DOE funds carbon dioxide usage research

Projects selected for grants will develop, test new ways of creating useful products from CO2 emitted by coal-fired power stations

By ALAN BAILEY
Petroleum News

The Department of Energy’s Office of Fossil Energy is issuing grants totaling $5.9 million to seven projects investigating novel ways of using carbon dioxide captured from coal-fired power plant exhaust, DOE announced Feb. 22. Each project will contribute to at least 20 percent of the project cost, the agency said.

The Department of Energy’s Office of Fossil Energy is issuing grants totaling $5.9 million to seven projects investigating novel ways of using carbon dioxide captured from coal-fired power plant exhaust, DOE announced Feb. 22. Each project will contribute to at least 20 percent of the project cost, the agency said.

Presumably the idea is to find means of improving the economics of carbon capture from coal burning plants by finding marketable uses for the carbon dioxide waste. Carbon dioxide is a commodity chemical with many commercial applications, such as enhanced oil recovery in oil fields, and the manufacture of products such as fertilizers, DOE said.

In addition to the conversion of carbon dioxide to usable products, the projects will explore ways of partially offsetting the cost of carbon capture, or the use of carbon dioxide in situations where high-volume applications such as enhanced oil recovery may not be optimal, DOE said.

Three areas of interest

The selected projects come within three areas of interest: biological-based uses for carbon dioxide; mineralization through the use of carbon dioxide in combination with industrial wastes; and novel physical and chemical processes for the beneficial use of carbon dioxide.

One project, a project to be conducted by the University of Kentucky Research Foundation, will address a biological-based process by developing a means of converting carbon dioxide from coal-fired flue gas to bioplastics, chemicals and fuels using carbon dioxide capture by micro-algae. The project team anticipates investigating the use of a combination of a photosynthetic biorreactor and a pond cultivation process to decrease the cost of algae cultivation for the process, while also developing a strategy for maximizing the value obtained from the resulting algal biomass.

A project addressing potential mineralization will be conducted by the University of California. This project will develop and evaluate a process for using exhaust gas from coal combustion in combination with waste from iron and steel processing to produce a construction material comparable to traditional Portland cement-based concrete.

Novel processes

Five projects seek novel processes for the beneficial use of carbon dioxide. DOE said.

Two projects, a project to be conducted by the University of Kentucky Research Foundation, will address a biological-based process by developing a means of converting carbon dioxide from coal-fired flue gas to bioplastics, chemicals and fuels using carbon dioxide capture by micro-algae. The project team anticipates investigating the use of a combination of a photosynthetic biorreactor and a pond cultivation process to decrease the cost of algae cultivation for the process, while also developing a strategy for maximizing the value obtained from the resulting algal biomass.

A project addressing potential mineralization will be conducted by the University of California. This project will develop and evaluate a process for using exhaust gas from coal combustion in combination with waste from iron and steel processing to produce a construction material comparable to traditional Portland cement-based concrete.

Novel processes

Five projects seek novel processes for the beneficial use of carbon dioxide. DOE said.

Two projects, a project to be conducted by the University of Kentucky Research Foundation, will address a biological-based process by developing a means of converting carbon dioxide from coal-fired flue gas to bioplastics, chemicals and fuels using carbon dioxide capture by micro-algae. The project team anticipates investigating the use of a combination of a photosynthetic biorreactor and a pond cultivation process to decrease the cost of algae cultivation for the process, while also developing a strategy for maximizing the value obtained from the resulting algal biomass.

A project addressing potential mineralization will be conducted by the University of California. This project will develop and evaluate a process for using exhaust gas from coal combustion in combination with waste from iron and steel processing to produce a construction material comparable to traditional Portland cement-based concrete.

Novel processes

Five projects seek novel processes for the beneficial use of carbon dioxide. DOE said.

Two projects, a project to be conducted by the University of Kentucky Research Foundation, will address a biological-based process by developing a means of converting carbon dioxide from coal-fired flue gas to bioplastics, chemicals and fuels using carbon dioxide capture by micro-algae. The project team anticipates investigating the use of a combination of a photosynthetic biorreactor and a pond cultivation process to decrease the cost of algae cultivation for the process, while also developing a strategy for maximizing the value obtained from the resulting algal biomass.

A project addressing potential mineralization will be conducted by the University of California. This project will develop and evaluate a process for using exhaust gas from coal combustion in combination with waste from iron and steel processing to produce a construction material comparable to traditional Portland cement-based concrete.

Novel processes

Five projects seek novel processes for the beneficial use of carbon dioxide. DOE said.

Two projects, a project to be conducted by the University of Kentucky Research Foundation, will address a biological-based process by developing a means of converting carbon dioxide from coal-fired flue gas to bioplastics, chemicals and fuels using carbon dioxide capture by micro-algae. The project team anticipates investigating the use of a combination of a photosynthetic biorreactor and a pond cultivation process to decrease the cost of algae cultivation for the process, while also developing a strategy for maximizing the value obtained from the resulting algal biomass.

A project addressing potential mineralization will be conducted by the University of California. This project will develop and evaluate a process for using exhaust gas from coal combustion in combination with waste from iron and steel processing to produce a construction material comparable to traditional Portland cement-based concrete.

Novel processes

Five projects seek novel processes for the beneficial use of carbon dioxide. DOE said.

Two projects, a project to be conducted by the University of Kentucky Research Foundation, will address a biological-based process by developing a means of converting carbon dioxide from coal-fired flue gas to bioplastics, chemicals and fuels using carbon dioxide capture by micro-algae. The project team anticipates investigating the use of a combination of a photosynthetic biorreactor and a pond cultivation process to decrease the cost of algae cultivation for the process, while also developing a strategy for maximizing the value obtained from the resulting algal biomass.

A project addressing potential mineralization will be conducted by the University of California. This project will develop and evaluate a process for using exhaust gas from coal combustion in combination with waste from iron and steel processing to produce a construction material comparable to traditional Portland cement-based concrete.

Novel processes

Five projects seek novel processes for the beneficial use of carbon dioxide. DOE said.

Two projects, a project to be conducted by the University of Kentucky Research Foundation, will address a biological-based process by developing a means of converting carbon dioxide from coal-fired flue gas to bioplastics, chemicals and fuels using carbon dioxide capture by micro-algae. The project team anticipates investigating the use of a combination of a photosynthetic biorreactor and a pond cultivation process to decrease the cost of algae cultivation for the process, while also developing a strategy for maximizing the value obtained from the resulting algal biomass.

A project addressing potential mineralization will be conducted by the University of California. This project will develop and evaluate a process for using exhaust gas from coal combustion in combination with waste from iron and steel processing to produce a construction material comparable to traditional Portland cement-based concrete.

Novel processes

Five projects seek novel processes for the beneficial use of carbon dioxide. DOE said.

Two projects, a project to be conducted by the University of Kentucky Research Foundation, will address a biological-based process by developing a means of converting carbon dioxide from coal-fired flue gas to bioplastics, chemicals and fuels using carbon dioxide capture by micro-algae. The project team anticipates investigating the use of a combination of a photosynthetic biorreactor and a pond cultivation process to decrease the cost of algae cultivation for the process, while also developing a strategy for maximizing the value obtained from the resulting algal biomass.

A project addressing potential mineralization will be conducted by the University of California. This project will develop and evaluate a process for using exhaust gas from coal combustion in combination with waste from iron and steel processing to produce a construction material comparable to traditional Portland cement-based concrete.

Novel processes

Five projects seek novel processes for the beneficial use of carbon dioxide. DOE said.

Two projects, a project to be conducted by the University of Kentucky Research Foundation, will address a biological-based process by developing a means of converting carbon dioxide from coal-fired flue gas to bioplastics, chemicals and fuels using carbon dioxide capture by micro-algae. The project team anticipates investigating the use of a combination of a photosynthetic biorreactor and a pond cultivation process to decrease the cost of algae cultivation for the process, while also developing a strategy for maximizing the value obtained from the resulting algal biomass.

A project addressing potential mineralization will be conducted by the University of California. This project will develop and evaluate a process for using exhaust gas from coal combustion in combination with waste from iron and steel processing to produce a construction material comparable to traditional Portland cement-based concrete.

Novel processes

Five projects seek novel processes for the beneficial use of carbon dioxide. DOE said.

Two projects, a project to be conducted by the University of Kentucky Research Foundation, will address a biological-based process by developing a means of converting carbon dioxide from coal-fired flue gas to bioplastics, chemicals and fuels using carbon dioxide capture by micro-algae. The project team anticipates investigating the use of a combination of a photosynthetic biorreactor and a pond cultivation process to decrease the cost of algae cultivation for the process, while also developing a strategy for maximizing the value obtained from the resulting algal biomass.

A project addressing potential mineralization will be conducted by the University of California. This project will develop and evaluate a process for using exhaust gas from coal combustion in combination with waste from iron and steel processing to produce a construction material comparable to traditional Portland cement-based concrete.

Novel processes

Five projects seek novel processes for the beneficial use of carbon dioxide. DOE said.

Two projects, a project to be conducted by the University of Kentucky Research Foundation, will address a biological-based process by developing a means of converting carbon dioxide from coal-fired flue gas to bioplastics, chemicals and fuels using carbon dioxide capture by micro-algae. The project team anticipates investigating the use of a combination of a photosynthetic biorreactor and a pond cultivation process to decrease the cost of algae cultivation for the process, while also developing a strategy for maximizing the value obtained from the resulting algal biomass.

A project addressing potential mineralization will be conducted by the University of California. This project will develop and evaluate a process for using exhaust gas from coal combustion in combination with waste from iron and steel processing to produce a construction material comparable to traditional Portland cement-based concrete.

Novel processes

Five projects seek novel processes for the beneficial use of carbon dioxide. DOE said.

Two projects, a project to be conducted by the University of Kentucky Research Foundation, will address a biological-based process by developing a means of converting carbon dioxide from coal-fired flue gas to bioplastics, chemicals and fuels using carbon dioxide capture by micro-algae. The project team anticipates investigating the use of a combination of a photosynthetic biorreactor and a pond cultivation process to decrease the cost of algae cultivation for the process, while also developing a strategy for maximizing the value obtained from the resulting algal biomass.

A project addressing potential mineralization will be conducted by the University of California. This project will develop and evaluate a process for using exhaust gas from coal combustion in combination with waste from iron and steel processing to produce a construction material comparable to traditional Portland cement-based concrete.