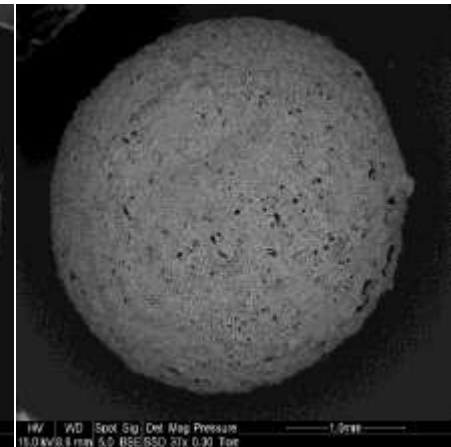
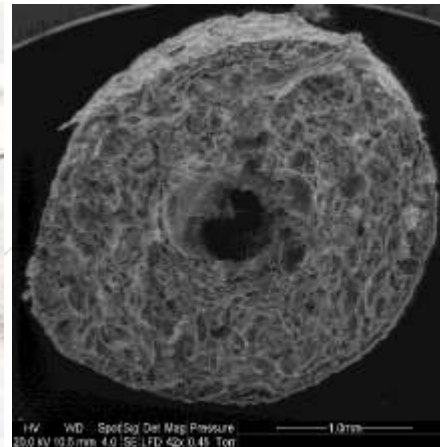


FACILITIES FOR WASTES AND BIO-RESOURCES MANAGEMENT



CEA, LEADER IN R&D OF RENEWABLE ENERGIES

9 centers
16000 empl.
4,1 Md€/y
195 start ups
743 patents/year



DEFENSE



FUNDAMENTAL RESEARCH



HEALTH AND INFORMATION TECHNOLOGIES



LOW CARBON ENERGIES



FROM RESEARCH TO INDUSTRY
cea tech

7 sites
4 500 empl.
600 M€/y
50 start ups
500 patents/an



Leti List liten



TRANSPORT



BUILDINGS



INDUSTRY



MATERIALS

3 sites
1 200 empl.
170 M€/y
235 patents/y

R&D GOAL

Biomass and waste

Wood



Agricultural residues

Tires



Sludges



Microalgae



Refused derived fuels (RDF)

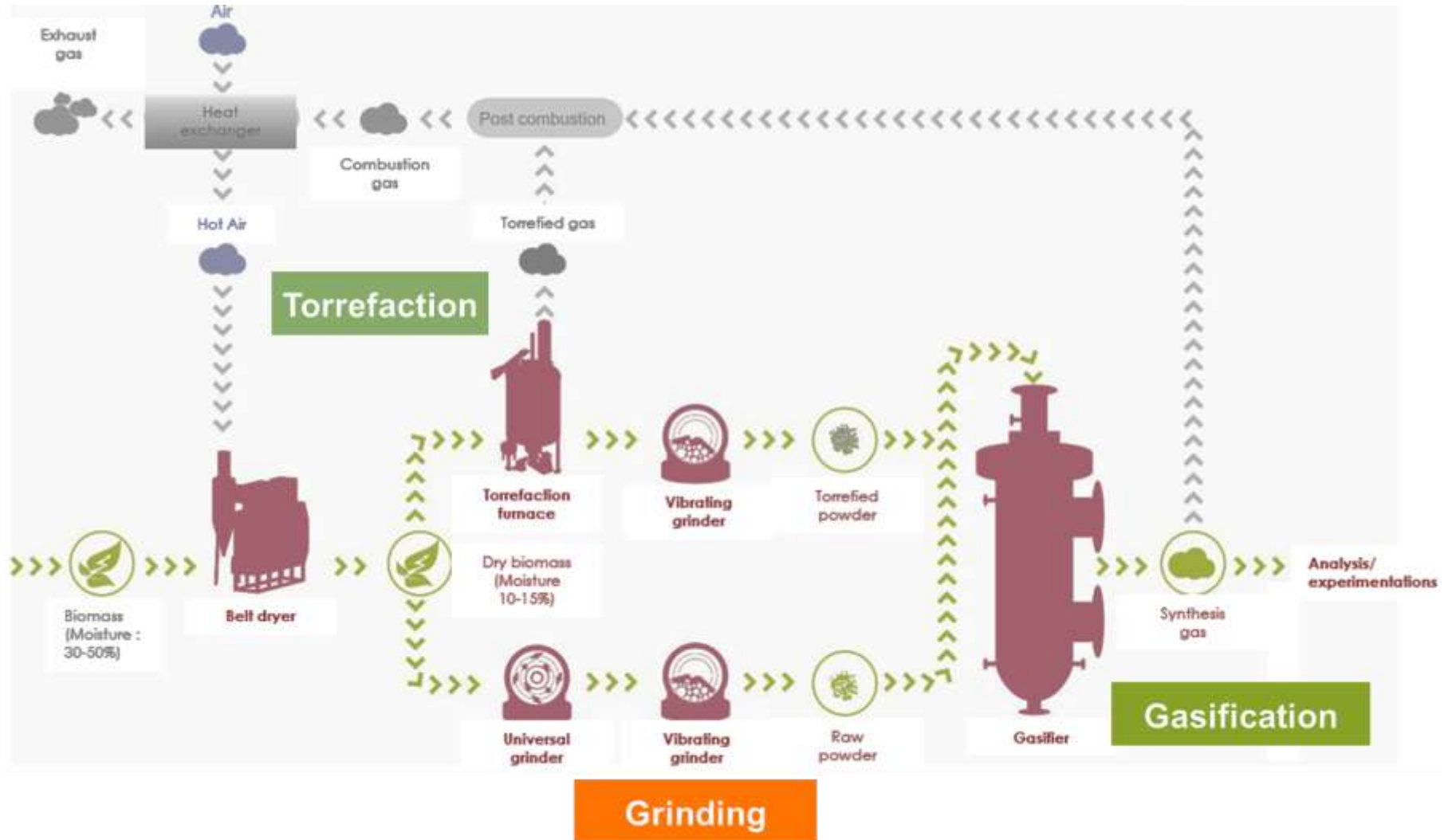


Heat & power

Solid, liquid and gaseous fuels

Biomaterials

GENEPI RESEARCH FACILITY



TECHNOLOGY DEVELOPMENT ACTIVITIES

Pretreatment

Grinding

Torrefaction

Drying

Pyrolysis

Blending

Pelletizing

Conversion

Gasification

Flash
pyrolysis

Hydrothermal
carbonization

Combustion

Anaerobic
digestion

Hydrothermal
liquefaction

Fermentation

Supercritical
water gasif.

Hydrolysis
Esterification

Post-treatment / Purification

Methanation

Thermal
cracking

Separation,
extraction

Refining

Syngaz
purification

Catalysis

Torrefied product
Powders
Pellets
Organic molecules
Activated carbon
Biochar

Syngas
Solid fuel (char)
Bio-oil
Ash, minerals
Clean water
CO₂

Biofuels (diesel, methanol)
SNG
Bio-oil, Bio-crude
Building block molecule
Ethanol, bio-butanol, H₂

EXPERTISE AND SKILLS

- Resource characterization
- Process engineering and thermodynamics
- Inorganic species behavior and agglomeration control
- Design, instrumentation and implementation of experimental pilots
- Process upscaling : pilot and demonstration performance analysis
- Modeling of torrefaction, pyrolysis and gasification physical and chemical reactions.
- Analysis of liquid, solid and gaseous products, tars and trace pollutants
- Process simulation (Proseet, Prosim)
- Economical evaluation of the various bioenergy routes (multi-scale, multi-criteria, multi-resource, multi-applications)

MAIN PARTNERS

Industrials

Pretreatment



Conversion



Post-treatment



Academicals





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