construction. Startup Q4 2026



**SRF Gasifier Plant**
30 MWth syngas to cement kiln. Spain.
Under construction. Startup Q3 2026



**SRF/Biomass Gasifier Plant**
12 MWth syngas to steam. Spain



**MBM Gasifier Plant**
18 MWth steam + 2 MWe. Lyss, Switzerland



**MBM Gasifier Plant**
16 MWth steam. Oporto, Portugal



**MBM Gasifier Plant**
10 MWth steam. Salamanca, España



**Wood chips Gasifier Plant**
2 MWe CHP.
Zaragoza, España



**Wood chips Gasifier Plant**
1.6 MWe CHP.
Valencia, España

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Clean Hydrogen Partnership

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