

**WITH THE CONSTRUCTION OF DUKE ENERGY'S**

new gasified coal power plant in Edwardsport, the state of Indiana is at the forefront of the national and international push toward advanced coal.

The nationwide debate about the development of advanced coal technology may be as strong as ever, but many projects to build coal gasification power plants across the country have stalled, unable to obtain regulatory approval or enough financial backing. That is not the case in the small town of Edwardsport, in south-west Indiana, however, where Duke Energy is building the first large-scale coal gasification power plant in the country.

Duke Energy's Indiana president, Jim Stanley, says the Edwardsport plant is a national and international showcase for state-of-the-art technology. "More than half of the nation's electricity supplies come from burning coal, so finding ways to burn coal cleanly is

fundamental to meeting the demand for power," he says.

Stanley says that construction on the plant, which will cost over \$2.3 billion, is on schedule and will finish in 2012. "Much of the work going on now includes installing pipes and wires underground, installing foundation support piling, and then pouring the plant's

foundations in preparation for some of the building to start above ground later this spring and summer," he explains.

The 630-megawatt plant will use a process called integrated gasification combined cycle (IGCC) technology to gasify coal, strip out pollutants, and then burn that cleaner gas to produce electricity. It will produce nearly 10 times as much power as Duke Energy's existing plant at Edwardsport, with much less environmental impact. Not only will the facility emit less sulfur dioxide, nitrogen oxide and mercury than the existing plant, it will cut carbon dioxide emissions by 45 percent per megawatt hour as well.

Stanley explains that reducing carbon emissions at IGCC plants is cheaper and easier than at other types of fossil fuel plants, because carbon dioxide is removed from the gasified coal before the gas is burned. In other fossil fuel plants, the carbon dioxide is removed from the exhaust gases, which are much greater in volume. That cost saving is important if and when the federal government starts to regulate the emission of carbon dioxide across the country. "We selected this project with the belief that carbon would be regulated in the future," he says.

**PIONEERING WORK IN CARBON STORAGE**

Duke Energy is also investigating whether the emitted carbon dioxide from the site can be captured and permanently stored underground where they cannot affect the atmosphere at all, a process known as carbon capture and storage (CCS).

In January, the Indiana Utility Regulatory Commission approved \$17 million in funding to study the potential for carbon capture at Edwardsport. If the results of these studies are positive, Duke Energy will ask for approval to go ahead and build a CCS system at Edwardsport, making it one of the first IGCC plants in the nation to incorporate CSS. As Stanley puts it, "It shows strong potential for the addition of carbon capture and permanent geologic storage technology – one of the most promising solutions to climate change with respect to coal."

After looking at a few other sites, Duke Energy decided to build the new plant at Edwardsport. Like much of the Midwest, Indiana has plenty of coal, which generates most of the state's electricity. Also, the company already has a small traditional coal- and oil-fired plant at Edwardsport, which it wants to retire. Certain geological conditions also have to be present for underground carbon storage and a preliminary feasibility study by the Indiana Geologic Survey showed that storage was possible at the site. In addition, the state had not added another major power plant to its system for over 20 years, so the new plant will boost the state's energy resources.

In fact, it was support from the state that enabled this project to proceed, unlike others around the country. One bonus was that the Indiana General Assembly put in place the Coal Gasification Investment Tax Credit Act, providing tax credits to encourage Duke Energy and other power companies to build IGCC plants in the state. "We have had tremendous state support and leadership from Governor Mitch Daniels and state lawmakers, who recognize that finding ways to burn coal cleanly is not only good public policy, but homegrown energy is good for an Indiana economy," says Stanley.

"Edwardsport establishes our unique worldwide leadership in moving to produce electricity using clean coal technology," said Indiana State Senator Beverly Gard (R-Greenfield), one particularly strong advocate of the project. "In Indiana the rates for electricity produced from coal have proved to be more affordable and more stable than natural gas."

Stanley says that this support will pay off when the plant powers half a million Indiana homes, creates green jobs and demonstrates the viability of advanced coal technology to the rest of the country and beyond. "When this plant is completed, it may be the cleanest coal-fired power plant in the world."

