Natural gas substitution by syngas made from biomass and waste wood gasification

Aluminium smelter - Plant of Mulhouse

Project overview – 12 June 2024

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Expertise en gazéification

Natural gas (2023) – 46 GWh

Biomass and waste from local sourcing

On site Syngas production process

Syngaz - 40 GWh

Aluminium smelter

STELLANTIS

Heat – 5.6 GWh

17 508 t/year

MULHOUSE ALSACE AGGLOMÉRATION

GazoTech

Investor – O&M

REGAWATT

Technology

Aluminium engine carter

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- Project/client
  - Reduce GHG emission of Stellantis Mulhouse plant
  - Increase the energy independance of the Stellantis plant
  - Source the biomass and waste wood needs from local or circular economy

- Global
  - Contribute to energy independance of FR/EU
  - Contribute to the GHG emission reduction of FR/EU
  - Implement a « first of a kind » project in France

1 of the 4 Aluminium furnace

The feasibility of this project mainly relies on the following key points :

Technical

- A relevant, reliable and commercially referenced synthesis gas production technology
- Compatibility between the operating modes of the furnaces and the syngas production plant (continuous annual operation, load variation, etc)
- The ability of the furnaces to operate with syngas or bi-fuel burners

Economical

- A purchase cost per MWh of syngas acceptable for Stellantis
- The possibility of benefiting from the financial assistance offered by the current DECARB-IND Ademe french national call (40% CAPEX grant)

Biomass ready to use

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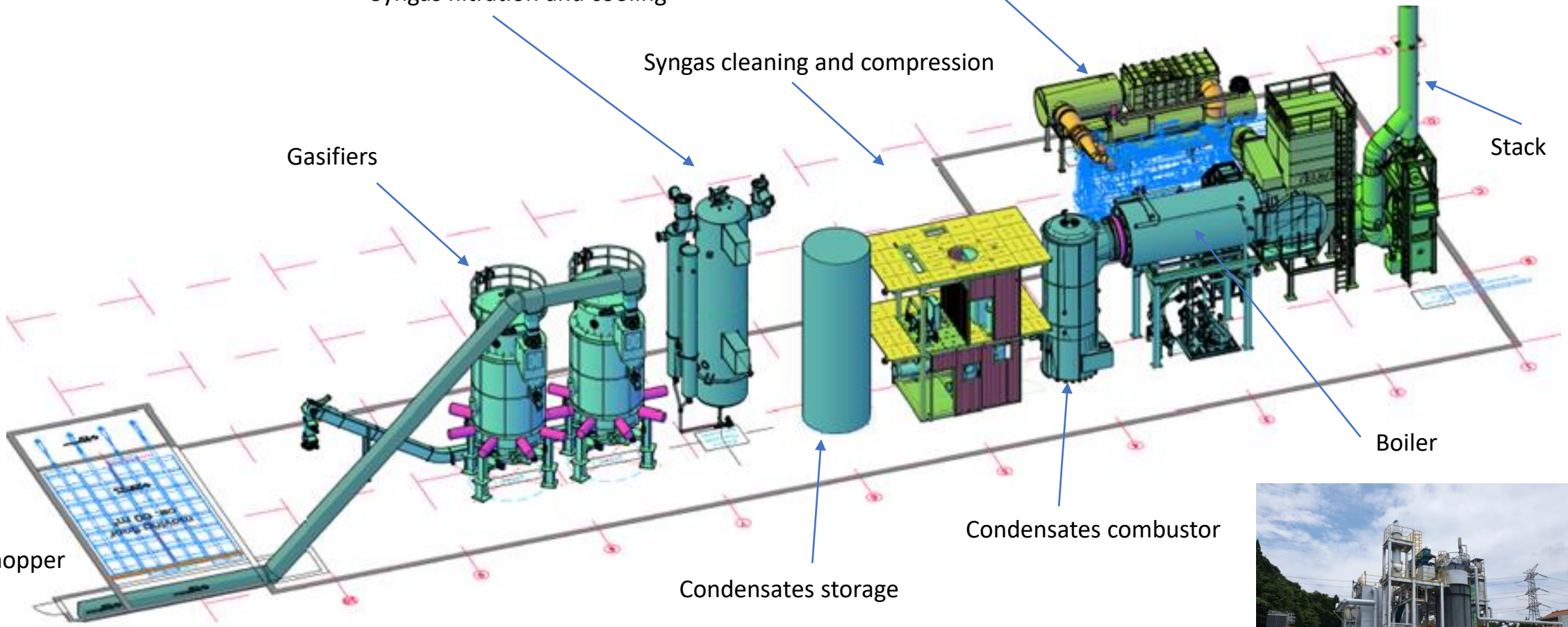

Charmey Regawatt CHP plant – (CH)

The actors of the project

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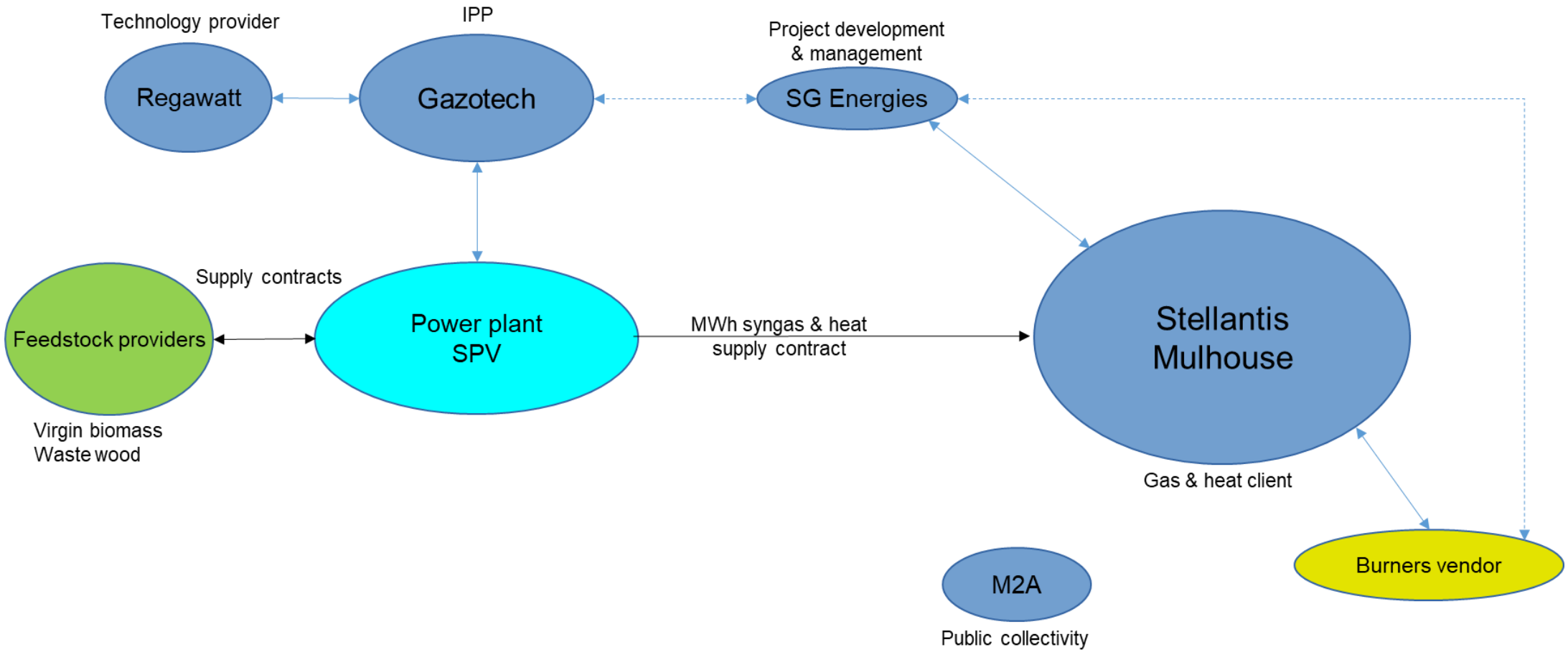

*IPP: independant power producer

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The following figures are coming from the Basic design study results, dated June 2024 :

- Annual feedstock quantity: 17kt/y (30% HR)
- 7800h/y of operation
- 9MW input power
- 6.7MW syngas power
- 1MW heat power
- CAPEX: 13.4 M€
- Syngas sale price: 70€-80€/MWh
- Heat sale price: 50€-60€/MWh

Insertec 1 Stellantis furnace

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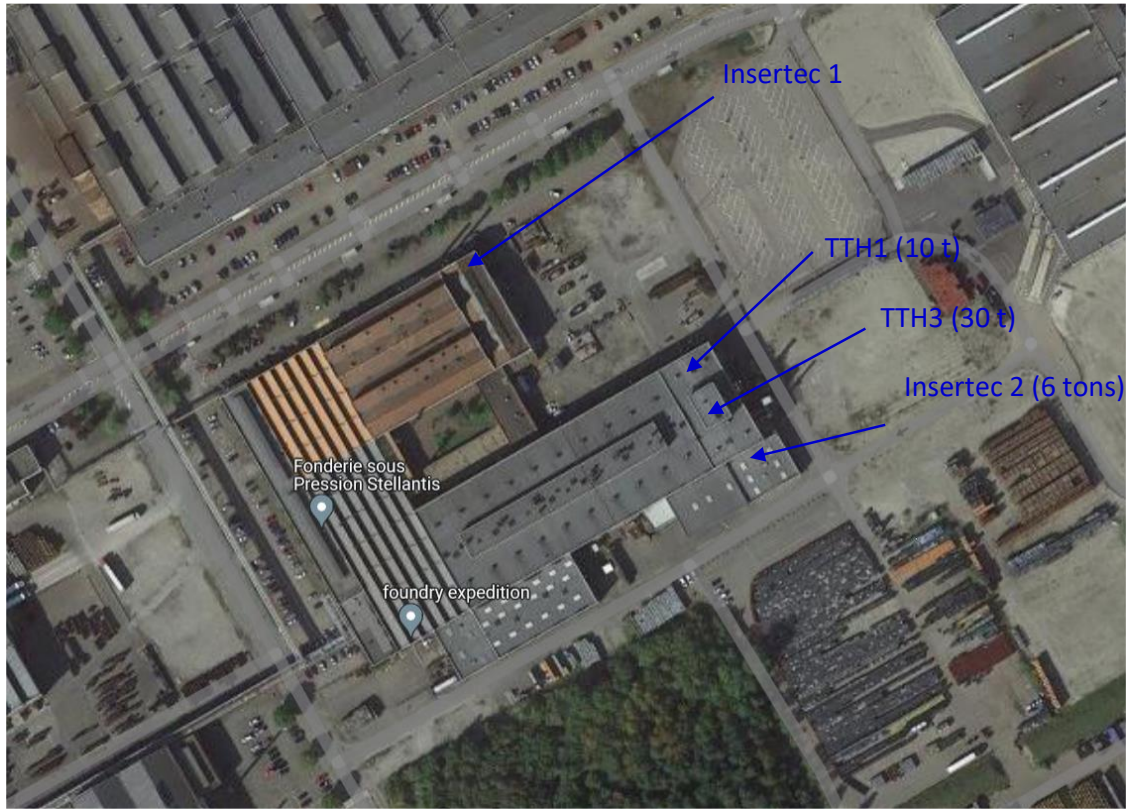

Stellantis 4 furnaces

Syngas power plant preliminary layout

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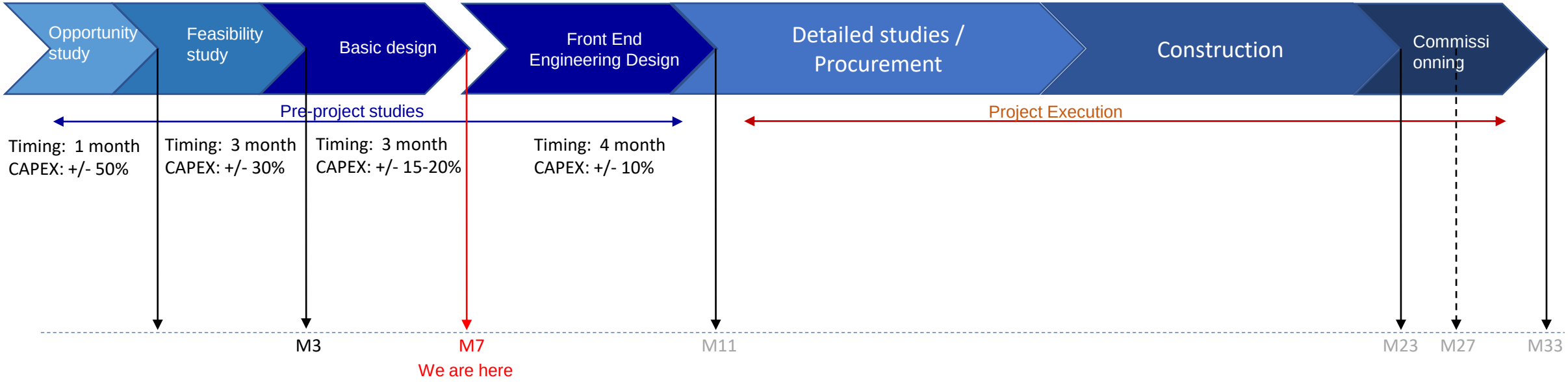

Regawatt feedstock typical storage box

Potential market

Any industrial process requiring « flames » such as:

- Bricks and tiles
- Slaked lime
- Lead and aluminium smelters

Limitations

- Requires 24/7 continous process with moderate fluctuations
- Temperatures > 1200/1300°C can be an issue (depending of the technology)

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SG Energies est membre de atee Club Pyrogazéification

Merci!