



CFE-06-06: Assessing Post Combustion Capture (PCC) for Coal Fired Power Stations in Asia-Pacific Partnership Countries

APP project update
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National Research
FLAGSHIPS



PCC-1 programme: 6 Key Activities

1. Establish a 3,000 tpa pilot PCC test program at Delta Electricity's Munmorah power station for two years
2. Establishing a 24 month PCC test program at Tarong Energy involving short campaigns on different solvents and operating parameters
3. Supporting a program of laboratory test work and research to understand operational problems and their potential resolution before and during large scale PCC deployment
4. Carry out process engineering and design for integration with power station energy systems
5. Technology transfer program among APP program participants
6. Use the foundations provided by pilot trials in Australia to support possible trials in other APP member countries



PCC-2 (China) Programme: 4 Activities

Phase 1: Pilot plant at Huaneng Beijing Co-generation Plant

- Preparation
- Construction and Installation
- Preparation for commissioning and operation
- Commissioning and operation

Phase 2: Pilot plant at second site

Phase 3: Technology scale up and international industry implementation

Phase 4: Outreach program



APP – PCC project status

➤ PCC-1 (Research & 2 Australian pilots)

- Construction of pilot plant in NSW completed (Delta Electricity, Munmorah) –first CO₂ capture in February 2009
- Second pilot plant (Tarong Energy, Tarong) in construction phase.

➤ Research focusing on chemical absorbents

- 8 solvents selected for further characterisation



NSW Pilot PCC Plant



- Munmorah Power Station
- Black coal
- Ammonia based
- No FGD/DeNox
- In operation

CSIRO S&T Seminar



Early Observations (Munmorah)

- CO₂ captured and data in broad agreement with lab experiments (wetted wall absorption rates).
- SO₂ removed but no appreciable effect on removal of NO_x
- Work will continue on optimisation of operation and plant performance



CSIRO PCC China Programme: - Status

Phase 1: Pilot plant at Huaneng Beijing Cogeneration Plant constructed and operational

Phase 2: Pilot plant at second site

- Seeking interested parties/locations

Phase 3: Technology scale up and international industry implementation

Phase 4: Outreach program

- Science and Technology seminar held in Australia on the use of aqueous ammonia for PCC



Post-Combustion Capture Pilot Plant China Huaneng Beijing Cogeneration Plant

Capture plant overall



Storage tanks and heat exchangers



Huaneng Pilot plant operation to date

- The first run was completed on 4th July 2008
- 9th July – 31st July commissioning and successive operation
- Experimental operation to determine optimum operating conditions
- Flow rates: 1800-3200 Nm³/h (75%-135%)
- CO₂ in exhaust gas: 2% - 4%
- **Captured CO₂ quality: 99.5%, 350-600 kg/h**
- **1000 ton CO₂ produced from flue gas since start-up**
- **Currently undergoing refurbishment for new campaigns in 2009**



International Technology Exchanges

Visiting technologists from China at Energy Centre in Newcastle, Australia



Visiting technologists from China at Loy Yang Power Station pilot plant, Australia



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Thank you

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