Making coal cleaner

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University of Queensland researchers are working on a process that could make the theory of clean coal a reality. Dr Joe da Costa's research group, from the Division of Chemical Engineering in the School of Engineering, has developed unique hollow fibre technology that can separate oxygen from air, making the process of capturing carbon dioxide (CO_2), a greenhouse gas, in coal-fired power stations much easier.

Dr da Costa said a lot of current research was focusing on separating the CO_2 at the end of the cycle, which is expensive at the moment.

“Our process happens at the start, before the coal is even burnt, which reduces the cost of removing oxygen as well as making the capture of CO_2 easier,” Dr da Costa said.

The secret of the process rested in the technology of producing ceramic hollow fibres that were exceptional at removing oxygen from the air.

Dr da Costa, from Toowong, said the fibres, which were less that 1mm in diameter, were woven in a novel process that combined nanotechnology and ceramic powder technology.

He said the next stage of the research would be reducing the temperature that the process happened at to make it cost effective on a large industrial scale.

“At the moment the process takes place at 800 degrees but we need to

get it down to around 500 degrees to make it commercially viable," he said.

"And this technology can not only be applied to coal power generation but other energy sources and processes as well such as natural gas and coal gasification, respectively".

Dr da Costa said investment in clean coal technology was vital to make the best use of our finite resources.

"Our best estimates of oil and even natural gas is that they won't last till the end of the century," he said.

"But coal reserves could last for up to 500 years, so research in this area is vital for future use."

Dr da Costa said his research would be about five years away from being commercially applied in large industry.

Source: University of Queensland