CONSIDER Green House Gas METHANE

**GREENHOUSE GASES CONTRIBUTIONS**

- **CO₂**: 53%
- **CH₄**: 17%
- **Trop Ozone**: 13%
- **N₂O**: 5%
- **CFC's**: 12%

**Fossil Power Plant**

**Coal mine Vent Shaft**

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- **CO₂**
  - GW impact: Life time in atmosphere >>10 000 years
  - Fossil Power Plant

- **CH₄**
  - GW impact: Life time in atmosphere 12 years
  - Coal mine Vent Shaft

- **Time**
  - 12 years
CONCLUSIONS ON MAJOR EMISSION Reductions:

- CO2 continues to accumulate, but at a slower rate.
CONCLUSIONS ON MAJOR EMISSION REDUCTIONS:

• CO2 continues to accumulate, but at a slower rate.
• Methane reductions have full impact quickly - in only 12 years!

Reducing methane emissions CONTRADICT increasing global warming!
Global Methane Emissions - by source

BIGGEST TOTAL SOURCE:
Cows, sheep etc

PROBLEM:
Each source is very small

50-100 kg CH4 per cow and year = 1-2 t CO2e
ANNUAL GREENHOUSE EFFECT on Global Warming
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1 million t CO2e

Coal mine VAM
800 000 m3/h, 1%
(50 000 t CH₄/yr)
ANNUAL GREENHOUSE EFFECT on Global Warming

Coal fired Power plant
300 MW$_{th}$ =

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800 000 m³/h, 1%
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1 million t CO₂e
ANNUAL GREENHOUSE EFFECT on Global Warming

1 million t CO₂e

½ million cars =

Coal fired Power plant 300 MWₜₜ =

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(50 000 t CH₄/yr)
Methane in coal mines - safety issue

Gas Engines

High CH₄ concentration

Very low CH₄
< 1%

Very high volumes

Main Coal Mine Vent Shaft

Coal Excavation

>30%
MEGTEC APPROACH
- FROM DIFFERENT ANGLE

- Global leader in VOC emission controll
- In house competence & experience of energy systems
**1st DEMO INSTALLATION AT A COAL MINE**

abating vent air methane in 1994.
Trial unit at British Coal

**DEMO INSTALLATION LONG TERM ENERGY RECOVERY**

-small scale trial unit at BHP in Australia 2001 – 2002, 12 months of utilizing VAM for generating steam

**LARGE SCALE DEMO ABATEMENT**

CONSOL ENERGY in the US

**LARGE SCALE COMMERCIAL ABATEMENT**

First VAM project in China.
Generation of hot water.
In full operation by April 2007
– the world’s first VAM Power Plant
VAM POWER PLANT – at BHP Billiton in Australia
- first large scale generation of VAM energy

- Has generated over 300,000 carbon credits
- Has generated over 50 GWh of electricity
- Processing only 20% of ventilation air volume
VAM market and Methane to Markets Partnership

Opening up a completely new market not easy.

BARRIERS:
• Projects totally depending on CERs/ERUs (new phenomena)
• Attitude – coal miners mine coal
• Ownership of VAM (safety hazard and GHG)
• Quality of info
• ..... 

These are exactly the issues addressed by Methane to Markets!
PRESENT VAM MARKET STATUS

- MEGTEC VAM technology and VAM Power Plant has won several awards such as the Excellence in Energy Award by the Australian Institute of Energy, and the US EPA 2008 Climate Protection Award.
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• Near market break through.
• Competitors starting to try the market.
• Investor hesitation on future of carbon credits market (and new application).
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- Near market break through.
- Competitors starting to try the market.
- Investor hesitation on future of carbon credits market (and new application).
- *Within 3 years, MEGTEC and competition should be able to reduce VAM emissions of over 30 million tons CO2e.*
3 CONCLUSIONS

1. VAM is a major opportunity to significantly reduce GHG emissions.
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2. In addition to reducing CO2 emissions, focus should ALSO be on reducing methane - CONTRADICTING the increasing global warming.
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2. In addition to reducing CO2 emissions, focus should ALSO be on reducing methane - CONTRADICTING the increasing global warming.

3. Methane to Markets is an excellent vehicle to identify and to overcome barriers holding back further reductions of methane emissions.