

General Overview

Explanatory notes

- : Promoted Project Subjects
- : Project Subjects

In Figure

- Promoted Project Subjects
- Project Subjects

CRIEPI's R&D Portfolio in FY2008

March 31, 2008

Five Pillars in R&D

① Nuclear Technology

~Supporting Foundations for a Stable Supply~

Next generation nuclear technology

- Metallic fuel cycle

Backend project supporting research

- Transportation and storage of recycled fuel
- High-level radioactive waste disposal
- Low-level radioactive waste disposal

Integral project

Light water reactor aged deterioration research

- Aged deterioration measures
- High accuracy prediction of irradiation embrittlement in the light water reactor and its code formation
- Comprehensive measures of thermal flow caused deterioration
- Advanced SCC assessment method

Radiation safety

- Low dose radiation effect assessment
- Rationalized radiation safety ensuring

② Advanced Maintenance Technology

~Rational Operation of Electric Facilities~

Advanced maintenance technology of power distribution facilities

- Establishment of maintenance standards for aged electric facilities
- Management measures for power distribution facilities
- Asset management of power network
- Asset management support technology

Advanced maintenance technology of power generating facilities

- Status diagnostics on power generation components
- Gas turbine hot gas path parts maintenance
- Power generating plant performance diagnostics

③ Environmental & Innovative Technology

~Sustainable Use of Fossil Fuels and New Energy~

Integral project
Global warming measures research

- Warming projection and adaptive measures
- CO₂ underground storage
- High efficiency utilization of biomass energy

Innovative environment technology

- Innovative environment measurement
- Coal ash environment measures

Next generation thermal plant technology

- Coal gasified furnace
- Integrated operation and evaluation system for pulverized coal combustion power generation
- Trace element control
- Low cost MCFC power generating system
- Next-generation IGCC system with CO₂ Capture

④ Optimum Energy Utilization Technology

~Contributing to More Comfortable and Enriched Life~

Next generation grid technology

- Supply and Demand integrated operation and control
- Assessment of demand reaction
- Next generation grid communication infrastructure
- Next generation power distribution components

End use technology

- SIC power semiconductor
- Inverter with SIC device
- Evaluation of system operational performance of new Eco-cute model
- Compact secondary battery
- Customer energy utilization support

Integral project subjects

- Project subjects

The thing which we take the cooperation between related problems and total it, and promote it

⑤ Social and Business Risk Management

~Contributing to More Comfortable and Safer Communities~

Energy policy

- Japan type deregulation system measures
- Scenario analysis for energy technical policy

Risk management of electric power infrastructure
[Natural disaster risk]

- Disaster recovering support of electric distribution facilities
- Wind and snow disaster prevention assessment of electric power facilities
- Lightning risk management
- Maintenance technology for civil engineering facilities for hydropower generation
- Earthquake scale assessment by active fault survey
- Ground collapse effect assessment at earthquake occurrence

[Human risk]

- Cyber security risk management framework
- Human error measures and safety culture cultivation

Research projects that provide the solutions for the needs in actual business

Fundamental research activities that back up actual business activities

Nuclear Technology Research Laboratory

- Risk information technology
- Construction and assessment of innovative energy system
- Technical basis for nuclear reactor system safety
- Application of basic technology in nuclear
- Fuel engineering and reactor physics

Material Science Research Laboratory

- Hydrogen basic technology
- Structural materials evaluation
- Energy conversion and storage materials technology
- Micro/nano science of advanced materials
- Water chemistry management
- Coating evaluation

Electric Power Engineering Research Laboratory

- Countermeasures for fault current
- Electric power apparatus insulation for next generation
- Electromagnetic environmental assessment
- Laser photon science & applications for diagnosis

Energy Engineering Research Laboratory

- Operation and maintenance technology in thermal power generation
- Fuel reforming and environmental protection technology
- High efficiency energy conversion technology

System Engineering Research Laboratory

- System analysis and stability assessment
- Impact assessment of wind power generation on a power system
- Communication media network technology
- Information technology

Environmental Science Research Laboratory

- Assessment of atmospheric environment
- Assessment of hydrospheric environment
- Biotechnology
- Assessment of biological environment
- Environmental risk management
- Assessment of biological effect caused by electromagnetic field

Socio-economic Research Center

- Analysis and support of electric power business
- Economics and social trend analysis under decentralization
- Social trust and communication measures
- Energy technology assessment

Civil Engineering Research Laboratory

- Computational Fluid Dynamics(CFD) technology
- Structural performance assessment technology
- Seismic risk mitigation technology
- Geosphere environment behaviour prediction technology