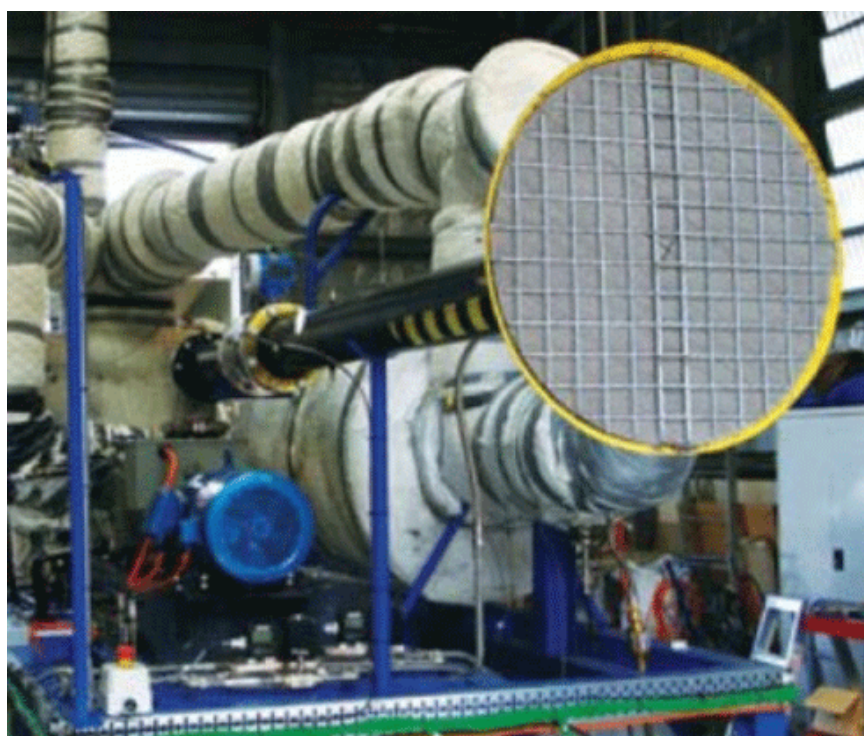


Smart solution to methane emissions from coal mining

An Australian-Chinese collaboration has successfully trialled new CSIRO technology to mitigate methane gas emissions from coal mining, harnessing them as a source of clean energy.



Credit: CSIRO

The Ventilation Air Methane Catalytic Turbine (VAMCAT) technology has the potential to reduce global methane emissions, which have a global warming potential more than 20 times greater than carbon dioxide.

Dr Shi Su, Research Leader in CSIRO Earth Science and Resource Engineering Division, says about 28 billion cubic metres of methane is released to the atmosphere every year from coal mining activities around the world.

‘Approximately 50 to 85 per cent of these are low concentration emissions from mine ventilation air systems that conventional gas technologies can’t capture or use effectively,’ he says.

VAMCAT technology uses a novel catalytic combustion gas turbine system to oxidise methane to carbon dioxide and water, turning what would otherwise be a greenhouse gas waste product into a clean source of energy. China is the largest potential user of the technology, accounting for 45 per cent of ventilation air methane emissions.

A demonstration unit built at [CSIRO's Queensland Centre for Advanced Technologies](#) was trialled at an underground coal mine in China in November 2011. It included a 25 kilowatt electric power generator.

‘The demonstration unit can be operated with less than one per cent methane in the air,’ Dr Su says.

‘Working with mine site personnel to install and test the unit, we ran a series of trials, catering for the various operating conditions at the mine, including different mixes of gas in the air. Now we are seeking partners to develop a commercial scale VAMCAT unit.’

CSIRO collaborated with Shanghai Jiaotong University, Jiangjin Turbo Machinery Company and Huainan Coal Mining Group to develop the demonstration unit under the Australian Government's Bilateral Climate Change Partnerships Program. It was also supported by an Australia–China special fund grant under the Australian Government International Science Linkage Program.

Dr Su says VAMCAT could also be used to mitigate and harness low-level methane emissions for energy from other operations, such as waste disposal or livestock facilities. However the mining industry is the initial target market.

Source: CSIRO

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