There are many more unique research facilities.

Single-Burner Combustion Test Furnace

The facility is for combustion characteristics evaluation of various fuels for thermal powergeneration and the improvement of numerical simulation technology for combustion

Thermal Cycling Test Apparatus of Thermal Barrier Coating (TBC)

Development of delamination life evaluation method for thermal barrier coating (TBC) on gas turbine hot-gas-path parts

Thermal Power Feedwater Treatment Test Equipment

Investigation of the cause of corrosion damage and optimization of feedwater treatment at thermal power plants

Solid Oxide Electrolysis Cell / Solid Oxide Fuel Cell (SOEC/SOFC) Test Building

Performance and durability evaluation for SOEC and SOFC

Spherical Aberration Corrected Transmission Electron Microscope : Cs-corrected TEM

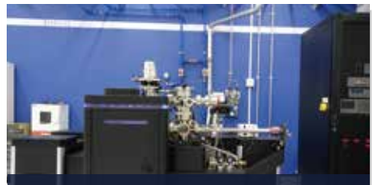
Clarification of the degradation mechanism of iron materials used at thermal power and nuclear power plants

Structural Material Strength Evaluation Test Equipment

Evaluation of strength of various materials used for thermal power and nuclear power plants

Non-Destructive Inspection Equipment

Development of nondestructive inspection technology for power generation equipment and virtual UT (ultrasonic test) system for training UT engineers



Atom Probe Tomograph

3D imaging and chemical composition measurements at the atomic scale for light water reactor materials

Three-Dimensional Thermal Hydraulics Test Facility with High-Energy X-Ray CT System

Evaluation of transient boiling flow distribution in reactor core at high-temperature and high-pressure using our original two-phase flow measurement technique

Power Semiconductor Fabrication/ Evaluation Equipment

Evaluation of electric characteristics of power semiconductor devices applied in the electric power system and development of next generation SiC power devices

Secondary Battery Perfomance Evaluation Testing Equipment

Lithium-ion cell performance evaluation and material analysis evaluation

New Functional Devices Research Facilities

Development and application of sensor and energy harvester for IoT societies

High Voltage Hall

Evaluation of long-term reliability of insulation for power equipment, development of insulation technology for the next-generation power devices

Communication Media Experimental Facility

Evaluation of transmission characteristics of wireless communication technologies, and research on applicability of highly reliable wireless communication to electric power fields

▲Visit our website for more details

Air Conditioner Selection Support Tool

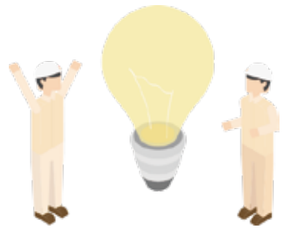
This tool assists in selecting the optimal capacity of an air conditioner based on the house's insulation level and climate conditions

Learn more about our facilities

Use the QR code on the left to visit our website for more details

Central Research Institute of Electric Power Industry
Yokosuka Area
2-6-1 Nagasaka, Yokosuka-shi, Kanagawa 240-0196 TEL: +81-46-856-2121

CRIEPI
Central Research Institute of Electric Power Industry



Welcome !

to the place where we make the wonders happen, which allows you use electric power all the time.

Central Research Institute of Electric Power Industry
Yokosuka Area

Look out, feel, and see how you are guided to think something.

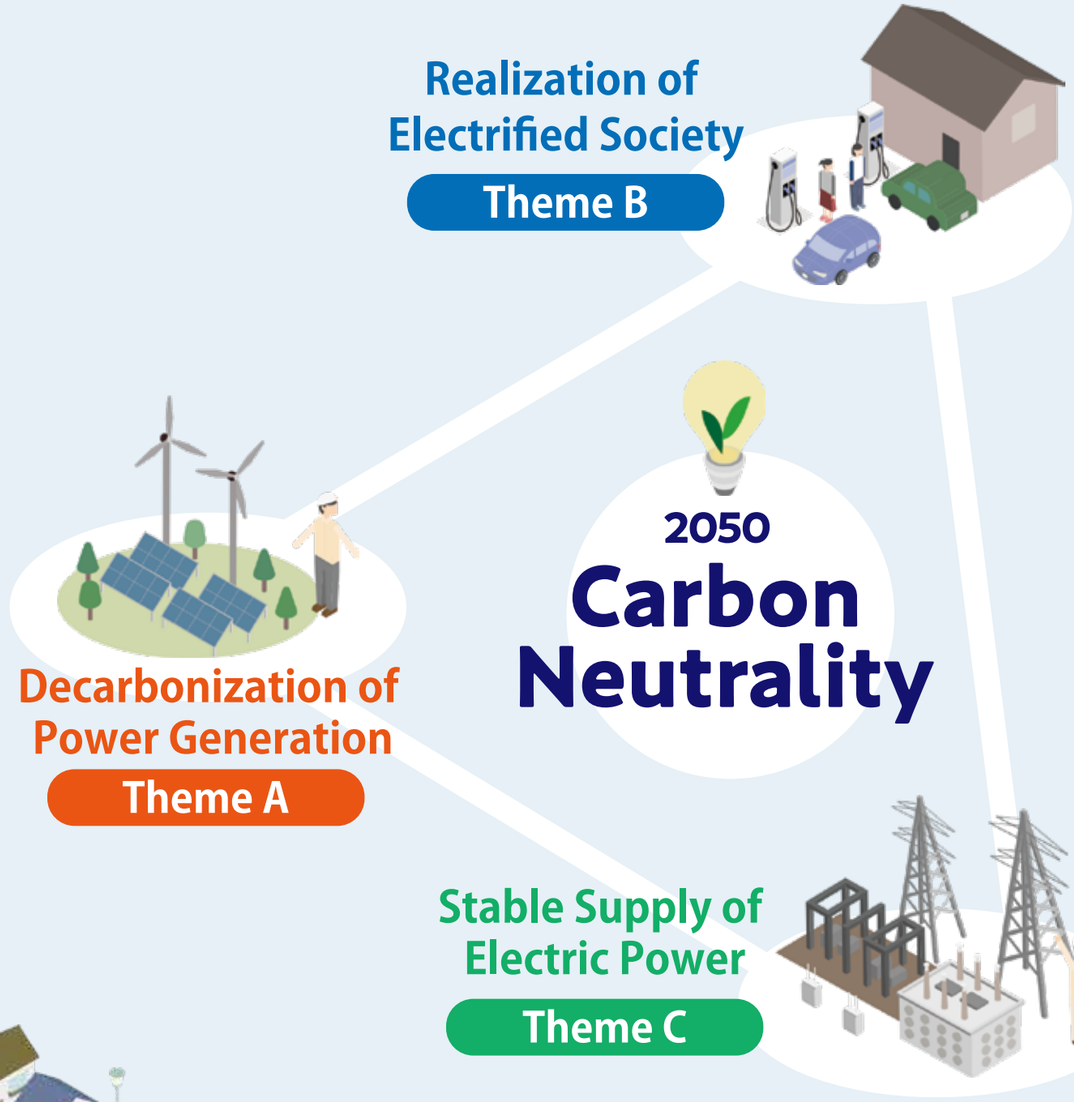
Welcome to CRIEPI Yokosuka Area!

We take electricity for granted when using it in our daily lives.

Yokosuka Area is a place where you can see, feel, and understand how electricity is created and delivered to each home and how the application of electricity should change in Japan to achieve carbon neutrality in 2050.

Please explore Yokosuka Area located at an extensive site with rich nature!

It is our utmost pleasure to provide an occasion to think and discuss about electricity in Japan, which will form the future of our country.



Yokosuka Area is our researchers' hub to strive for Carbon Neutrality in 2050.

Recently, we often hear the term “carbon neutrality.”
The trend is transferring from low carbon for reducing greenhouse gas (CO_2) to decarbonization for eliminating CO_2 emission. How can a decarbonization society that does not generate CO_2 be achieved?
The main points for solutions are the Decarbonization of Power Generation, Electrification of Society, and Stable Supply of Electric Power.
Let’s explore the road to carbon neutrality unfolding in Yokosuka Area!

Welcome to CRIEPI YOKOSUKA AREA!

Decarbonization of Power Generation — Theme A

Changing the power generation in Japan

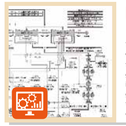
Development of decarbonization power supply that does not emit CO_2,
improvement in thermal power generation to reduce CO_2 emission,
research for safe and low cost nuclear power generation,
and other initiatives.
We are focusing on the energy mix to achieve an environmentally friendly, economic, and stable supply of electricity.

Coal Combustion Test Facility

A facility that simulates pulverized coal thermal power plants used for technology development to use coal in an environmentally friendly method. In addition to evaluating the flammability and environmental properties of various types of fuel, it is used to evaluate mixed combustion characteristics of coal with biomass, ammonia, and other materials and develop the optimum combustion technology.

Coal Gasification Test Facility

3 ton/day coal research gasifier is bench scale gasifier which used for developing an air blown IGCC (Integrated coal Gasification Combined Cycle power generation). Currently, we are developing O2/CO2/H2O gasification technology that uses multiple fuels such as a coal, a waste plastic and a biomass for a new polygeneration system and CCUS (Carbon Capture Utilization and Storage).



EnergyWin
(General Purpose Program for Power Generation System Thermal Efficiency Analysis)

Thermal efficiency calculation for power plants, which are complex systems consisting of multiple facilities, requires the repetition of difficult convergent calculations. This analysis software assists in the thermal efficiency calculation of power generation systems and contributes to improving the plant's reliability and reducing operation costs.

Component Creep Test Facility

World's largest facility to investigate damages in the piping of power plants. It is used to measure the progression of deformation and damage until failure for large diameter pipes used in power plants and to conduct demonstration research of diagnostic technologies such as the life assessment methods and the nondestructive inspection methods.

Pipe Wall Thinning Test Facilities

A facility to reproduce pipe thinning phenomenon (progression of corrosion and erosion (mechanical damage) enhanced by a flow of water or steam) in power plants. Prediction software for optimization of pipe wall thinning management in power plants is established by performing wall thinning experiments under various flow velocities, water quality, materials, and other factors.

Fluid Leakage Experiment for The Influence on Personnel and Surrounding Equipment by Pipe Failure

Equipment to visualize water/steam leakage behavior when piping is fractured at power plants. It establishes the leakage range prediction method by optically measuring the water/steam blowout behavior at pipe fracture, and through tests under different pipe sizes, fracture forms, pressures, temperatures, and other conditions.

Stress Corrosion Cracking Testing Facility for Environment of High Temperature Water

A facility to identify the growth rate of stress corrosion cracking (SCC) generated in the core structure and piping of nuclear power plants. Equipment that can handle large test pieces composed of devices to measure SCC crack growth rate with high accuracy. It is used to obtain crack growth characteristics with evaluation items of material, environment, and mechanical conditions.

Biomass CarbonizedFuel Production Test Facility

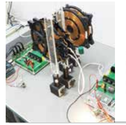
To support the higher use of biomass for coal thermal power generation to reduce the CO_2 emission volume, this facility performs tests to evaluate the methods and safety for producing biomass carbonized fuel suitable for mixed combustion with coal, and for reducing energy consumption during the production phase.

Research and Development Facility for Industrial and Commercial Heat Pumps

This facility conducts experiments to understand the characteristics of heat pumps as a result of changes in heat use and operating temperature, and to evaluate the applicability of new low GWP refrigerants to high-temperature heat pumps. It contributes to promoting the use of high performance heat pumps for industrial heating and commercial hot water supply.

Air Heat Exchanger Test Facility for Heat Pumps
(Frost-Free Heat Pumps Research Facility)

This facility is designed to test fundamental characteristics of air heat exchangers, including heat transfer characteristics, frosting/defrosting characteristics, and adsorption/desorption characteristics. It contributes to develop technologies to improve the energy efficiency of air-source heat pumps used for water heating, space heating, refrigeration, air conditioning, et al.



Wireless Power Transfer

Technologies for wireless power transfer are developed to support automated power transfer for EVs (eElectric Vehicles). Solutions for power transfer interoperability, electromagnetic compatibility, protection from electromagnetic field, and other issues are researched.

Evaluation Facility for Residential Heat Pumps

This facility performs a highly accurate evaluation by reproducing various outdoor air temperature and hot-water supply load conditions to evaluate the performance mainly of residential heat pump water heaters. It contributes to promoting energy saving in the water heater field by using it to examine an appropriate energysaving performance evaluation and to create standards.

Achieve electrification of society — Theme B

Move society forward by using electricity to the maximum degree

To achieve carbon neutrality, reformation to the electrification of society is necessary in addition to changing the power generation methods. Research is underway to use electricity as much as possible to move society forward and reform it to achieve electrification of society that does not generate CO_2.

IoT Laboratory

Our team support the digital transformation of the electric power industry by applying IoT. We are developing and evaluating various analysis technologies that utilize data and technologies that capture signs of aging and abnormalities in equipment.

Stable Supply of Electric Power — Theme C

Stably supply electricity

Safe and stable provision of electricity for society is important to achieve electrification of society. We have been conducting research to limit power outages caused by natural disasters to the minimum degree and to provide a stable power supply by supporting power transmission and distribution that is increasingly becoming complex due to the reformation of power generation.

High Power Test Facilities

This facilities evaluate and verify the safety and short-circuit performance in the event of an accident involving a large current, such as a short-circuit fault of power transmission lines and distribution lines due to lightning strikes. It consists of a short-circuit generator, high voltage short-circuit transformers, a short-circuit test building, and high voltage DC short-circuit test facilities.

High Voltage Insulation Test Building

The central facility for high voltage tests and research to establish the insulation performance maintenance standard for electric power equipment. Dielectric strength test and contamination withstand voltage test in fog and water exposure conditions can be performed in full scale using 500 kV class power equipment and insulator, which is the highest transmission voltage in Japan.

Long Length XLPE Cable Deterioration Test Facility

XLPE(crosslinked polyethylene insulated) cable is designed 30 years as its lifetime, and some XLPE cable have been operating more than 30 years nowadays. This facility evaluates the electrical insulation performance of such XLPE cables in long-term operation to detect causes of insulation deterioration, and understand their electrical insulation capabilities. The results obtained have been directly applied to the planning of maintenance and renewal of aged XLPE cables.

Advanced Distribution Grid Test Building

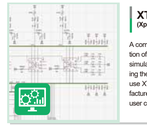
It is composed of testing facilities to solve issues in power quality, interference between control equipment, protection coordination, public safety, and others considering major changes such as the increase of renewable energy, smart distribution systems, and electricity deregulation.

CPAT®
(CRIEPI's Power System Analysis Tools)

Advanced integrated software package for RMS analysis of electric power system. It has been used for power system planning and operation since 1980, and contribute to realization of stable supply in Japanese electric power system, which is globally known for its high reliability.

CALDG®
(Comprehensive Analysis Tool for Distribution System with Distributed Generations)

A digital tool to examine voltage adjustment. Electricity is delivered after the voltage is adjusted appropriately according to the location and use. However, voltage adjustment for the major introduction of renewable energy and with EVs and storage batteries connected to the distribution line becomes extremely complex. CALDG enables accurate analysis for complex voltage adjustment and supports the decarbonized society.



XTAP®
(Xpandable Transient Analysis Program)

A computer program for the waveform level simulation of power systems. It is used for various types of simulations necessary for maintaining and improving the power quality. In Japan, all utility companies use XTAP as their standard tool, and major manufactures, universities and research institutes form a user community.

NRRC, Risk Assessment Research Team

The Nuclear Risk Research Center (NRRC) conducts cross-field research and implementation support with a mission to assist electric utilities in their effort to improve the safety of nuclear facilities by developing the methods of probabilistic risk assessment (PRA), risk informed decision making and risk communication. In Yokosuka Area, state-of-the-art PRA technology has been developed to assess risks of external hazards, equipment failure and human failure events in nuclear facilities, alongside with the methodology of risk communication based on risk information.