

INDIRECTLY HEATED CARBONATE LOOPING



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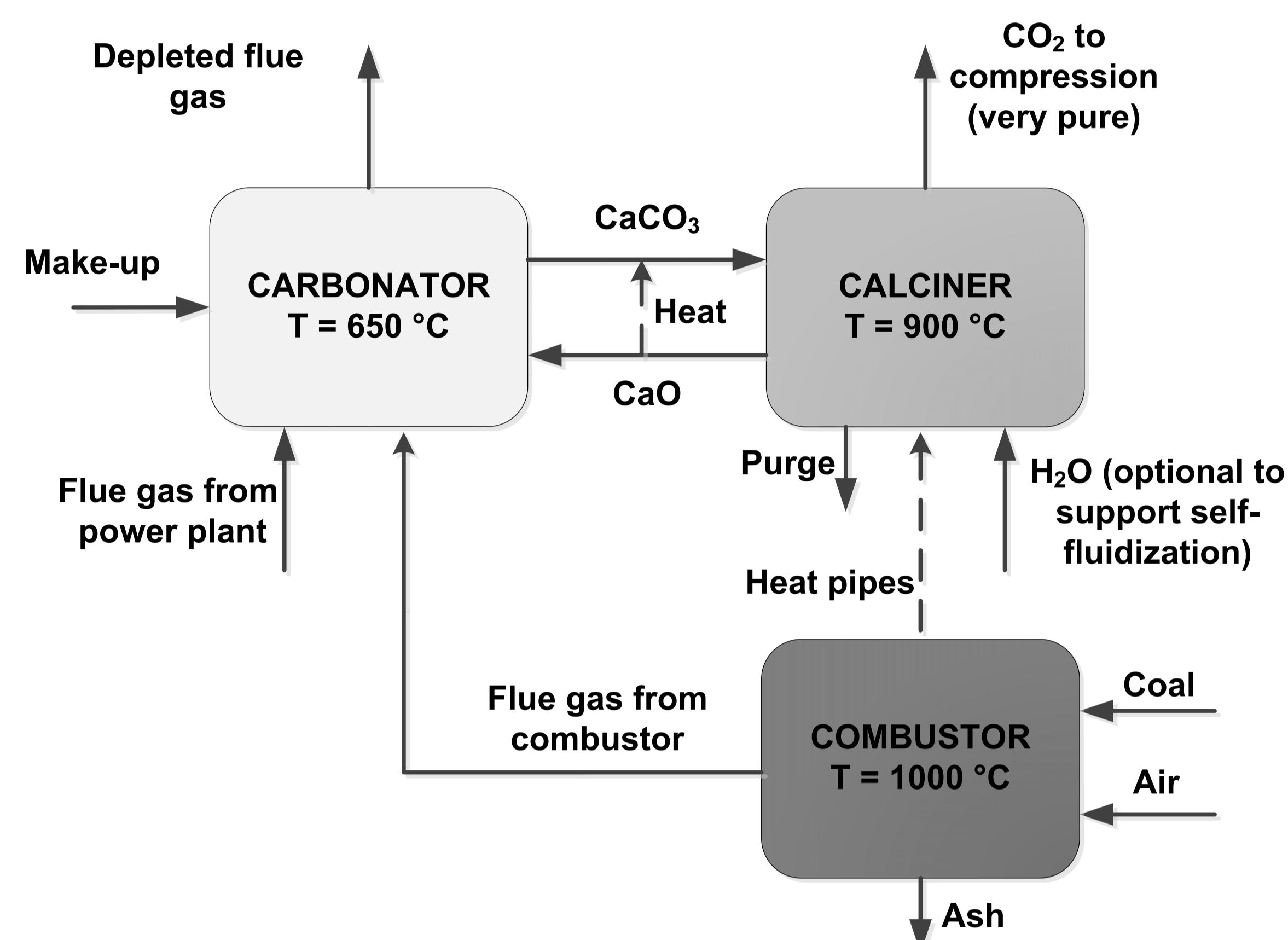
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INDIRECTLY HEATED CARBONATE LOOPING TECHNOLOGY

Process description:

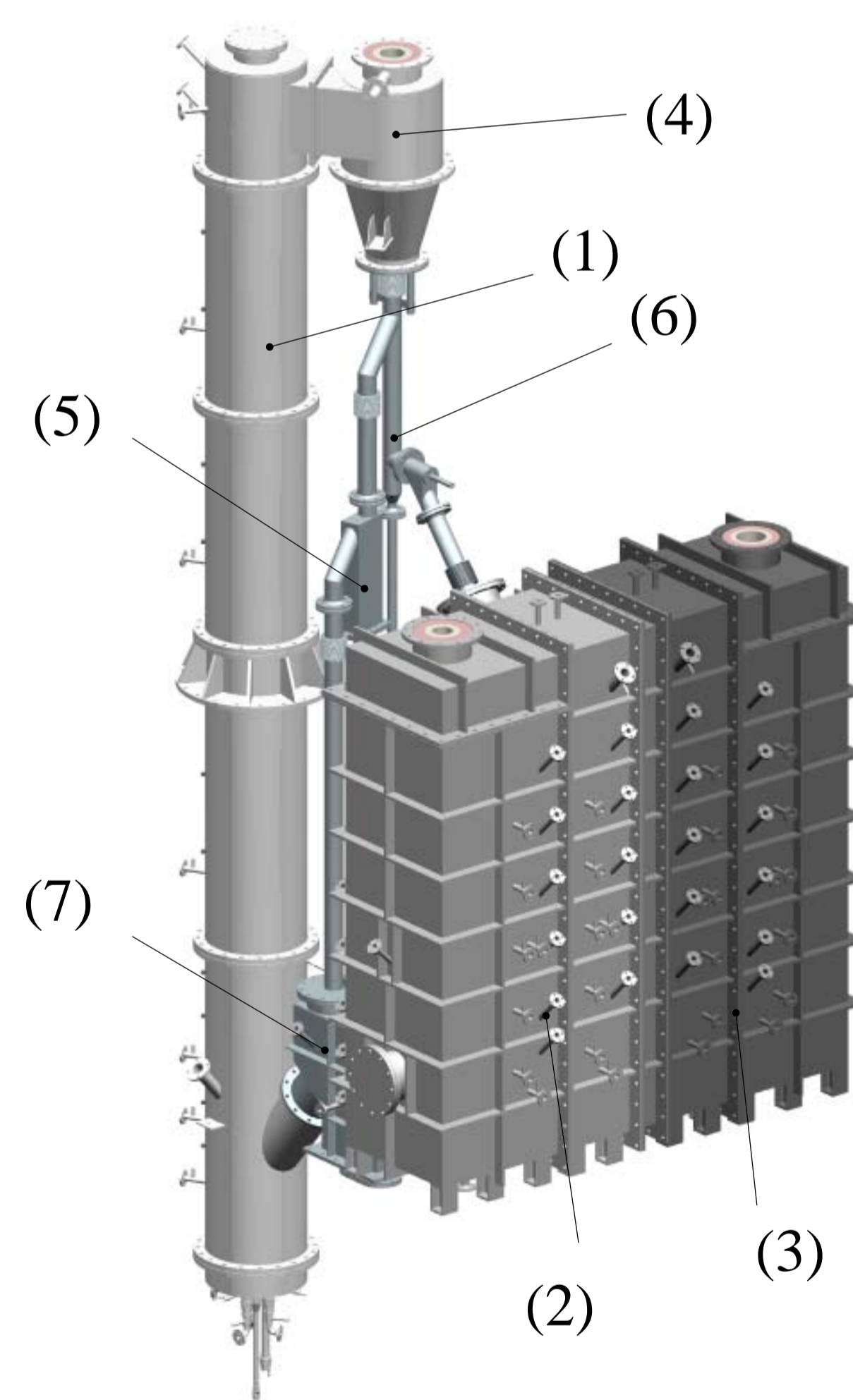
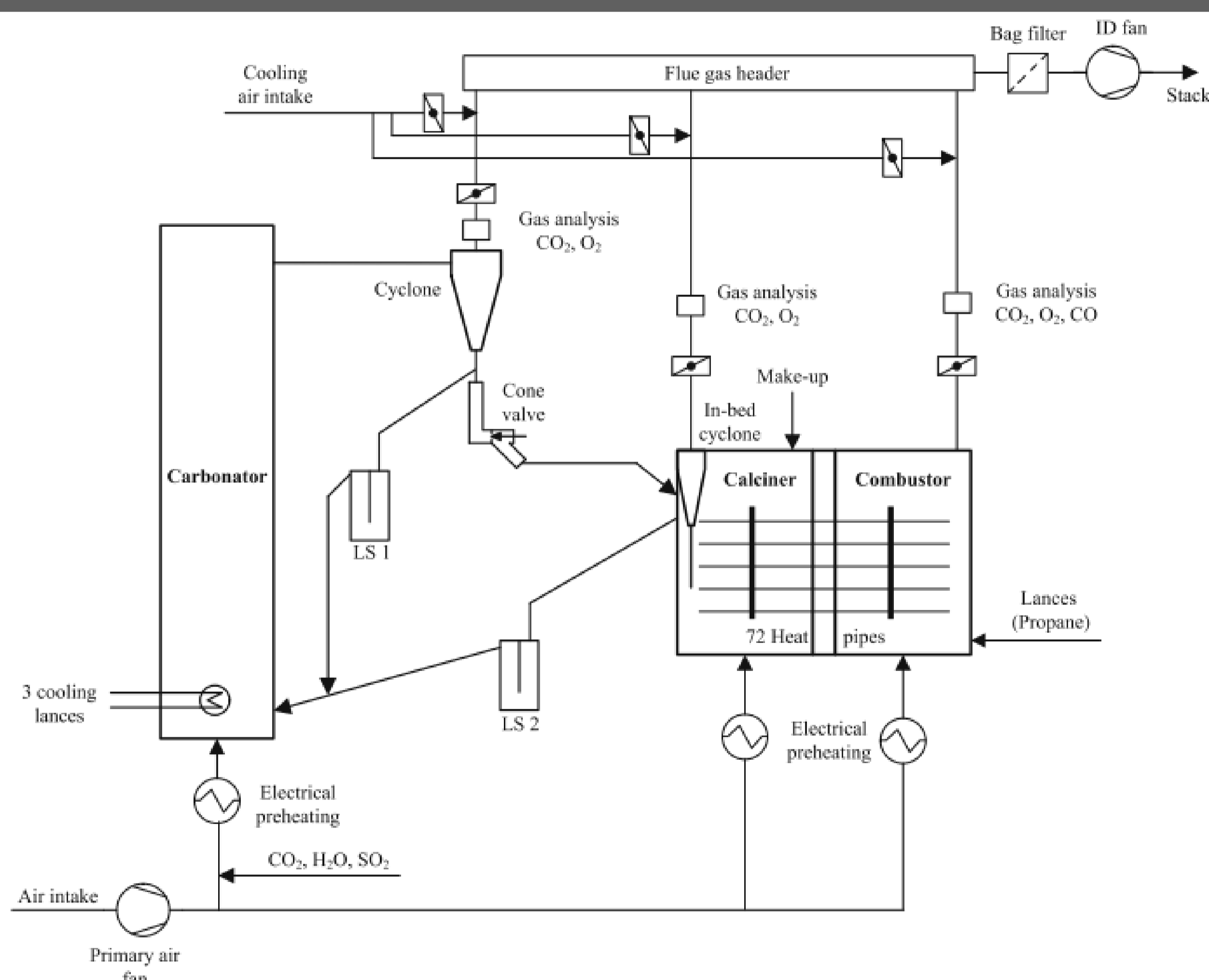
- Reversible reaction between lime and CO_2 forming CaCO_3
- Release of CO_2 during indirectly heated sorbent regeneration
- Heat transfer from external combustor due to heat pipes
- Highly efficient Process configuration



Advantages compared to standard Carbonate Looping:

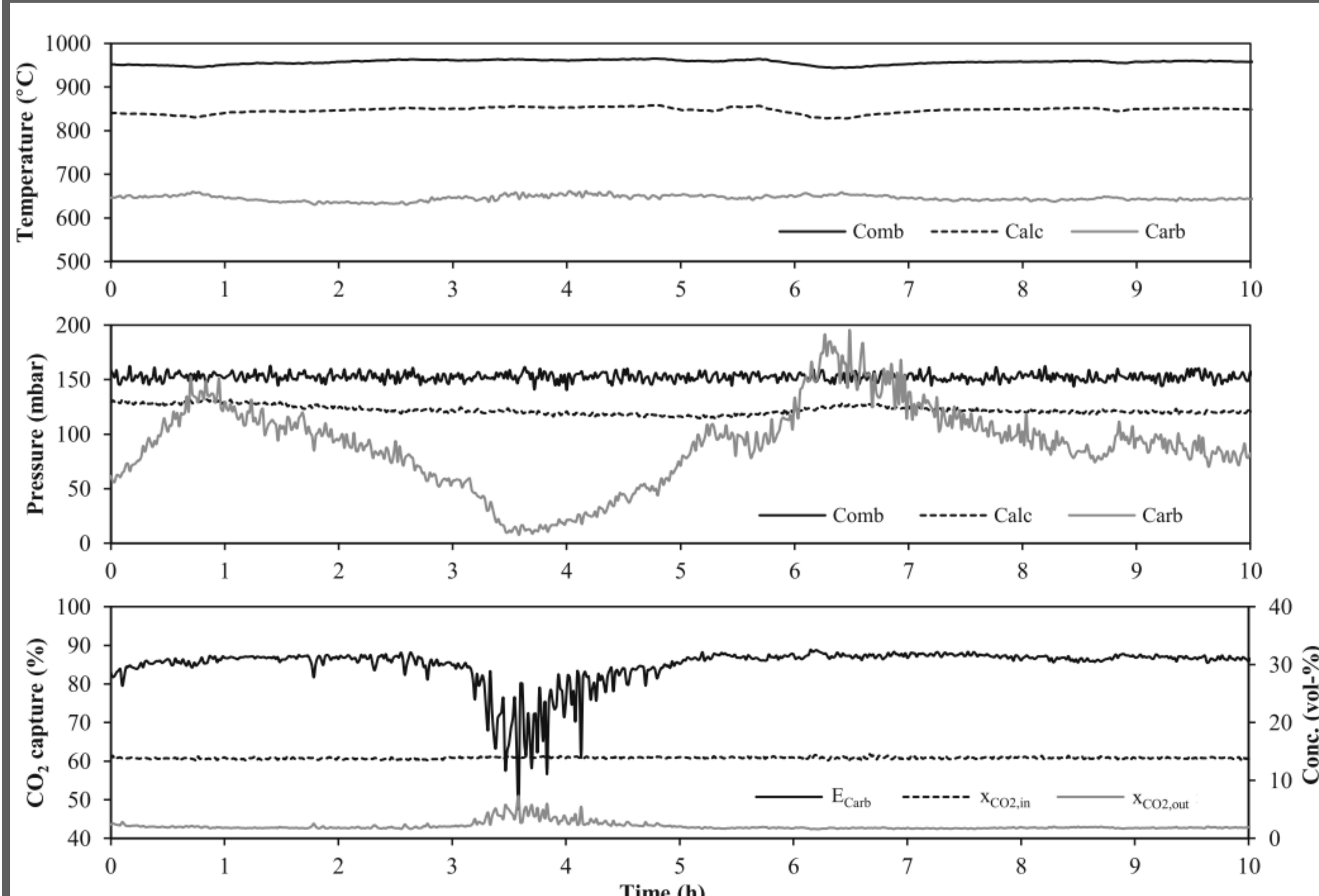
- No ASU for oxygen supply required
- Less sorbent deactivation due to separate supplementary firing
- More active CaO due to moderate calcination conditions
- Lower attrition rates due to moderate fluidization velocities

300 kW_{TH} INDIRECTLY HEATED CARBONATE LOOPING PILOT PLANT



- (1) Carbonator (CFB)
 - Flue gas load: 300 kW_{th}
 - TSI: 30...60 kg (CaO/CaCO₃)
- (2) BFB Calciner
 - Heat duty: 180 kW_{th}
 - TSI: 400 kg (CaO/CaCO₃)
- (3) BFB Combustor
 - Thermal power: 310 kW_{th}
 - Fuel: Propane
 - TSI: 600 kg (silica sand)
- (4) Cyclone separator
- (5), (6) & (7) Coupling devices

SUCCESSFUL LONG-TERM PILOT TESTING



- proof of concept of newly developed process scheme
- more than 500 hours of stable plant operation
- over 300 h of CO_2 capture due to indirectly heated calciner
- CO_2 capture rates over 90 % feasible
- steady state process data for model validation
- investigation of heat pipe operation performance

CONTACT

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