

Cleaner Energy Use
Technology Development

2002

KOREA

(MOCIE • KEMCO)

Backgrounds

- With the continuous increase of energy consumption, fossil fuel use which is the main cause of global warming is also increasing
 - To cope with the international environmental regulation, support for the development of energy cleaning technology by MOCIE started in '94
- The adoption of the UN Framework Convention on Climate Change at the "Earth Summit" in Rio de Janeiro in 1992
- '10-year R&D Plan for Energy Technology(1997 ~ 2006) was formulated including the energy cleaning technology

Definition of the Technology

- Technology to reduce the pollutants emission(SO_x, NO_x, CO₂, particulates) according to the combustion of fossil fuel

Technology applied before the combustion

Technology applied during the combustion

Technology applied after the combustion

- Largely classified into three categories;

Coal cleaning Tech., Oil cleaning Tech., CO₂ utilization Tech.

Managing Programs

■ Three categories are divided into specific programs

Major Programs : Fluidized bed combustion, Combustion treatment, New catalyst development, coal ash utilization, CO₂ separation

Minor Programs : Treatment and reuse of catalyst, Desulfurization using microbe

Comparison with Advanced countries

●:domestic, ◇:advanced countries

category	technology	basic	applica.	practical	commer.	dissemi.
FBC	CFBC		●		◇	
	Pressurized FBC	●		◇	◇	
Com. treatment	SOx removal		●	●	◇	◇
	NOx removal		●	●	◇	◇
New catalyst	De-SOx Catalyst		●		◇	◇
	SCR		●		◇	◇
Coal cleaning	Coal pre-treatment		●			◇
	Coal ash utilization		●	●		◇
CO ₂ utilization	CO ₂ separation, resumption		●	◇		
	CO ₂ conversion	●	◇			

Achievements

- Circulated Fluidized Bed Combustor development
 - Securing technology for domestic production
- High efficiency de-NO_x process development for LNG power plant
 - Expected to be commercialized next year
- High efficiency de-SO_x process development using Mg(OH)₂
 - 30MW pilot scale process operation completed
- High efficiency diesel desulfurization catalyst development
 - Securing technology(500ppm) for commercialization

- High efficiency RFCC catalyst development
 - Pilot plant testing under way
- Resumption of expensive minerals from the used catalyst
 - Commercialization is under way
- Bench scale continuous CO₂ separation process development
 - 1.2Nm³ CO₂ separation / hr
 - CO₂ separation (2CO₂Ton/day) and conversion Demo-Plant

Future Direction

- Energy cleaning technology is for public benefit. So, rather than the economical aspect, it should be managed with the mid & long-term prospects to cope with environmental regulations
- Large scale system technology from major programs will be the main subjects for development
 - energy technology development should be proceeded with systematic approach rather than sporadic unit technology development

■ For systematic technology development, technology tree and step-by-step technology development strategy should be worked out

- survey foreign national program

- operation of survey group

■ For the promotion of practical use, proceed ETDP program actively