



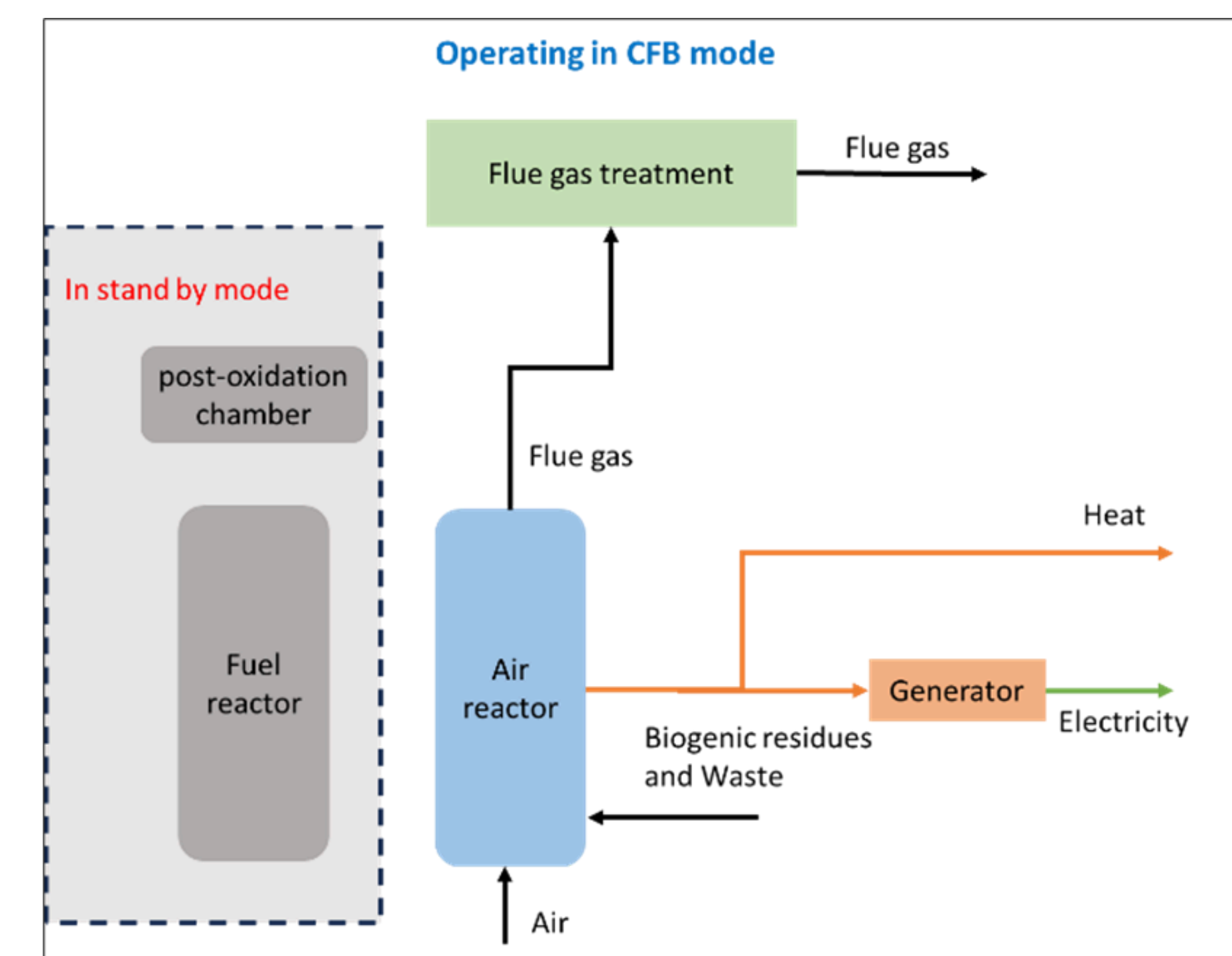
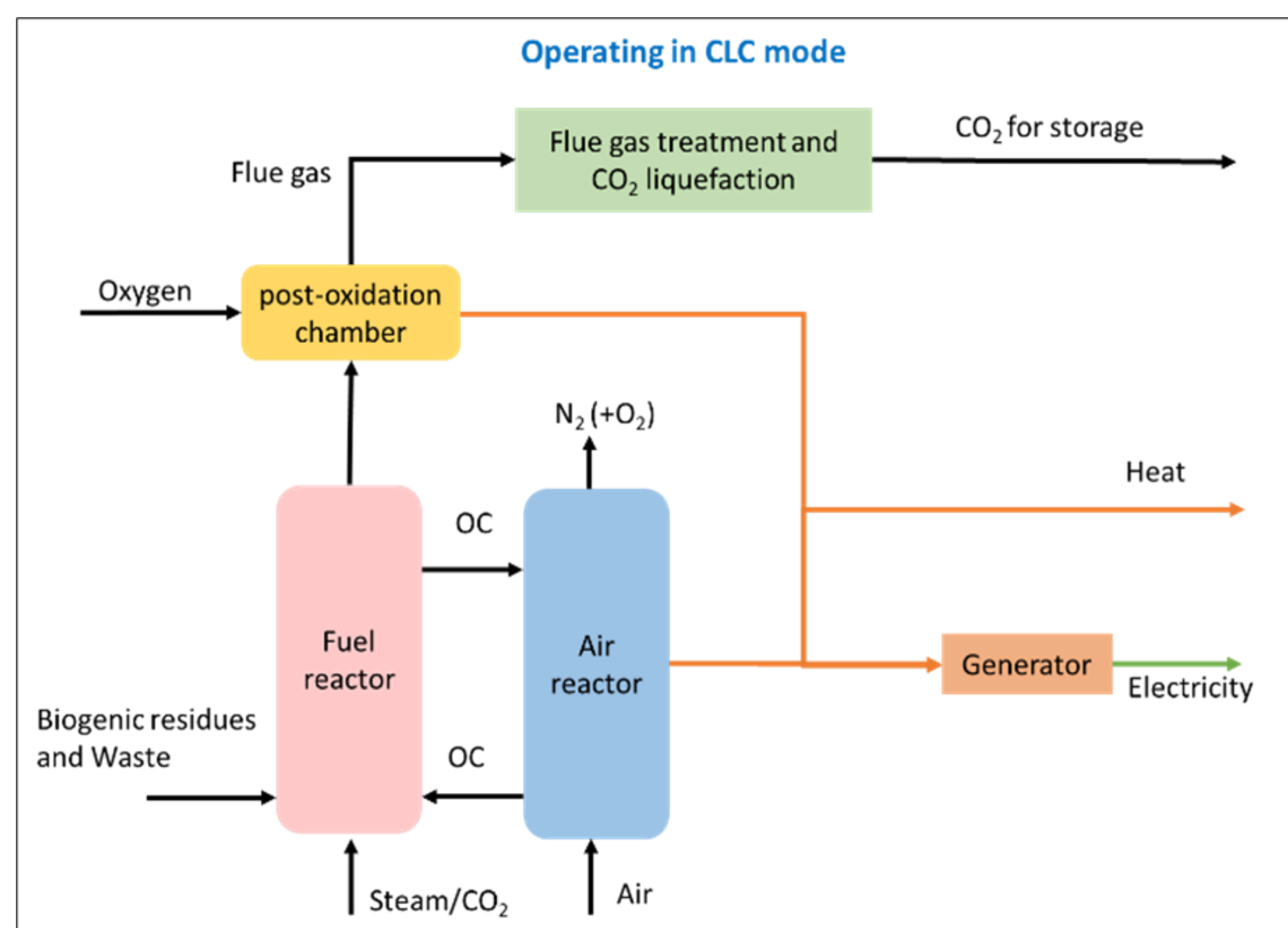
Bio-FlexCLC

Flexible chemical looping combustion for combined heat and power production from biogenic residues with negative emission



In a nutshell

Bio-FlexCLC develops and demonstrate (TRL5) a full-chain technology that utilizes biogenic residues and wastes for flexible combined heat and power (CHP) production with the possibility of cost-effective CO₂ capture.



Advantages

- The concept is based on fluidized bed combustion, a common technology for heat and power production, with strong compatibility with existing infrastructure,
- Have the flexibility to switch to conventional CFB combustion if market conditions are not amiable for carbon capture,
- High flexibility for load fluctuations and feedstock variation.
- CLC mode has high efficiency and low cost and energy penalty and for CO₂ capture,
- CLC provides inherent CO₂ capture that automatically adapts to load variations,
- Can utilize biogenic residues and waste as feedstock to deliver low-cost negative emissions (CDR),
- In CLC mode, ash and emissions are concentrated in the fuel reactor, where the gas flow is reduced to one quarter of that in conventional combustion,
- CLC enables supercritical steam generation and higher electrical efficiency by eliminating corrosive emissions from the air reactor,
- CLC mode results in lower SO_x and NO_x emissions.



Consortium

- RISE Research Institutes of Sweden
- Aichernig Engineering GmbH
- Götaverken Miljö AB
- Technische Universität Darmstadt
- Chalmers Tekniska Högskola
- Spanish National Research Council
- Centre for Research and Technology Hellas
- 1CUBE BV
- FORTUM
- Växjö Energi



Objectives



Develop Chemical-Looping Combustion (CLC) Technology

Advance CLC technology for efficient energy production using biogenic residues.



Enable Flexible Combined Heat and Power (CHP) Production

Flexible, on-demand power and heat generation from renewable resources.



Optimize Cost-Effective CO₂ Capture

Affordable CO₂ capture integrated into CLC, enabling negative emissions.



Promote Sustainable Energy Using Biogenic Waste

Boosting the economy in regions where waste generation or agriculture significantly contributes to GDP.



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Coordinator: Research Institutes of Sweden (RISE)

Project Coordinator: Amir Soleimani Salim

Website



LinkedIn



"Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor CINEA can be held responsible for them."