

Memorandum of Understanding
between the
Korea Institute of Energy Research
and the
United States Department of Energy
National Energy Technology Laboratory

I. Purpose

This Memorandum of Understanding (MOU) reflects a mutual interest on the part of the Korea Institute of Energy Research (KIER) and the United States Department of Energy's National Energy Technology Laboratory (NETL) to pursue collaborative work to advance the technical, environmental, and cost performance of fossil energy technologies.

II. Areas of Cooperation

Cooperative activities may include, but are not limited to, collaboration on base and enabling technologies and assessments of technology options and economics. Areas of cooperation may include:

- a. Environmentally friendly discovery, characterization, production, processing, and transportation technologies for fossil fuels.
- b. Advanced, high-efficiency power systems, including:
 - Integrated gasification combined cycle (IGCC) systems
 - Advanced pulverized coal combustion systems
 - Advanced gas turbines
 - Chemical looping
 - Hybrid systems
- c. Advanced environmental control systems for conventional and advanced power systems, including:
 - Nitrogen oxides (NO_x)
 - Sulfur oxides (SO_x)
 - Particulates

- Hazardous air pollutants (e.g., mercury)
 - Greenhouse gases
 - Process water treatment
- d. Operations in the production and use of high-quality transportation fuels and chemicals including gasifiers, gas cleanup, gas separations, sorbents and membranes, reactors, catalysts, materials, and control systems.
 - e. Development of advanced central-station power and/or fuels production systems with very low emissions.
 - f. Development and assessment of sequestration options for carbon dioxide (CO₂) and other greenhouse gases from fossil fuel-based systems, including capture, storage, and utilization.
 - g. Development and assessment of technologies to recover coal bed and coal mine methane, including options to sequester CO₂ from fossil fuel-based systems.
 - h. Other environmental technologies for assessment, control, and remediation of ground water and soils, including acid mine drainage, affected by fossil fuel production and use.
 - i. Other related technologies, such as minimization and utilization technologies for wastes resulting from fossil fuel production and use (e.g., coal combustion byproducts).

III. Forms of Cooperation

The forms of cooperation under this MOU include:

- a. Exchange of information, publications, reports, technical data, samples, materials, and instruments.
- b. Exchange of scientists, engineers, and other specialists. Each Participant intends to abide by the other's safety and security requirements.

IV. Lead Coordinator

Each Participant intends to designate a Lead Coordinator to serve as that Participant's principal representative for activities under this MOU.

V. Availability of Funding

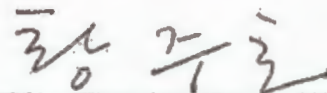
NETL's participation in furtherance of this MOU is contingent on the availability of funds appropriated by the Congress of the United States. KIER's participation in furtherance of this MOU is contingent on the availability of funds to pursue cooperative activities. Each Participant is to be responsible for its own costs incurred in furtherance of this MOU.

VI. Commencement, Modification, and Discontinuation

1. Cooperative activities under this MOU may commence on the date of the last signature by the Participants and continue for a 5-year period unless discontinued in accordance with paragraph 2 of this Section VI. The MOU may be modified by the mutual and written consent of the Participants.
2. The Participants may discontinue this MOU at any time by mutual consent in writing. Alternatively, a Participant that wishes to discontinue its cooperative activities under this MOU should endeavor to provide written notice to the other Participant at least 90 calendar days in advance.

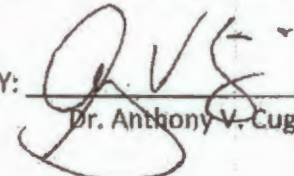
Signed in duplicate.

Korea Institute of Energy Research:

BY: 
Dr. Jooho Whang, President

DATE: May 16, 2013

United States Department of Energy
National Energy Technology Laboratory:

BY: 
Dr. Anthony V. Cugini, Director

DATE: 5/16/13