Academic Report

Speaker：Sihyun LEE，Clean Coal Center, Korea Institute of Energy Research (KIER)

Title： Review and Deployment Perspectives of Coal Upgrading Technology for Utilization of Low Rank Coal

Time： 14:00-15:00(pm) July 22, 2011

Place：Room 312, IPE Mansion

Abstract

Despite vast reserves, low rank coals are not used as a main fuel in industry because their high moisture content, potential spontaneous combustion in transportation and storage, and the low thermal efficiency during the combustion in conventional power plants. With a view to secure and strengthen low rank coal's position as high available energy source, in recent years many attempts have been made to develop technologies for an energy-efficient upgrading process. This presentation reviews these technologies mainly categorized as drying for reducing moisture, stabilization for decrease self-heating characteristics and cleaning the coal for reducing mineral content of coal. Drying technologies consist of both evaporate and non-evaporative types. There are also highly advanced coal cleaning technologies that produce ash-free coal. We discuss some of the promising upgrading technologies aimed at improving these coals in terms of their moisture, ash and other pollutants. Korea's activity for the drying and stabilization technologies will be introduced in this paper and the utilization of dried low rank coal also introduced

Resume of Dr. Sihyun LEE

Dr. Sihyun LEE

Clean Coal Center, Korea Institute of Energy Research (KIER)

Education (*degrees, dates, universities)*

Degree	Dates	Universities
BA	1982	Sogang University, Chemical Engineering
M.S.	1987	Sogang University, Graduate School of Chemical Engineering
Ph.D.	1991	Sogang University, Graduate School of Chemical Engineering

Career/Employment (*employers, positions and dates)*

Dates	Employer	Position, responsibilities
1991- present	Korea Institute of Energy Research	Principal Researcher, Clean Coal Research Group Leader
2003- 2008	Korean Particle & Aerosol Society	Director
2006- present	APEC-EGCFE	Representative Korea
2008- present	Korean Carbon Society	Planning Director
2009- present	IEEJ Clean Coal Promotion Research Project Working Group	Representative Korea

Specialization

(i) **main field:** *Coal cleaning and preparation, coal combustion, gasification* .

(ii) **other fields:** *Flue gas treatment, Waste gas control, Mercury removal from flue gas*

(iii) **current research interest:** *Upgrading low rank coal, Low Rank Coal Gasification*

Research Projects and R&D activities

Title of the project	Customer, Financing	Duration	Participation
Gasification of low rank coal	MKE	2011-2013	PM
Upgrading low rank coal	MKE	2008-2012	PM
Development and application of ash-free coal	MKE	2006-2010	PM
Carbon dioxide capture by absorption using bio-catalyst	MKE	2007-2008	Researcher
Development of hybrid APCD for the simultaneous removal of multi-pollutants	MKE	2005-2008	PM
Development of advanced vortex scrubber for the removal of hazardous air pollutants	MKE	2006-2008	PM
Development of hybrid oxidation system by concentration of VOCs and vortex/regeneration technology	ME	2003-2005	PM
Cyclonic combustion system of combustible waste gas	MKE	2001-2003	PM