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CSIRO to trial brown coal generation engine

BCIA donates A\$1m to develop process

Helen Tunnicliffe



CSIRO will initially test a lab-scale prototype DICE in Latrobe Valley in Victoria

CSIRO is to conduct a trial of its direct injection carbon engine (DICE), which could reduce the carbon emissions of electricity from brown coal by 50%.

Brown Coal Innovation Australia (BCIA), a not-for-profit organisation which supports research into brown coal emissions reduction, has donated A\$1m (US\$927,000) to the trial. Australia has large brown coal reserves, but it burns less efficiently than other coals and many researchers are working to improve this.

CSIRO will initially test a lab-scale prototype DICE in Latrobe Valley in Victoria, which has the second-largest and cheapest brown coal resource in the world. The researchers will then test the same coal in a large-scale DICE in Japan. They hope to find out whether the use of DICE would allow Australia to replace its current coal-generation plants with plants using brown coal, for a lower cost and with lower CO₂ emissions.

DICE is essentially a modified diesel engine. The researchers convert the brown coal into a water-based slurry, called micronised refined carbon (MRC), which burns similarly to heavy diesel fuel. This creates intense pressure and heat in the engine, which is used to turn electrical generators. DICE can also use other carbon sources, including ordinary black coal and biomass. It has a lower capital cost than conventional coal-fired power stations, a fast start-up time, which could help balance intermittent renewable generation, and is also suitable for baseload power.

"The energy sector has long been a lynchpin of our country's economic prosperity and coal is expected to continue to make an important contribution in decades to come," says CSIRO Energy Group executive Alex Wonhas, adding: "Thanks to the support of BCIA, we can partner with industry to deliver solutions like DICE that will ensure more efficient and sustainable use of our brown coal reserves and give Australians continued access to affordable and reliable energy supply."

Exergen, Ignite Energy Resources, AGL, MAN Diesel & Turbo and EnergyAustralia are also supporting the research.

Source: <http://www.tcetoday.com/latest%20news/2014/april/csiro-to-trial-brown-coal-generation-engine.aspx#.U3P82CiKSg>