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Reducing brown coal emissions with direct injection carbon engine

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A direct injection carbon engine (DICE) developed by [CSIRO](#) could reduce emissions from brown-coal-generated electricity by as much as 50% compared to current technology. Along with industry partners, CSIRO will trial the DICE in the Latrobe Valley, the second-largest and lowest-cost brown coal resource in the world.

[Brown Coal Innovation Australia](#) (BCIA) has allocated \$1 million to the technology trial, which is designed to maximise the value of Australia's unique resource by significantly reducing emissions associated with the use of brown coal.

CSIRO Energy Group Executive Dr Alex Wonhas said DICE technology may allow Australia to economically develop coal reserves while reducing the environmental impacts of the sector.

"Australia has the second-largest brown-coal resource in the world but current utilisation technologies are carbon intensive so we need to implement cleaner and more efficient ways to generate energy from coal," Dr Wonhas said.

"CSIRO is excited about the potential for DICE to lower power costs, halve carbon dioxide (CO₂) intensity and create a new export market for both brown and black coal."

The advanced coal technology involves converting coal or biomass into a water-based slurry that is directly injected into a large, specially adapted diesel engine. The fuel burns to produce intense temperature and pressure in the engine, which provides highly efficient power to turn electrical generators.

An existing laboratory-scale prototype engine will trial fuel based on Victorian brown coal and this work will be followed by trials using the same fuel in a large-scale test engine in Japan.

This research will help determine whether DICE can enable brown coal to produce Australia's lowest-cost, reduced-CO₂ electricity for the staged replacement of existing coal power plants.

The project is supported by industry partners including [Exergen](#), [Ignite Energy Resources](#), [AGL](#), [MAN Diesel & Turbo](#) and [EnergyAustralia](#).

"The energy sector has long been a linchpin of our country's economic prosperity and coal is expected to continue to make an important contribution in decades to come. I believe CSIRO has a critical role to play in supporting industry to minimise the environmental impacts from coal through the application of world-leading science," Dr Wonhas said.

More information about DICE is available [here](#).

Source: <http://www.processonline.com.au/news/67054-Reducing-brown-coal-emissions-with-direct-injection-carbon-engine>