

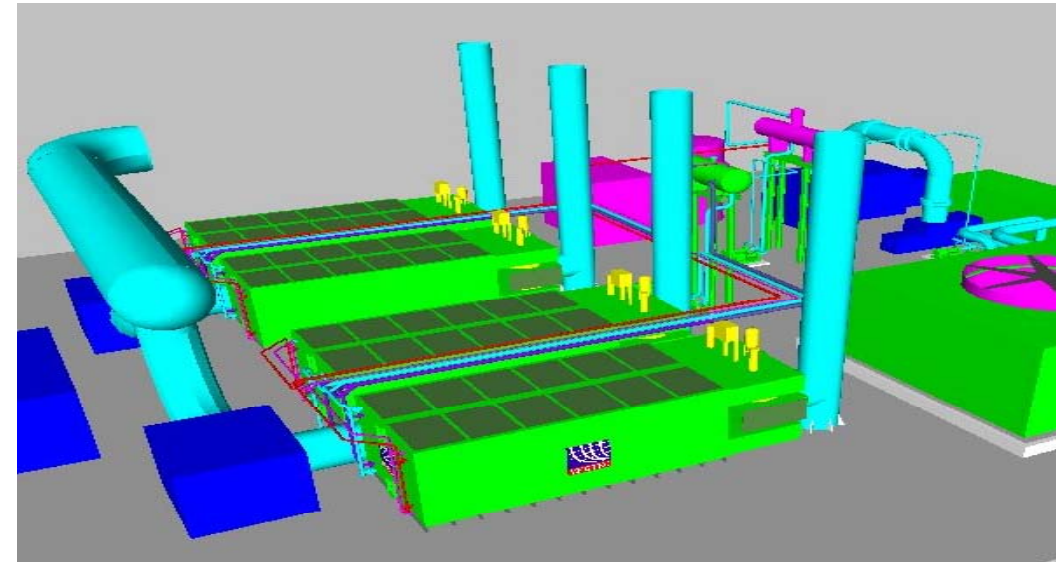
2nd Annual Methane to Markets Partnership
Meeting in Buenos Aires



Richard Mattus

Business Manager
Energy & Process Systems

MEGTEC Systems



The Worlds 1st large scale
VAM Power Plant
now under construction in Australia



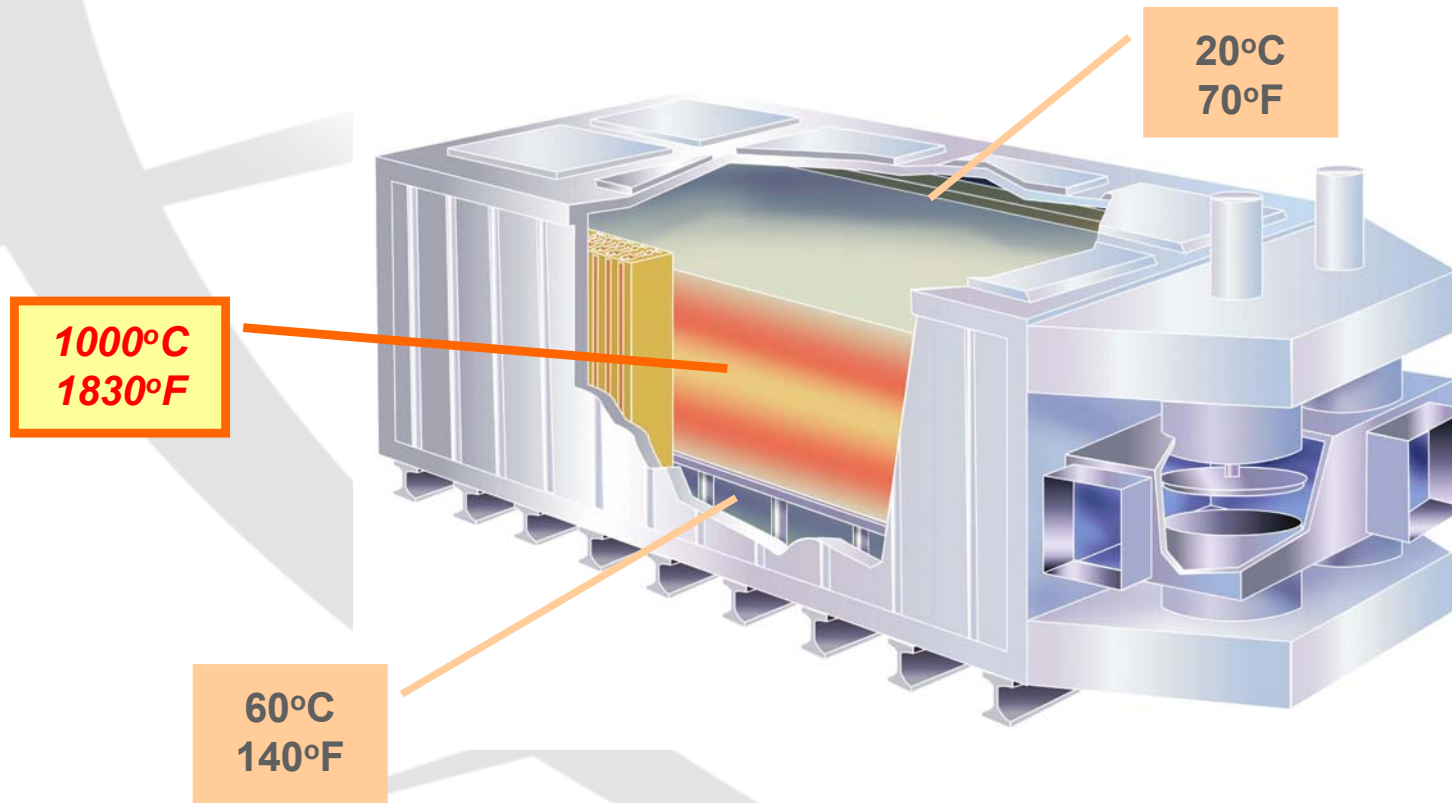
Globally leading supplier
of emission control equipment for
low concentrations of hydrocarbons to air.

+

**In house competence and experience
of boilers and boiler design.**

Most suitable technology:

The flameless VOCSIDIZER



No Catalyst: Efficiently oxidizing at full normal temperature for methane.

Flameless: Oxidation completely in-bed.

No NOx: No flame. Homogeneous temp distribution without peaks.

Another Typical MEGTEC Oxidizer Application



Over 700 VOCSIDIZERS in many industrial applications,
now adding ..

Coal Mine Ventilation Air Methane

PROVEN TECHNOLOGY

VAM ABATEMENT

1st DEMO INSTALLATION AT A COAL MINE
- abating vent air methane in 1994

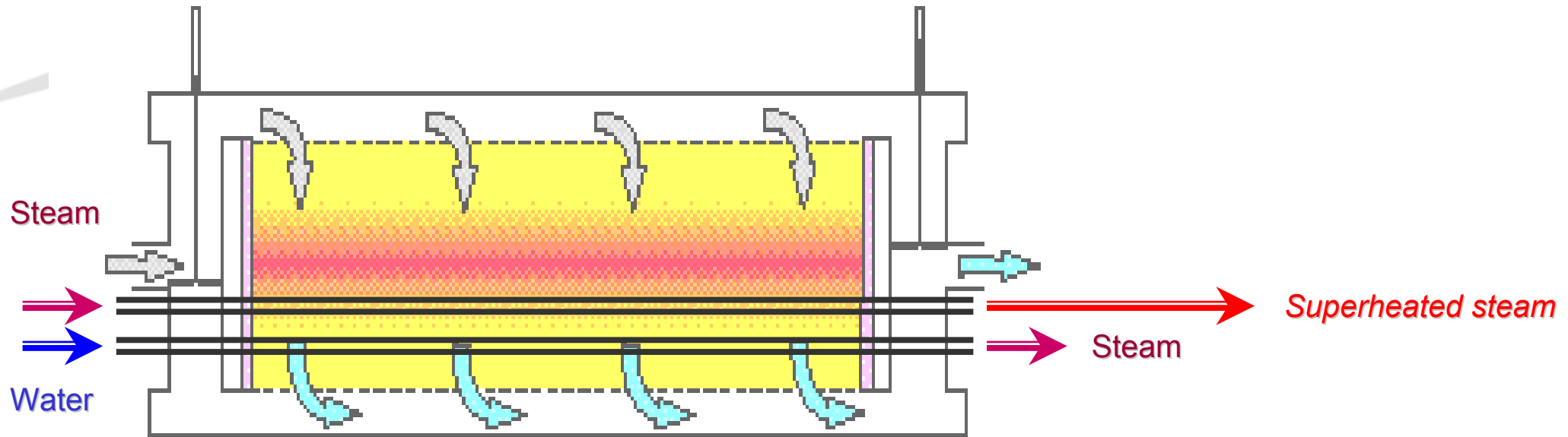


TRIAL UNIT AT BRITISH COAL 1994

Demonstration of abatement.

8 000 m³/h of ventilation air
with 0.3 – 0.6 % methane.

RECOVERING ENERGY FROM VOCSIDIZER BED



PROVEN TECHNOLOGY

VAM PRIMARY FUEL FOR GENERATION OF ENERGY

2nd DEMO INSTALLATION AT A COAL MINE
- small scale generation of energy



**TRIAL UNIT AT APPIN COLLIERY, BHP
AUSTRALIA 2001 - 2002**

Demonstration of small scale heat recovery :
12 months of utilizing VAM for boiling water

Partly funded by ACARP

(Australian Coal Association Research Programme)

PROVEN TECHNOLOGY

VAM PRIMARY FUEL FOR GENERATION OF ENERGY

2nd DEMO INSTALLATION AT A COAL MINE
- small scale generation of energy

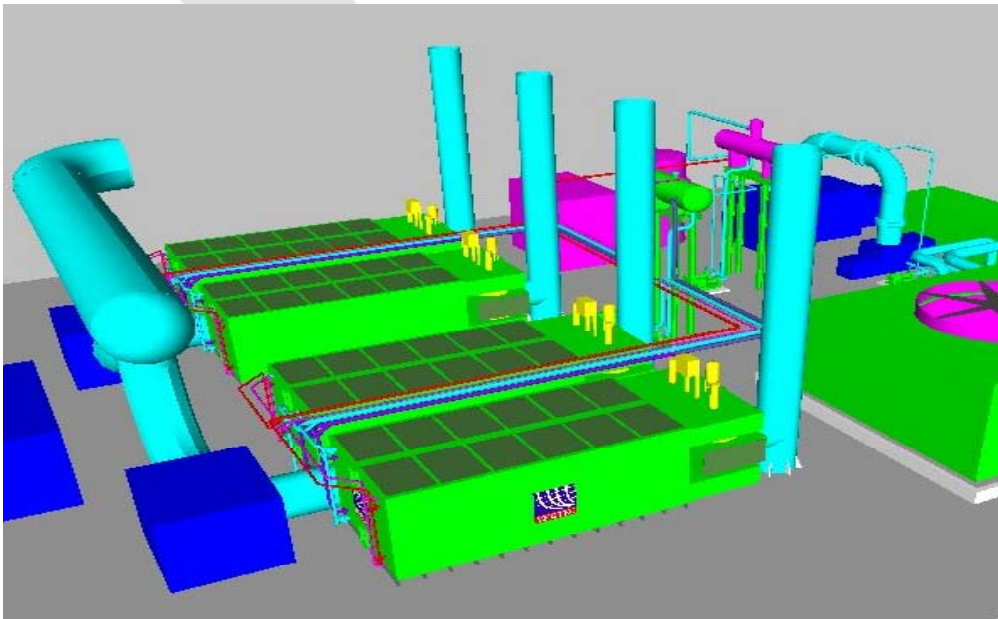


On 5 April 2005 awarded as
best Greenhouse Gas Project
funded by ACARP

LARGE SCALE

VAM PRIMARY FUEL FOR GENERATION OF ENERGY

3rd DEMO INSTALLATION AT A COAL MINE
-first large scale generation of energy



INSTALLATION AT WestCliff COLLIERY,
BHP Billiton AUSTRALIA 2005 - 06

Demonstration of **large scale** heat recovery.

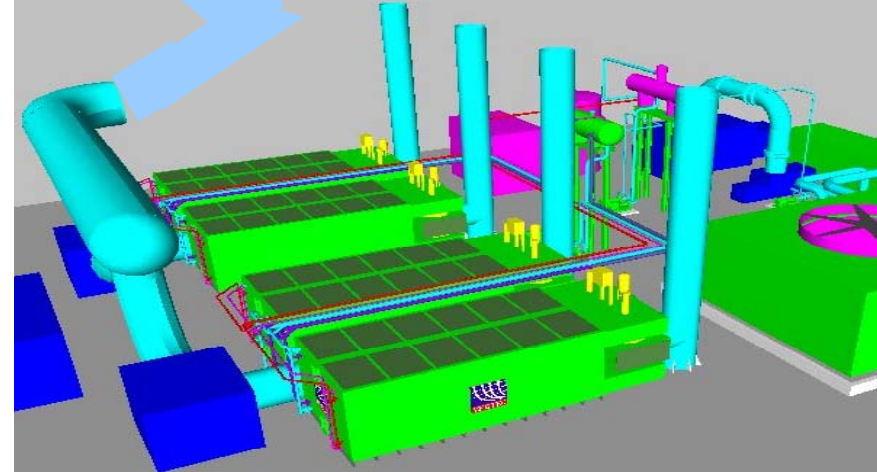
250 000 m³/h of ventilation air generating 6 MWe.

Taking only 1/5 of the shaft air volume.

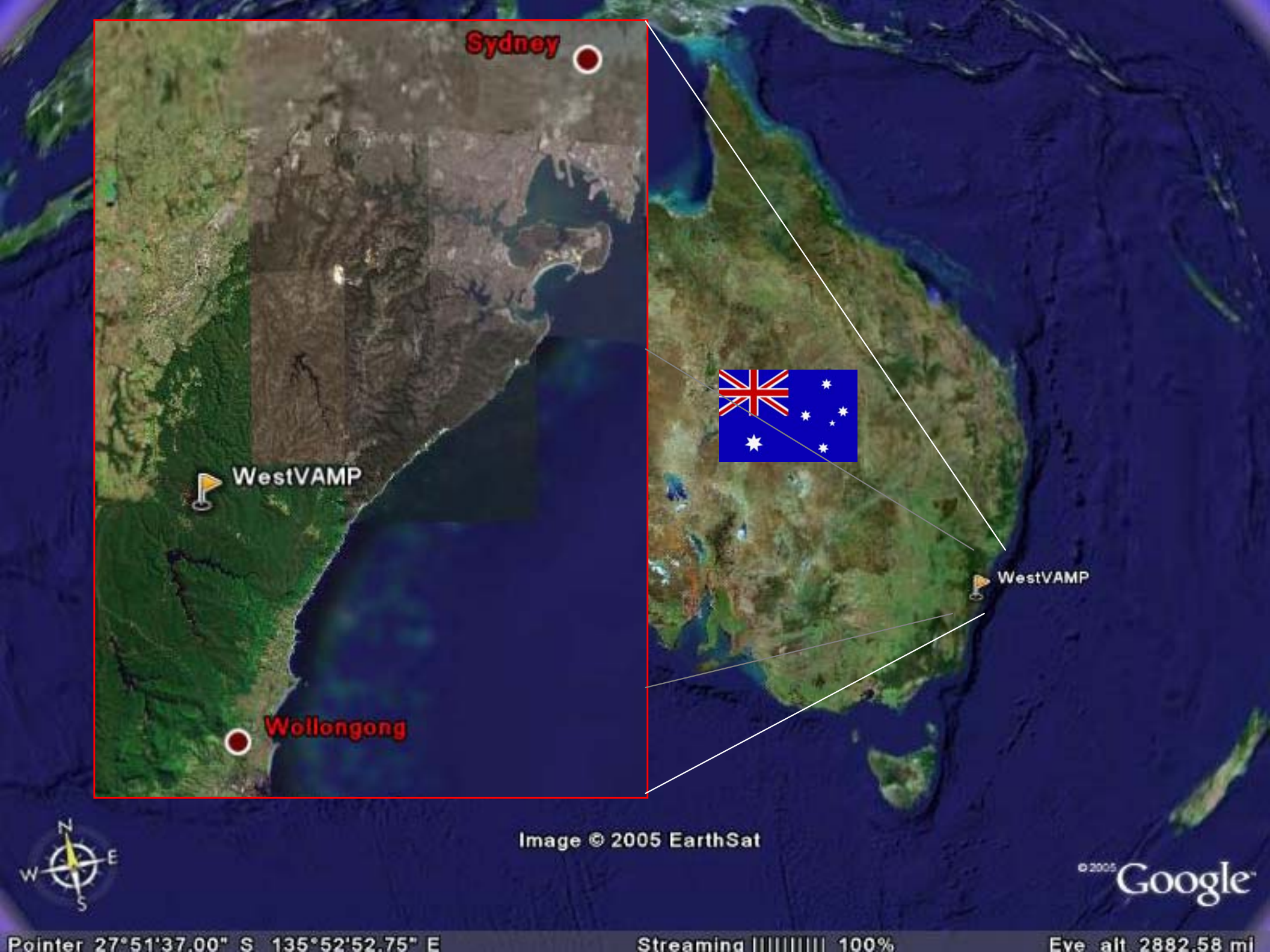
Partly funded by AGO
(Australian Greenhouse Office)

LARGE SCALE VAM PRIMARY FUEL FOR GENERATION OF ENERGY

3rd DEMO INSTALLATION AT A COAL MINE
-first large scale generation of energy



➤ Site installations started in summer 2005



Sydney



WestVAMP



Wollongong



WestVAMP



Image © 2005 EarthSat

© 2005 Google

Pointer 27°51'37.00" S 135°52'52.75" E

Streaming ||||| 100%

Eye alt 2882.58 mi

West Cliff Colliery

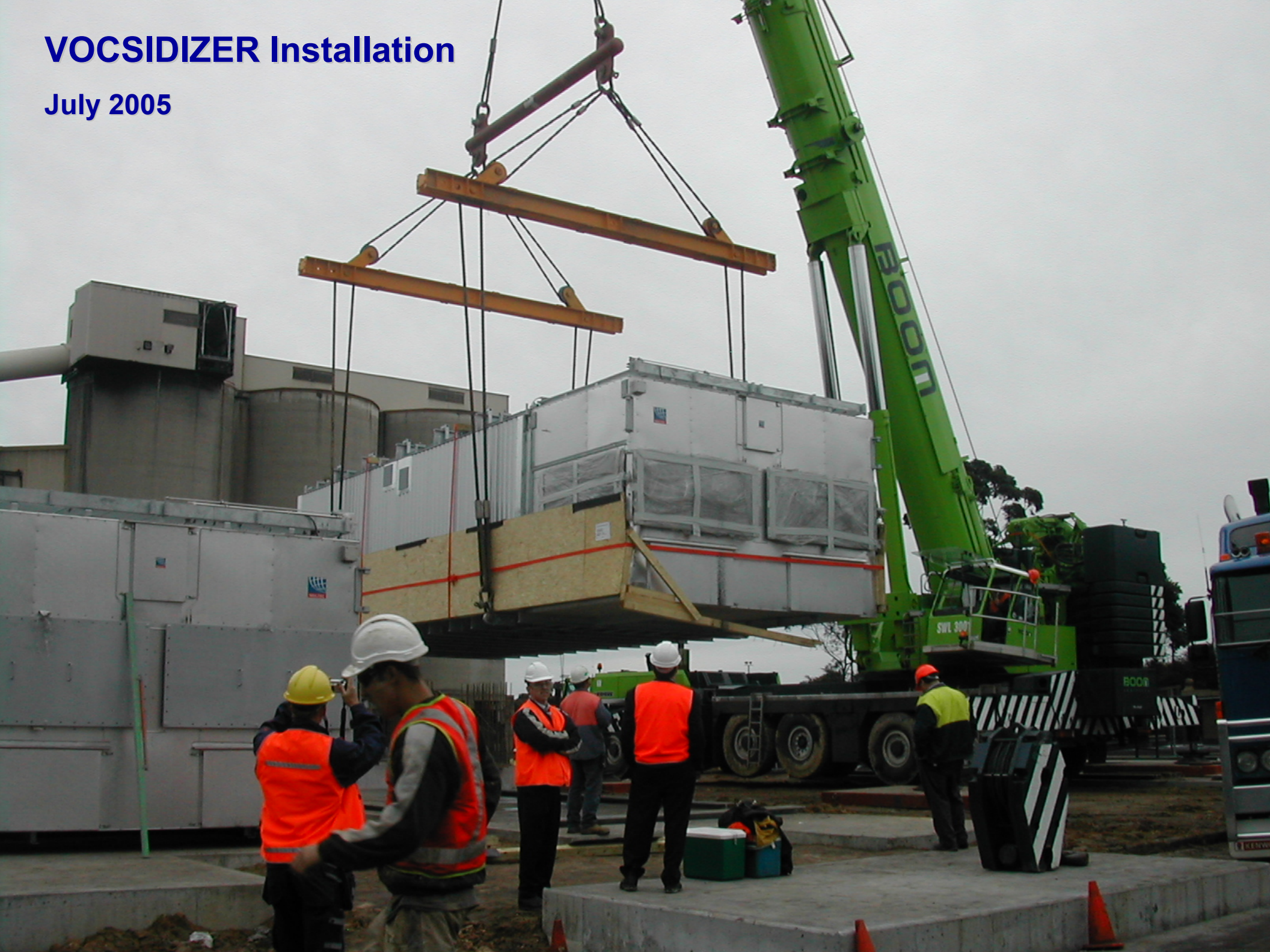
BHP Billiton





VOCSIDIZER Installation

July 2005

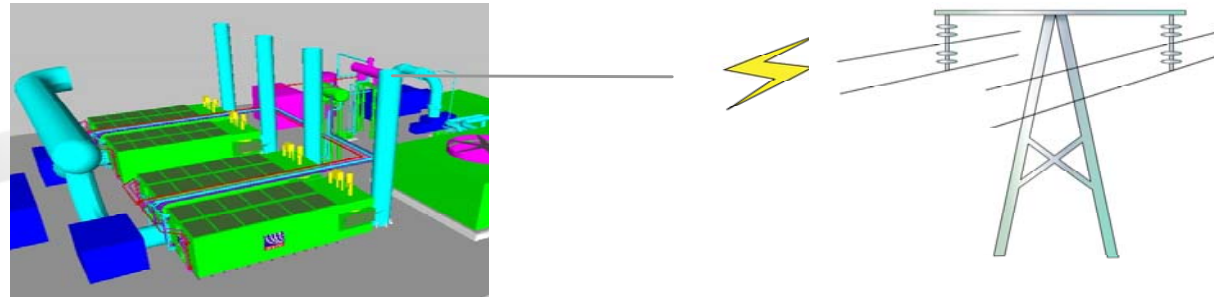


On site 3Q 2005:

- 4 VOCSIDIZERS
- 2 Fans (250 000 Nm³/h)
- Turbine-generator (6 MWe)

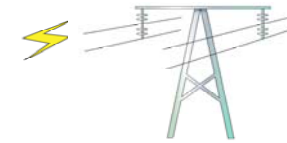
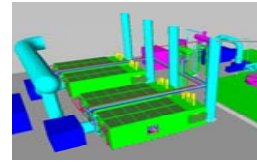


➤ Start-up planned for Spring 2006



A VAM POWER PLANT HAS 2 TYPES OF REVENUES

1. The value of energy produced.
2. The value of emissions reduced (CER).



Simply ventilating VAM to atmosphere means ***wasting*** the potential of ***an annual 100 to 200 GWh of electricity*** - per coal mine ventilation shaft.

RULE OF ADDITIONALITY

- making the difference for VAM Power Plants

- The ***value of energy alone will finance only few projects***, with
 - high value of energy and where
 - long payback times are accepted (as for normal power plants).
- ***Most cases require CER-financing***, to be realized.
 - This fulfills the rule of Additionality, an important requirement for CDM/JI Projects.

ANNUAL GREENHOUSE EFFECT on Global Warming



ANNUAL GREENHOUSE EFFECT on Global Warming



**~1million
tons of CO_{2e}**



Coal mine VAM
800 000 m³/h, 1%
(50 000 t CH₄/yr)

ANNUAL GREENHOUSE EFFECT on Global Warming



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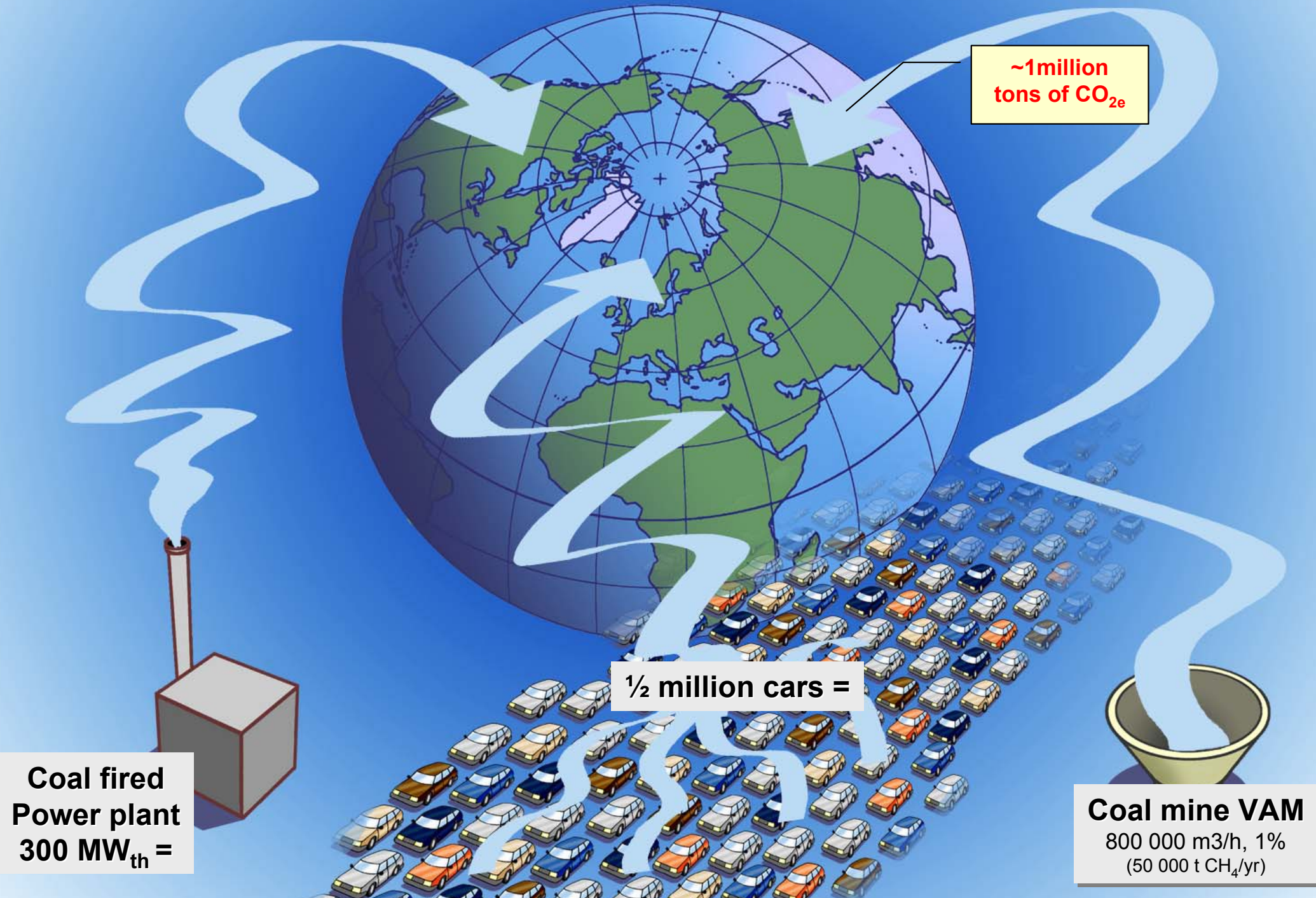


**Coal fired
Power plant
300 MW_{th} =**



**Coal mine VAM
800 000 m³/h, 1%
(50 000 t CH₄/yr)**

ANNUAL GREENHOUSE EFFECT on Global Warming



~1million tons of CO_{2e}

1/2 million cars =

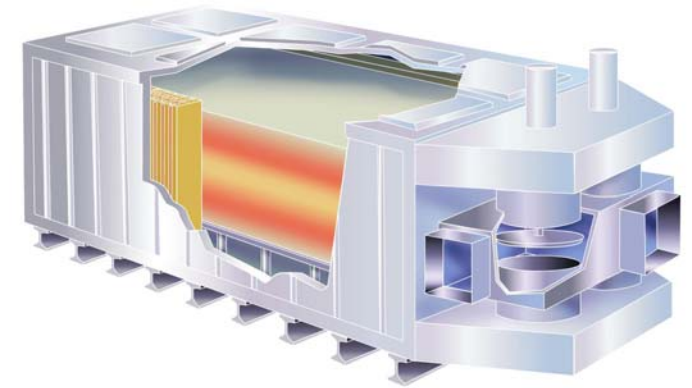
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Coal mine VAM 800 000 m³/h, 1% (50 000 t CH₄/yr)

5 CONCLUSIONS on VAM (Ventilation Air Methane)

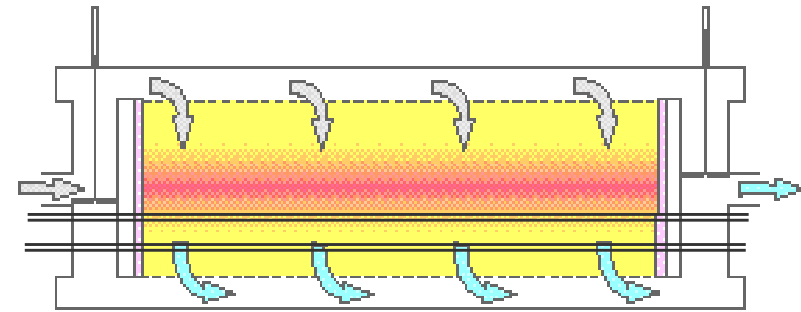


1. VOCSIDIZER can abate VAM



5 CONCLUSIONS on VAM (Ventilation Air Methane)

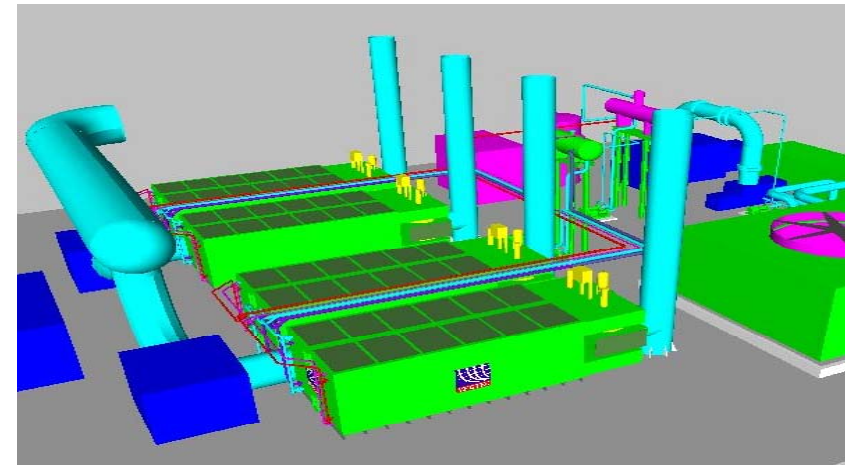
1. VOCSIDIZER can abate VAM
2. VOCSIDIZER can convert VAM into useful energy



5 CONCLUSIONS on VAM (Ventilation Air Methane)



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5 CONCLUSIONS on VAM (Ventilation Air Methane)



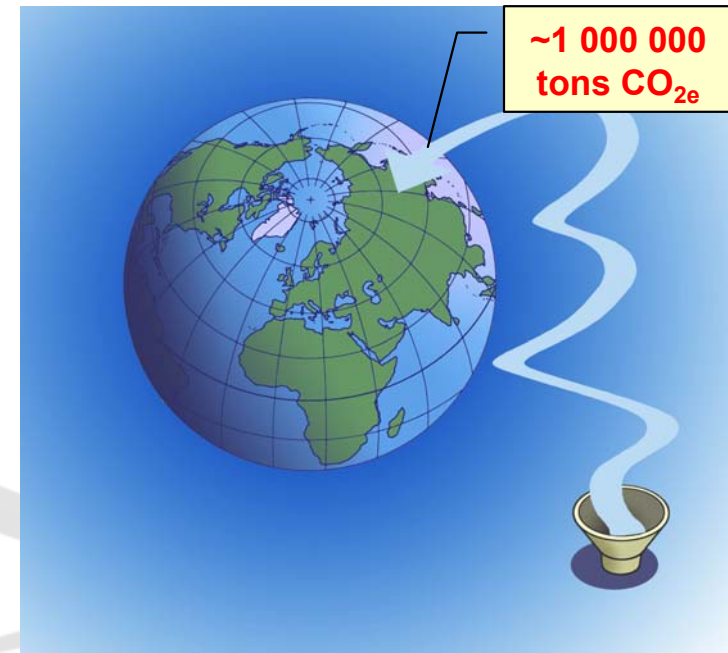
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5 CONCLUSIONS on VAM (Ventilation Air Methane)



1. VOCSIDIZER can abate VAM
2. VOCSIDIZER can convert VAM into useful energy
3. Project WestVAMP in Australia will be the World's first large scale VAM Power Plant
4. CER financing will be required for most VAM projects to be realized.
5. **One single VAM Power Plant can reduce annual emissions of ~1 million tons CO_{2e}.**

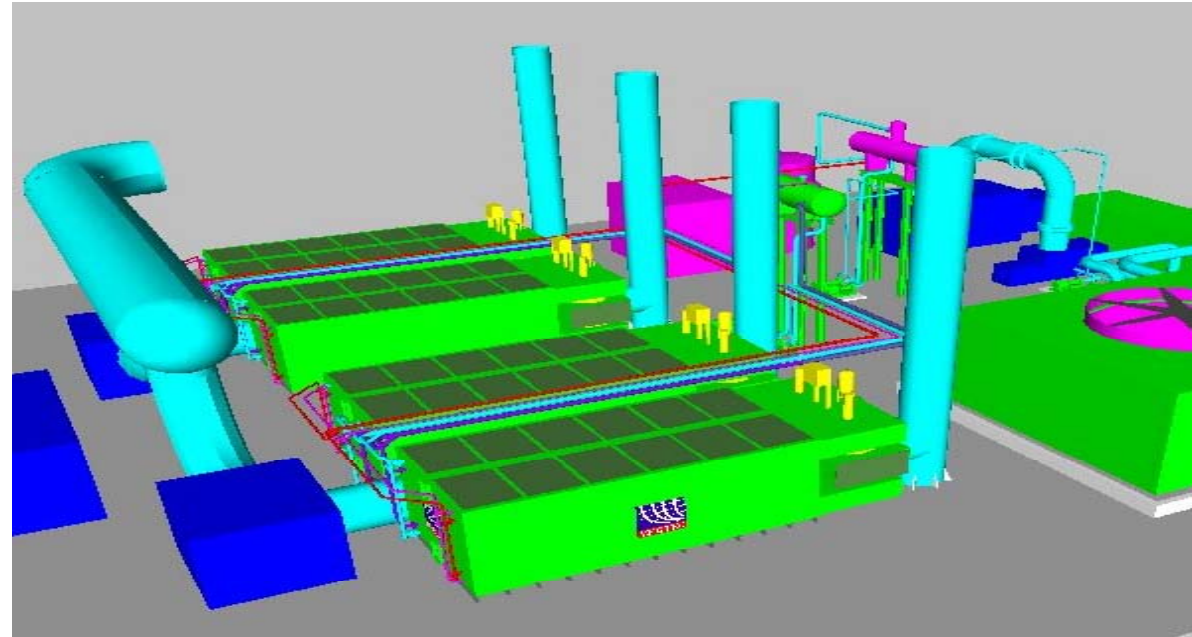


VAM to Energy – 1st commercial project



Richard Mattus
Business Manager
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MEGTEC Systems



RMATTUS@MEGTEC.SE