MEGTEC VAM Processing

GMI-Coal Status Update Report

Sydney September 2012

Richard Mattus

MEGTEC VAM Power Plant

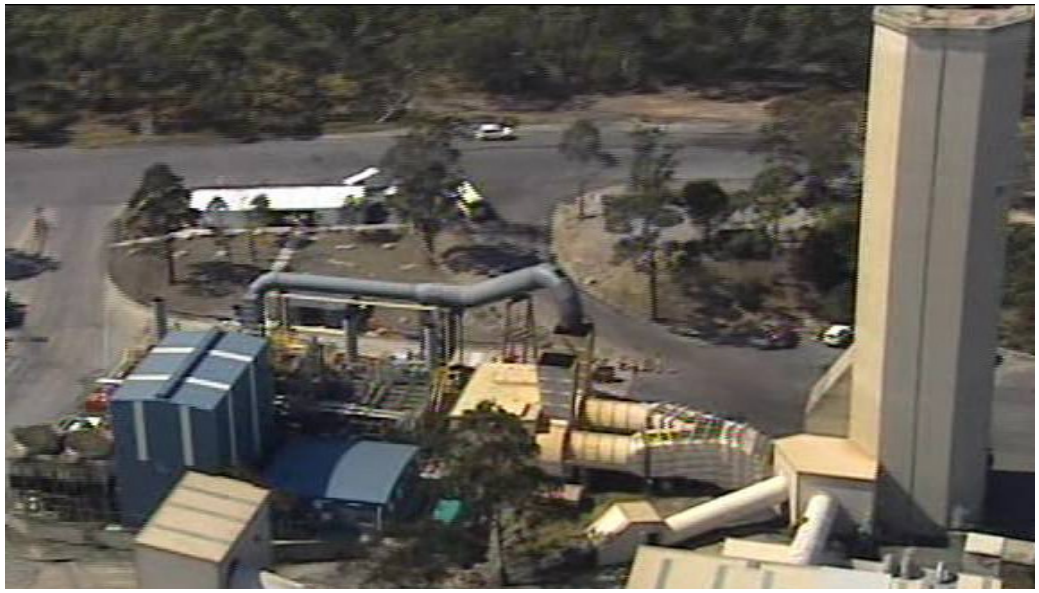
WestVAMP at BHP Billiton in Australia

Commissioned in 1st Quarter 2007.

By 1st Q 2012 WestVAMP had generated;

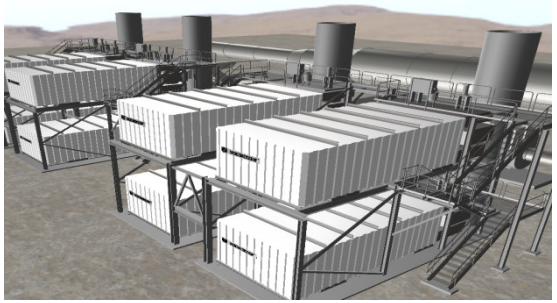
> 165,000 MWh of electricity

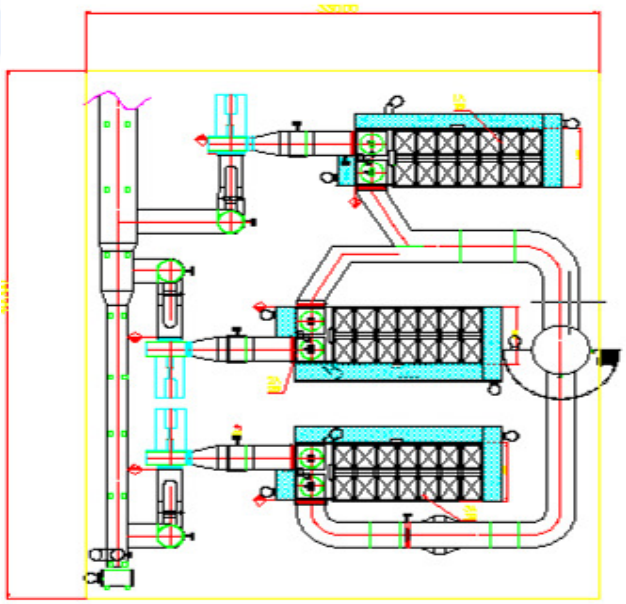
> 1 million carbon credits (CO_{2e} as NGAC's).

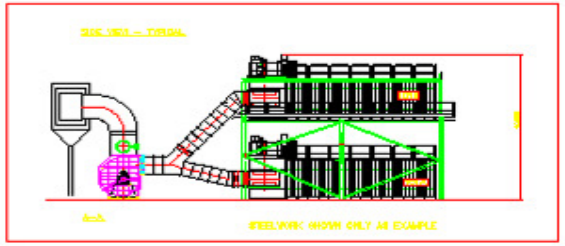


MEGTEC VAM in China 2011

Da Tong mine, ChonQing Province, China







- Investor is a joint venture owned by:
  - SongZao Coal & Electricity Co Ltd
  - AES Corp (US-based global power generation company)
  - Shenzhen Dongjiang Environmental Renewable Energy Co Ltd

MEGTEC VAM in China 2011

Da Tong mine, ChonQing Province, China

World's largest VAM abatement plant in operation
in the ChongQing Province of China since mid 2011.

MEGTEC VAM in China 2011

Da Tong mine, ChonQing Province, China

- 6 Vocsidizer units mounted on two levels
- Processing capacity is 375,000 Nm3/h of ventilation air
- Includes hot water generation for local use

MEGTEC VAM in China 2011

Duerping mine, Shanxi Province, with Sindicatum

One Megtec 2-Can Regenerative Thermal Oxidizer ("RTO") units with a capacity of 2,100 Nm3/min

One 1,200 Nm3/min capacity CH4MIN Regenerative Catalytic Oxidizer ("RCO") built by Megtec.

- The first commercial deployment of the CH4MIN catalytic technology.
- The project is expected to generate 2 million CERs over its life.
- Completion planned for 2nd half 2012.

MEGTEC VAM demo installations
Summary by September 2012

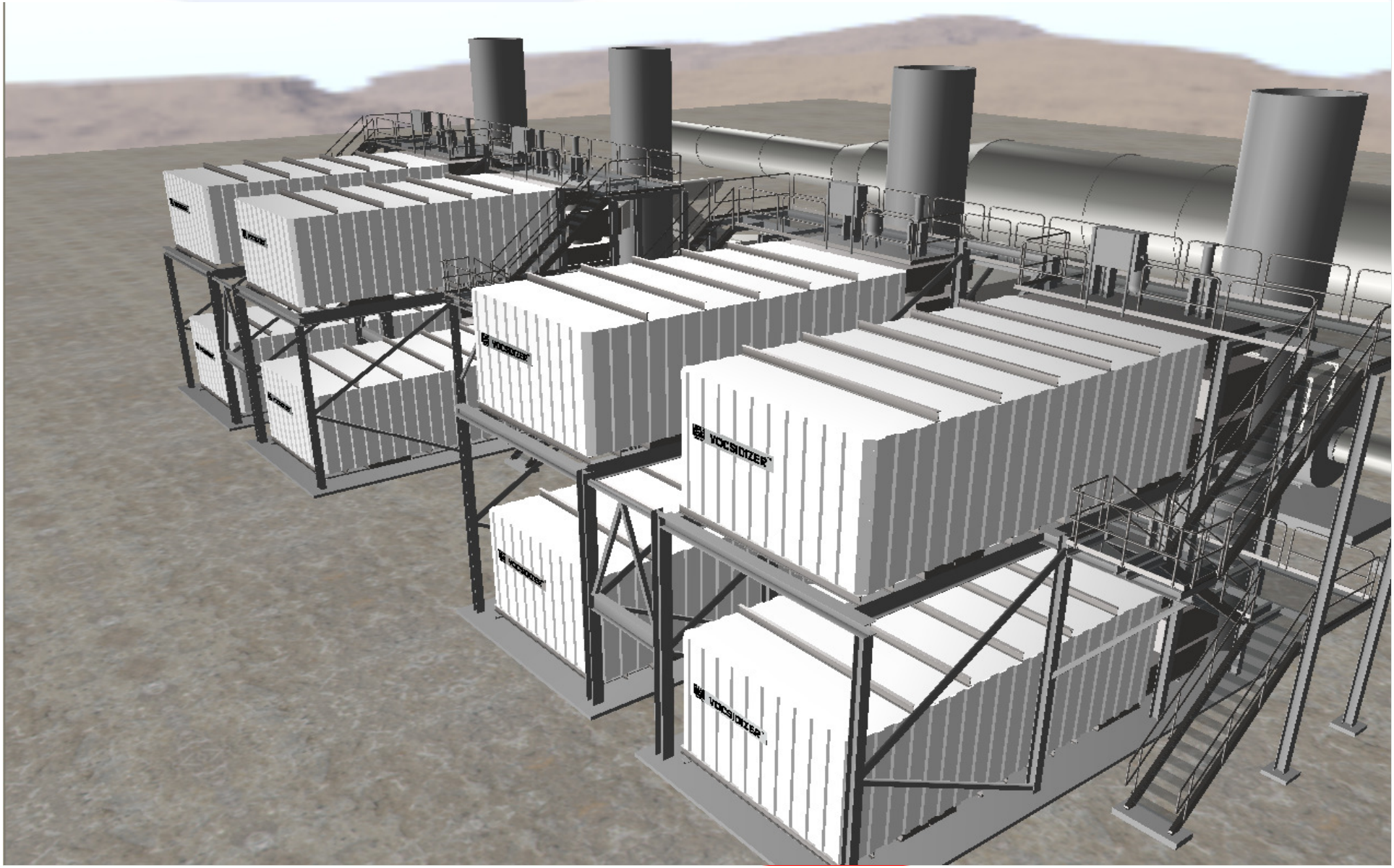
MEGTEC Commercial VAM installations
Summary by September 2012

MEGTEC VAM STATUS 2012

MEGTEC VAM status achieved by 2012				
Type of installations	**Number of plants**	**Number of RTO units**	**Approx total processing capacity in Nm3/h**	**Year of installation (Locations)**
Demo / pilot	4	4	80,000	1994, 2001, 2007, 2009 (UK, Australia, USA)
Commercial;				
- Completed	3	11	700,000	2007, 2008, 2011 (Australia, China)
- Under completion	*1*	*2*	*200,000*	*2012 (China)*

Total of MEGTEC VAM plant operation experience	~14 years
Total of MEGTEC VAM RTO unit operation experience	> 30 years

MEGTEC VAM processing concept is modular, based on VOCSIDIZERs, stacked in arrangements of VAM Cubes, each Cube processing 250,000 Nm3/h.



Electricity from VAM Power Plant

GUIDE LINES

	0.3%	0.6%	0.9%
Heat straight from bed. **Water at 70 - 150^{oC}**	3 MW_{th} = ½ -1 MW_e	11 MW_{th} = 3 -4 MW_e	18 MW_{th} = 5 - 6 MW_e
--- *For each 250 000 Nm3/h of ventilation air* - - -			

For large size plants, conversion from thermal to electrical energy can be expected to be around 30%, and lower for smaller plants.

MEGTEC is also exploring other types of VAM energy recovery and utilization.

MEGTEC

Pilot VAM VOCSIDIZER

- available in Australia for VAM processing demonstration