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What is the next best thing in PCC?

Energy Transformed Flagship

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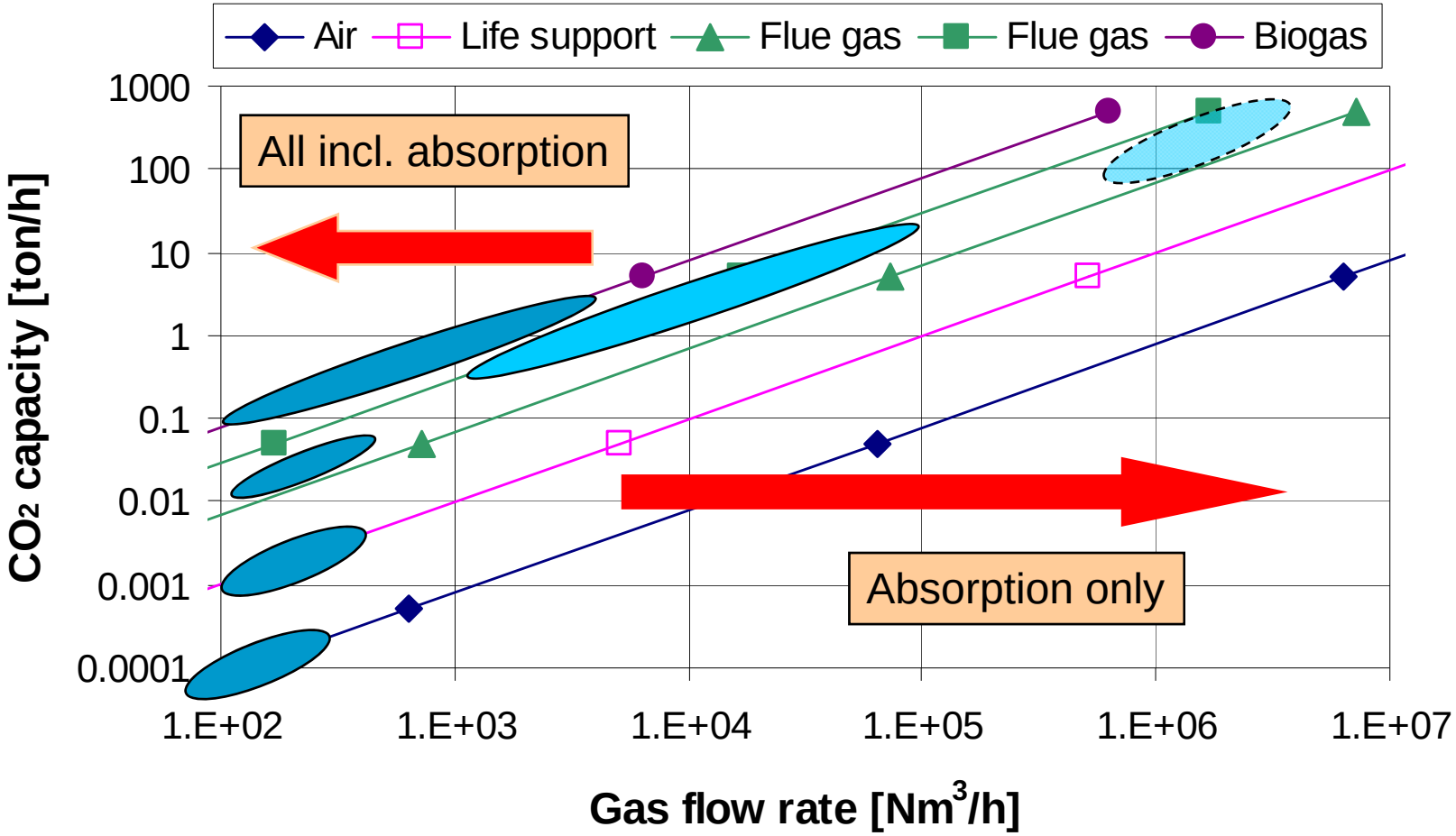
IEA GHG 11th Post Combustion CO_2 Capture Network Meeting

Vienna, 20-21 May 2008

National Research FLAGSHIPS

CSIRO

CO_2 separation at atmospheric pressure: Current technologies and markets



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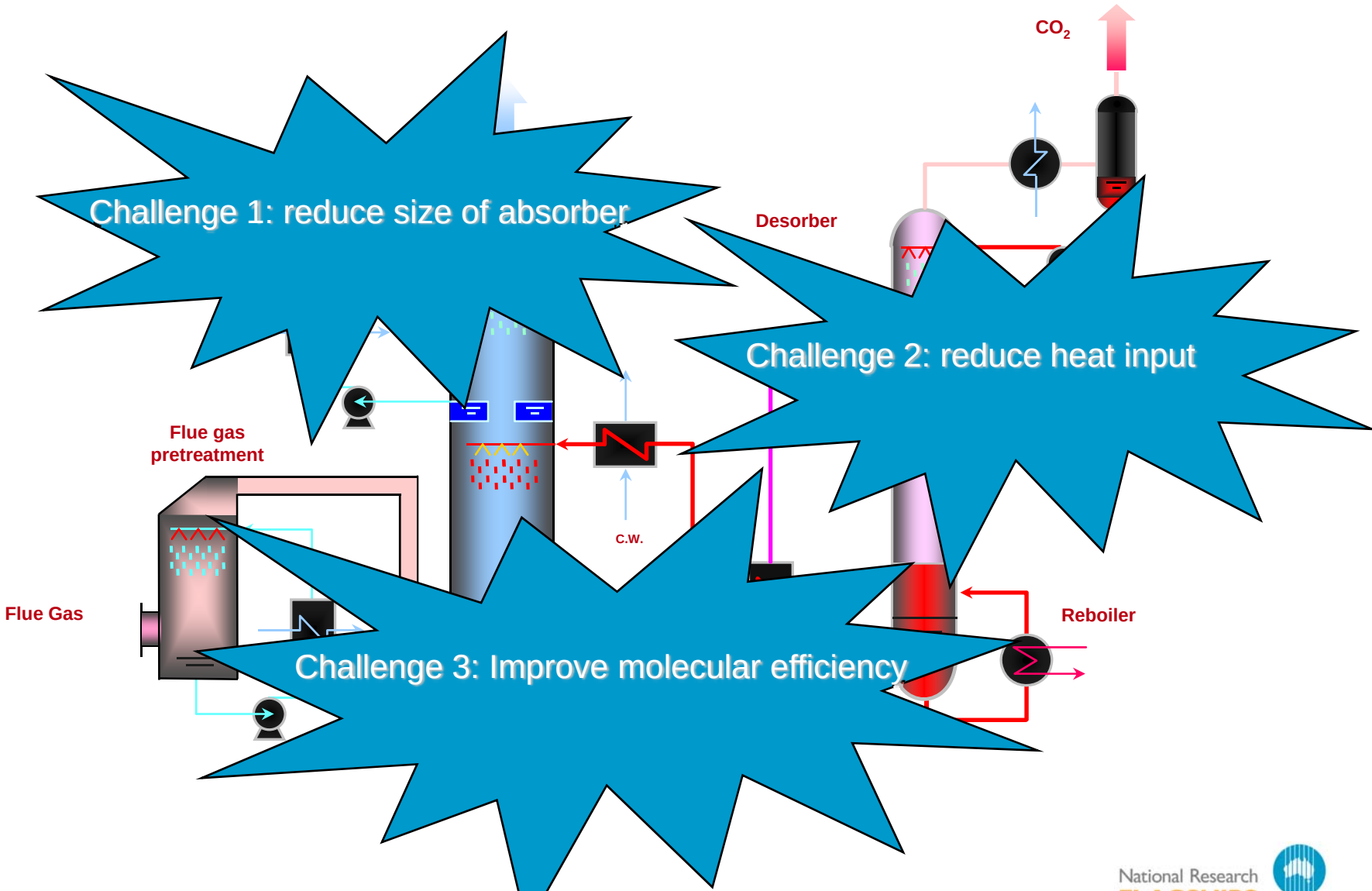
Novel PCC technologies

- Requirements
  - Quickly deployable at large capacities
  - Need to be a lot better than absorption processes

- Adsorption processes
  - Use of circulating fluidised beds
- Membranes
  - Engineering designs for large capacities
- Cryogenic technologies
  - Engineering designs for large capacities

- General
  - Less material science, more engineering & equipment design
  - Absorption processes likely to be improved through R,D&D

Three main challenges for PCC



Go for innovation in absorption processes!

- Advanced amines
  - Formulated mixtures, multiple amine groups
- Non-aqueous solvents
  - Ionic liquids
- Phase change solvents
  - Slurries, emulsions
- Modified process concepts
  - Intercooling, heat exchange integration in stripper, integration of compression, split flow
- Novel process components
  - Membrane contactors, heat pumps
- Robust solvents
  - Ammonia, carbonates
- Biomimetic approaches
  - Enzymes for solvent process improvements