

AECE

# Prof. Shozo Kaneko Laboratory

Endowed research Unit : Advanced Energy Conversion Engineering  
Institute of Industrial Science

<http://www.kaneko-lab.iis.u-tokyo.ac.jp>

Speciality Area: Advanced Energy Conversion Engineering

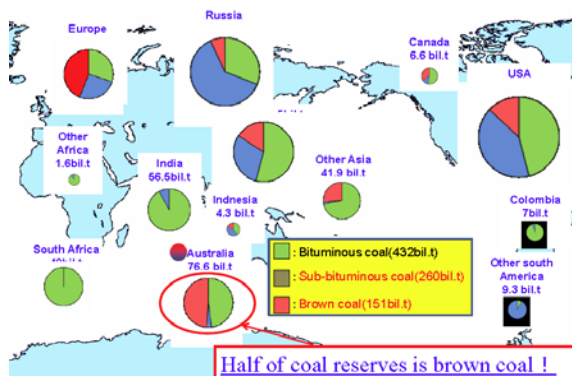
Mechanical Engineering

## High Efficiency Utilization of Lignite(ULTRA)

Utilization of Lignite with Innovative Drying System for Transportation, Resources and Advanced Power Generation

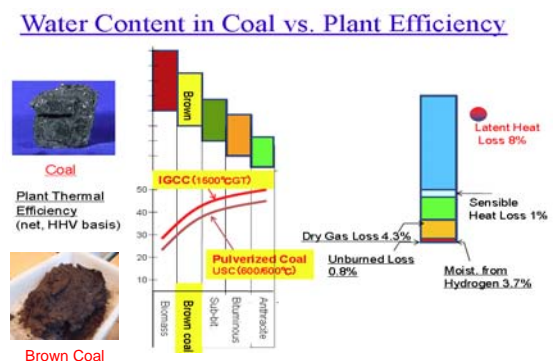
How to minimize CO<sub>2</sub> emission from fossil power plants is very important to prevent global warming. Coal is most abundant among fossil fuels and stable in prices and supplies. However, due to its high carbon content Emission of CO<sub>2</sub> is higher than other fuels. Raising efficiency is most fundamental and effective way to solve this dilemma. Lignite or brown coal which occupies nearly half of the world coal resources is not fully utilized yet because of its high moisture content resulting in very low efficiency hence high CO<sub>2</sub> emission. An innovative drying system of lignite is under study to greatly improve the thermal efficiency of conventional power plant or gasification.

- To greatly decrease the heat losses due to high moisture content of lignite by Self-heat Recuperation Drying System
- To increase in plant efficiency by full utilization of low temperature waste heat
- To increase in efficiency of IGCC(Integrated coal Gasification Combined Cycle)
- To produce of various liquid fuels using high efficiency gasification of lignite



World Coal Resources

Coal rank and Efficiency



Integrated coal Gasification Combined Cycle(IGCC)

Heat recovery by self-heat recuperation

