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Making coal power environment friendly

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Students from Clarkson University have designed an innovative and efficient method for removing and storing carbon dioxide emitted in coal-fired power plant flue gas.

"Coal-fired power plants generate 51 per cent of the energy used in the U.S. today," said Brian Malone, a senior civil engineering major at Clarkson.

"But these power plants have also been proven to be the major contributor of greenhouse gas emissions, primarily carbon dioxide. Our challenge was to develop an economical and effective carbon sequestration system that can be implemented as an additional process in present flue gas treatment."

Malone and five other students, all members of the Clarkson University Remedial Engineering (CURE) team developed the system as part of an international collegiate competition.

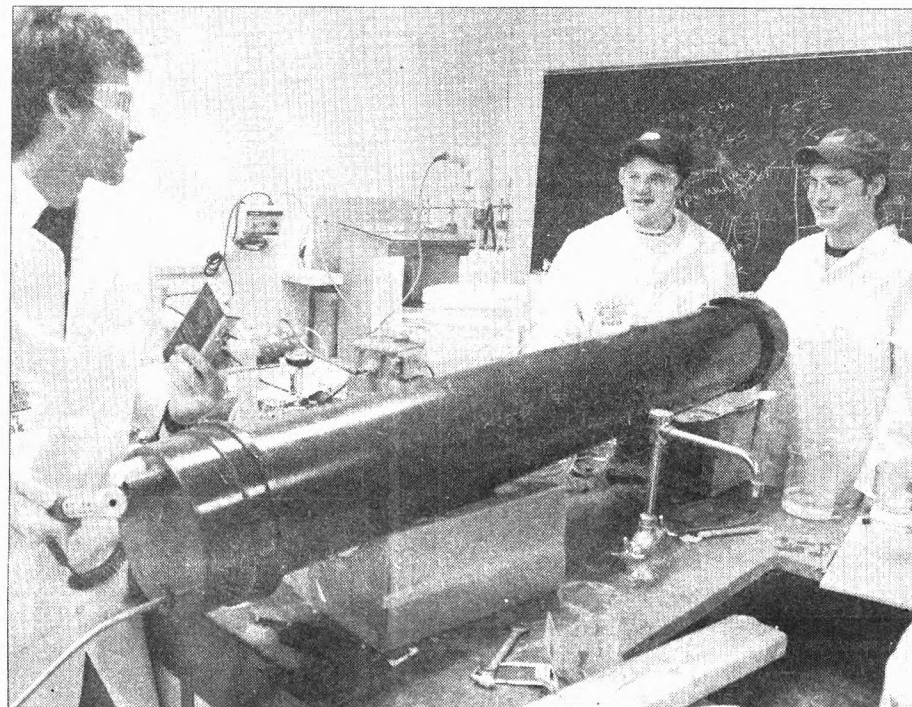
Earlier this month the Clarkson team won first

place at the 15th Annual Environmental Design Contest at New Mexico State University.

The competition, sponsored by WERC: A Consortium for Environmental Education and Technology Development, challenges student teams to develop novel and innovative solutions for real-world environmental problems that have been submitted by various companies and government institutions. Thirty-three teams from the U.S., Canada and China participated in this year's competition.

The CURE team designed a process utilizing steel slag from the steel manufacturing industry that can be implemented into an already functioning coal-fired power plant. Labour, health, safety and economic considerations have been incorporated into the process design.

"Their solution is a highly creative one," said Stefan Grimberg, professor of Civil and Environ-



An efficient process to remove and store carbon dioxide emitted in coal-fired power plant flue gas developed by students at Clarkson University won first prize at the 15th Annual Environmental Design Contest held earlier this month in New Mexico. (L-R) Here, Clarkson senior Jordan Winkler measures the carbon dioxide absorption levels while teammates Chase Gerbig and Andrew Zamurs adjust the water flow rate and calcium oxide concentrates to optimize CO₂ absorption from the flue gas.

mental Engineering and team advisor. "Their process uses steel slag, which is a byproduct of the steel manufacturing process and has very little market

value, to extract the carbon dioxide.

The result is the production of calcium carbonate (limestone) and hydrated slag, both of which can be sold and used by other industries. So the students have used a waste product to solve their problem and the resulting products have considerable market value."

The Clarkson team is composed of graduate student William Guerra of Utica, N.Y.; seniors Chase Gerbig of Honeoye Falls, N.Y.; Christopher Kennedy of Pittsford, N.Y.; Brian Malone of Underhill, Vt.; Brian Murray of Victoria, British Columbia; Jordan Winkler of Colchester, Vt.; and Andrew Zamurs of Slingerlands, N.Y.

The WERC consortium comprises New Mexico State University, the New Mexico Institute of Mining and Technology, the University of New Mexico, Dino College, Los Alamos and Sandia National Laboratories.