Australian Coal Sector Update 18th Session of the GMI Coal Subcommittee

19-20 November 2013
Australian Government

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Overview

1. Australian coal sector update
2. CMM project outlook
3. Five new projects at Australian coal mines

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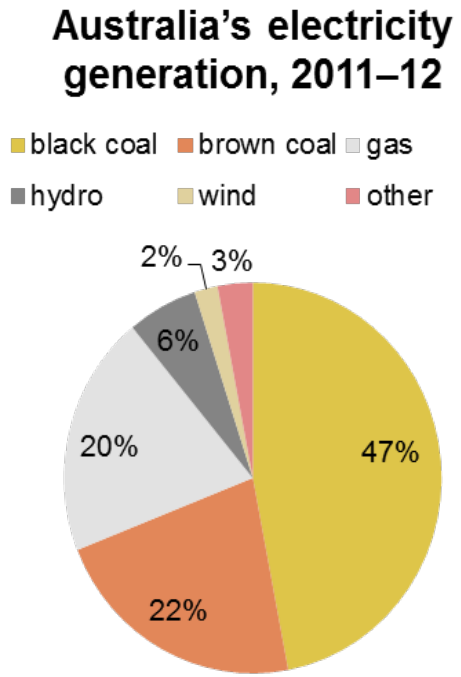
Australia coal sector update

- Estimated 526.6 Mt of black coal produced in 2012-13
- 29 Mt of emissions in 2012 from coal mining
- Coal generates 70% of Australia's electricity
- Second largest coal exporter accounting for around 27% of coal trade
- Employs over 50,000 direct and more than 130,000 indirectly



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CMM project outlook

- Direct Action Plan
  - 5 per cent reduction on 1990 levels of CO_2–e emissions by 2020
  - Emissions Reductions Fund – reverse auction to achieve low cost abatement
  - Clean up waste coal mine gas identified as an early opportunity

Five new projects at Australian coal mines

- $39 million will be spent over five years on five new methane abatement projects
- Projects support the development and demonstration of technologies to safely reduce fugitive methane emissions from coal mines
- Knowledge sharing through the GMI

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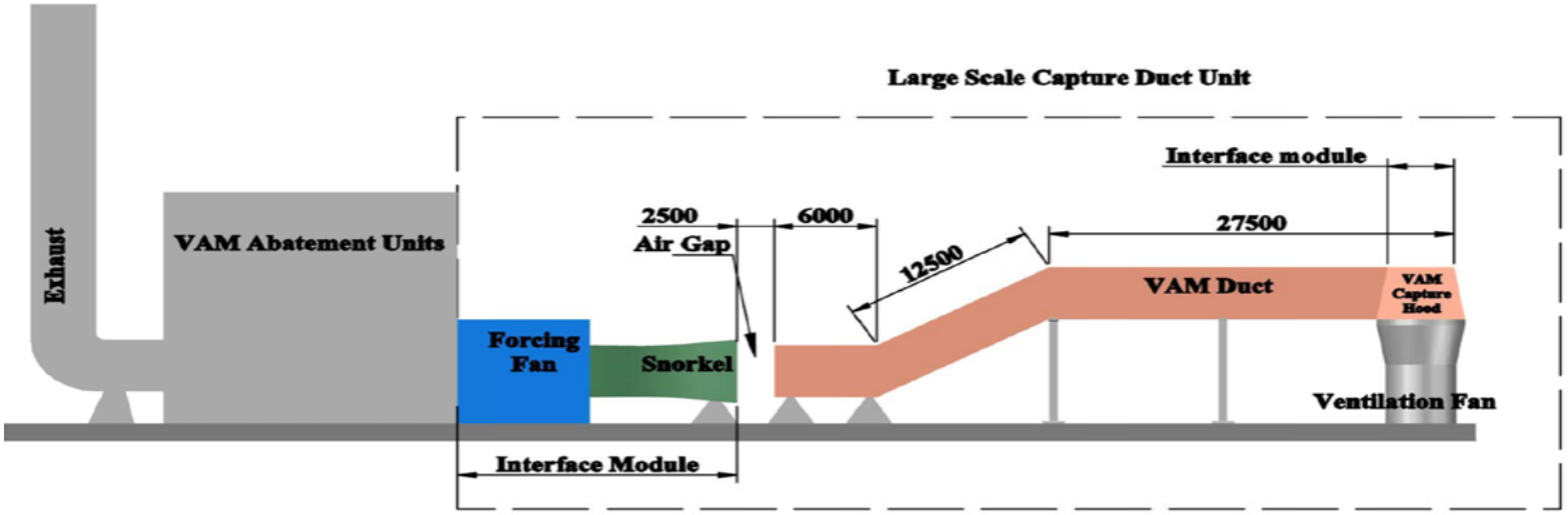
University of Newcastle
VAM Abatement Safety Project

- $12.5 million (Australian Government) $27 million (Total project value)
- Demonstration of a large-scale VAM capture duct complete with safety control measures and supporting design and testing information
- Understanding the underlying scientific and engineering principles behind methane ignition, deflagration and detonation



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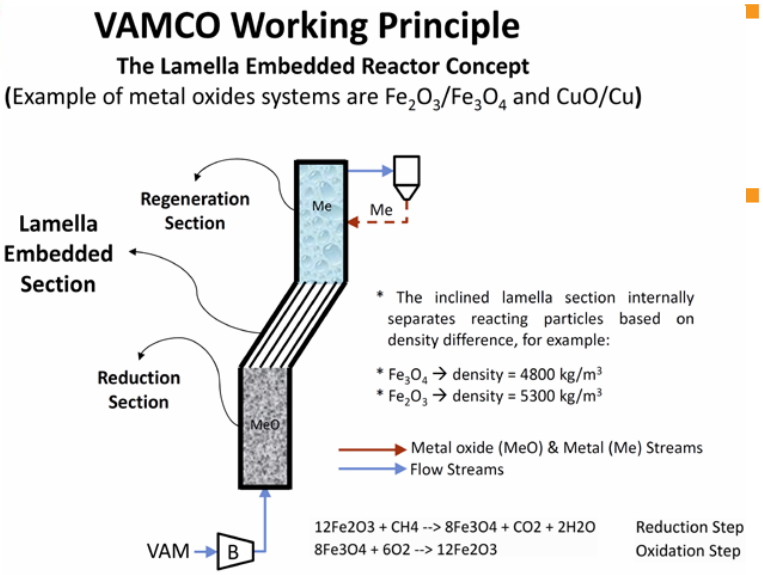
University of Newcastle
Chemical Looping VAM Abatement Project



Schematic of a VAMCO unit working principle.

- $2.7 million (Australian Government)
  $8.5 million (Total project value)
- Mitigates VAM flows with methane concentrations between 0.005% and 2.0%
- 1 m^3/s VAMCO prototype and then a 10 m^3/s pilot-scale demonstration unit

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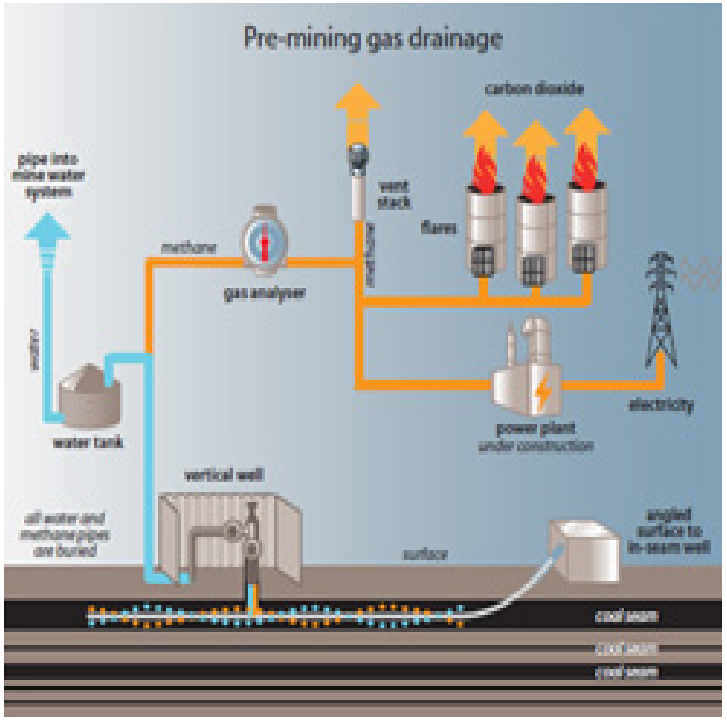
Bulga Underground Operations
Methane Capture and Abatement Optimisation

- $3 million (Australian Government) $6.9 million (Total project value)
- Increasing the longwall gas capture efficiency from 60% to 80%
- Result in a significant reduction of annual fugitive emissions by 0.3 Mt CO2-e
- Best practice information to be shared with industry



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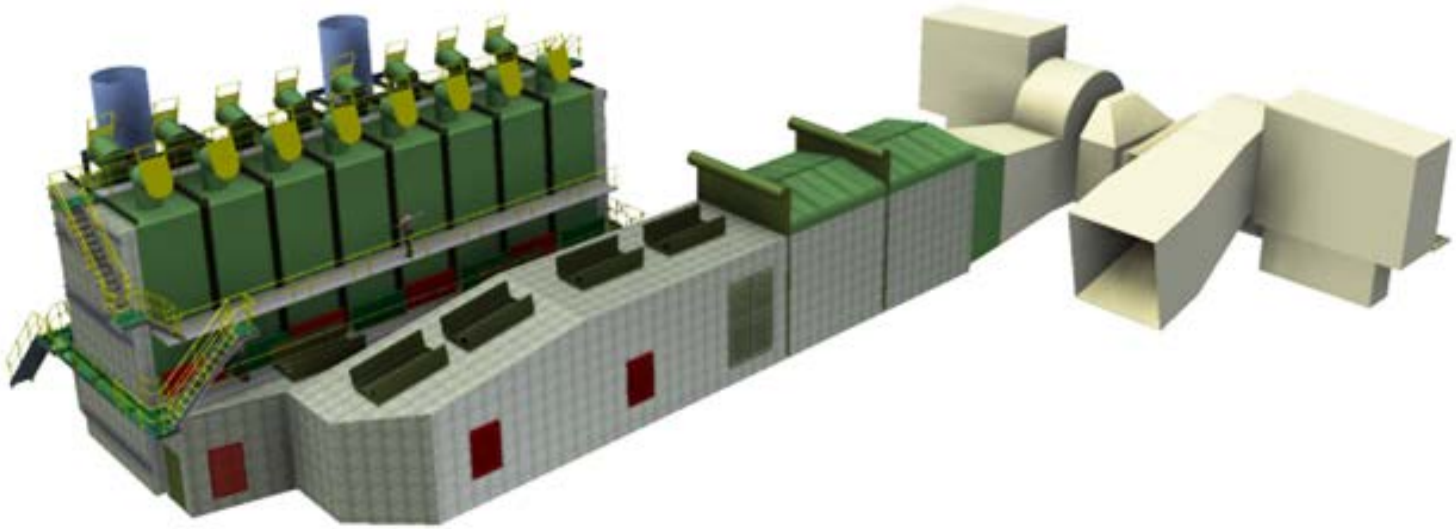
Centennial Coal Company Limited
Safety Duct and VAM-RAB Scale Up

- Centennial Coal Company Limited
- $13.4 million (Australian Government) $31 million (Total project value)
- Direct coupled RTO to a ventilation fan at the Mandalong mine
- Abatement of better than 98% of methane emitted
- Capable of handling 100-150 m3/s of ventilation air flow



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CSIRO

Novel VAM Technologies and Evaluation Tool

- $3.9 million (Australian Government) $8.2 million (Total project value)
- **VAMCAT** - a VAM catalytic combustion electricity-producing gas turbine that can be powered with 0.8% methane in air.
- **VAMMIT** - a VAM mitigator for elimination of methane (>0.3%) in ventilation air.
- **VAMCAP** - an enrichment technology that uses CSIRO developed carbon composite adsorbents to enhance methane capture.

1. VAMCAT prototype

2. VAMMIT prototype

3. VAMCAP prototype

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Contact information and announcements

Thank you,

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