Six rules for maximising the effectiveness of post combustion CO_2 capture systems

Jon Gibbins, Imperial College (GHGT7 paper, 2004)

1. Add heat to the steam cycle at as high a temperature as possible (i.e. be prepared to use best available steam conditions if commercially justified).

2. Reject heat from the steam cycle, in the steam extracted for solvent regeneration, at as low a temperature as possible.

3. Produce as much electricity as possible from any additional fuel used, consistent with rejecting heat at the required temperature for solvent regeneration.

4. Make use of waste heat from CO_2 capture and compression in the steam cycle.

5. Use the latest solvent developments.

6. Exploit the inherent flexibility of post-combustion capture.

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Part load steam extraction issues

Multiple steam tapping points?

Auxiliary turbines?

4. Make use of waste heat from CO_2 capture and compression in the steam cycle.

Feed water quality issues

Secondary heat recovery circuits?

Interaction with district heating

5. Use the latest solvent developments.

Capital costs plus flexibility, appropriate construction approach

Compatible upgraded solvents

Troubleshooting solvent additives – maintaining performance

6. Exploit the inherent flexibility of post-combustion capture.

Definite interest in this area now

Solvent storage

Compressor/pipeline interactions

Dynamic modelling including revenue optimisation