

A young tree sapling with green leaves is growing out of a large, moss-covered log in a forest. The background is a dense forest with sunlight filtering through the trees.

# CHARWOOD

## ENERGY

Decarbonising energy production through **biomass**

Supplier of syngas  
through decentralised  
pyrogasification

# INDEPENDANT POWER PRODUCER (IPP)

Charwood Energy has partnered with the Eiffel Gaz Verts fund to become an independent power producer (IPP) through a dedicated subsidiary, W&nergy, by acquiring stakes in dedicated companies that own pyrolysis plants designed and built by Energy&+.

These SPVs sell the energy produced directly to the customer through a power purchase agreement (cPPA).

The plants recover biomass by producing syngas and biochar, which can be recovered and generate carbon credits.



Builds the Group's pyrogasification plants



Finances the Group's pyrolysis plants



Supplies wood resources to the Group's power stations



Industrialises the already proven solution and explores new technological building blocks to exploit its full potential.

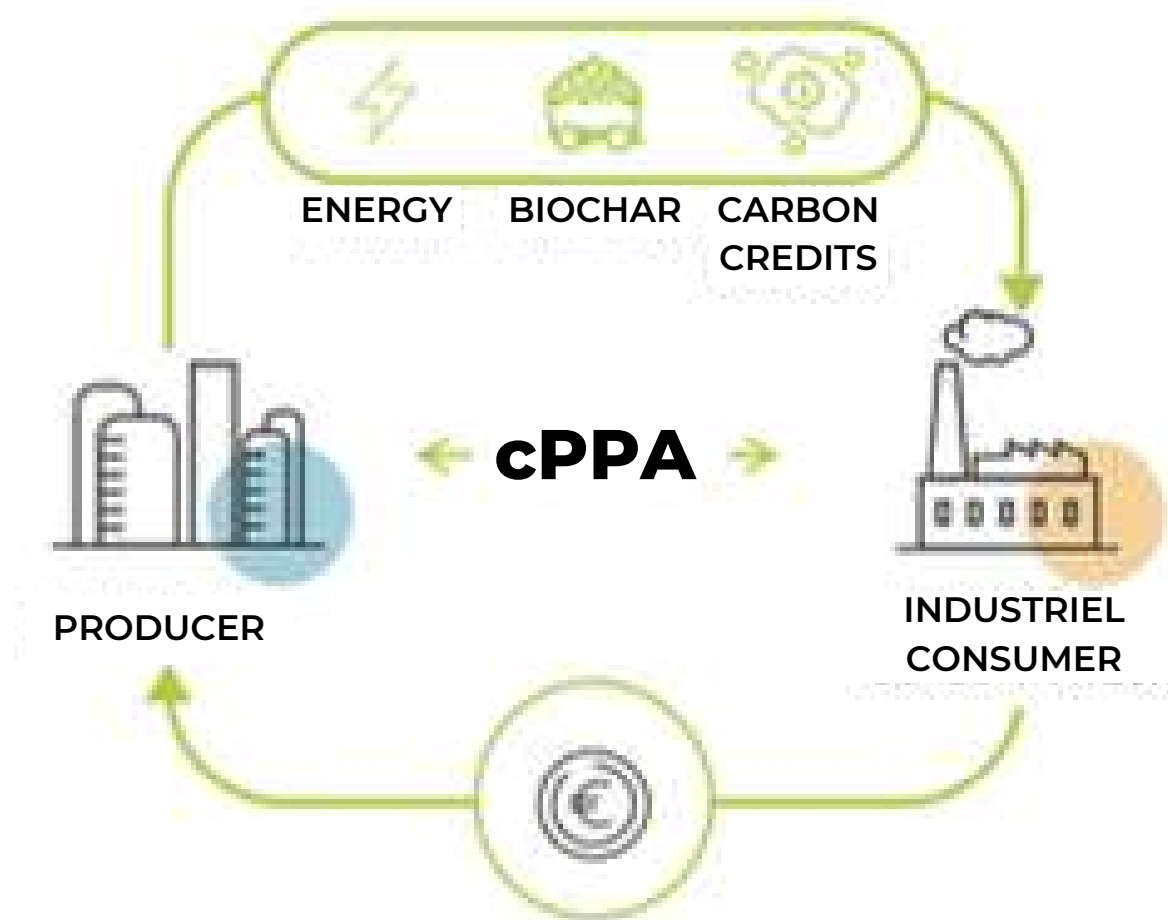


Sells the syngas produced to the industrial company for a period of 20 years, through a cPPA contract.

# THE CPPA, A NEW MODEL FOR PURCHASING RENEWABLE ENERGY

## What is a cPPA ?

The cPPA is a long-term energy purchase agreement signed directly between the consumer and the producer who builds a power plant to supply their customer.



## A lot of benefits for manufacturers and local authorities



Reduced carbon footprint and response to decarbonisation challenges



Access to energy independence through direct supply from the producer



Freedom from market volatility and guaranteed price stability

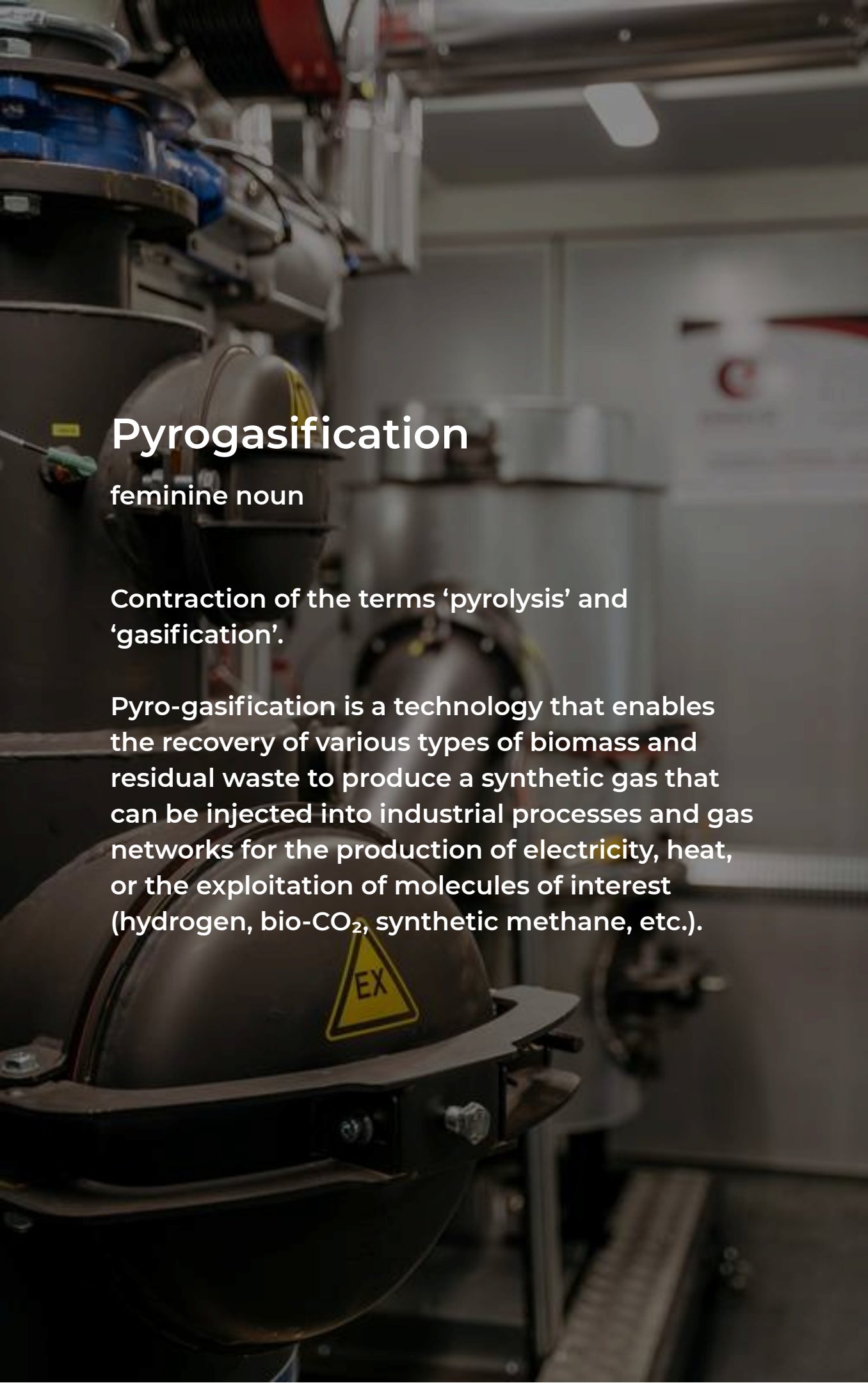


No CAPEX to finance



Promotion of environmental commitment among stakeholders





## Pyrogasification

feminine noun

Contraction of the terms 'pyrolysis' and 'gasification'.

Pyro-gasification is a technology that enables the recovery of various types of biomass and residual waste to produce a synthetic gas that can be injected into industrial processes and gas networks for the production of electricity, heat, or the exploitation of molecules of interest (hydrogen, bio-CO<sub>2</sub>, synthetic methane, etc.).

# WHY PYROGASIFICATION ?

## DISRUPTIVE TECHNOLOGY WITH A SIGNIFICANT ENVIRONMENTAL IMPACT

### Carbon emissions reduction

Replacing fossil gas with low-carbon syngas: CO<sub>2</sub> emissions reductions of up to 85%

### Local recovery of end-of-life products

Prioritising the use of locally produced end-of-life biofuels, strengthening the energy independence of regions

### Carbon sequestration through biochar

The by-product of the process, biochar, enables carbon to be sequestered sustainably, contributing to a potentially negative carbon footprint.

### Reducing energy costs

Greater stability and price visibility: fossil fuels and imported energy sources are heavily influenced by geopolitical events.

### Creation of non-relocatable jobs

The establishment of local green gas production units supports the local economy: engineering, logistics, maintenance and operation.

### Meeting the needs of local stakeholders

A non-intermittent solution that can be used for direct injection into industrial processes for the production of electricity, heat, or the exploitation of molecules of interest (hydrogen, bio CO<sub>2</sub>, synthetic methane, etc.).

# A PROVEN BUT LITTLE-KNOWN TECHNOLOGY

A technological partnership with  
a leading player: Spanner Re<sup>2</sup>  
GmbH



*An exclusive agreement with a leading German company  
specialising in the design of cogeneration plants that  
recover biomass through pyrolysis gasification.*

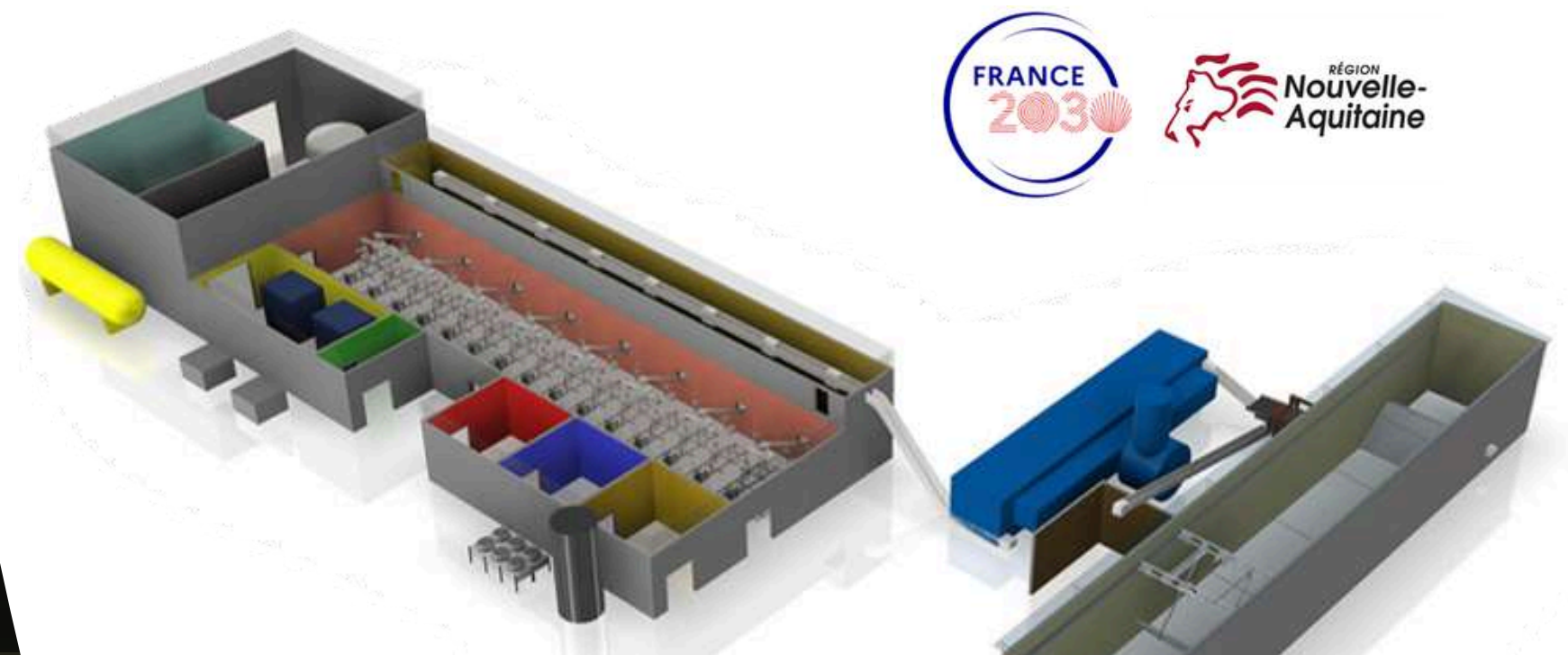
More than 1000 units since 2007  
20 million operating hours

# A WORLD FIRST, IN FRANCE



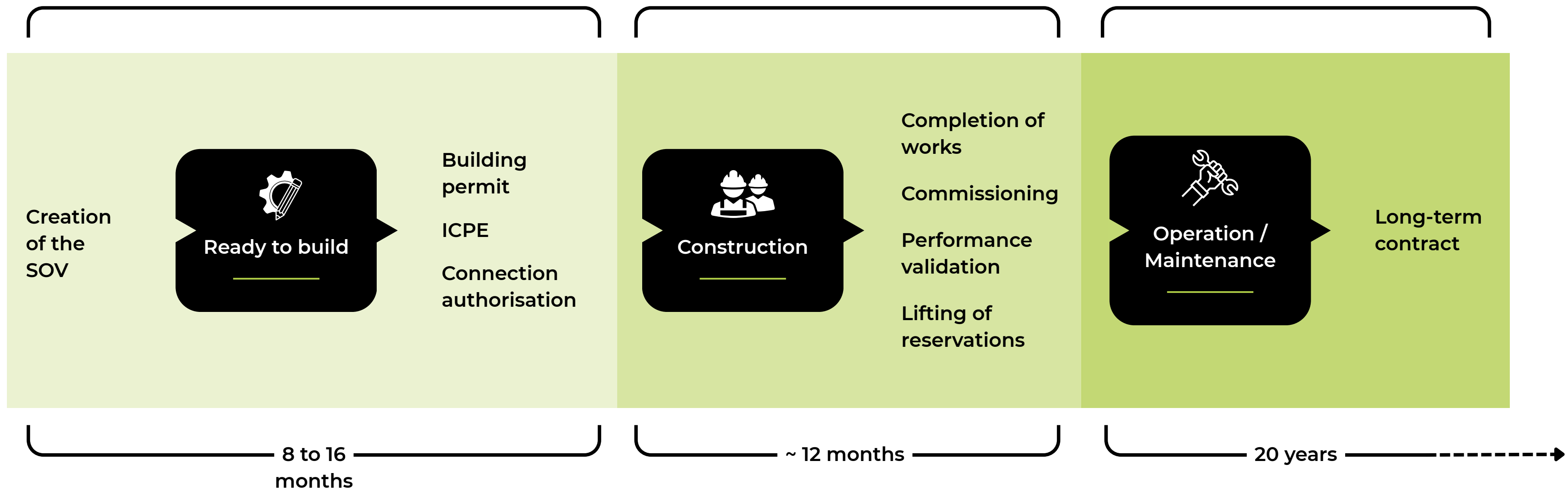
Project to sell syngas to a glass  
manufacturer as a  
replacement for fossil gas

- Biomass produced within a 100 km radius of the site
- 6,000 tonnes/year CO<sub>2</sub> savings: 84.5% decarbonisation compared to natural gas
- Subsidies: ADEME and Nouvelle-Aquitaine region





# STAGES IN THE SYNGAS SALES PROCESS







# CHARWOOD

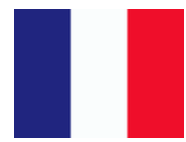
INNOVATION

France's leading independent industrial R&D  
centre dedicated to **pyrogasification**



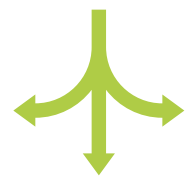
# CHARWOOD INNOVATION

## OUR MISSION



Demonstrate the effective operation of pyrogasification in France

*The technology is mature and works, but is still relatively unknown in France.*



Diversify the uses of the technology

*Assemble new technological building blocks that are mature but have never been tested in combination.*



Explore the potential of new local biofuel sources

*Promote new resources with high potential but which have been little or not at all exploited to date.*

## OUR TRIAL AND TRAINING OFFERS

### An offer of biofuel trials

- *Real-world testing at our plant*
- *Analysis of the properties of the gas produced and the co-produced biochar*
- *Test and feasibility report, preliminary design study and project budget*

### Training offer

- *Open house*  
*To discover the centre and the technology*
- *Project set-up*  
*To understand the administrative, financial and regulatory aspects of successfully completing a project*
- *Technical*  
*To understand the operation, maintenance and management of a facility in order to run your power plant*





# LET'S MEET AT POLLUTEC

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