



Light for Tomorrow.



Leading energy systems transition through our technologies and insights of excellence

Message from the President

Central Research Institute of Electric Power Industry (CRIEPI) was founded in 1951 to serve as a joint research institute for the electric power industry to contribute to the industry and society through scientific and technological research. Since then, for more than seven decades, we have contributed to the electric power industry from the aspect of R&D which is the pillar of the development of Japanese economy and society.

While the energy policy in Japan is based on S+3E (Safety, Energy Security, Environment, and Economic Efficiency), long-term energy security and decarbonization have arisen as of more imminent importance among all of them. Digitalization with broad applications of artificial intelligence is yet another driver of rapid changes to our society. The key to overcoming these more complex issues in our era of changes is to integrate diverse knowledge and wisdom.

We are challenging to resolve medium- and long-term issues through cross-disciplinary research by a wide range of experts from natural



sciences and engineering to social sciences, with research collaboration with institutions concerned in Japan and abroad. Inheriting the philosophy of CRIEPI's founder, Yasuzaemon Matsunaga; "Industrial research tempers wisdom, and thereby contribute to society", we work sincerely to investigate the principles of things, always keep perspectives of the electric power industry and the society beyond, and produce research results and solutions which effectively lead to social implementation.

Yoshiro Hiraiwa
President, CRIEPI

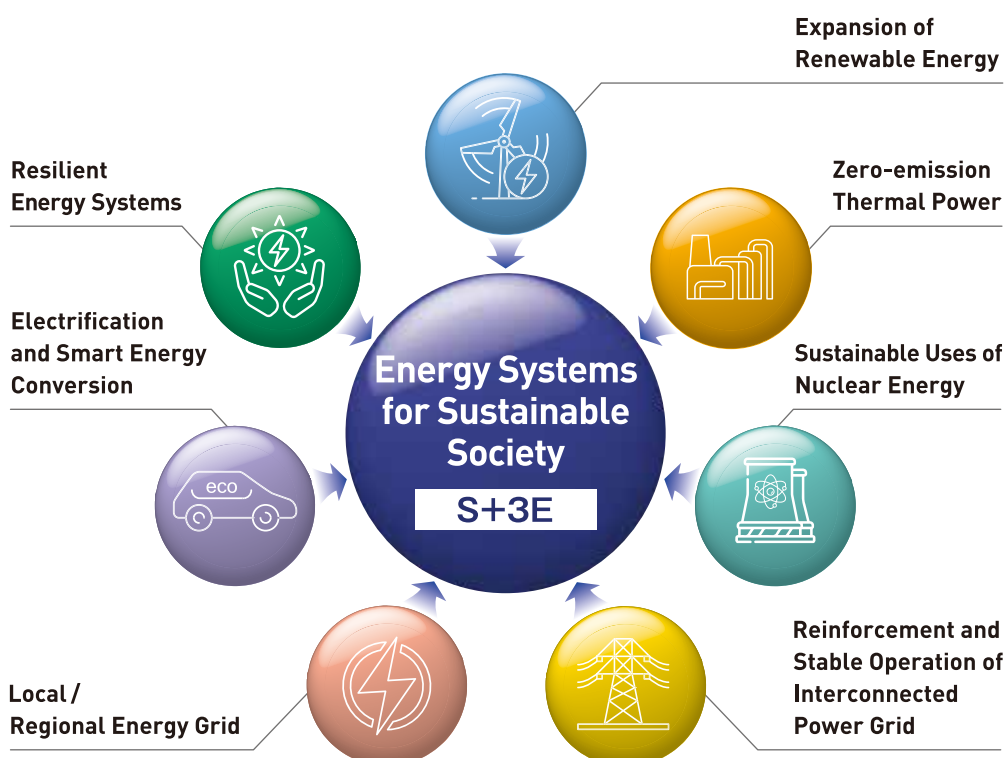
About CRIEPI

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

The vision that we have developed for Japan in the year 2050 takes into account circumstances affecting our nation, fundamental energy policy perspectives, and the electricity business environment. Our vision seeks to create an “**Energy Systems for Sustainable Society**”. To realize this, we have set forth seven goals, and promote research and development to achieve these and, by extension, our vision. We will spearhead the transformation of energy systems by providing society with value generated by new technologies and knowledge.

7 Goals by 2050



Research Framework

To attain these seven goals, our Socio-Economic Research Center, Nuclear Risk Research Center, Energy Transformation Research Laboratory, Grid Innovation Research Laboratory, and Sustainable System Research Laboratory collaborate to capitalize on our collective capabilities.

It is our intention to accurately grasp changes taking place in society and the electric power industry, produce research, and apply these results in a practical manner for the benefit of society.

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

- Otemachi Area
- Yokosuka Area
- Abiko Area
- Komae Area
- Akagi Testing Center
- Shiobara Testing Yard

Board of Councillors

Board of Directors

President
Senior Executive Vice President

General Auditor

Internal Audit Office

Head Office

- General Affairs Group
- Planning Group
- Accounting and Finance Group
- Public Communications Group

Research Laboratories and Centers

- Socio-Economic Research Center
- Nuclear Risk Research Center
 - Planning and Administrative Team
 - Risk Informed Decision Making Promotion Team
 - Risk Assessment Research Team
 - External Natural Event Research Team
- Energy Transformation Research Laboratory
 - Strategy and Planning Division
 - Plant Systems Engineering Division
 - Materials Science Division
 - Performance Demonstration Center
 - Energy Chemistry Division
- Grid Innovation Research Laboratory
 - Strategy and Planning Division
 - ENIC Division
 - Grid and Communication Technology Division
 - Electric Facility Technology Division
 - High Power Testing Center
 - Shiobara Testing Yard
- Sustainable System Research Laboratory
 - Strategy and Planning Division
 - Geology and Geotechnical Engineering Division
 - Structures and Earthquake Engineering Division
 - Meteorology and Fluid Science Division
 - Biology and Environmental Chemistry Division
- Akagi Testing Center
- Yokosuka Operation and Service Center
 - Safety Management Center
- Abiko Operation and Service Center
 - Safety Management Center
- Komae Operation and Service Center

Procurement Center

CORPORATE PROFILE

Overview

Ordinary Revenue
(FY2023 financial statement)

¥31.6 billion

Personnel (FY2023)

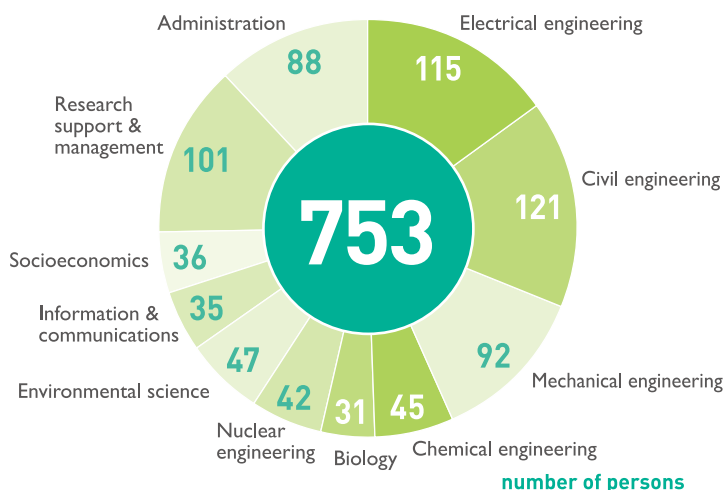
753

Research : 665

Staff with doctorate degrees 390

Administration : 88

Personnel Configuration by Subject Field



Research Results / Intellectual Property (FY2023)

Research Reports

484



Presented Papers

1,346

Academic Papers
(peer reviewed)

466



Patents
Application Registration

45

42



Software

107



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)

- Commencement of operation of Japan's first commercial nuclear power plant (1966)

- Oil crisis (1973, 1979)

- Accident at Three Mile Island Nuclear Generating Station (1979)

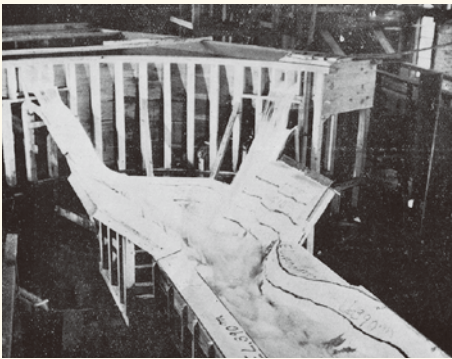
- Accident at Chernobyl Nuclear Power Plant (1986)

1950s ▶ 1960s

1970s ▶ 1980s

1950s

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

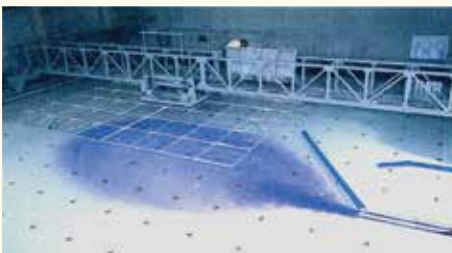


Model testing for spillway

- 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

- 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

- Adoption of Kyoto Protocol (1997)
- JCO criticality accident (1999)

- Major blackout across North America (2003)

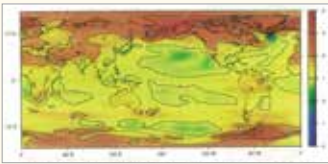
- Accident at Fukushima Daiichi Nuclear Power Station (2011)
- Adoption of Paris Agreement (2015)
- Major blackout in Hokkaido (2018)

1990s ▶ 2000s

2010s ▶

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

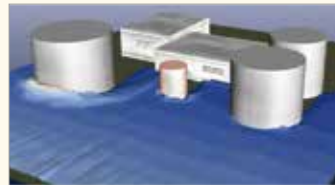
- Enhanced quality of next-generation power semiconductor device to high levels



Fabrication of SiC semiconductor device materials

2010s

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



Tsunami numerical simulation in power plant site



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

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For details, please visit our website.

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