



Light for Tomorrow.

Aiming to realize the energy systems for a sustainable society



Outline

Name: Central Research Institute of Electric Power Industry (CRIEPI)

President: Yoshiro Hiraiwa

Date of Establishment: November 7, 1951

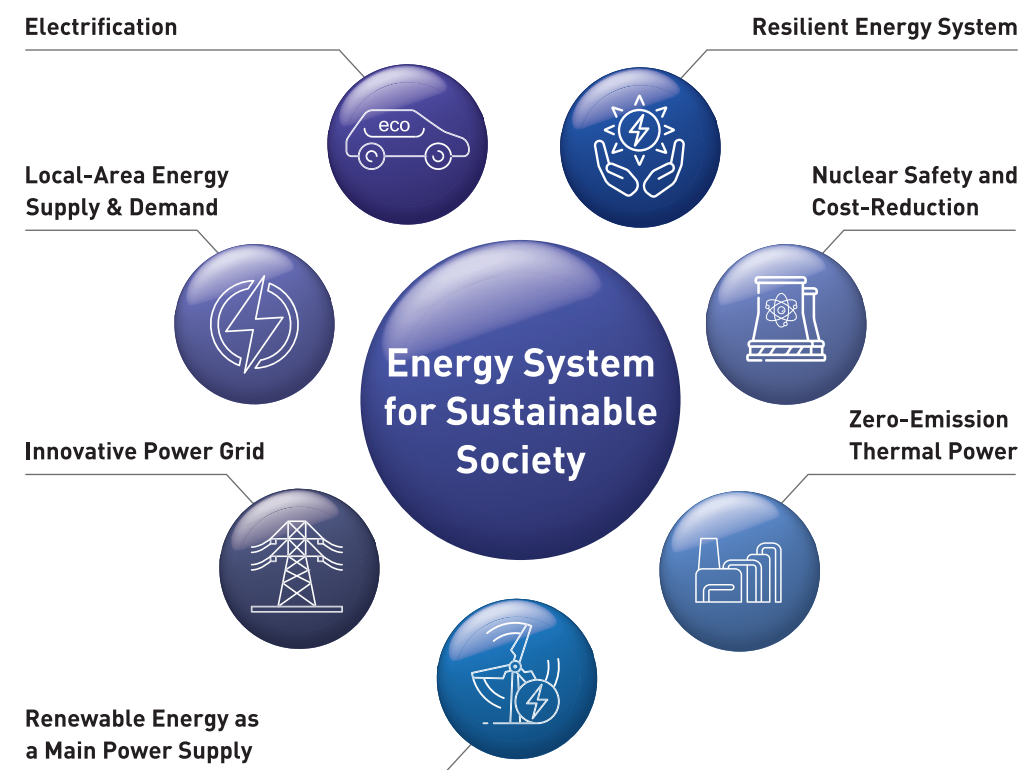
About CRIEPI

CRIEPI is a central and academic research institution for the electric power industry that supports the transformation of technology and systems pertaining to the supply and use of electric power and other forms of energy, and thus leads technological innovation in the energy industry.

Our Vision

Japan's goal of carbon neutrality by 2050 is also a major challenge for the electric power industry. We recognize that a transformation of energy systems is needed to achieve that goal, and aim to realize a "sustainable and socially acceptable energy system" by then.

7Goals by 2050



We have set seven goals for the sake of realizing the energy system that we seek to achieve. These goals dictate the selection of our research and development challenges leading up to 2050, and include the promotion of carbon-free energy and an electrified society and the construction of electric power systems that are capable of withstanding the intensification of disaster risk and the mass-usage of renewable energy.

Research Framework

Our institute, consisting of Socio-economic Research Center, Nuclear Risk Research Center, Energy Transformation Research Laboratory, Grid Innovation Research Laboratory, and Sustainable System Research Laboratory, is tackling the current important issues of the electric power industry and is accelerating the research and development leading the creations of new technologies.

Socio-Economic Research Center (SERC)

To create a stable and decarbonized energy supply-demand system, the SERC analyzes the contribution of renewable energy, nuclear and thermal power in the energy mix, considering climate change issues, changing energy demand and the design of energy markets.

Nuclear Risk Research Center (NRRC)

The NRRC assist nuclear operators and the nuclear industry in their continuous effort to improve the safety of nuclear facilities, that is, to manage the relevant risks, by developing and employing modern methods of Probabilistic Risk Assessment (PRA), risk-informed decision making and risk communication.

Energy Transformation Research Laboratory (EXRL)

The EXRL promotes the development of innovative technologies to convert and store energy, the long-term use of nuclear power plants, the development of next-generation nuclear reactors, and the realization of zero-emission thermal power generation.

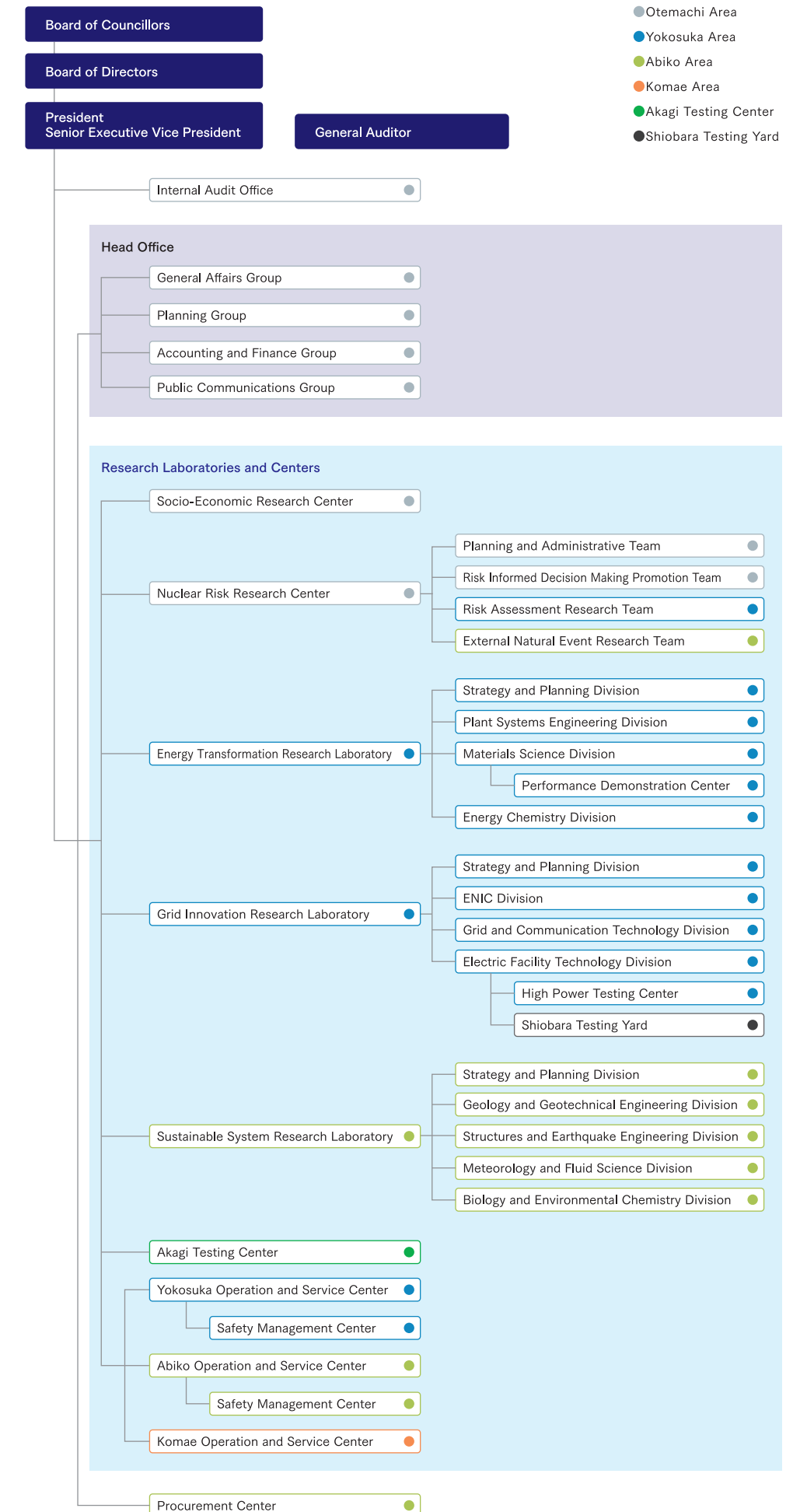
Grid Innovation Research Laboratory (GdRL)

The GdRL promotes research and development that contributes to the building of new wide-area systems and regional energy supply-demand infrastructure and to electrification in the industry, transport and household domains in order to simultaneously facilitate increases in renewable energy and its guaranteed supply.

Sustainable System Research Laboratory (SSRL)

The SSRL promotes research and development pertaining to the reinforcement of resilience through effective disaster risk prevention, operation and preservation for electric power equipment, the construction, operation and preservation of renewable energy power source equipment for the likes of offshore wind power generation, the disposal of radioactive waste, and radiation safety.

Organization



CORPORATE PROFILE

Overview

Ordinary Revenue
(FY2022 financial statement)

¥31.7 billion

Personnel (FY2022)

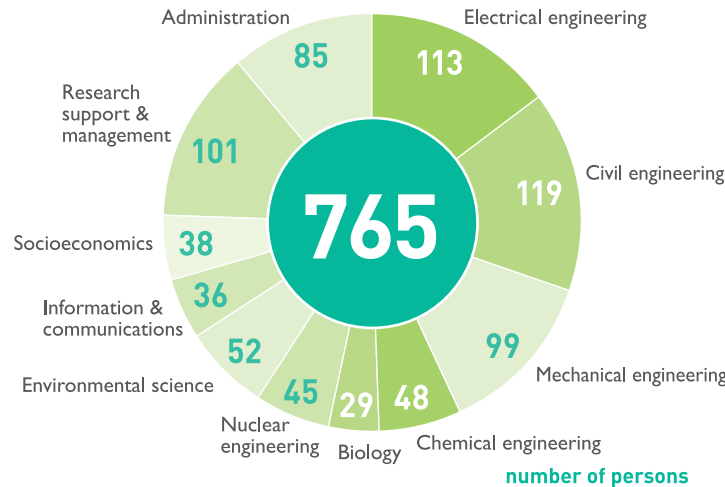
765

Research : 680

Staff with
doctorate degrees 404

Administration : 85

Personnel Configuration by Subject Field



Research Results / Intellectual Property (FY2022)



Research Network

With the aim of identifying trends in forefront energy-related R&D, CRIEPI proactively engages in exchanging with domestic and international partners possessing high technical standards and leads to strengthening and enhancing research networks.

International Partners for Research Cooperation Agreements

- French Alternative Energies and Atomic Energy Commission (CEA)
- Électricité de France (EDF)
- Studiecentrum voor Kernenergie•Centre d'Etude de l'Energie Nucléaire (SCK•CEN), BE
- Korea Electric Power Corporation Research Institute (KEPRI)
- Korea Electrotechnology Research Institute (KERI)
- Korea Hydro & Nuclear Power Co., Ltd. Central Research Institute (KHNP-CRI)
- Taiwan Power Company (TPC)
- Electric Power Research Institute (EPRI), US
- Southwest Research Institute (SwRI), US
- Organization for Economic Co-operation and Development / Nuclear Energy Agency (OECD/NEA)

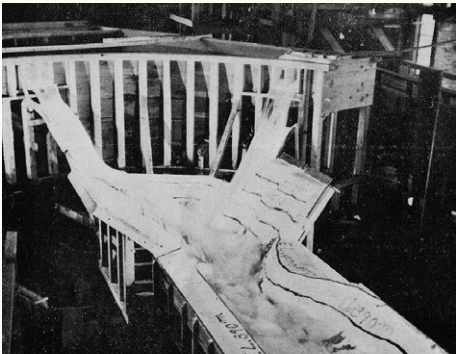
Research History

- Establishment of CRIEPI (1951)
- Oil crisis (1973, 1979)
- Accident at Three Mile Island Nuclear Generating Station (1979)
- Adoption of Kyoto Protocol (1997)
- JCO criticality accident (1999)
- Accident at Fukushima Daiichi Nuclear Power Station (2011)
- Adoption of Paris Agreement (2015)
- Major blackout across North America (2003)
- Major blackout in Hokkaido (2018)

1950s ▶ 1960s

1950s

- Developed high power transmission technology
- Streamlined designs for arched and gravity dams

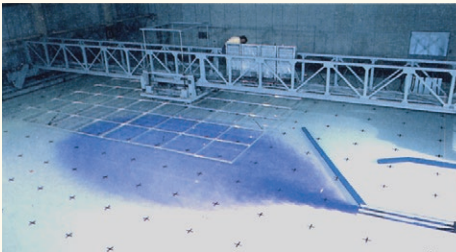


Model testing for spillway

- Analyzed and examined issues with electric power system operation
- Developed technologies for applying crude oil in thermal power generation

1960s

- Promoted electrification of agricultural technology
- Developed prediction methods for diffusion of warm-water discharged from thermal and nuclear power plants



Warm-water diffusion testing

- Provided technological assistance for building nuclear power plants
- Developed "CRIEPI Short-Term Macro-Econometric Model"

1970s ▶ 1980s

1970s

- Researched sophistication of lightning-protection designs for electric power facilities
- Conducted research aimed at modernization of power distribution systems
- Advanced evaluation methods of aseismic performance at nuclear power plants



Forced vibration test inside nuclear power plant building

- Developed diffusion prediction method and environmental impact assessment method for stack gas from thermal power plants

1980s

- Researched transport, storage and disposal of radioactive waste
- Developed ultra high voltage (UHV) AC transmission technology



UHV AC test transmission lines



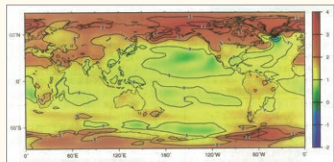
Coal gasifier

- Developed integrated coal gasification combined cycle (IGCC) power generation technology
- Conducted research on human factors

1990s ▶ 2000s

1990s

- Elevated precision of fault activity assessment methods to high levels
- Researched global warming projection and mitigation



Changes in global mean surface temperature caused by doubling of CO₂ concentration

- Studied biological effects of low-dose radiation
- Developed residential CO₂ heat pump water heater



Performance evaluation testing for prototype of CO₂ heat pump

2000s

- Sophisticated technology of analysis for stable operation of electric power systems
- Researched life management for aging electric power transmission and distribution facilities
- Researched materials for plant life management of nuclear reactors



Crack propagation testing for structural materials for nuclear reactors

- Enhanced quality of next-generation power semiconductor device to high levels

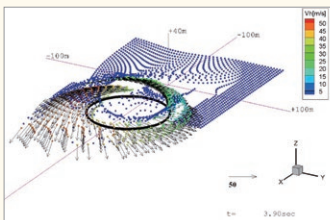


Fabrication of SiC semiconductor device materials

2010s ▶

2010s

- Conducted research aimed at improving safety and reducing risk in order to continue using nuclear power



Tornado missile speed evaluation model



Testing facility for three-dimensional thermal hydraulics in light-water reactors

- Conducted research associated with electricity system reform and energy policy
- Conducted research aimed at promoting electrification and improving customer satisfaction

Locations

● Otemachi Area

- Internal Audit Office
- Head Office
- Socio-Economic Research Center
- Nuclear Risk Research Center

Otemachi Bldg. 7F, 1-6-1 Otemachi,
Chiyoda-ku, Tokyo 100-8126
Phone: +81-3-3201-6601

● Yokosuka Area

- Energy Transformation Research Laboratory
- Grid Innovation Research Laboratory

2-6-1 Nagasaka, Yokosuka-shi,
Kanagawa 240-0196
Phone: +81-46-856-2121

● Abiko Area

- Sustainable System Research Laboratory

1646 Abiko, Abiko-shi,
Chiba 270-1194
Phone: +81-4-7182-1181

● Komae Area

2-11-1 Iwadokita, Komae-shi,
Tokyo 201-8511
Phone: +81-3-3480-2111

● Akagi Testing Center

2567 Naegashima-machi, Maebashi-shi,
Gunma 371-0241
Phone: +81-27-283-2721

● Shiobara Testing Yard

1033 Sekiya, Nasushiobara-shi,
Tochigi 329-2801
Phone: +81-287-35-2048



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For details, please visit our website.

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