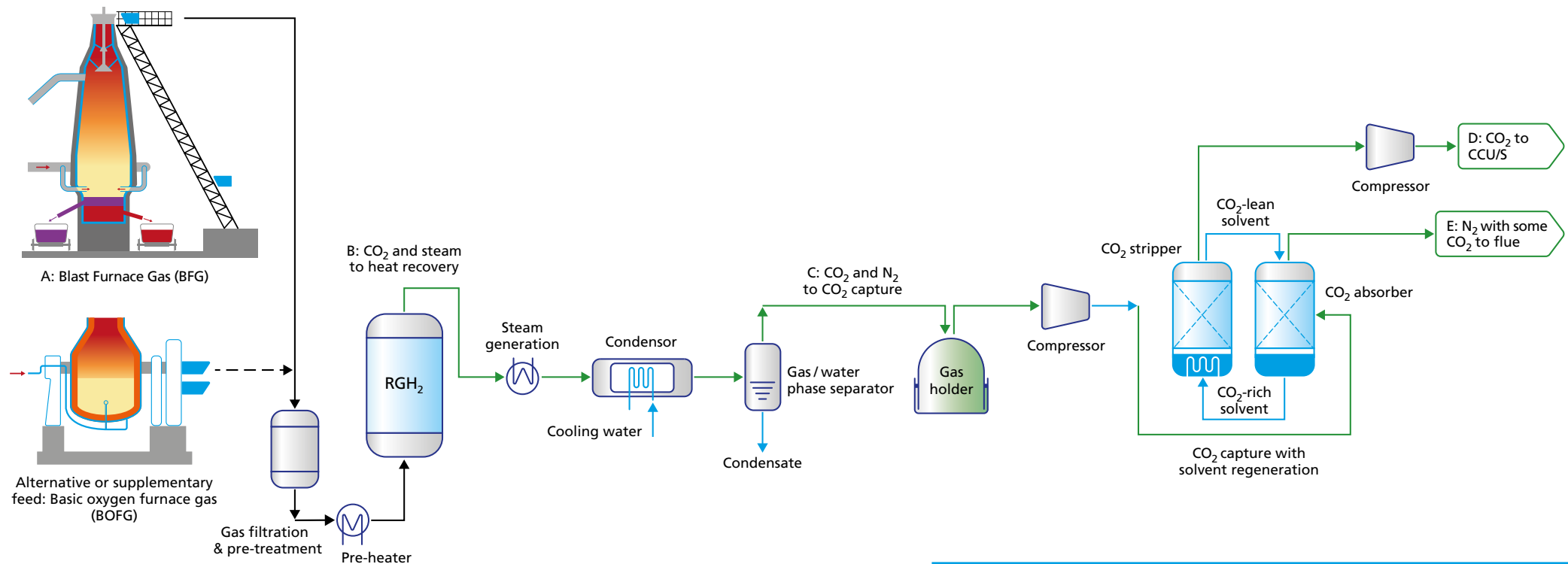


Stage 1 (BFG and / or BOFG feedstock): Reduction and CO₂ recovery. Reduction of the RGH₂ oxygen-carrier with CO, H₂ and CH₄ from iron and steel making flue gases.

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consulting

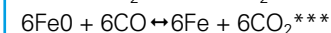
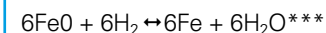
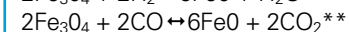
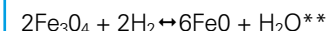
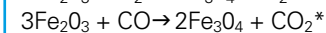
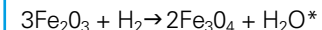
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Stream	CO ₂ Mol%	H ₂ Mol%	CO Mol%	N ₂ Mol%	H ₂ O Mol%	Temp °C
A: Blast Furnace Gas to RGH ₂	22	4	24	50	0	50
B: CO ₂ , N ₂ and steam from RGH ₂	46	0	0	50	4	770
C: CO ₂ and N ₂ to CO ₂ capture	46	0	0	50	4	50
D: CO ₂ to utilisation or sequestration	97	0	0	0	3	100
E: Nitrogen and CO ₂ slip to flue****	5	0	0	92	3	Ambient

**** Composition shown is indicative of solvent-based CO₂ capture plants operating at a reasonable balance of CO₂ capture rate and energy efficiency).

Key reactions in the RGH₂ plug-flow, iron-oxide chemical looping reactor



* This reaction non-reversible is required to ensure full conversion of H₂ and CO in the syngas feed to CO₂ and moisture.

** This reversible reaction converts 65 to 80% of hydrogen and CO in the syngas feed to CO₂ and moisture.

*** This reversible reaction converts 30 to 40% of hydrogen and CO in the syngas feed to CO₂ and moisture.