JAPAN
Nuclear Energy Buyers Guide 2020-21

Japan Atomic Industrial Forum, Inc.

About the Buyers Guide

The Japan Atomic Industrial Forum, Inc.（**JAIF**）is the leading nonprofit organization for nuclear energy in Japan. Its objective is to promote peaceful uses of nuclear energy and technology to support sound development of the national economy and well-being.

The Buyers Guide lists business profiles of over 60 JAIF's member companies/organizations（out of approximately 400）that not only proactively engage in international business in their respective markets, but also are seeking new collaborative opportunities with counterparts from around the globe.

We sincerely hope and expect that this book will be of benefit to both you and our member companies for business expansion and development in the future.

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Nuclear Vendors

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HITACHI
Inspire the Next

Hitachi, Ltd.

http://www.hitachi.com

Address	1-18-13, Sotokanda, Chiyoda-ku, Tokyo 101-8608, Japan
Contact	https://www.hitachi.com/products/energy/portal/contact/
Phone	+81-3-3258-1111

Major Business Operations

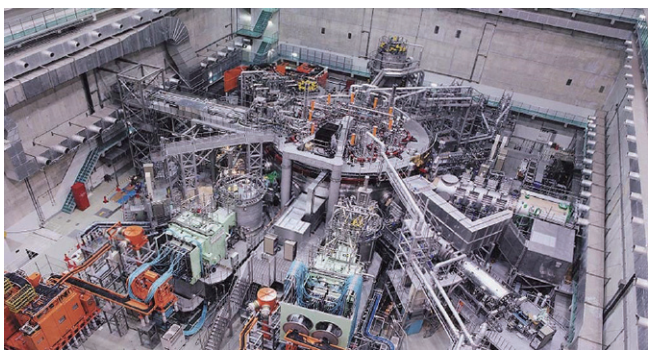
We contribute to society by developing our excellent technologies and products.
We deliver powerful synergy generated through collaboration within the Hitachi Group. By providing world-class, cutting-edge power generation systems, we solve the problems faced by society.

Nuclear Power Generation

We promote business operations with GE by establishing the One Team framework, and address research and development to enhance technologies and economy of boiling water reactors such as ABWR. We are responding to global needs with consistent responsibility, from the planning and design of nuclear systems to the manufacture of major equipment, construction of power plant, and maintenance of operating plants.

Nuclear Fusion Equipment and Others

We support society extensively through our long history of providing nuclear fusion equipment and electric motor business for industry in general and vehicle/wind power.



Transmission & Distribution

The introduction of natural energy, enhancement/expansion of power supply infrastructure to respond to growing electricity demand, and renovation of old facilities are in progress all across the world. We provide high value-added solutions worldwide that enhance power grids and make them more reliable by utilizing power distribution system integration that combines the equipment with IT.

Digital Solutions and Lumada IoT Platform

Hitachi utilizes and combines its strengths in OT, IT, products and its Lumada* platform to engage in collaborative creation of solutions with all customers and partners involved with energy.
Hitachi uses OT and digital technology, which has cultivated over the years, to provide various service solutions that contribute to the stable operation of facilities and the improvement of operational efficiency, depending on the needs of customers.

*Lumada is Hitachi's advanced digital solutions, services, and technologies for turning data into insights to drive digital innovation.

Hitachi-GE Nuclear Energy, Ltd.

http://www.hitachi-hgne.co.jp/en/index.html

Address	3-1-1, Saiwai-cho, Hitachi-shi, Ibaraki-ken 317-0073, Japan
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Profile

Building the Future of Energy Through Reliable Manufacturing

From the standpoints of energy security and the prevention of global warming, nuclear power generation is important and will soon embark on a new era. Hitachi-GE Nuclear Energy, Ltd., was established in 2007 by Hitachi, Ltd., and the General Electric Co. of the U.S. as a means of participation in the nuclear energy business. Hitachi-GE Nuclear Energy, Ltd., having inherited the technologies and the experiences of both companies, each with a half-century of experience in the nuclear energy business, is working for progress in that field while promoting highly reliable manufacturing practices. Furthermore, through synergistic collaboration with GE Hitachi Nuclear Energy in the U.S., we offer global services of consistently high quality, ranging from research and development to design, manufacturing and construction, as well as the maintenance of advanced boiling water reactors (ABWR), fast reactors, nuclear fuel cycle facilities, etc. Hitachi Group's overall strength, is used to support the reliable, sustainable supply of energy, as part of an effort to build a richer, more comfortable future for people and the planet.

Business Outline

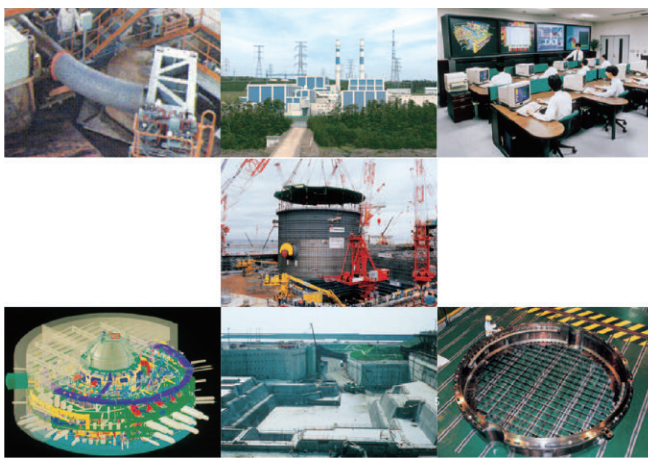
We support nuclear power generation, creating healthy avenues for the future of the world.

Hitachi-GE Nuclear Energy, Ltd., as it pursues the construction of nuclear power generation facilities with a higher level of both reliability and safety, conducts operations in their entirety through a consistent organizational structure. This structure encompasses the planning and design of nuclear systems, the manufacture of main equipment, the construction of power generation plants, and the repair/maintenance of operating plants. Moreover, we actively support the use of cutting-edge technologies by promoting the implementation of ABWR, robotics, and the construction and development of new materials and radioactive-waste disposal systems.

Network

We contribute to the future of nuclear power, working together with the companies of the Hitachi Group.

Hitachi-GE Nuclear Energy, Ltd., together with Hitachi Group companies, offers products and services that excel in terms of reliability, safety and cost-effectiveness. This is achieved through a consistent organizational structure encompassing the nuclear fuel, the nuclear fuel cycle and, of course, the power generation plant. Additionally, we are mobilizing our collective efforts and resources toward R&D, pursuing continuous improvement in the technological sophistication and economic efficiency of light water reactors—which currently predominate in nuclear power generation—while aiming to the future when fast reactors will be put into practical use.



Mitsubishi Electric Corporation

http://www.mitsubishielectric.com

Address	Tokyo Building, 2-7-3, Marunouchi, Chiyoda-ku, Tokyo 100-8310, Japan
Contact	http://www.mitsubishielectric.com/bu/powersystems/nuclear/
Phone	+81-3-3218-2608

Corporate Information

The Mitsubishi Electric Group applies our technologies to contribute to society and enhance the quality of life around the globe. We are working to create a brighter future through innovation and ensure a more sustainable world. We are extending our global reach and pioneering developments in fields ranging from home appliances to satellites, introducing breakthrough after breakthrough for the benefit of society, industry, and individuals. Our path to the future is built on an untarnished record of innovation and excellence, and our tradition of "changes for the better."

Main Activities

Energy and Electric Systems

- Thermal and Nuclear Power Generation
  - Turbine Generators
  - Digital Instrumentation & Control Systems
- Transformers & Power Transmission Equipment
  - Power Switchgear
  - Energy Management Systems (EMS)
  - Large-capacity Shell-form Transformers
  - Transmission & Distribution Systems

Products

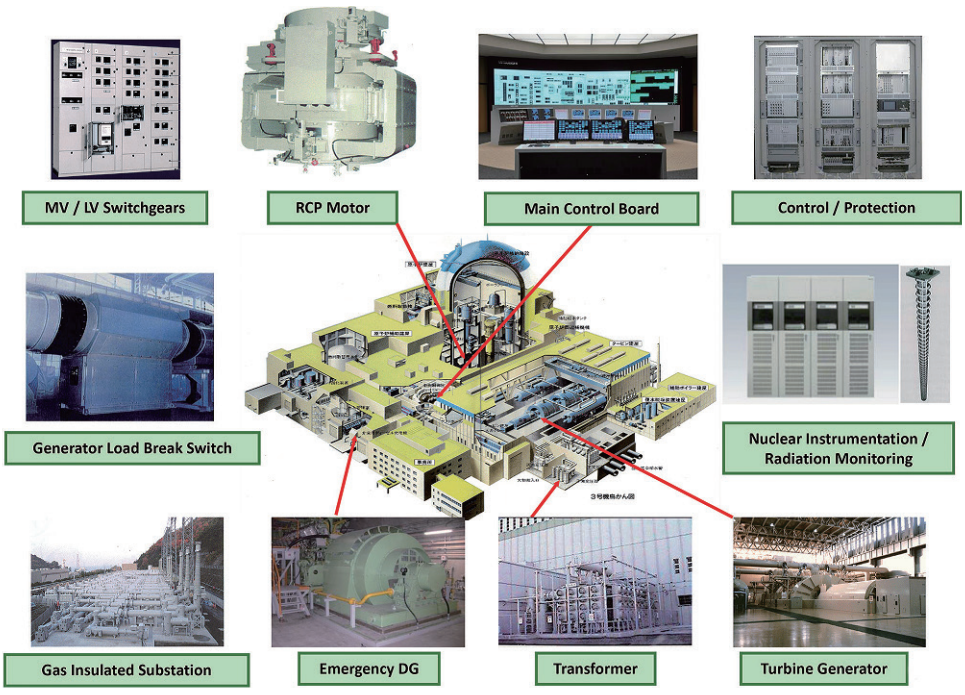
Power Plant Instrumentation Control Systems

Mitsubishi Electric has been supplying electrical systems and instrumentation-and-control (I&C) systems to nuclear power plants for decades, as well as contributing to the safe and secure operation of nuclear power plants using reliable technologies with a proven track record. Utilizing our I&C systems in particular, Mitsubishi Electric is providing both analog and digital systems made with leading-edge technologies of each generation for new plant construction and upgrading existing plants.
Mitsubishi Electric provides I&C systems for monitoring, protecting, and controlling nuclear power plants. The I&C product lineup ranges from components such as sensors to main control boards. Our I&C systems for nuclear power plants comply with the safety classification demanded by countries around the world.

Turbine Generators

Responding to a wide range of requirements, from small power stations to large-scale nuclear power plants, Mitsubishi Electric provides an extensive lineup of turbine generators.

Product Lineup



Mitsubishi Heavy Industries, Ltd.

http://www.mhi.com/index.html

Address	Marunouchi-Nijubashi Bldg, 3-2-3, Marunouhi, Chiyoda-ku, Tokyo 100-8332, Japan		
Contact	http://www.mhi.com/inquiry/inquiry_nuclear.html		
Phone	+81-3-6275-6200	Fax	+81-3-6275-6482

Corporate Information

— Integrated, Comprehensive Technology to Meet Society's Needs, from Developing New Technologies to Design, Production, Service —

At Mitsubishi Heavy, Industries Group, we bring people, businesses and ideas together as one to pave the way to a future of shared success. Utilizing our proven, forward-thinking approach and deep industry knowledge, we offer world-class innovative and integrated solutions across a wide range of industries and technologies, from planning to execution. Passionately seeking new, simpler and sustainable ways, we work with our clients and partners around the globe to create a better future for everyone who shares our planet.

Nuclear Power Generation

As a leading manufacturer of nuclear power plants, MHI has proactively engaged in the entire industry from the supply of pressurized water reactor (PWR) nuclear power plants to the development of fast breeder reactors (FBR) as well as nuclear fuel cycle related businesses.
MHI has supported the successful operation of all 24 PWR nuclear power plants in Japan with a total output of more than 20,000 MWe since 1970. MHI is continuously contributing to the supply of secure electricity by our extensive experience and practical accomplishments.

Sophisticated Production Capabilities Contribute to a Low-Carbon Society

Based on the customers' excellent trust in our abundant experience and capability in nuclear technologies, MHI has been the No.1 supplier in Japan in exporting major heavy components worldwide such as the U.S, Europe and Asia.
In response to the increasing global demand for nuclear power plants, along with the momentum to control the emission of greenhouse gas, MHI is promoting exportation of PWR power plants and major PWR components to contribute to realization of a low-carbon society.

ATMEA1 Reactor: Solution to Low Emission, Stable Energy

ATMEA1 reactor is the Generation III+ 1200MWe (net) class PWR providing the world's highest levels of safety and reliability evolutionarily developed from technologies that have been proven by operation for decades throughout the planet.

Nuclear Power Plants

- PWR (Pressurized Water Reactor)
- APWR (Advanced Pressurized Water Reactor)
- ATMEA1 (Mid-sized PWR jointly developed with EDF Group)
- Next Generation PWR

Advanced Reactors

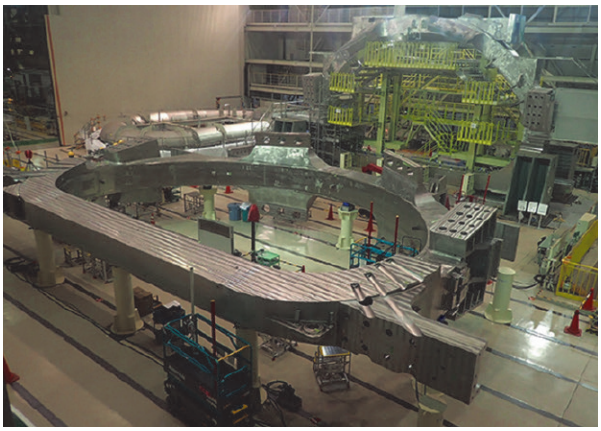
- Fast Breeder Reactor (FBR)
- Nuclear Fusion Reactors (ITER)
- High Temperature Gas-cooled Reactor
- Small Modular Reactor

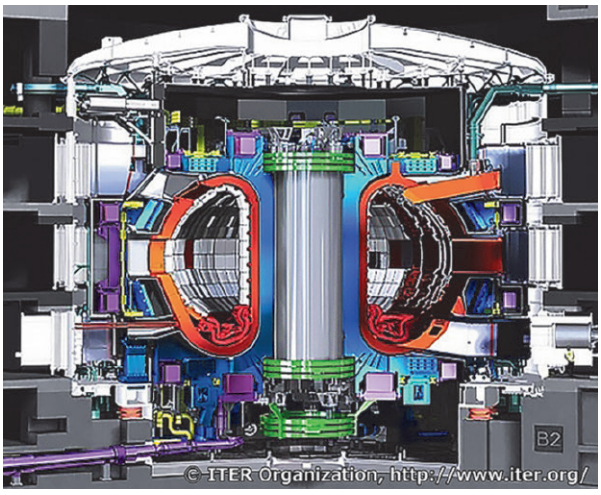
Nuclear Fuel Cycle, etc.

- Fuel Fabrication
- Spent Fuel Reprocessing Equipment
- Spent Fuel Transportation/Storage Cask
- Spent Fuel Interim Storage Facility
- MOX Fuel Fabrication Plant
- Various Disaster Support Robot, etc.

Post-Operational Services

- Statutory Periodical Inspection
- Replacement
- Repair
- Degradation Prevention and Mitigation
- Long-Term Maintenance Planning
- Operational Support, etc.





Toroidal Field Coil for ITER
Ref. https://www.mhi/news/story/200130.html

Mitsubishi Hitachi Power Systems, Ltd.*

http://www.mhps.com/products/steamturbines/lineup/nuclear-power/index.html

*Mitsubishi Hitachi Power Systems, Ltd. (MHPS) is scheduled to be changed to Mitsubishi Power, Ltd.

Address	3-3-1, Minatomirai, Nishi-ku, Yokohama, Kanagawa 220-8401, Japan		
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Phone	+81-45-200-6100	Fax	+81-45-200-7989

Corporate Information

Mitsubishi Hitachi Power Systems, Ltd. (MHPS), one of the leading companies for power industry, sincerely invites you to our value added solutions for energy supply security. Our proven and validated products will bring you benefit to various energy demands with less emissions.
Nuclear power generation is one of the resolutions, and we provide nuclear turbine plants with the highest reliability based on our manufacturing strength and comprehensive engineering.

Our Mission in Nuclear Power Generation

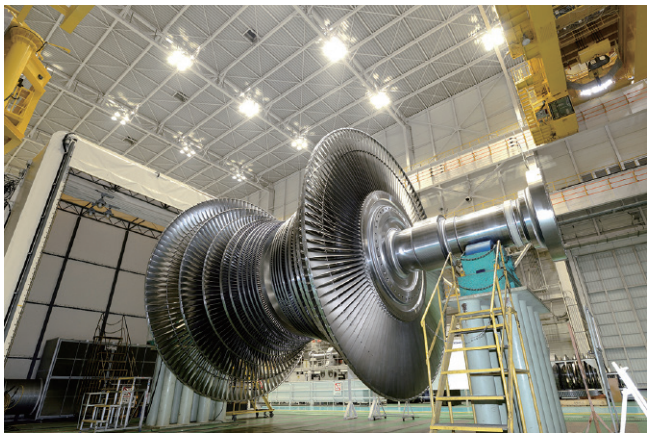
MHPS has rolled out its business of manufacturing nuclear turbine generators and plants for over 40 years featuring high reliability and safety, based on advanced "Manufacturing Capability," the world's highest level of "Technical Capability" and "Comprehensive Capability" ranging from research & development to engineering & design, procurement, manufacturing, construction and after-sales services.
We are determined to further provide products for nuclear power generation as well as offer the most appropriate solutions for our customers, eying to maintain stable energy supply in response to the global rising demand as well as to give solutions to global challenges toward a greener earth by reducing carbon emissions.

Response to Customers' Need

MHPS is able to offer turbine generators as well as heat exchangers in response to customers' demands of various reactor types, electrical outputs, and site conditions. Major components in Turbine plant are manufactured in house, maintaining high quality and reliability.

Advanced Nuclear Steam Turbine

MHPS has developed 1880™ Last Stage Blade (LSB), the world longest class LSB not only for 50 Hz but for 60 Hz regions, with our advanced technology and abundant experience over 40 years as one of the world's top manufactuers of nuclear steam turbines.
Steam turbines with 1880™ LSB produce more output, and reduce the number of LP turbine (LPT) cylinders, which meet our customers' requirements on economic efficiency of plant.



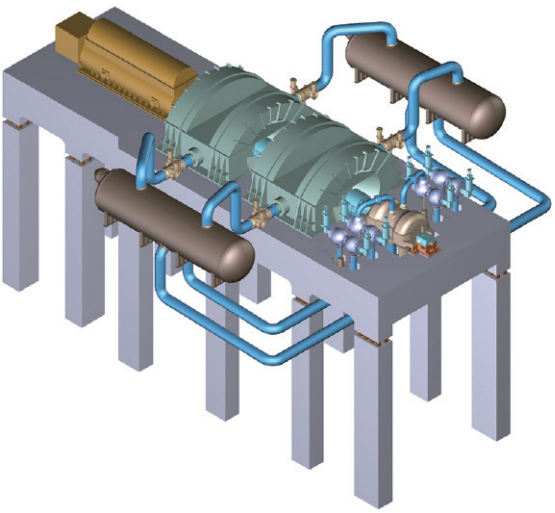
*The copyright belongs to MHPS.

MHPS Steam Turbine with 1880™ LSB

Output range (MWe)	From 1000 to 2000
Speed (rpm)	1500 / 1800
LSB Length (mm/inch)	1880 /74

Major Products for Nuclear Power Plant

- Steam Turbine
- Turbine Generator
- Moisture Separator Reheater
- Condenser
- Feedwater Heater & Deaerator



*The copyright belongs to MHPS.

Toshiba Energy Systems & Solutions Corporation

https://www.toshiba-energy.com/en/nuclearenergy/index.htm

Address	72-34, Horikawa-cho, Saiwai-ku, Kawasaki 212-8585, Japan
Phone	+81-44-331-0552
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Corporate Information

Toshiba Energy Systems & Solutions Corporation offers not only the large scale power generation systems of thermal and nuclear, but also of the renewables such as hydro power, PV, geothermal and wind power. We have expertise in transmission & distribution systems as well. Together with autonomous hydrogen energy supply system to enable local energy production for local consumption, and the smart grid integrating power infrastructure and the communications infrastructure, we can offer the best energy solutions the suit every customer. Our advanced technologies for nuclear energy are now applied to healthcare domain as well, offering an innovative way of Heavy-ion therapy system for cancer treatment.

Main Activities

We provide solutions for improving high levels of safety, reliability, and economic efficiency of nuclear facilities by using our abundant experiences in plant construction and continuous efforts in technology development.
We also offer new solutions in the field of energy, environment and healthcare by using our advanced technologies which are based on R&D for fusion, accelerator and superconducting magnet.

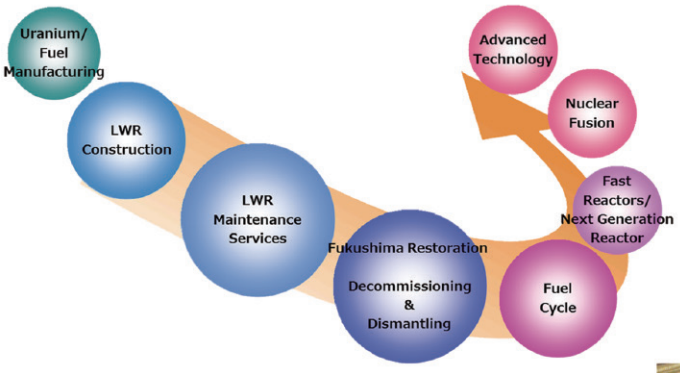
Main Products

- Light Water Reactor（LWR）
  - Advanced Boiling Water Reactor（ABWR）
  - Boiling Water Reactor（BWR）
- Steam Turbine and Auxiliary Equipment
- Digital Instrumentation, Control and Electrical Systems
- Service and Maintenance for Operating Plant
  - Laser Peening System for SCC mitigation
  - Laser Welding System
- Decommissoning
- Fast Reactors（FR）
- Nuclear Fuel
- Reprocessing Facilities
- Advanced Technology Application
  - Fusion Reactor Equipment
  - Accelerator
  - Superconducting Applications
  - Heavy-ion Therapy Equipment

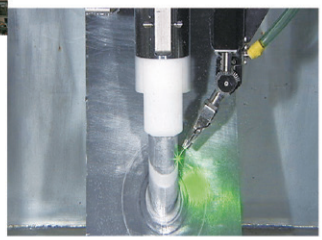
Heavy-Ion Therapy System for Cancer Treatment（Courtesy of NIRS/QST）

ABWR
（Kashiwazaki-Kariwa Nuclear Power Station unit No.6 and No.7: TEPCO）

High Performance Turbine

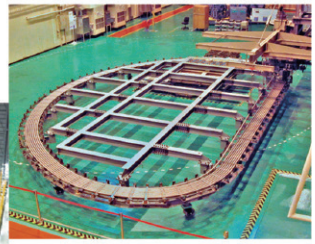


Nuclear Energy Business Domain



Laser Peening Equipment

MRRS™ Multiple Radio-nuclides Removal System



ITER Toroidal Field Coil
（International Thermonuclear Experimental Reactor）

Manufacturing

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- Mirion Technologies（Canberra）KK 22
- Okano Valve MFG. Co. Ltd. 23
- Toa Valve Engineering Inc. 24
- Yokogawa Electric Corporation 25

Advanced Fusion Technology Co.,Ltd. (AdFuTec)

http://www.adfutec.com

Address	5-6-3, Sotokanda, Chiyoda-ku, Tokyo 101-0021, Japan				
Contact Person	Mr. Yoshifumi Hoshide				
Phone	+81-3-6803-0177	Fax	+81-3-3839-0177	E-mail	yhoshide@adfutec.com

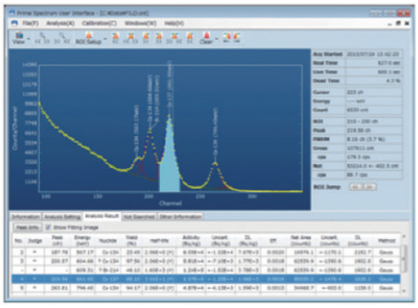
Corporate Information

AdFuTec was established in 2004. Despite its small size, almost all staff of the company have over 25 years of business experience in the nuclear related market in Japan. AdFuTec is well-known among our valued customers for our professionalism.

Main Products

Prime Spectrum User Interface

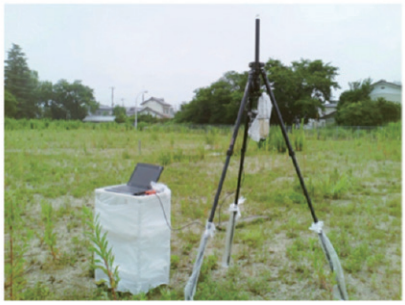
MCA emulation, data acquisition and analysis software for Gamma Spectroscopy.



Features:

- Simple and easy operation
- Data acquisition and hardware control
- Gamma spectrum analysis from Scintillation to HPGe detectors
- Peak viewer
- Analysis report
- Support for multiple file formats and languages

Prime In-Situ System



Features:

- "Middle" resolution Gamma Spectroscopy System
- Suitable for soil contamination screening
- Suitable for environmental measurement
- Analysis method: ICRU Rep.53
- Lightweight, compact and easy to carry
- Quick installation and easy setup
- Battery operation
- USB connection to MCA

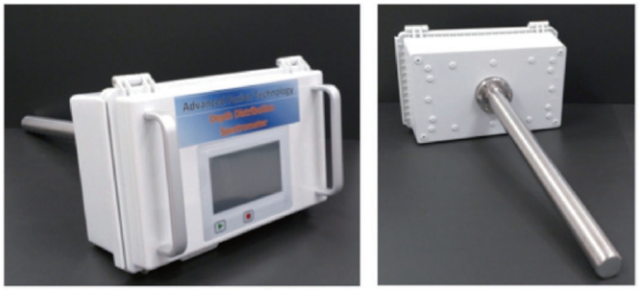
AFT-DDS

Portable Radiation Depth Distribution Spectrometer

This device provides an optimum solution for soil contamination having depth distribution.

Features:

- Built in 20 each CsI (Tl) scintillators and HV modules
- Scintillations: 10mm x 10mm x 10mm (placed with 20mm intervals)
- 512 Channel conversion gain/spectrum memory
- Waterproof and dustproof
- Dimensions: 125mm x 71mm x 200mm
- Rod: 30 ϕ mm x 430mm
- Weight: < 3.0kg



AFT-NDA2

Food Screening System with Non-Destructive Sample Assay

Features:

- Sample preparation not needed
- MDA < 10Bq/kg @ 1kg sample/10min measurement
- Sample weight range: 300g – 2,000g
- Built in 5"x 5"NaI (Tl) scintillator, HV. MCA
- Sample room size: 315mm x 315mm x 180mm
- Energy range: 50 – 3,000keV
- 1,024ch spectrum
- Size: 466mm x 466mm x 790mm
- Weight: 430kg
- Easy operation with analysis software

CHIYODA TECHNOL CORPORATION

https://www.c-technol.co.jp/eng

Address	1-7-12, Yushima, Bunkyo-ku, Tokyo 113-8681, Japan		
Contact Person	Mr. Tatsuya Kobayashi		
Phone	+81-3-3816-5267	E-mail	ctc-w@c-technol.co.jp

Corporate Introduction

Established in 1958, Chiyoda Technol Corporation (CTC) has been providing its services and goods related to radiation protection through 28 sales branches throughout Japan.

Personal Dosimetry Services with RPL Glass Dosimetry

CTC is the primary personal monitoring services company in Japan that have started with film badge services since 1956. Since 2000, we have succeeded in the replacement of film dosemeters by glass dosemeters, covering about 60% of market share in Japan including all kinds of radiation field workers in hospitals, schools, research institutes and nuclear power stations (approximately 380,000 monthly) in Japan. Glass dosemeters called "Glass Badge" is **"the State of the Art" whole body personal dosimeter**. Its quality has been recognized in Europe (IRSN have adopted more than 200,000 Glass Badges in France).

Photo © IRSN

Calibration Services

Chiyoda Technol Corporation provide calibration service of radiation measuring devices.
Our Oarai Research Center was certified by the Japan Calibration Service System (JCSS) in the field of radiation in 1995. In 2003, we became the only one private company that was certified for international MRA (Mutual Recognition Agreement) to offer "secure and reliable" calibration service to our customers.
*We can provide our irradiation equipment upon your inquiry.

In-vivo RPL Dosimetry System

Our dosimetry system with small glass detector called **Dose Ace** is particularly suitable for checking of delivered dose in the treatment planning of radiotherapy.

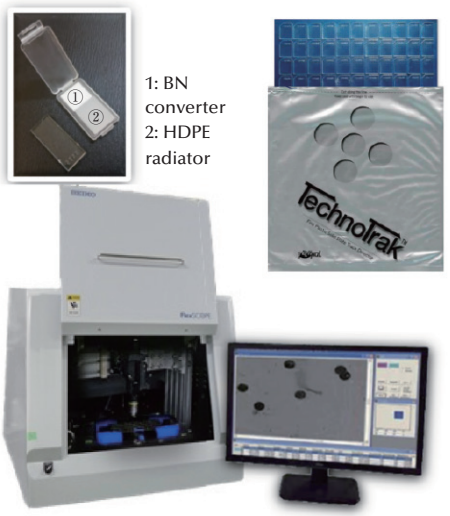
https://www.c-technol.co.jp/eng/e-small

Environmental Monitoring System

High liability and precision are the undeniable asset of Radio-Photo luminescence (RPL) technology. We provide the environmental measurement system (FGD-200 series & SC-1) for leakage dose in nuclear power plants, radiological department of hospitals, isotope facilities and cyclotron facilities.

Neutron Detector and Monitoring System

Our neutron personal monitoring service using **"TechnoTrak" (TT)** detector (solid state neutron detector) in Japan meets **ISO 21909-1** requirements. The majority of the nuclear power plants in Japan receive our monitoring service (324,000 neutron detectors every year). We offer **Wide-range Neutron Pit (WNP) System** including the innovated TT2 based on our monitoring technology. TT2 can be solely purchased with customized cutting.



DAIPLA Corporation

C.I. TAKIRON GROUP

https://www.daipla.co.jp

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Corporate Information

At Daipla Corporation, we have been pursuing the creation of "new forms" as a plastics manufacturer to realize the potentials of chemistry and social prosperity since our founding in 1956. To achieve this, we have sought to create valuable products in diverse fields with high levels of motivation and sincerity.
By utilizing the connections of the Group that we have established over the years, we have access to flexible information links and have the capability to develop multiple types of products types of from one idea and to feed back market information to the development site in real time. Through these initiatives, we are taking steps to create a system that responds flexibly to market needs.

Main Activities

Daipla is a leading company and a pioneer in the development of large plastic pipes for gravity and pressure pipes in Japan. Today, plastic pipe systems enjoy the greatest demand and the fastest growth rate worldwide. We provide these pipe system for industrial applications such as intake/outfall, chemicals, drainage, sewerage, water treatment and hydraulic transportation.

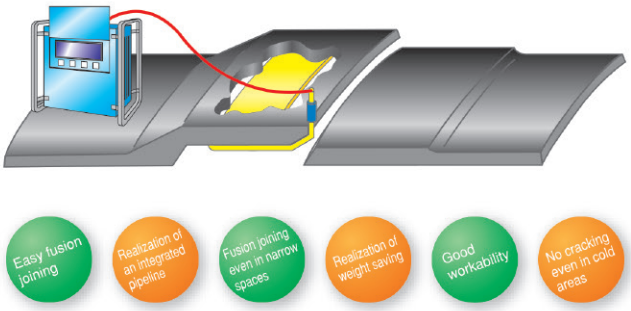
Gravity Pipes ID ϕ 300～ϕ 3000mm

Gravity pipe system is designed for high pipe stiffness to withstand external load. The gravity pipes are produced with a structured (profiled) wall.

Diameter of 3m

Flexibility Pipe

Pressure Pipes



Pressure pipe system is designed for high internal pressure. The pressure pipes are produced with a homogeneous solid wall. They are either made out of fully high density polyethylene or out of a compound (based on high density polyethlene and glass fibers.) The advantage of this pipe system is the perfection, the end finish of the pipes. Every pipe can be produced directly with an integrated socket and spigot or every other end design which is available.

Generation Facilities

Seawater Intake Pipe

Fuji Electric Co., Ltd.

http://www.fujielectric.com/products/nuclear

Address	1-1, Tanabeshinden, Kawasaki-ku, Kawasaki-city 210-9530, JAPAN				
Contact Person	Mr. Hisashi Mikami				
Phone	+81-44-329-2188	Fax	+81-44-329-2176	E-mail	mikami-hisashi@fujielectric.com

Corporate Information

Corporate Mission

We, Fuji Electric, pledge as responsible corporate citizens in a global society to strengthen our trust with communities, customers and partners.
Our mission is to:

- Contribute to prosperity
- Encourage creativity
- Seek harmony with the environment

Main Activities

Beginning with the construction of Japan's first commercial nuclear power station (the Tokai Power Station, a gas-cooled reactor) in 1965, Fuji Electric has made significant contributions to the establishment of the nuclear fuel cycle and the expansion of nuclear power as a clean form of energy without CO_2 emission by utilizing three core technologies: remote handling technology, radioactive waste treatment technology and nuclear reactor engineering technology.

Core Technologies and Main Products

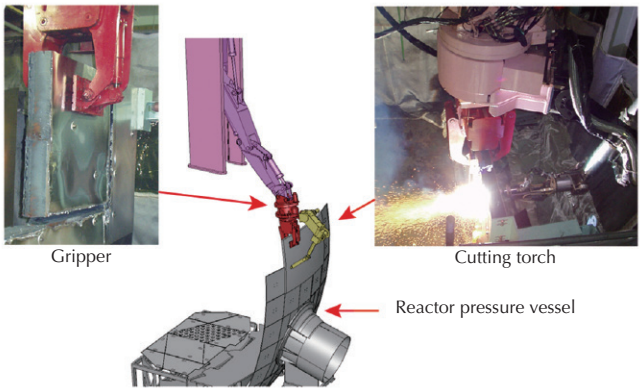
Fuji Electric is a unique company in the nuclear business field. Our principal experience is as follows:

1. Remote Handling Technology

(1) MOX Fuel Pellets Manufacturing Facility

(2) Fuel Transfer System

(3) Remote Dismantling System



2. Radioactive Waste Treatment Technology

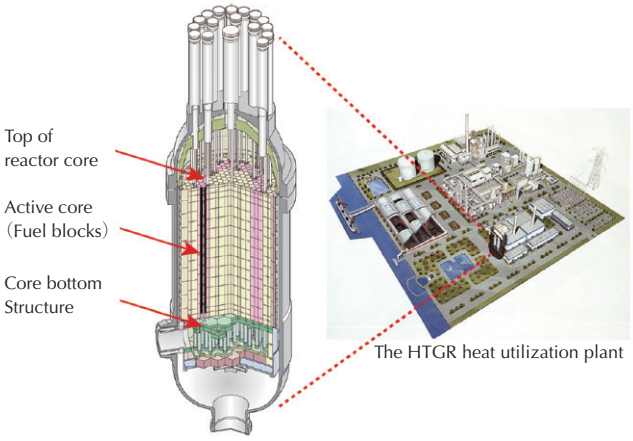
- SIAL® (Geopolymer for radioactive waste treatment)


SIAL® Solidified samples


Kneading equipment for solidification treatment system

3. Nuclear Reactor Engineering Technology

- Commercial HTGR with passive safety feature



Commercial HTGR

Fujikin® Carp® Group

http://www-ng.fujikin.co.jp/

Address	Akihabara Dai Bldg., 1-18-13, Sotokanda, Chiyoda-ku, Tokyo 101-0021, Japan		
Phone	+81-3-3252-0301	Fax	+81-3-5209-8835

Introduction

Nuclear power plants and thermal power plants are two main pillars supporting energy supply in Japan. The valve equipments used for these plants require higher safety and reliability in compliance with the guidelines and laws including Electricity Enterprises Law.

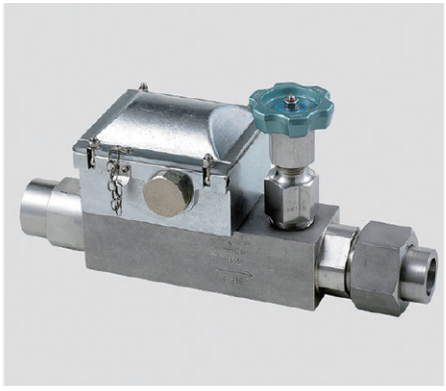
Fujikin has so far delivered many types of instrumentation valves to nuclear power plants of PWR (pressurized-water reactor) and BWR (boiling-water-reactor) types throughout the country. Based on these experiences, our valves products have been also adopted by nuclear fuel reprocessing plants.

Fujikin has many clients also in the field of thermal power plant, not only in Japan but also worldwide, receiving high acclaims for its quality and reliability. Fujikin promises to provide security, safety and reassurance through our products.

Grand-Sealed Instrumentation Valves

Two Valve Manifolds

Metal Diaphragm-Sealed Instrumentation Valves



Excess Flow Check Valves

IA Header Valves

Fail-Proof Devices

Tubes Connectors for Nuclear Application

Mini Control Valves

Bellows-Sealed Valves

Pin-Type Snubbers

After-Sales Service

GNS Gesellschaft für Nuklear-Service mbH

https://www.gns.de/language=en/24394

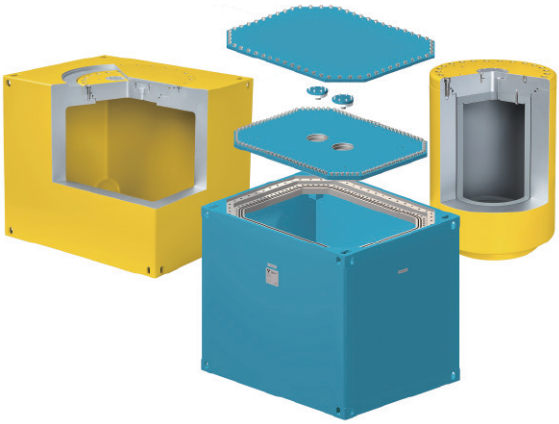
Address	Frohnhauser Straße 67 45127 Essen				
Contact Person	Dr. Juergen Skrzyppek				
Phone	+49-201-109-1480	Fax	+49-201-109-21480	E-mail	gns-sales@gns.de

Company Information

GNS provides comprehensive solutions for spent fuel, nuclear waste and decontamination and decommissioning (D&D) with its unique nuclear expertise of more than 45 years. With more than 700 employees at eight locations, the companies of the GNS Group have achieved a combined turnover of well over 250 million euros per year.

Spent Fuel

GNS invented the CASTOR® cask, the world's first dual-purpose cask for spent nuclear fuel, four decades ago. Today, it offers several cask types for various different kinds of fuel from nuclear power plants (NPPs) and research reactors as well as high-level waste (HLW). To date, 1,800 GNS-casks have been loaded and are now stored in several countries across four continents. GNS rounds out its portfolio by offering cask loading services and designing storage facilities for spent fuel.

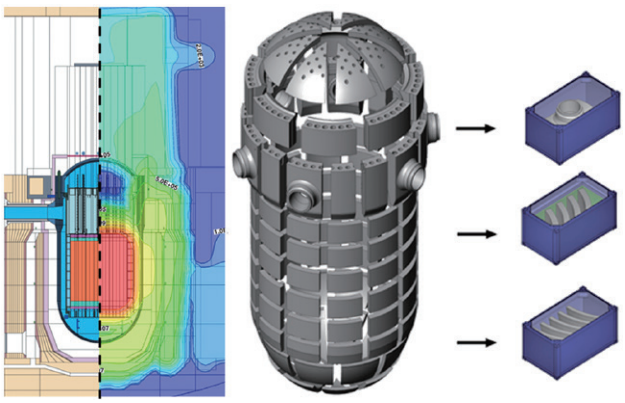


D&D

GNS offers solutions for all phases of the decommissioning process, from defueling to the dismantling and packaging of reactor pressure vessels (RPVs) and their internals as well as other primary circuit components. Experience-based activation calculations facilitate efficient cutting and packaging as well as minimal dose rates.

Waste Management

For all kinds of radioactive waste from NPPs, GNS offers treatment services alongside equipment and packaging solutions to ensure acceptability for interim storage and final disposal. With 8,000 MOSAIK® casks and GNS Yellow Boxes® for intermediate-level waste (ILW) already in use, GNS is the world's top supplier of shielded transport and storage casks. Leveraging its reliable treatment technology, GNS even designs, constructs and operates complete waste management centers for operation and decommissioning sites.



Hirata Valve Industry Co., Ltd.

http://www.hvi.co.jp

Address	3-2-3, Hisamoto, Takatsu-ku, Kawasaki-city, Kanagawa 213-0011, Japan				
Contact Person	Mr. Kengo Yamada				
Phone	+81-44-812-8556	Fax	+81-44-822-5101	E-mail	kengo-yamada@hvi.co.jp

Corporate Information

The Hirata Valve Industry Co., Ltd. (HVI) is a specialty valve maker for energy since 1937.
Recently we piled up many track records and became a trustworthy leader in the valve making industry, by manufacturing products for nuclear power plants and LNG plants, in which social responsibility is highly required.
Our company creed is to serve our society by manufacturing advanced, user-friendly and user-considerate valves from the user point of view.
Under our company creed, we strive to offer reliable products of high quality and high performance within customer's budget. Furthermore, we undertake research and development of new products based on current needs, such as environmental preservation and energy saving resources, and contribute to the development of the energy industry.

Main Activities

We produce our valves based on customer's need and demand. Our wide range of basic product lineup is as follows:

- **Types of valve**
  globe valve, needle valve, gate valve, lift check valve, swing check valve, tilting check valve, ball valve, butterfly valve, tank bottom valve, Y-type strainer, safety valve and others
- **Operation Types**
  manual, air, electric and solenoid operation
- **Pressure Classes**
  150LB-2500LB, JIS10K-63K, PN10-PN100
- **Nominal Sizes**
  6A-1500A, 1/8B-60B (Differ according to the valve type)
- **Materials**
  carbon or low alloy steel (forgings, castings), austenitic steel (forgings, castings)
- **End Connections**
  flange, socket welding (SW), butt welding (BW)
- **Fields**
  LNG terminal, thermal power station, nuclear power station, process industry plant (oxygen, nitrogen, oil, chemistry and food, etc.), space rocket liquid hydrogen device, and others

Product Information

Development of the whole surface hard rubber lining valve

Frequent damage to the interior of the valve due to corrosive substances such as seawater is common.
We worked on valve development and later successfully achieved a milestone to improve reliability, harmonize anticorrosion materials and structures, and extend inspection life and cycle.
The biggest features of our valve:

- The internal structure has no exposed metal parts.
- It completely shuts off fluid entry into metal structures.

Our hard rubber lining valves have been free of corrosion claims for over 20 years since installation. The eradication of seawater corrosion has become a reality, and the prejudice of "corrosion = seawater" has receded.
The conventional maintenance cycles are usually 1-2 years, but our valve has a long cycle of over 4 to 5 years.

The whole surface hard rubber lining valves are shown in Fig.-1 and Fig.-2. Fig.1 is the class 150-700A (28B) swing check valve and Fig.2 is the class 150-500A (20B) butterfly valve.

Fig.-1

Fig.-2

Hitachi Zosen Corporation

http://www.hitachizosen.co.jp/english/index.html

Address	Omori Bellport D-wing, 6-26-3, Minamioi, Shinagawa-ku, Tokyo 140-0013, Japan				
Contact Person	Mr. Yoshitaka Kitai (Manager of Nuclear Systems Sales Group)				
Phone	+81-3-6404-0151	Fax	+81-3-6404-0159	E-mail	nuclear-sales@mml.is.hitachizosen.co.jp

Corporate Information

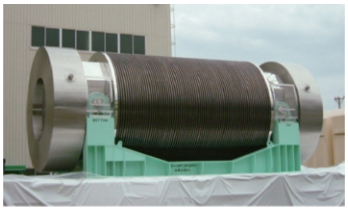
Environmental protection, plants, precision machinery, disaster prevention – in each of these fields, the Hitachi Zosen Group, founded in 1881, is providing a safer and more comfortable today, and working to create a more prosperous tomorrow. Its business domain includes the manufacturing of industrial machinery and process equipment, engineering of state-of-the-art environmental plants, creation of information technology-related business, offering of relevant proposals, and provision of services in a wide range of industry fields.

Main Activities

Hitachi Zosen (Hitz) has over 30 years of experience in the nuclear field, especially for the transport/storage cask market as we have been providing the development, design and manufacturing of these casks as a pioneer in Japan.
In 2013, we acquired NAC International Inc. ("NAC", see below.), a leading nuclear fuel cycle management company focused on the engineering, design, and transportation of casks and canisters in the U.S., giving us the capability to provide a "one-stop" integrated solution service in the global market. Hitz & NAC have entered into a collaboration ("one team") in order to develop our game changing technology and bring it to the global markets.
In addition, we have manufacturing experience and capability for components of nuclear power plants including heat exchangers.

Products

- Transport/Storage Cask and Canister
- Components for Nuclear Power Plant
  - Vessel & Tank
  - Heat Exchanger
  - Piping Module



Transport Cask

Storage Cask

NAC International Inc. (NAC)

NAC is an industry-leading provider of engineering and nuclear fuel management solutions for nuclear facility operators, fuel cycle companies and government agencies. NAC has been in business for 50 years and offers a proven process for the design, licensing and deployment of innovative technologies to store, transport and manage nuclear materials, including high level waste and spent fuel. NAC's professional staff possesses unsurpassed industry knowledge and experience, necessary for today's demanding requirements for nuclear fuel cycle projects and performance. NAC has delivered more than 600 spent fuel casks or canister dry storage systems in use and has more than 3,700 spent nuclear fuel shipments from more than 70 nuclear facilities worldwide.

Legal Weight Truck (LWT)
Cask for Site Transportation Service

Dry Storage Systems (Concrete Cask)

IHI Corporation

http://www.ihi.co.jp/en/

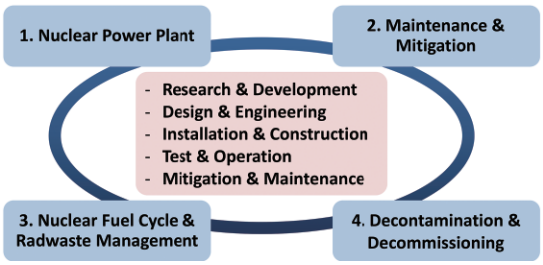
Address	(Nuclear Energy Business Unit) 1, Shin-Nakahara-Cho, Isogo-ku, Yokohama 235-8501, Japan (Global Headquarters) Toyosu IHI Building, 1-1, Toyosu 3-chome, Koto-ku, Tokyo 135-8710, Japan				
Contact Person	Mr. Masashi Fukusawa				
Phone	+81-45-759-2293	Fax	+81-45-759-2698	E-mail	fukusawa7116@ihi-g.com

Main Activities

To meet increasing power demands in the world and realize the carbon-free society, IHI Corporation, a leading company of energy infrastructure, has been providing total solutions for nuclear industry over 65 years.

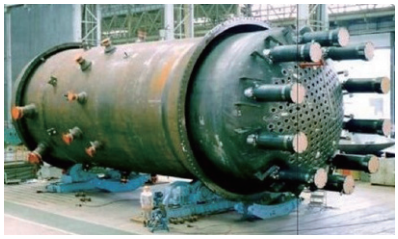
Main Products & Services

Our rich experiences and the cutting-edge technologies enable IHI to provide the total solution through nuclear power generation products, plant operation & maintenance services, nuclear fuel cycle & radioactive waste management and nuclear backend area.



1. Nuclear Power Plant

(1) Reactor Pressure Vessel



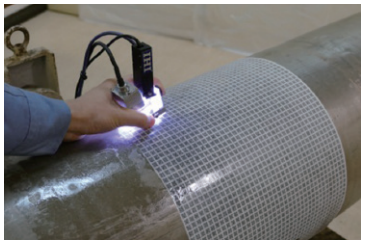
Reactor Pressure Vessel

(2) Reinforced Concrete Containment Vessel / Containment Vessel
(3) Piping & Heavy Structure Module Component
(4) Heat Exchangers
(5) Design, Analysis, Engineering and Installation Services

Containment Vessel / Structural Module
(Photograph provided by Georgia Power Company: georgiapower.com/company/plant-vogtle.html)

2. Maintenance & Mitigation

ISI, PSI & other maintenance Services by utilizing;
(1) Inspection / Remote Control Robot Technologies
(2) Stress Corrosion Cracking Preventive Technologies
(3) Laser Weld Technologies



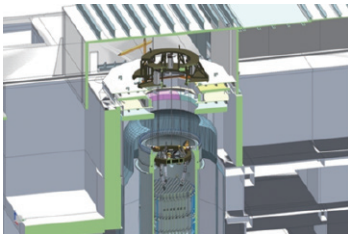
ARMUT®
(Absolute Recordable Manual Ultrasonic Testing)

3. Nuclear Fuel Cycle & Radioactive Waste Management

(1) Radioactive Waste Receptacle and Storage Plant
(2) High-level Radioactive Waste Vitrification Plant

4. Decontamination & Decommissioning

(1) Planning and implementation for decontamination & decommissioning projects
(2) Design, manufacturing, and implementation in the following fields:
– physical & chemical process for decontamination
– application of remote controlled equipment
– waste management
– various storage containers



Source: WM2016, Conceptual Study of Fuel Debris Retrieval System for Fukushima Daiichi Reactors-16111

5. Participation to development of Small Modular Reactor (SMR) / Advanced Reactor projects (FBR, HTGR and ITER)

6. Certificates

(1) Boilers & Class 1 pressure vessel
(2) ASME N/NPT/NA/NS and U/U2/S Certificates of Authorization
(3) ISO9001:2015
(4) ISO14001:2015

KIMURA CHEMICAL PLANTS Co., LTD.

http://www.kcpc.co.jp

Address	2-1-2, Kuise-Terajima, Amagasaki, Hyogo 660-8567, Japan				
Contact Person	Mr. Shinji Ozaki				
Phone	+81-6-6488-2533	Fax	+81-6-6487-5800	E-mail	shinji-o@kcpc.co.jp

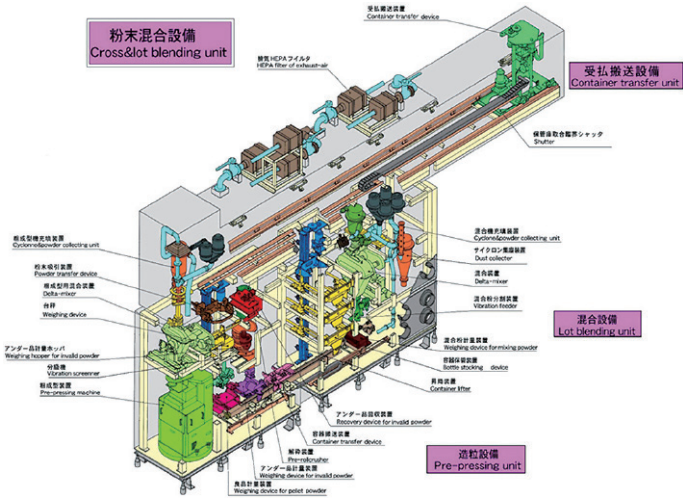
Corporate Information

The company was established in 1924 to supply the lead products such as water pipes. It also supplied quite a few number of lead lining tanks for synthetic fiber companies. The demand for the shielding radioactive rays using our lead technology led us to the nuclear power related industires. Since then, we have designed and manufactured various machines and facilities having very close contacts with Japanese nuclear power reactor companies and nuclear related R&D organizations. Our technology has been continuously developed by reflecting our customers' ideas and requirements. Our accumulated experiences in this field are our biggest strength and could be in service at our customers' disposal.

Main Activities

Our Energy and Environment Engineering Division offers the following services and supplies:

- **Glove Box and its inner facility technology**
- **Facilities for MOX fuel manufacturing**
- **Double door system for airtight chamber**
- **Electric boiler**
- **Equipment for the treatment and disposing radioactive material**
- **Transportation casks and containers for nuclear fuel and radioactive waste**
- **Machinery for shelding radioactive ray**
- **Various nuclear ralated equipment fabrication**



Products

1. Facilities for MOX Fuel Manufacturing

KCPC has designed and manufactured several installations under the direction of JAEA (Japan Atomic Energy Agency). Our technology is concentrated on the field of MOX powder preparation and pellet manufacturing.

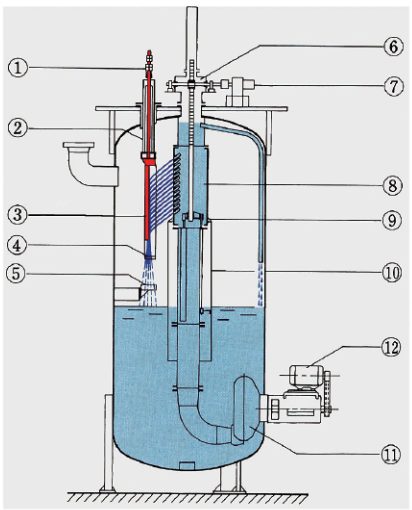
2. Electric Boiler

- Small space requirement: needs no separate boiler house, no oil tanks, no smoke stack
- Designed and engineered on the basis of many years of experience (over 1000 installations)
- Output regulation from 0% to 100%
- Absolutely environment compatible: no smoke, no fumes, no noise
- Simple to operate: all instruments arranged neatly on central panel
- Safe operation: no risk of damage even if the water supply is interrupted
- Efficiency up to 98%, hence high profitability
- Simple to install, therefore low initial costs

Structure of electric boiler

① Current intake
② Insulator
③ Electrode
④ Lower nozzle plate
⑤ Counter electrode
⑥ Output controller
⑦ Motor for controller
⑧ Upper nozzle plate
⑨ Deflector
⑩ Control hood
⑪ Circulation pump
⑫ Motor for pump

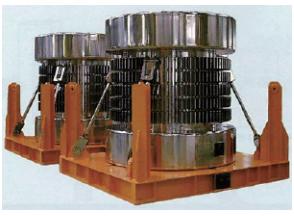
Electric current flow within upper water jet streams between upper nozzle plate ⑧ and electrode ③ heat water and generate steam. Similarly lower water jet streams between counter electrode ⑤ and electrode ③ generate steam. Because control hood ⑩ regulates the number of water jet stream, boiler output can be automatically controlled according to steam pressure.



3. Transportation Casks and Containers for Nuclear Fuel and Radioactive Waste

KCPC can supply holistic engineering, safety analysis, manufacturing, and services.

- Casks for transportation of the spent fuels for the research reactors
- Casks for the fuel assemblies for FBR Monju
- Casks for the irradiated fuels



MIRION TECHNOLOGIES (CANBERRA) KK

https://www.mirion.com/

Address	Asakusabashi Bldg. 4-19-8, Asakusabashi, Taito-ku, Tokyo 111-0053, Japan				
Contact Person	Mr. Yoshiharu Ito				
Phone	+81-35-835-5402	Fax	+81-35-835-5403	E-mail	jp-sales@mirion.com

Corporate Information

Mirion Technologies, Inc.

We are a world-leading company in the provision of radiation measurement and nuclear-related services with a track record of over 60 years. Our organization is comprised of over 1,800 talented professionals, all of whom are passionate about delivering world-class products, services and solutions in the world of radiation detection, protection and measurement.

In partnership with our customers in nuclear power plants, military and civil defense agencies, hospitals, universities, national labs, and other specialized industries, we strive to deliver cutting-edge products and services that constantly evolve based on changing customer needs.

Mirion Technologies (Canberra) KK

Our mission is to provide Mirion products and our expertise to the Japanese market while meeting Japan's unique requirements. In addition to products, we also offer a wide range of services as well as customized software development. In recent years, we have successfully developed tailor-made solutions and Measurement & Expertise Services to meet the needs of the evolving Japanese market. This was achieved thanks to a combination of Mirion's worldwide expertise and its domestic capabilities, including through partnerships.

Main Applications & Products

Spectroscopy & Counting Labs

Advanced spectroscopic and radiochemistry solutions for laboratories as well as in vivo and in situ applications. From routine analysis to cutting-edge research, we bring defensibility, reliability and trust to your operations.

Customized Japan-made software

- Spectroscopy software compliant with MEXT guidelines
- HASL258-compliant in-situ analysis software
- Software for real-time activity mapping

Contamination Monitoring & Clearance Monitoring

- Body screening and entry/exit monitoring
- Tool, object and conveyor screening
- In-vivo counting

Criticality Accident Alarm System (CAAS)

From wide-area coverage in large buildings or across facilities to stand-alone self-contained fixed or mobile units.

Decontamination & Decommissioning

Large offerings ranging from dose/activity mapping to object characterization of free release and waste assay systems, including field/sites, as well as Measurement & Expertise Services.

Environmental Monitoring

Real-time quantitative and qualitative measurements of natural and artificial radioactivity (α, β & γ) in the environment, in a facility's surroundings and/or in any type of sample.

Services

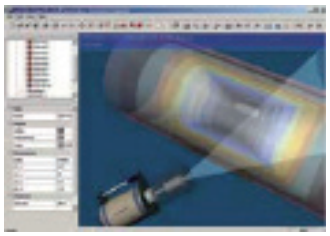
- Calibration services
- Customer training programs
- Installation
- Maintenance
- Product support and repairs

Key Technologies & Offerings

In-Situ Object Counting System (ISOCS)

Over the last 20 years, ISOCS has been used on almost every major decontamination and decommissioning (D&D) site in the US and Europe, having proven to be an essential tool for efficient decommissioning.

ISOCS technology is an MCNP-based mathematical method that is used to calculate geometric efficiency for gamma spectrometry measurements. It enables operators to perform in-situ modeling and calculations in a short time (typical calculations can be done in just a few seconds.). ISOCS is equipped with various sets of templates that can be used for modeling in 3D virtual space as well as the ISOCS Uncertainty Estimator (IUE), which calculates uncertainty in relation to various given input parameters.



Measurement Services & Expertise

- Expertise: We develop customized measuring solutions, conduct technical and feasibility studies to assist in waste management and D&D strategies, and design non-destructive assay (NDA) systems.
- Onsite measurement services and characterization reports: We offer a wide range of onsite services, from dose rate and gamma imaging surveys to complex gamma spectroscopy, as well as the conducting of measurements by using ISOCS or other modeling codes.

OKANO VALVE MFG. CO. LTD.

http://www.okano-valve.co.jp/english/

Address	1-14, Nakamachi, Moji-ku, Kitakyushu City, Fukuoka 800-8601, Japan				
Contact Person	International Sales Section, Sales Dept. Sales Headquarters				
Phone	+81-93-372-9244	Fax	+81-93-382-1200	E-mail	okano-kaiei@themis.ocn.ne.jp

Corporate Information

Established in 1926, OKANO VALVE MFG. CO. LTD. has been on the front line in development and design of some of the world's most important valves. With the expansion of thermal and nuclear power plants in and outside of Japan, these valves help provide the base for our current technology. OKANO manufactures most types of valves used for thermal and nuclear power plants, as well as other fields of industry. Covering ultralow to ultrahigh temperatures as well as vacuum area to high pressure, these valves total more than one million.

Main Activities

1. Design
- Designing of valves for thermal and nuclear power plants in accordance with applicable codes, standards and regulations such as ASME, ANSI, JSME, JIS and JEAC

2. Manufacturing (Valves and Materials)
- Line valves, pressure relief valves and safty valves
- Steel casting materials comforming to the codes and standards, such as ASME and JIS
- Performing nondestructive examination for casting materials and valve parts

3. Material Supply
- Supplying steel and non steel materials

4. Maintenance
- Providing maintenances for valves delivered to the customers for safe and high operation

5. Quality Assurance Program
- Establishing, maintaining and implementing the Quality Assurance programs

Head Office

MSIV

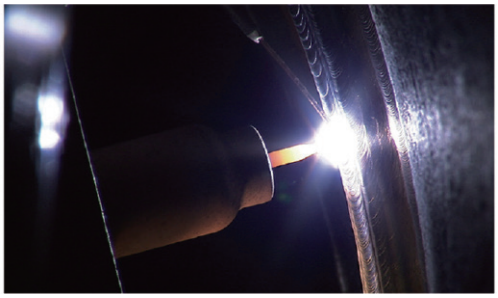
Products & Technologies

Material Organization

Having our steel casting shop, we manufacture quality casting material including valve parts for manufacturing proved by lots of data accumulated.

Technologies

OKANO is the world's first valve manufacturer to produce valves with seat surfaces overlaid with stellite alloy. This technology has been adopted worldwide as the standard in valve manufacturing.



Main Steam Safety Relief Valves

OKANO's design and development of the Main Steam Safety Relief Valve (MS-SRV) is one of the most important valves to assure safety of BWR and ABWR nuclear power plants. Proving our technology is capable of responding to future development, the MS-SRV has been adopted by all BWR nuclear plants throughout Japan.
In addition, having obtained the ASME NV Certificate, the MS-SRV manufactured by OKANO is ready to be adopted worldwide.

Valves for Overseas Nuclear Power Plants

Aiming to increase orders for nuclear power plants overseas

TVE TOA Valve Engineering Inc.

Evolving towards the 100th anniversary, 2022

https://www.toavalve.co.jp/

Address	5-12-1, Nishitachibana-cho, Amagasaki, Hyogo 660-0054, Japan				
Contact Person	Mr. Norihiro Iwanaga				
Phone	+81-6-6416-8865	Fax	+81-6-6416-1207	E-mail	info@toavalve.co.jp

Corporate Information

"Safety", "Security" and "Confidence"

Toa Valve Engineering Inc. has supplied the valves for all nuclear power plants (PWR, BWR, ABWR, FBR) in Japan since Japan's first commercial nuclear power plant-Tsuruga Unit No.1 in 1967. Moreover, our valves are used as the main valves for the primary and secondary system of all PWRs (Pressurized Water Reactor) in Japan. TVE has also provided the critical maintenance services for safety and reliable operation in reply to various customer's needs. Our valves are also used at nuclear plants in USA, Mexico and China.
TVE has consistently provided manufacturing, sales, maintenance of industrial valves and safety valves as one of the leading valve suppliers, along with changes in the main market, such as for ships until about 1945 and for power plant during the years of high economic growth.

"Opening", "Closing" and "Relieving"

We have prided ourselves on our contribution to the stable electric supply through safety and reliable operation of the power plants, providing products which fulfill those functions reliably under all circumstances and maintenance. We put our continuous effort into contribution of the development of economy and society while respecting culture and custom of each country/region as well as complying with the international rules and the local laws to cooperate with the international society.
It is our belief that our considerable experience and high quality acquired through half a century of valve design and manufacturing for nuclear will respond to the needs of a new era.

Main Activities

【High Pressure Valve】

Manufacturing and Maintenance of Casting & Forged Steel and Stainless Steel Valves, etc.

- Nuclear Power Generation
- Conventional Thermal Power Generation
- Refinery, Petrochemicals

covering the ranges from ultra high-temperature and from ultra super critical pressure.

1500lb to 4500lb / 2 inches to more than 30 inches
WCB, WC6, WC9, C12A, A105, F22, F91 etc.

【Valve Types】

Gate valve, Globe valve, Needle valve, Check valve, Safety valve Relief valves and various other special valves.

Manufacturing and Supply of Various Maintenance Equipment

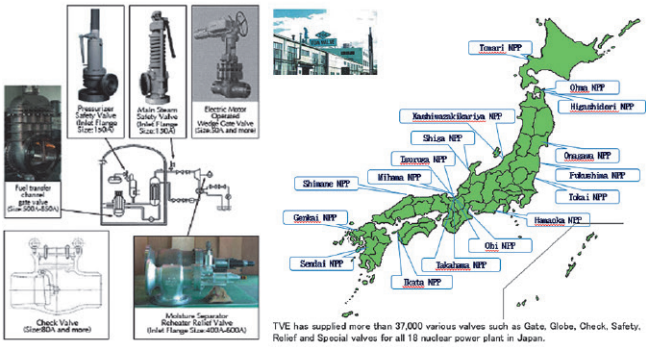
- Computer aided diagnosis equipment for motor operated valve: "TACS (TVE Actuator Characterizing System)", etc.

Products

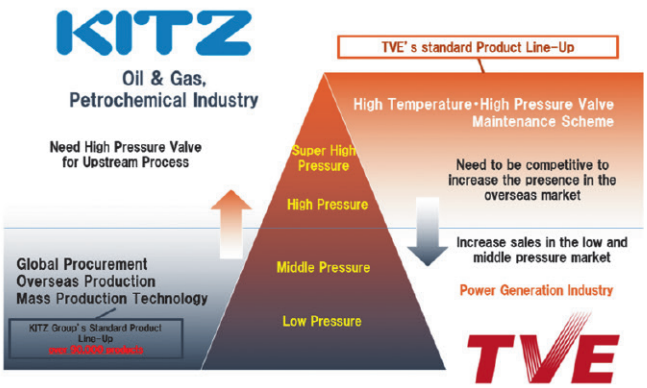
Supply Results for PWRs in Japan

Since the first reactor unit was constructed, TOA valves have been delivered to evolving Japanese nuclear power plants.

Main Products for PWR Nuclear Power Plants



Collaboration with KITZ



The capital and business alliance with KITZ Corporation has come into effect since February, 2016.

TVE: High Pressure valve
KITZ: Low / Middle Pressure valve

Yokogawa Electric Corporation

http://www.yokogawa.com/

Address	2-9-32, Nakacho, Musashino-shi, Tokyo 180-8750, Japan				
Contact Person	Mr. Yuki Furuya				
Phone	+81-422-52-5637	Fax	+81-422-52-6672	E-mail	Yuuki.Furuya@jp.yokogawa.com

Corporate Information

Founded in 1915, Yokogawa Electric Corporation has over 100 years' experience in the measurement, control, and information businesses, and provides leading-edge products and services to industry. The high added value created with its excellent technologies contributes not only to the development of industry, but also to the realization of an affluent society. The company remains committed to the achievement of a healthy and profitable operation.

Main Activities

Yokogawa is a leading control company and a pioneer in the development of distributed control systems for the monitoring and control of process in a broad range of production facilities. Its comprehensive solutions range from sensors (such as pressure transmitters, flowmeters and analyzers) to control systems, software that improves productivity, and services that optimize plant lifecycle costs. These solutions currently play vital supporting roles for our customers in the electric power industry (including nuclear), oil, chemical, natural gas, iron and steel, pharmaceuticals, food, and other industries.

Based on Yokogawa's vision for realizing the ideal plant, we are developing products and solutions that ensure safety, make maximum use of plant assets, enhance production, and optimize operations over the entire plant lifecycle.

Main Services

Production Control Systems

We provide our customers with a range of systems that support the safe and efficient operation of their plants. These include highly reliable production control systems for the control and monitoring of plant operations, safety instrumented systems that are fully integrated with plant production control systems to achieve the highest levels of safety, and network-based control systems that are both highly reliable and versatile.
In addition, Yokogawa is unique in the sense that it can offer completely diverse and modular analogue systems that employ magnetic elements to process the functional logic, making it inherent failsafe and extremely fast and reliable.

CENTUM VP
Integrated Production Control System

Prosafe-SLS
Safty Instrumentated System
(Solid-state Logic Solver)

ProSafe-RS
Safety Instrumentated System

STARDOM
Network-based Control System

Field Instruments, Analytical Instruments, and Recorders

We offer a full lineup of field instruments for use on production lines. These include transmitters and flowmeters that measure fluid pressure, temperature, and flow rate. We also offer analytical instruments such as pH and conductivity analyzers for measuring the concentrations of liquid constituents.

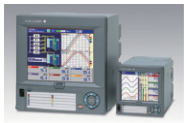
Paperless Recorders and Single Loop Controllers

Yokogawa paperless recorders and single loop controllers are highly suitable for plant operation. High reliable paperless recorders realize stable plant monitoring and recording with low maintenance needs. Yokogawa single loop controllers are well applicable for various applications by running a user program, and offers high reliability, user friendliness, and expandability.

DPharp EJX
Differeintial Pressure/
Pressure Transmitter

FLXA21
2-Wire Liquid
Analyzer

ADMAG AXF
Magnetic Flowmeter



DXAdvanced
Data Acquisition and Display Station

YS1000
Single Loop Controller

Solutions for Manufacturers

We provide total solutions that address the entire range of company activities. These include information management solutions that enhance the visibility of manufacturing operations as well as manufacturing execution and enterprise resource planning (ERP) solutions. By bringing together the production and management domains, we make it possible for companies to manage their operations in real time, thereby maximizing efficiency and enhancing corporate value.

Steel, Metal & Materials

Feature Companies

- Japan Steel Works M&E, Inc. 28
- Kobe Steel, Ltd. 29
- Nikkeikin Aluminium Core Technology Co., Ltd. 30
- Toyo Tanso Co., Ltd. 31

Japan Steel Works M&E, Inc.

http://www.jsw-me.com

Address	1-11-1, Osaki, Shinagawa-ku, Tokyo 141-0032, Japan				
Phone	+81-3-5745-2058	Fax	+81-3-5745-2063	E-mail	info_steel_forging@jsw.co.jp

Corporate Information

Founded in 1907, The Japan Steel Work, Ltd. ("JSW") has been providing various kinds of high quality steel and machinery products to the major global sectors like fossil and nuclear power, steel mill and petrochemical industries. Under the reputation as "General Supplier of Steel Products and Machineries", JSW is highly valued by its clients. Especially in the field of fossil and nuclear power generating equipment market, JSW keeps supplying large scale steel products manufactured with its advanced technologies which have been developed and accumulated through the efforts in its history over 110 years. JSW, as the leading manufacturer of high quality steel forgings on earth, will maintain to support what the nuclear supply chain demands, and continue to contribute to the nuclear industry with its reliable high quality steel products.

On April 1st 2020, JSW spun off its operational steel related business into a new company and is now conducting business as "Japan Steel Works M&E, Inc.". The new company has succeeded JSW's manufacturing culture and capabilities and it is committed to supplying the first class products and services to the clients globally.

Main Activities

The Japan Steel Works, Ltd., as its name suggests, began as a domestic producer of steel products in Muroran City, Japan. Utilizing a number of extra-large production facilities, notably represented by two units of 14,000-ton forging presses, and with the world's largest ingot of 670 ton commercially available, its broad range of products including large castings, forgings, clad steel plates, and pressure vessels are manufactured. Muroran Plant has constantly been contributing to the various needs of nuclear development.

Located in Hokkaido, northern major island of Japan, facing a good natural bay called Muroran Bay, Muroran Plant has Melting, Forging, Foundry, Heat Treatment, Machining and Weld Fabrication Shops in a large complex so they can control the products' quality, cost and delivery in the same place easily and effectively.

JSW's Muroran Plant

14,000-ton Press

Muroran Plant is diligently upgrading its capabilities to supply high quality steel products under the most sophisticated quality control system certified by ASME, RCC-M, ISO, TUV, JIS and other multi-national authorities.

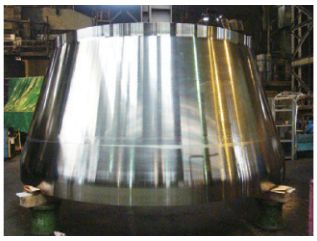
Products

NSSS Forgings

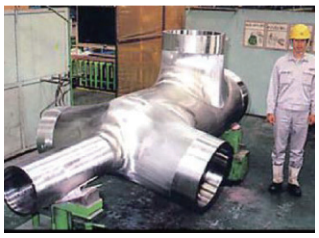
RPV Bottom Petal

RPV Monoblock Shell Flange

Monoblock RV Head



SG Conical Shell



Primary Loop Piping

Cask Body for Storage and Transportation of Spent Nuclear Fuel

Nuclear Steam Turbine & Electric Generator

Monoblock LP Rotor

Integral MSV Casing

Generator Rotor

Steam Turbine Casing

Kobe Steel, Ltd.

http://www.kobelco.co.jp/english/index.html

Address	Tokyo Head Office: 5-9-12, Kita-Shinagawa, Shinagawa-ku, Tokyo 141-8688, Japan Kobe Head Office: 2-2-4, Wakinohama-kaigandori, Chuo-ku, Kobe, Hyogo 651-8585, Japan				
Phone	Tokyo:+81-3-5739-6653	Fax	Tokyo:+81-3-5739-6978	E-mail	global-nuclear@kobelco.com

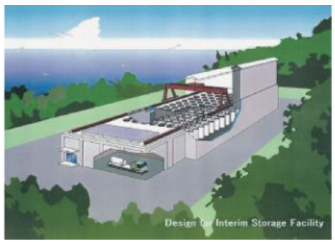
Corporate Information

The Kobe Steel Group, a global enterprise built around Kobe Steel, Ltd., is engaged in a wide range of fields, with its major businesses in materials (iron and steel, welding, aluminum and copper products), industrial and construction machinery, as well as engineering in the field of natural resources and environmental solutions.

While various energy sources have been reconsidered as countermeasures for global warming, nuclear energy plays a significant role in today's energy supply with ever higher levels of reliability and safety.

Main Activities

- **Plants and Equipment**
  Interim Storage Facility, Cask Maintenance Facility, Rad Waste Treatment/Handling/Storage/Disposal Facilities
- **Transport & Storage of Spent Fuel and Waste**
  Storage Casks, Transport Casks, Canisters
- **Chemicals**
  Boric Acid (H3BO3), Potassium Fluoroboride (KBF4)
- **Materials for Pressure Vessels**
  Forged Materials, Titanium Alloys, Steel Plates, Welding Materials
- **Materials for Nuclear Reactors and Nuclear Facilities**
  Fuel Channels, Special Alloys
- **Decommissioning Services**
  High-Concentration Radioactive Waste Processing

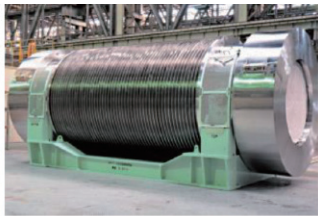


Metal recycle

Products and Services

Cask, other product and chemical

Kobe Steel, as a pioneer of cask in Japan, has manufactured and delivered over 250 large scale forged casks for transport & storage of spent fuel and radioactive wastes generated in nuclear power plants and reprocessing facilities worldwide, with a Transnuclear jointly owned with Orano TN International (France). While a world-leader of steel castings and forgings, we have been supplying reliable high-quality forged casks with our own various material and shaped forgings for the most advanced nuclear power plants, based on our advance technology and capability of world's large scale forging press (capacity: max. 420t ingot).



Kobe Steel, has also accomplished mass-production of **Fuel Channels** for BWR fuel assemblies as the first Japanese supplier in the early 1970's with delivery record of over 50,000 Fuel Channels worldwide.

Technology for production of **Boron 10**, which is highly enriched boron (more than 96%), was also developed,for the first time in Japan by joint development with Stella Chemifa (Japan) and has delivered enriched boric acid for primary coolant of reactors worldwide.

Metal recycle

Kobelco Studsvik Co., Ltd. formed jointly by Kobe Steel and Studsvik AB, will respond to issues concerning the treatment and disposal of radioactive metal waste generated from decommissioned nuclear power plants in Japan.

Nikkeikin Aluminium Core Technology Co., Ltd.

https://group.nikkeikin.co.jp/act/

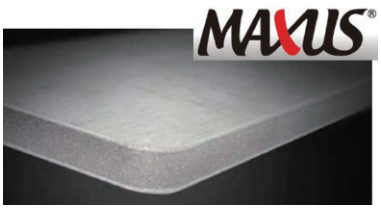
Address	Urbannet Uchisaiwaicho Building, 1-1-13 Shimbashi, Minato-ku, Tokyo 105-8681 Japan				
Contact Person	Mr. Aaron Herfurth				
Phone	+81-3-6810-7295	Fax	+81-3-6810-7280	E-mail	aaron-herfurth@act.nikkeikin.co.jp

Corporate Information

Nikkeikin Aluminium Core Technology Co., Ltd. (Nikkeikin ACT) was established in October 2002 and is a 100% owned subsidiary of Nippon Light Metal (NLM) Holdings Company, Ltd. Nikkeikin ACT specializes in manufacturing aluminum extrusion and aluminum processed products and is ISO 9001 and ISO 14001 certified.

Nikkeikin ACT has a diverse and global employee base comprising around 1,150 members, and has created and provided high quality products that have been used by the nuclear industry, construction industry, transport industry and many more.

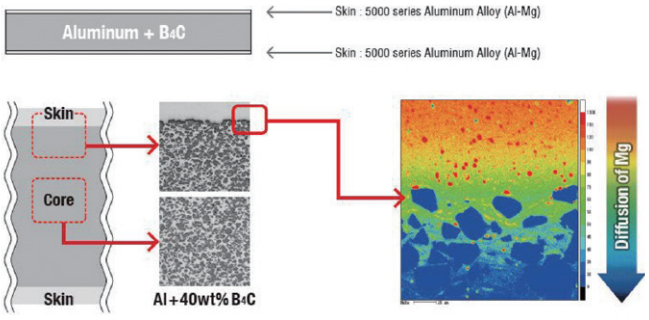
Products Information－Neutron Absorbers



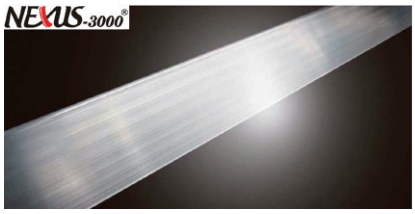
Nikkeikin ACT's main product for the spent nuclear fuel industry is MAXUS®. MAXUS® is a borated aluminum neutron absorber Metal Matrix Composite (MMC) material used in spent nuclear fuel dry storage / transportation casks as well as spent nuclear fuel pool racks.

MAXUS® consists of a sandwich structure with highly corrosion resistant aluminum cladding and boron carbide powder (B_4C) uniformly distributed within a high-purity aluminum matrix.

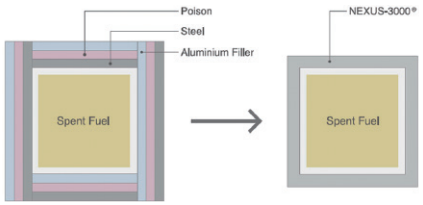
The advanced manufacturing process of MAXUS® also allows for strong bonding between the clad and the core through the diffusion of magnesium from the skin's aluminum alloy. With MAXUS®, Nikkeikin ACT has realized an unprecedented high performance material that meets customers' expectations.



Cross sections of MAXUS®
(Al-light gray; B_4C-dark gray and blue; Mg-red)

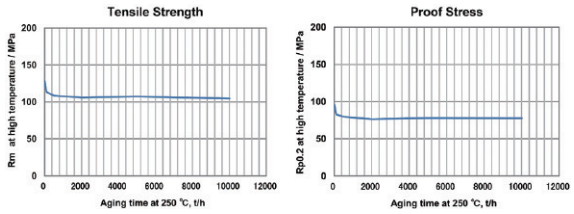


Nikkeikin ACT has also developed an extruded borated aluminum MMC called NEXUS-3000® that has the neutron absorption, strength and thermal conductivity to meet dry cask needs. It can be used solely in dry cask baskets instead of using multiple materials.



NEXUS-3000® can be used as a sole dry cask basket material

NEXUS-3000® comprises of B_4C in an enhanced 3004 aluminum alloy matrix (Al-Mn-Mg alloy) that allows NEXUS-3000® strength to be stable over aging time.



NEXUS-3000®'s strength is stable over aging time

Products Technical Information

MAXUS®

Maximum Length:	5,000mm (197")
Maximum Width:	500mm (20")
Maximum Thickness:	2-10mm (0.075"-0.395")
Clad Material:	5000 series aluminum
Matrix Material:	1070 aluminum
B_4C content in matrix:	20-40% in mass
Density:	2.6g/cm^3
Thermal Conductivity:	110-160 W/m*K

NEXUS-3000®

Typical Length*:	4,000mm (157")
Typical Width*:	200mm (8")
Typical Thickness*:	20mm (0.787")
Matrix Material:	Enhanced 3004 aluminum
B_4C content in matrix:	Up to 10.5% in volume
Density+:	2.73g/cm^3
Thermal Conductivity+:	120W/m*K

*The dimensions are adjustable to a degree
+ for B_4C concentration of 10.5 vol%

Toyo Tanso Co., Ltd.

http://www.toyotanso.com

Address	5-7-12 Takeshima, Nishiyodogawa-ku, Osaka 555-0011, Japan		
Contact	https://www.toyotanso.com/Products/contact.form.html		
Phone	+81-6-6472-5856	Fax	+81-6-6472-6012

Corporate Information

First company worldwide to achieve mass production of isotropic graphite

Having pursued ideal quality and conducted extensive research and development as a specialized manufacturer of high-function carbon, in 1974, Toyo Tanso became the first company in the world to successfully mass produce isotropic graphite. Since that time, our products have been supporting domestic life and industrial infrastructure in various fields.

World-class product competitiveness

Carbon applications continue to expand from electronics and general industry into cutting-edge fields such as nuclear power and aerospace.

To keep pace with this trend, we supply world-class products that leverage our know-how in areas such as manufacturing ultra-large materials, precision processing at the micron level, and providing advanced functionality and high-added value to suit different applications.

Products Information

For High-temperature gas-cooled reactors

Our IG-110 is the world's only graphite material employed as components for high-temperature gascooled reactors (HTGR).

Graphite is very effective at slowing down fast neutrons to thermal neutrons, but is not very effective at absorbing neutrons. Thanks to its excellent thermal and mechanical properties at high temperatures, graphite is additionally used as a moderator and reflector in components in HTGRs.

Of the various graphite materials available, Toyo Tanso's fine-grained isotropic graphite, IG-110, provides excellent thermal durability, sufficient strength and highly consistent quality.

Due to the fact that it is availability of a large amount of outstanding data related to neutron irradiation damage, IG-110 is also currently the only graphite material employed in the world's three existing HTGRs.

- High-temperature Engineering Test Reactor (HTTR) (Japan Atomic Energy Agency)
- HTR-10 (Tsinghua University, China)
- HTR-PM (HTR project in Shangdong Province, China)

IG-430, a material that provides higher density, strength, and thermal conductivity, has already been developed as a graphite for next-generation HTGR, and is expected to be employed.

Core component for HTGR
Photo courtesy of Japan Atomic Energy Agency

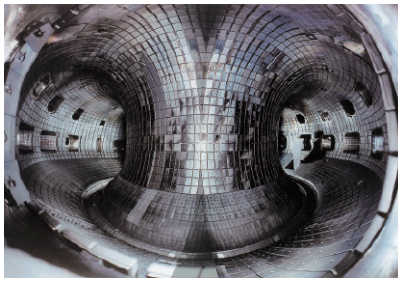
For Nuclear fusion energy

CX-2002U (C/C composite) and IG-430U (isotropic graphite) are exceptional graphite materials that are capable of contributing to early practical applications of nuclear fusion energy — considered by many as the energy of the future.

CX-2002U is a high thermal conductivity material made from carbon felt infiltrated with pyrolytic carbon via chemical vapor infiltration (CVI).

It is a special material developed for use in diverters in nuclear fusion reactors, which require special heat-removal characteristics for plasma and ions/electron beam.

IG-430U is a type of isotropic graphite developed to provide higher density, strength, and thermal conductivity than IG-110, which has been used successfully in HTGRs. It is mainly used in the first walls of plasma facings exposed to low thermal loads.



Left : Break-even plasma test facilities JT-60
Right : Nuclear Fusion Reactor Plasma First Wall
* Photo courtesy of National Institutes for Quantum and Radiological Science and Technology

Construction

Feature Companies

- Hazama Ando Corporation 34
- JGC Holdings Corporation 35
- Kajima Corporation 36
- Obayashi Corporation 37
- Okumura Corporation 38
- Penta-Ocean Construction Co., Ltd. 39
- Sato Kogyo Co., Ltd. 40
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HAZAMA ANDO CORPORATION

http://www.ad-hzm.co.jp/english/index.html

Address	515-1, Karima, Tsukuba, Ibaraki 305-0822, Japan（Head office : 6-1-20, Akasaka, Minato-ku, Tokyo 107-8658）				
Contact Person	Mr. Kiyoshi Amemiya				
Phone	+81-3-6234-3660	Fax	+81-3-6234-3704	E-mail	amemiya.kiyoshi@ad-hzm.co.jp

Corporate Information

Hazama Ando Corporation（Ad-hzm）General Contractors, Architects & Engineers marks more than 110 years of growth as one of Japan's leading companies. Ad-hzm's role in the construction of large-scale civil and public works helps to improve the total infrastructure of many countries. The company also has been engaged in designing and construction of nuclear power plants since 1960's.

Tsukuba technical research institute of Ad-hzm established in 1992 continuously produces new architects and engineering technologies. The outputs contribute to the progress and safety of nuclear industries.

Main Activities

1. Construction Works

- **Nuclear power plants（NPPs）**

Ad-hzm has been engaged in the construction works constantly since 1966 in 18 NPP sites. Main works are of reactor, turbine and rad-waste building, circulating water intake or discharge culvert and other concrete structures.

- **Other plant/facility/laboratory of nuclear fuel, RI or accelerator concerned**

Construction and engineering of nuclear fuel cycle plant, radioactive waste treatment facility, and hospital or laboratory with radiation shielding system is the important activity of us.

2. Diagnosis and Design Works

- **Health monitoring and diagnosis of aging or damaged facility**

（e.g. Assessing cracks on concrete structures by digital photo image; www.ad-hzm.co.jp/trr/hazama/2009/pdf_file/04. pdf, in Japanese）

- **Earthquake - resistant design of building, circulating water intake or discharge culvert, concrete structure, foundation, slope etc.**

3. Research and Development

- **Consignment Study**

Ad-hzm has contracted R&Ds from Japanese public organizations（JAEA, RWMC, JNES, NUMO etc.）and also from private companies（electric company, plant maker, JNFL, TEPSCO etc.）. In the field of radioactive waste disposal the total number of consignments FY1991-2015 is about 300, the sum is over 3 billion yen.

- **Independent Study**

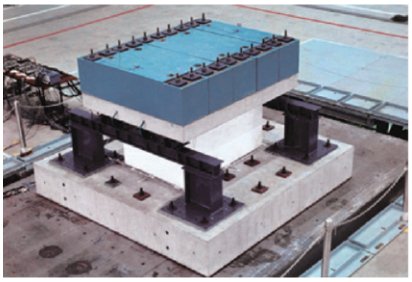
Ad-hzm has been continuing the own R&D. Results are published in "Technical Research Report of Ad-hzm Corporation".

*http://www.ad-hzm.co.jp/trr/2019/start.html

Technologies

1. Large Scale Test for Earthquake-resistant Technology

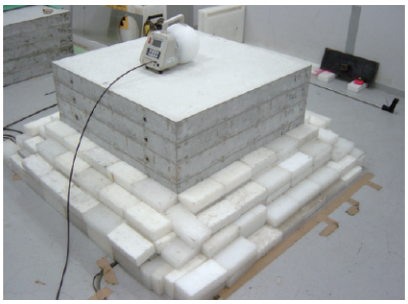
High-performance shaking table can accommodate specimens up to a weight of 784kN and Maximum acceleration is X:1G Y:3G Z:1G（with 343kN specimen）. The facility can carry out vibration tests on any type of structure, controlling both horizontal axes and vertical axes simultaneously.



Shaking Test of NPP Concrete Wall

2. Radiation Shielding Technology

Ad-hzm researches radiation protection systems for facilities such as hospitals, and is developing new materials and rational systems.



Neutron Irradiation Measurement [^{252}Cf, shielding concrete]

3. R&D for Radioactive Waste Disposal [LLW, TRU, HLW etc.]

Ad-hzm is contributing to the safety disposal of radioactive waste. Concerning design and construction of artificial barrier and bentonite buffer material, laboratory experiments, monitoring and total consultants are available.

Compaction Machine for LLW Bentonite Barrier

JGC HOLDINGS CORPORATION

http://www.jgc.com

Address	2-3-1, Minato Mirai, Nishi-ku, Yokohama 220-6001, Japan				
Phone	+81-45-682-1111	Fax	+81-45-682-1112	E-mail	webmaster@jgc.com

Corporate Information

Headquartered in Yokohama, Japan, JGC is a leading, internationally recognized contractor with total engineering, procurement and construction (EPC) capabilities. Over the course of its more than 80-year history, JGC has executed in excess of 21,000 projects of all sizes in over 75 countries. The majority of these have been on a lump-sum turnkey basis, for a wide range of industries, including petroleum refining, gas processing, LNG, GTL, petrochemicals, power, pharmaceuticals, nuclear waste disposal, and non-ferrous metals.

Main Activities

Meeting All Needs

JGC possesses a wide range of original process technologies and constituent technologies, the result of well-directed research and development. This R&D conducted, combined with JGC's flexible systemization, has significantly extended the company's business horizons. JGC has accumulated extensive experience in the meshing of industry with society over the last 30 years. Plants and facilities completed by the company in Japan and overseas bear the hallmark of JGC's advanced technologies and high reliability. In the non-hydrocarbon field, these include pharmaceutical and food processing plants, research laboratories, medical and welfare facilities, commercial facilities, various industrial plants, and facilities for environmental conservation. These facilities, supported by our variety of services, meet client needs in a wide array of business fields.

Nuclear Fuel Reprocessing Plant for JAEA

Technologies

JGC brings superior engineering capabilities and experience in the field of nuclear energy, where stringent safety standards and effective use of latest technologies are of paramount importance. JGC has a history of nuclear power plant design spanning more than 40 years, focusing on the treatment and disposal of low-level radioactive waste and the reprocessing of spent fuel. Moreover, recently, JGC has been drawing on its advanced project management capabilities and extensive experience with overseas projects to actively participate in nuclear power plant construction project overseas, as demand for nuclear power is increasing in developed as well as emerging countries.

Petroleum Facility

Natural Gas Facility

RW Facility for Virginia Power USA

KAJIMA CORPORATION

https://www.kajima.co.jp/english/welcome.html

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Contact Person	Mr. Eiichi Tanaka				
Phone	+81-3-5544-1251	Fax	+81-3-5544-1748	E-mail	kjm-nuclearpower-dpt@kajima.com

Corporate Information

Established: 1840, Incorporated: 1930
Number of Employees*: 7,783 (Consolidated: 18,297)
Revenue**: ¥1,280 billion (Consolidated: ¥1,974 billion)
*As of March 31, 2019, **Fiscal year 2018
President Representative Director: Mr. Yoshikazu Oshimi

Main Activities

Kajima Corporation is one of the leading engineering and construction companies in Japan, providing a full range of services in Japan and countries around the globe. For any categories and types of buildings and civil structures, skilled professionals in the areas of architectural and civil engineering design, building and civil construction, and real estate development are ready to serve our clients. Engineers and specialists highly versed in mechanical, electrical, and information technologies as well as chemistry, agriculture, and oceanography are also on hand to provide comprehensive services and solutions when requested.

- Construction
- Real Estate Development
- Environmental Engineering
- Research and Development
- Architecture
- Engineering
- Global Support

Main Services in Nuclear Industry

Kajima's engineering and construction technology of nuclear facilities are moving ahead in tandem with the development of nuclear power in Japan. For a safe and secure energy cycle, we integrate planning, design, engineering and construction of nuclear power plant structures. Our ongoing technological development will support life cycle management of nuclear power facilities.

Design and Analysis

The seismic design and analysis is one of the most priority technologies in a land of earthquakes, Japan. In order to evaluate seismic effects induced into structural elements and to assess structural integrity of the building accurately, Kajima applies a dynamic soil-structure interaction analysis using 3D finite element model.

Analytical Assessments of Airplane Crash

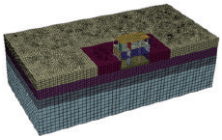
According to the new regulatory guides for nuclear facilities, assessment and countermeasures for malicious airplane crash impact should be conducted. Using our approach of analytical assessments, the event of the airplane crash to WTC Building in New York is simulated in good agreement with that of the actual.

Construction

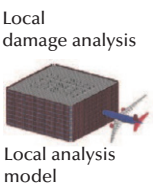
Kajima has been constructing nuclear plants since the 1950s. Using those experiences and innovative ideas, Kajima has developed the technologies to build high-quality structures safely in a very short term "Large-Scale Modular Construction Method", "All-Weather Construction Method", and so on.

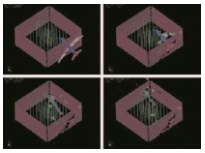
Decommissioning of Fukushima Daiichi

Kajima was involved in the building of all six reactors at Fukushima Daiichi. Immediately after the disaster we began devoting an all-out effort toward solving problems in the reactor decommissioning work through onsite work and from engineering supports.



Dynamic soil-structure interaction analysis using 3D finite element model

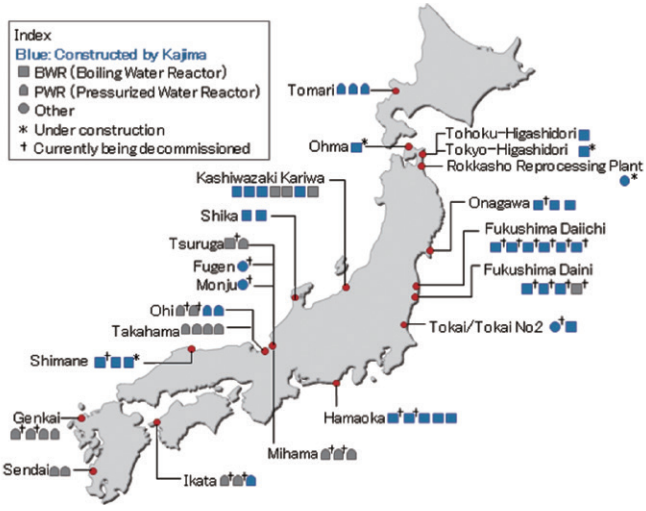




Simulation of airplane crash at WTC buildings in New York
Status of airplane and building from impact to penetration

Shimane Nuclear Power Plant Unit 3, engineering and construction (as of February 2010)

Fukushima Daiichi Unit 3, engineering and construction of cover structure for fuel removal (as of February 2018)



Nuclear Power Facility construction Track Record (as of February 2020)

OBAYASHI CORPORATION

http://www.obayashi.co.jp/english/

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Corporate Information

With a history of more than 126 years, Obayashi Corporation is one of Japan's largest general contractors. Centered on the Obayashi Corporation, the Obayashi Group comprises 89 subsidiaries and 28 affiliated companies with a total of approximately 14,000 employees and combined annual net sales of approximately ¥2,000 billion.

Obayashi also has an established record outside Japan, dating back to 1962 when it became the first Japanese general contractor to take on an overseas construction project. Since then, Obayashi has continued its business activities in the United States, playing a role in many high-profile large-scale projects, from the Central Artery/Tunnel Project in Boston to the Colorado River Bridge at Hoover Dam. In addition to the United States, Obayashi has been involved in a number of global projects around the world, from the main stadium for the Sydney Olympics to Taiwan's high-speed railway and the urban rail system in Dubai — a truly global business.

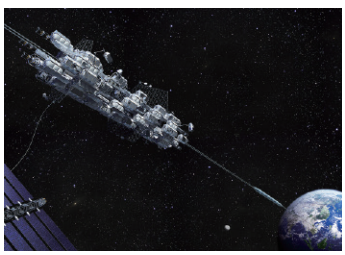
Main Activities

Our main scope of business is as follows:

1. Contracting for construction work
2. Regional, urban, marine environmental development and management, and other construction related business
3. Engineering and management, including research and surveys, planning, design and supervision related to the two preceding items

In the field of nuclear energy, Obayashi provides engineering, construction and technical services for facilities such as nuclear power plants, reprocessing facilities, spent fuel interim storage facilities, and geological disposal facilities.

TOKYO SKYTREE[SM]



Space Elevator Construction Concept

Major Technologies

1. Advanced Construction

Obayashi has an extensive modularization methodology developed through experience with construction of nuclear facilities; this is coupled to a highly-advanced computer-integrated system that incorporates information and construction management functions. Making full use of this advanced methodology, we can realize improvements in productivity and quality, with a corresponding reduction in costs, as required in the construction of large-scale nuclear facilities.

Recently, we utilize building information modeling (BIM) in the building construction field and construction information modeling (CIM) in the heavy civil engineering field to construct computer-based models of buildings or infrastructure, as a visualization technique. The models integrate 3D form information as well as information on material and component specifications and attributes such as costs and finishing. Use of 3D models assists information sharing and mutual understanding between people involved in projects, and enables them to form a consensus quickly.

2. Pre-stressed Concrete Containment Vessels (PCCV)

Obayashi recognized the potential of PCCV at a very early stage, starting research in the 1960's and constructing the first PCCV in Japan. At present, we are continuing to improve our technology in order to maintain our global position as the leading expert in PCCV.

3. Decommissioning Technology

Obayashi Corporation is actively promoting the development of all kind of technologies, including dismantling plan, demolition method, and reuse of dismantled waste, in order to implement measures for safe and efficient decommissioning. For example, we develop BIM-based simulation techniques and rational shielding method for dismantling planning. Regarding dismantling of concrete, we are developing dry wire sawing method, dry long core drilling method, controlled blasting method etc. so that we can handle any field conditions.

Obayashi Corporation also focuses on the reuse technology of nonradiative concrete for reducing of environmental burden.

4. Waste Disposal Technology

Obayashi has a long history of global involvement in radioactive waste disposal projects. We participated in the WIPP construction project in USA, in 1982 and are now involved in a variety of waste disposal research projects worldwide, for example in the Grimsel and the Mont Terri rock laboratories in Switzerland. We provide a "one-stop" service for all aspects of geological disposal, including site investigation, design, construction and safety assessment.

OKUMURA CORPORATION

http://www.okumuragumi.co.jp/

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Corporate Information

OKUMURA CORPORATION is a general contractor to undertake various projects ranging from social infrastructure to various types of private facilities.
Our expertise covers the entire project from start to finish; throughout all the stages of conceptual approach, project planning, design, construction, operation, maintenance, and management.

Main Activities

The main activities of the Company are described at each of the five stages as follows:

1. Conceptual approach and general planning
We engage in the project from the conceptual approach and general planning stage, providing proposals to meet the specific requirements of the customer.

2. Project planning
We undertake project planning to enable effective use of land and maximize asset values. Through functions such as capital procurement and financial services, we help realize a wide range of undertakings, including land readjustment projects, urban redevelopment projects, and private finance initiative (PFI) projects.

3. Design
We submit design proposals incorporating the optimum solutions for a variety of conditions, including location, profitability, environmental preservation, and disaster prevention. We are also active providers of PM (project management) and CM (construction management) services.

4. Construction
Once construction work starts, we make full use of our extensive experience and technology to ensure the highest level of safety while at the same time minimizing adverse impact on the local community and the natural environment.

5. Operation, maintenance, and management
Services we provide to sports venues and public facilities include operation, maintenance management, and study of renovation options.

Major Works

We introduce some of the major works in various construction fields; nuclear power station, inclined water pressure conduits of hydropower station, underground tunnel in urban areas and through mountains, high rise RC building and passenger terminal building of airport.

Kashiwazaki Kariwa Nuclear Power Station

Kannagawa Hydropower Station

Advanced Technologies

We engage in research and development to pursue advanced technologies in building, civil and environment engineering; seismic isolation and vibration control system for prevention of earthquake disaster, estimation and control technique of noise and vibration (prediction of franking transmission) at RC condominium, numerical method for deformation and failure by excavating small covering soil layers, borehole fluorescence method for visualizing of cracks in rock masses, purification of oil-polluted soil using bio-augumentation technique, and so on.

Seismic isolation building and table system

Penta-Ocean Construction Co., Ltd.

http://www.penta-ocean.co.jp/english/index.html

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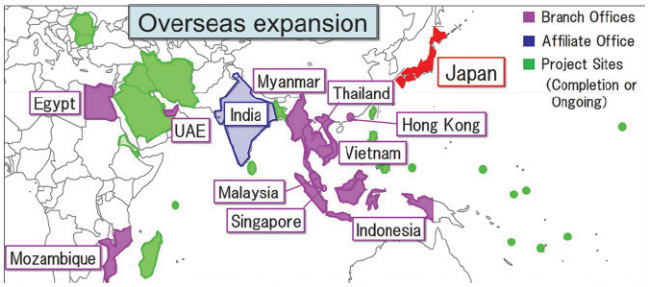
Corporate Information

Paid-In Capital : 30,449 million yen
Employees : 2,945（as of Sep 30, 2019）
President, CEO and Representative Director : Takuzo Shimizu

Penta-Ocean Construction Co., Ltd. has been continuously evolving since its founding as Mizuno-Gumi in Kure City, Hiroshima Prefecture in 1896. Our initial business in marine civil engineering works has significantly expanded to land civil engineering and building construction works. Also, we have had historical involvement in numerous and notable major projects overseas, particularly the Suez Canal Widening and Deepening project in Egypt, etc. We are now aiming to become a global No.1 contractor in port, coastal and waterfront areas.



Corporate Characteristics

Penta-Ocean is known for possessing the most-advanced technologies in marine construction and owning work vessels equipped with cutting-edge technologies that can meet the increasing demands for large-scale waterfront development.

"CP-8001"
Multipurpose Self-Elevating Platform

"CASSIOPEIA V"
Self-Propelled Cutter Suction Dredger with cutting-edge technology

Major Works

Penta-Ocean has the most advanced construction technologies and pioneering expertise in marine engineering works that deal exclusively with the construction of harbors for nuclear power plants.
The following are major power plant projects undertaken by Penta-Ocean.

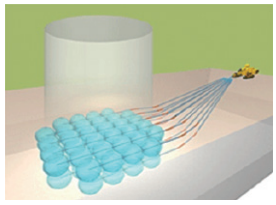
- Fukushima Nuclear Power Station
  （Tokyo Electric Power Co., Inc.）
- Kashiwzaki・Kariwa Nuclear Power Station
  （Tokyo Electric Power Co., Inc.）
- Onagawa Nuclear Power Station
  （Tohoku Electric Power Co., Inc.）
- Tomari Nuclear Power Station
  （Hokkaido Electric Power Co., Inc.）
- Genkai Nuclear Power Station
  （Kyushu Electric Power Co., Inc.）
- Shimane Nuclear Power Station
  （Chugoku Electric Power Co., Inc.）
- Shika Nuclear Power Station
  （Hokuriku Electric Power Co., Inc.）
- Ikata Nuclear Power Station
  （Shikoku Electric Power Co., Inc.）

Kashiwzaki・Kariwa Nuclear Power Station

Shimane Nuclear Power Station

Technologies

Penta-Ocean Construction has developed a number of advanced techniques related to the construction and maintenance of infrastructure, including nuclear power plants. One of these techniques is the Permeation Grouting Method（PGM）, which is a unique soil improvement method that minimizes deformations on the ground surface. This method enhances the strength of the ground and reduces the likelihood of liquefaction during an earthquake. Controlled Curved Drilling is a new technique developed by Penta-Ocean that is applicable to the ground located under existing structures. A schematic illustration of this technique is shown in the figure below. This technique has already been applied in several existing types of infrastructure, including the subsurface of runways at Fukuoka International Airport and Tokyo International Airport. The prevention of liquefaction at nuclear power plant sites is critical for ensuring their safety during and after an earthquake. Consequently, the application of Controlled Curved Drilling in PGM may be a suitable choice for improving the ground foundations for nuclear power plants.



Schematic illustration of controlled curved drilling for application of PGM

SATO KOGYO CO., LTD.

http://www.satokogyo.co.jp

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Corporate Information

Sato Kogyo traces its roots to one of the oldest turnkey contractors in Japan. Established in 1862 and headquartered in Tokyo, Japan, Sato Kogyo has accomplished numerous types of building and civil engineering projects of varying scales, nature and complexity not only in Japan but also in other parts of the world. At the same time, Sato Kogyo is committed in creating a unique identity by combining a signature mix innovative construction techniques with advanced quality control. In keeping with its vision of being a leader in the construction industry increasingly marked by keen competition, Sato Kogyo has focused its efforts on its brand value - "Total Project Excellence" to enhance customer satisfaction, building safe, secure and comfortable spaces and to develop high quality social infrastructure.

Main Activities

1. Civil Engineering

Civil engineering involves technologies in various disciplines. While experts from each discipline are concentrating on developing the technology in their own field, our role is to harness the strength of all these technologies for application in the design and construction of civil engineering works to serve the society in a wide range of infrastructure projects related to energy, roads and rails, dams, sanitation, landfill and marine.

2. Building

Buildings are required to be not only physically durable but also flexible in layout to accommodate the changing needs and expectation of different eras. The objective is to provide quality living space with due consideration for the environment. We have the technology and expertise to create various types of buildings in the educational, cultural, entertainment, residential, medical, commercial, research and industrial fields.

3. Environmental Business

"Power from Nature", "Recycle like Nature", and "Wisdom of Nature" are our philosophies when dealing with environmental issues. We, Sato Kogyo, have been conscientiously adopted these philosophies in our development and application of environmental technology to provide a safe and comfortable environment for all.

4. Overseas Business

Sato Kogyo has actively established its presence in South East Asia, particularly in Singapore, Malaysia and Thailand since the 1970s. Over the years, Sato Kogyo has successfully completed numerous projects, some of which are high profile landmark projects in those countries. Our approach has always been to understand and respect the philosophy and the culture of the host countries while introducing innovative engineering solutions. Sato Kogyo is well-poised to be engaged in many exciting up-coming projects as a trusted, reliable contractor in those dynamic economies and is spreading its wings beyond the regions.

5. Quality, Environmental, Health, Safety Management

Sato Kogyo is ISO certified for its rigorous implementation of Integrated ISO Management System. The achievement on continuous certifications of the system is a reflection of Sato Kogyo's commitment and dedication in achieving Total Project Excellence in the fields of quality, environmental, health, safety and timely performances for every project.

Technologies

Constant participation in various projects has not only provided Sato Kogyo with vital opportunities to innovate further and to develop more efficient and sophisticated construction techniques, it also propels Sato Kogyo into greater scale and heights in the quest for construction excellence. This is achieved by passionate collaborations with Sato Kogyo Research Institute and with its domestic and international joint venture partners.

Intake Pond Structure (Design & Construction)

SHIMIZU CORPORATION

https://www.shimz.co.jp/english/

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Corporate Information

Shimizu's more than 210-year history began in 1804 when its founder, Kisuke Shimizu, launched a carpentry business in Edo (now Tokyo), Japan.
Shimizu provides state-of-the-art technologies from the design and engineering phase through to the construction and maintenance phase for all building and construction projects.

Consolidated Financial Highlights (FY2018)
Net Sales: JPY 1,664.960 billion
Ordinary Income: JPY 133.957 billion
Employees: 16,184

SHIMZ VISION 2030
SHIMZ VISION 2030, Shimizu's new long-term vision for 2030, takes on the challenge of venturing beyond solutions rooted in the construction business to the creation of new value and innovation in non-construction businesses. Shimizu expresses the goal of this new challenge as becoming a "Smart Innovation Company."
Shimizu also clearly states its corporate stance on contributing to the achievement of the SDGs and the resolution of other challenges faced by the global community through business.

Nuclear Projects Division
In the nuclear field, Shimizu constructed the first nuclear power plant in Japan and has been responsible for the building/civil design and construction of various types of nuclear power plants. Shimizu has also participated in overseas nuclear-related projects.

Main Activities

The goal of Shimizu's nuclear activities is to develop and provide leading technology for security and seismic safety to realize a sustainable energy supply. From seismic analysis to decommissioning, our technology contributes to a cleaner and safer global environment.
Shimizu has broad ranging technology development, design, construction and maintenance capabilities that provide our customers with timely and high quality solutions.

1. Ground Motion and Soil Evaluation
Ground motion evaluation, liquefaction and soil improvement assessment. Generation of site specific input earthquake motion.

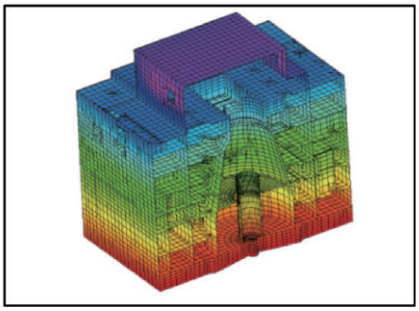
2. Technology Development
Seismic isolation system for nuclear power plants: 2D and 3D seismic isolations.
Containment vessel: reinforced concrete containment vessel, steel plate reinforced concrete containment vessels including next generation reactor.

3. Design and Planning
Structural design: Dynamic soil-structure interaction response analysis, nonlinear containment vessel analysis, aircraft impact assessment for nuclear facilities, support for nuclear regulatory licensing.

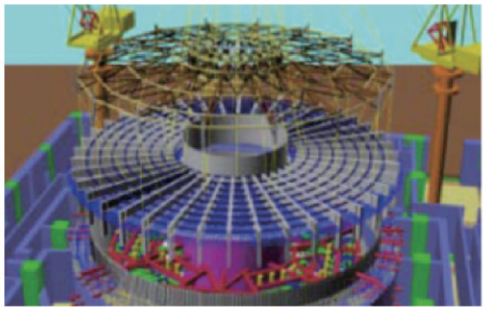
4. Construction and Maintenance Management
Construction technologies: utilization of BIM (3D-CAD), large block and modular construction methods.

5. Decommissioning and Recycling
Nuclear plant decommissioning: decommissioning of experimental reactor, contamination area assessment, decontaminated concrete demolition system, radioactive waste processing technology. Technology development applied to the Fukushima Incident including debris removal from the damaged containment vessel to be first in its kind.

Shimizu is open to cooperation with overseas design, engineering and construction firms for nuclear related projects.



3D FEM Analysis



BIM Application for Modular Construction

Taisei Corporation

http://www.taisei.co.jp/english/index.html

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Contact Person	Mr. Yoshio Ikeda				
Phone	+81-3-5381-5316	Fax	+81-3-5326-0188	E-mail	yosioi@eng.taisei.co.jp

Corporate Information

Since its establishment in 1873, Taisei Corporation has undertaken many notable projects in Japan and overseas. Our corporate roots coincided with Japan's development as a modern nation and we have continuously met the demands of a changing era and people's aspirations for the future through sound construction operations.
In the second century of modern urban construction, there is a strong need to preserve historic scenery, protect the environment and create attractive public and private spaces. Taisei Corporation is responding with even more advanced technologies through research and development. With a capital position among the strongest in the industry, we are redoubling efforts to produce world-class, leading-edge technologies. Operations extend internationally, including the construction of environmental and infrastructure projects in developing nations.

Main Activities

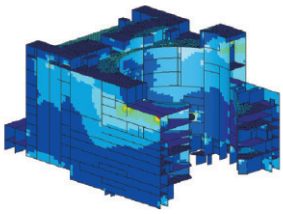
- Planning, surveying, designing, supervising, engineering, implementing, managing, and consulting concerning building construction, civil engineering, installation of machinery, tools, and equipment, and other general construction works.
- Business relating to surveying, planning, designing, supervising, engineering, managing, and consulting for regional development, urban development, ocean development, energy provision, and environmental improvement.
- Planning, designing, supervising, constructing, holding, leasing, transferring, maintaining and operating roads, railways, harbors, airports, river facilities, water and sewer facilities, government buildings, waste disposal and treatment facilities, parking lots, and other communal facilities.
- Diagnosis and assessment of buildings, structures and civil engineering works, and operations relating to security and safety.

Technologies

Taisei Corporation has participated in designing and constructing nuclear power plants and various nuclear facilities including facilities for nuclear fuel cycle and nuclear waste. Based on our outstanding technologies, expertise and experience, we develop new designs and construction technologies for nuclear power plants construction plannings.

Technology to Seismic Response Analysis and Seismic Design

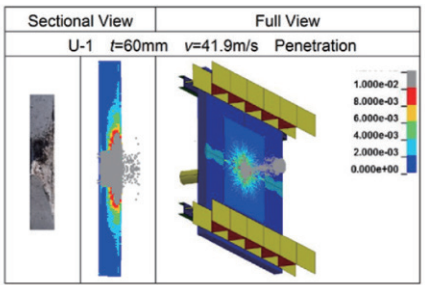
It is mandatory to perform seismic response analyses and seismic design of buildings in nuclear power plants against seismic forces for validating their structural integrity and the safety integrity of equipment and main pipings housed in these buildings.



Taisei Corporation conducts the seismic response analyses and design using lumped mass and three dimensional finite element models of the buildings, taking account of the effects of the soil structure interaction.

Technology to Collision Analysis

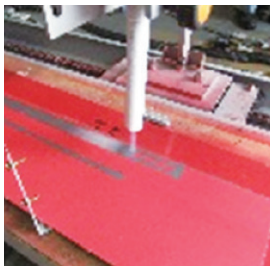
In the design of nuclear power plants, it is necessary to confirm that the structure can bear against both collision of flying objects due to tornadoes and airplane crash. It is possible to evaluate faithfully the collision phenomenon about the flying objects and the airplane crash to the structure, by using collision analysis techniques such as finite element method and/or particle method.



Technology to Decommissioning Engineering

Taisei Corporation has carried out researches on decommissioning technology since 1979.
We can provide rational decommissioning techniques to the dismantling facilities taking account of their characteristics, such as electric discharge impulse crushing system, dry ice blast, boring technique for fuel debris removal and Jack down system.

Electric discharge impulse crushing system



Dry ice blast

TAKENAKA

http://www.takenaka.co.jp/takenaka_e/

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Corporate Profile

With yearly sales of $10 billion, 20 overseas offices, the largest construction R&D laboratory in the world and over 1,000 architects in our design department, Takenaka offers comprehensive services worldwide across the entire spectrum of space creation from site location and planning to design and construction as well as postcompletion services such as building maintenance.
We became the first construction company to win the Deming Prize in 1979 and again the first in the industry to win the Nippon Quality Control Medal in 1992, both in recognition of our efforts in Total Quality Management.
At Takenaka, we strive to consistently improve the quality of our works to ensure building owners that orders placed with us will be fulfilled with the utmost confidence, security, satisfaction and pride throughout the contract period and beyond.

Main Activities

Takenaka has been carrying out construction works for various kinds of nuclear power plants such as BWR and PWR in Japan since the early 1960s.

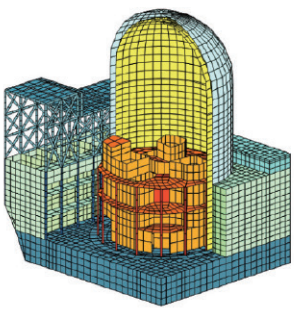
(1) Seismic Analysis

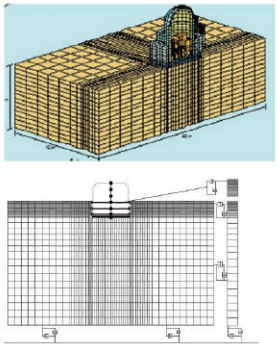
In Japan since September 2013, all nuclear power plants have suspended their operation to re-evaluate its safety and, electric power companies have to obtain the approval for restarting operation from the Nuclear Regulation Authority.
Takenaka is implementing the structural analysis for mainly earthquakes and tsunamis to ensure safety measurement during reviewing design for the nuclear power plants constructed by Takenaka in the past.
3D FEM model of reactor building with PWR is shown as left-side below.
Evaluation for soil-structure interaction by 3D FEM model is shown as below and also with analysis by 2D FEM model.

(2) TEPCO Fukushima Daiichi Works

We have completed new structure frame over the Unit 4 Reactor for the purpose of removing spent fuel rods left in the storage pool at the Unit 4 Reactor.
The condition of radiation dose around Unit 4 is not as severe as Unit 1, 2 and 3. People wearing protection masks have been able to work carefully for a short period of time at the Unit 4 Reactor building. On the contrary, the remote machines have been used to replace human workers at the Unit 1, 2 and 3 Reactor buildings.

The construction process was as follows:
Firstly, we cleaned up around Unit 4 as preparation work. Secondly, we removed broken pieces over the operating floor which is located 30 meters above the ground. Finally, we constructed a new structure frame which has been overhung 30 meters without interfering existing objects on the south side of the Unit 4 Reactor building.
A fuel handling machine and a 100-ton overhead crane were installed on the new structural frame. The fuel handling machine picks up the spent fuel rods and inserts those into the cask in the storage pool at 30 meters high. Then the cask contained by spent fuel rods is taken out from the pool and lifted down to the ground.
The design for this structure has resulted in large and heavy size structural members. For example, the concrete foundations are 4 meters thick and the columns and girders are steel square tube with section of 3 meters. Those columns and girders were effective in shielding steel workers against radiation exposure because steel workers were staying and tightening bolt sets in steel square tube with section of 3 meters.
This construction work has been completed successfully by Takenaka Joint Venture in March 2014, then the removal of spent fuel rods from the Unit 4 Reactor building has been completed in December 2014.





Nuclear Fuel

Feature Companies

- Mitsubishi Nuclear Fuel Co., Ltd. 46
- Nippon Nuclear Fuel Development Co., Ltd. 47
- Nuclear Fuel Industries, Ltd. 48

Mitsubishi Nuclear Fuel Co., Ltd.

http://www.mnf.co.jp/en/

Address	622-1, Funaishikawa, Tokai-mura, Naka-gun, Ibaraki 319-1197, Japan		
Fax	+81-3-3593-5250	E-mail	info_global@mnf.co.jp

Corporate Information

Since its establishment in 1971, MNF has supplied over 20,000 high performance PWR fuel assemblies for use in all the PWR reactors in Japan. With the strong technical advantages that the Mitsubishi Group has developed over many years, MNF is committed to supplying reliable products meeting diverse customers' needs. As a global supplier of PWR fuel, MNF is also active with its proven technology in the world market.

Main Activities

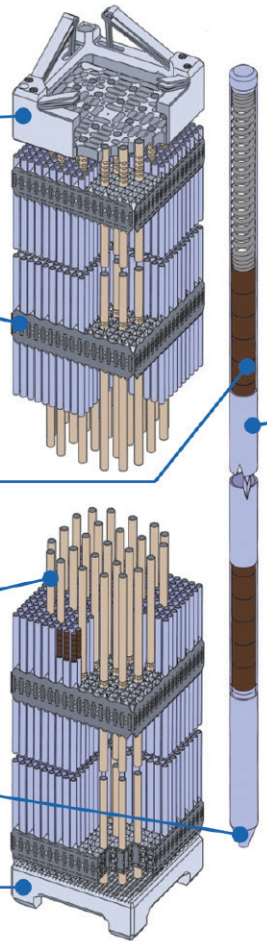
- Design, development, manufacturing, and sales of Mitsubishi PWR fuel
- Incore components supply, core design and core related services, MOX fuel supply to Japanese customers, uranium reconversion service

Worldwide Advanced Mitsubishi PWR Fuel

For improvement of fuel reliability, MNF has been striving for design improvements based on customers' requests, operating experience, and application of precautionary measure design to foreign fuel trouble. Customers can benefit from our experience and vigorous efforts for improvement.

MNF has also been trying to achieve more enhanced fuel economy. The MNF advanced fuel design allows plant operators to realize more economical and flexible operations such as High Burn-up, Power Uprate, and Longer Cycle operation with advanced cladding (M-MDA) and new technologies. Keeping the safety of nuclear fuel as first priority, MNF will continue to supply high quality and high performance products in order to meet customers' needs as well as to contribute to stable energy supply.

ZDP fuel of Mitsubishi
Zero Defect Performance



Isotropic Top Nozzle
Wear reduction of control rod tip,
Reliable removable mechanism

I-Type Grid Spacer
Scratchless rod loading,
Grid-to-rod fretting resistance,
High thermal-hydraulic performance,
High seismic adequacy

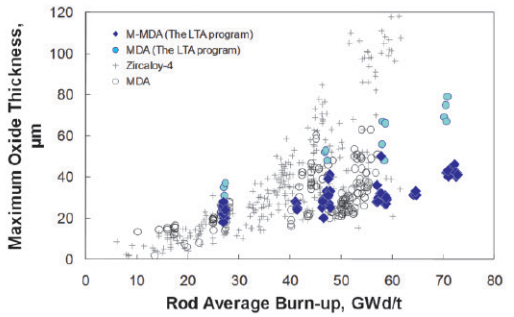
Pellet for Flexible Core Operation
High density (up to 97%T.D.),
High content of Gd (up to 10wt%)

Robust Thimble Tube
Countermeasure
against Incomplete Rod Insertion

Tapered End Plug of Fuel Rod
Grid-to-rod fretting resistance

Bottom Nozzle with Built-in Filter
High capability of debris trapping

MDA™ & M-MDA™
Corrosion-resistant Cladding



Alloy	Chemical component [wt%]					
	Sn	Nb	Fe	Cr	O	Zr
Zircaloy-4	1.2-1.7	-	0.2	0.1	-	Balance
MDA	0.8	0.5	0.2	0.1	-	Balance
M-MDA™	**0.5**	**0.5**	**0.3**	**0.4**	**-**	**Balance**

The reliability of MDA (Mitsubishi Developed Alloy) is well proven and being used for over 10 years in Japanese PWR plants as the Mitsubishi standard cladding for 55GWd/t fuel assembly. M-MDA (Modified MDA) is a new cladding alloy based on MDA. M-MDA, which has demonstrated the excellence reaching rod burn-ups up to 70GWd/t in a PWR reactor, is ready for commercial use.

Nippon Nuclear Fuel Development Co., Ltd.

http://www.nfd.jp/

Address	2163, Narita-cho, Oarai-machi, Higashi-ibaraki-gun, Ibaraki 311-1313, Japan				
Phone	+81-29-266-2131	Fax	+81-29-266-3273	E-mail	mail@nfd.jp

Corporate Information

Nippon Nuclear Fuel Development Co., Ltd. (NFD) was established in 1972 as a joint venture between Hitachi, Ltd. and Toshiba Corporation for the purpose of researching and developing nuclear fuels. In change with the times, we are now also conducting research on reactor structural materials for the purpose of plant extended lifetime operation.

- Paid-in capital: 1.8 billion yen
- Stockholders: Hitachi, Ltd. 50% and Toshiba Energy Systems & Solutions Corporation 50%

Business Outline

- Research and development for nuclear fuels
- Development of inspection and test technologies for spent nuclear fuels
- Research for post-irradiation material characteristics
- Analysis of radionuclides to support decommissioning work
- Transportation of spent nuclear fuels and irradiated materials

Research

Research on safety enhancement of nuclear power plants

In order to enhance safety of nuclear power plants, NFD carries out research on individual processes and overall behavior of nuclear fuels to contribute to maintenance of severe accident analysis codes, and to develop technologies necessary for behavior analysis of accident-tolerant fuels.

In addition, NFD does research to improve fuel safety and performance during normal operation.

In order to contribute to restarting and extending the operation lifetime of plants, NFD does research and development on characteristic changes of materials by radiation and their mechanisms.

The data necessary to make regulations and standards are being systematically obtained.

Research on decommissioning of Fukushima Daiichi Nuclear Power Plant.

Since the nuclear accident at the Fukushima Daiichi Nuclear Power Plant, NFD has been performing tests to confirm validity and safety of various measures to deal with such accidents, and it is contributing to the establishment of measures against future accidents.

In addition, research on decommissioning of the Fukushima Daiichi Nuclear Power Plant is being actively performed to allow restoration and revival of areas around the plant site in Fukushima Prefecture.

Technologies

Research and development for nuclear materials

Tests, evaluations and analyses of nuclear materials and radioactivated metals, such as uranium oxide, zircaloy, low alloy steel, and stainless steel are performed using the most advanced test and analytical equipment and testing technologies developed by NFD.

Data for evaluating reliability and safety of nuclear power plants are being obtained.

Development of post-irradiation examination technology

Since irradiated nuclear fuels and structural materials that have been used in nuclear power plants are highly radioactive, NFD develops test and analytical equipment for remote operation to use inside nuclear facilities shielded by thick concrete and steel.

It also develops evaluation technology that takes into account radiation effects on the analytical data.

Post-irradiation test data must have high accuracy and reliability, since they are used for safety evaluations of nuclear power plants.

Analysis of radionuclides to support decommissioning work

Wastes of varying radioactivity levels and having various shapes and consisting of various materials occur in the process of nuclear power plant decommissioning, and especially at the Fukushima Daiichi Nuclear Plant, many kinds of wastes that have previously not been encountered are present or are being generated.

Appropriate and realistic evaluations based on accurate nuclide analyses are needed to rationally promote the decommissioning work.

NFD is updating the number of analyzed species to 58 nuclides to make a substantial contribution to plant decommissioning.

Transportation of spent nuclear fuels and irradiated materials

NFD carries out transport business for spent nuclear fuels and irradiated materials using multiple transportation casks. NFD has the know-how of a safety analysis and license acquisition of casks to correspond to regulations.

Nuclear Fuel Industries, Ltd.

http://www.nfi.co.jp

Address	4-33-5, Tsurumi Chuo, Tsurumi-ku, Yokohama 230-0051, Japan				
Contact Person	Mr. Atsuhiro Matsuura				
Phone	+81-45-500-6302	Fax	+81-45-500-6310	E-mail	a-matsuu@nfi.co.jp

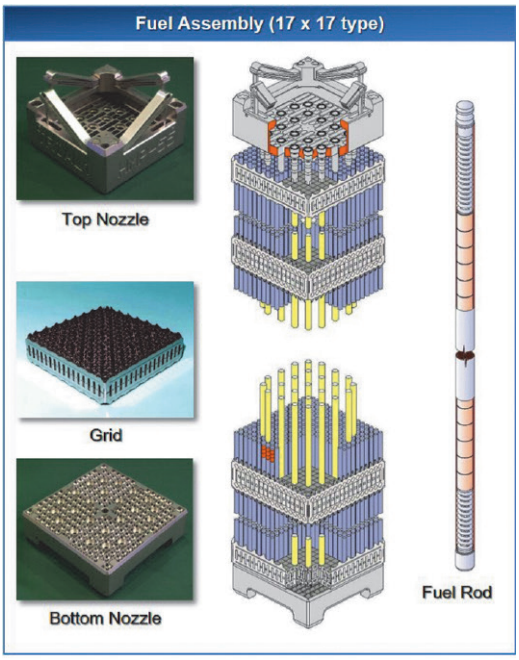
Corporate Information

NFI is the sole company in Japan that manufactures and supplies nuclear fuels to almost all nuclear power plants of both PWR and BWR over forty years.

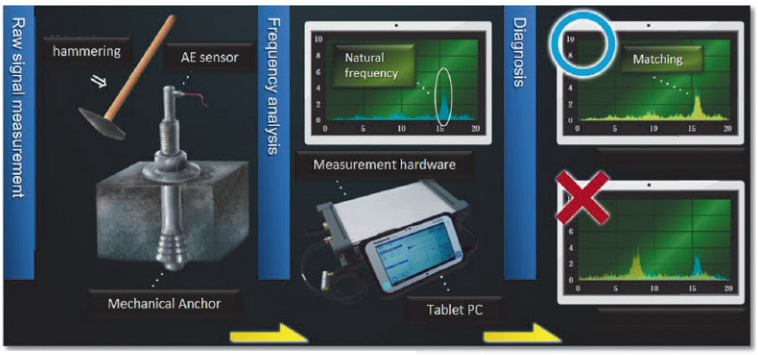
Established	July 1972
Shareholders	Toshiba Energy Systems & Solutions Corporation (100%)
Facilities	Kumatori Works (Osaka), Tokai Works (Ibaraki)

Main Activities

- R&D, design, manufacturing and sales of nuclear fuel for light water reactors (PWR/BWR)
- Core management services for light water reactors (PWR/BWR)
- Engineering for domestic MOX fuel fabrication plant
- Engineering services related to nuclear power plant applications and decommissioning
- Inspection and measurement devices/services for NPP and nuclear fuel
- Non-destructive diagnostic services of social infrastructures



PWR Fuel



Non-destructive Diagnosis Services

NPP Facility Mock-ups for Development and Training of Engineering Activities

BWR Fuel

Transportation

Feature Companies

- Kamigumi Co., Ltd. 52
- Nuclear Fuel Transport Co., Ltd. 53

Kamigumi Co., Ltd. (Heavy Cargo & Energy Transportation HQ)

http://www.kamigumi.co.jp/

Address	7th floor, 4-1-11, Hamabe-dori, Chuo-ku, Kobe 651-0083, Japan				
Contact Person	Mr. Hideaki Nagao				
Phone	+81-78-271-5141	Fax	+81-78-271-5216	E-mail	juryou_energy@kamigumi.co.jp

Corporate Information

Kamigumi provides the most competitive, integrated logistics services in international intermodal transport, port transportation, installation and heavy cargo transportation, plant transportation, warehousing, customs, navy and air freight, shipping agents and freight transport vehicles to our clients of all types incidental to their business and leisure facility.

Main Activities

As a pioneer of the nuclear fuel transportation, we have been deeply involved in whole operation of nuclear fuel cycle in Japan.

- **Transportation of Nuclear Raw Materials and Nuclear Fuel**
- **Transportation of Spent Fuel and Cask Handling**
- **Transportation of Heavy Cargo Equipment and Installation**

Transportation of Pressurized Fluidized Bed Boiler (3,820 tons) for a Thermal Power Plant

Main Services

We have accumulated tremendous experiences in the transportation of heavy industrial equipment such as transformers, exhaust heat collecting boilers, waste nuclear casks, Japanese bullet trains, and so on. We understand that our customers need not only the transportation of heavy cargo by big-scale specialized vehicles (high-performance unit carriers, etc.) all developed originally by us, but also the installation of large-scale facilities and the periodic inspection of gas turbines. As a Result, we pride ourselves on providing services conformed to the ISO 9001 standard and making contributions to a wide range of industries, always with safety as our top priority.

Example of Plant Transportation

Transportation of Vessel

Speed Carrier (140 tons)

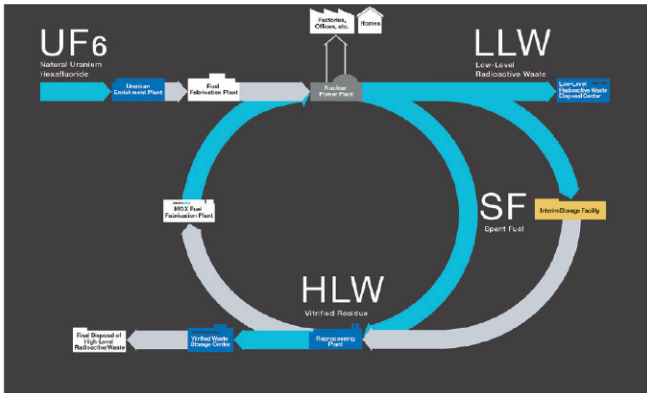
Nuclear Fuel Transport Co., Ltd.

http://www.nft.co.jp/english/index.html

Address	1-1-3, Shiba-daimon, Minato-ku, Tokyo 105-0012, Japan				
Contact Person	Ms. Yukari Tanaka				
Phone	+81-3-3438-7225	Fax	+81-3-3438-3240	E-mail	y.tanaka@nft.co.jp

Corporate Information

Nuclear Fuel Transport Co., Ltd. ("NFT") is a company specializing in the transport of spent nuclear fuels and other related materials - all of which constitute an integral part of the nuclear fuel cycle in Japan. Handling radioactive materials from nuclear power plants nationwide, NFT is ensuring safe and reliable transport, while consolidating a relationship of trust with stakeholders. In addition, NFT is striving to make maximum contributions to the stable operations of the nuclear fuel cycle business in Japan. Furthermore, we have established a perfect safety record of transport since our foundation in 1971.



*Blue arrows show our current transport scope.

Main Activities

1. Transport

NFT plays an important role in the nuclear fuel cycle process through its transportation business with our equipment such as dedicated vessels, SF casks and cranes.

We conduct:

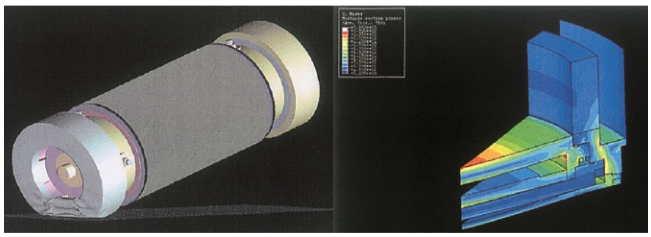
- Marine and land transport of spent fuels and low-level radioactive wastes
- Land transport of vitrified residue and natural uranium hexafluoride

2. Engineering

In order to secure safe transport of spent fuels, packages have to meet national criteria in design, manufacturing and operational processes. NFT conducts thorough quality control based on the requirements of ISO 9001 standards. Cooperating with its group company, OCL CORPORATION, NFT engages in package design, licensing, manufacturing and maintenance as well as upholding high performance standards by leveraging its extensive experience and know-how.

NFT is especially experienced in the areas of:

- Acquisition of design and packaging certification
- Package designs and safety analysis
- Manufacturing control and packaging certification
- Performance maintenance and renewal of packaging certification



Safety Measures for Marine Transport

Our dedicated transport vessels have enhanced structure and various safety measures to be in conformity with domestic regulation which is stricter than INF code.

Securing of Safe Navigation

- Various navigation radars
- Automatic anti-collision system

Safety Structure

- Double-hulled structure
- Enhanced stability against collision or grounding

Fire Prevention

- Fixed cargo space cooling arrangements
- Fire-extinguishing equipment in case of emergencies

Chemical & Water Treatment

Feature Companies

- Organo Corporation 56
- Tomiyama Pure Chemical Industries, Ltd. 57
- Veolia Nuclear Solutions 58

ORGANO CORPORATION

http://www.organo.co.jp/english

Address	1-2-8, Shinsuna, Koto-ku, Tokyo 136-8631, Japan		
Contact	http://www.organo.co.jp/english/contact /contact.htm		
Phone	+81-3-5635-5131	Fax	+81-3-3699-7160

Corporate Information

ORGANO creates value through the use of water with "Heart and Technology". In response to needs of its customers, ORGANO has been researching and developing new technologies and solutions for all water treatment industries: power utilities, supply and sewage water, IT manufacturing plants, pharmaceutical and general industries since 1946.

Power Plant Business

The pioneer spirit is a part of ORGANO's culture for the water treatment business field of nuclear power utilities. In order to overcome many challenges to meet strict water quality requirements from BWR's (Boiling Water Reactor) and PWR's (Pressurized Water Reactor) water chemistries, ORGANO has been developing new technologies and brushing them up step by step. The sophisticated engineering and technologies provide high-performance with the world's best water quality.

- CD, RWCU, FPC and WW (radioactive liquid waste) installation at Japan's first commercial nuclear power plant in 1970
- First CF installation at BWR in Japan, 1974
- First CD installation at PWR in Japan, 1977
- Hollow Fiber Filter (as CF) installation at BWR in Japan, 1986
- First Hollow Fiber Filter (as CF) installation at PWR in Japan, 1997
- First Hollow Fiber Filter (as CF) installation at BWR in the USA, 2007

Products Lineup

Condensate Filter: CF (BWR, PWR)

- Hollow Fiber Filter
  - High iron removal efficiency
- Pleated Filter

Condensate Demineralizer: CD (BWR, PWR)

- High Flow Velocity (Option)
- Anion Resin Underlay (Option)

Reactor Water Cleanup: RWCU (BWR)

- Filter / Demineralizer with powdered resin
  - High area flow rate, 2% of Feed Water, design with IFD* at ABWR**

Fuel Pool Cleanup: FPC (BWR)

- Filter / Demineralizer with powdered resin
  - High area flow rate, design with IFD* at ABWR**

*Integrated Flow Distributor
**Advanced Boiling Water Reactor

Waste Water Treatment: WW (BWR, PWR)

Makeup Water: MUW (BWR, PWR)

- RO Seawater Desalination
- MPU™ – RO + EDI
- STRATA-G™ – Save regen (time and consumption)

Main Activities

Engineering
Procurement
Construction
Commissioning
Maintenance service

Tomiyama Pure Chemical Industries, Ltd.

https://www.tomypure.co.jp/en/

Address	Nihonbashi Honcho Square, 1-2-6, Nihonbashi-honcho, Chuo-ku, Tokyo 103-0023, Japan				
Contact Person	Mr. Yusuke Takechi				
Phone	+81-3-3242-5147	Fax	+81-3-3242-3166	E-mail	y_takechi@tomypure.co.jp

Corporate Information

We, at Tomiyama Pure Chemical Industries, supply high-purity chemical products that we pursue together with our customers with all our originality and technical capability.
We supply excellent quality products manufactured to suit the conditions of customer uses with high reliability to obtain full customer satisfactions.
We can also assist our customers in developing and improving products with a quick-wheeling development system.
We are ready to undertake joint research and development projects with customers as well.

Main Activities

We supply boric acid for the cooling water used in Pressurized Water Reactors (PWRs), while also supplying boric acid and borates for Boiling Water Reactors (BWRs) in case an emergency stop is required. Our super high purity boric acid includes extremely few impurities, so it can prevent the degradation of casks and other difficult-to-replace equipment used around nuclear reactors, thereby extending the service life of such equipment.
In order to make the lives of residents living near nuclear power plants safer, and for peaceful utilization of stable, affordable, and clean nuclear power, and for safety operation of nuclear power plants, our boric acid and borates are playing important indispensable roles.

Technologies

We established our new plant in Kamisu City, Ibaraki Prefecture in Japan.
The plant exclusively for manufacturing super high purity boric acid was also newly established.

Veolia Nuclear Solutions

http://www.nuclearsolutions.veolia.com

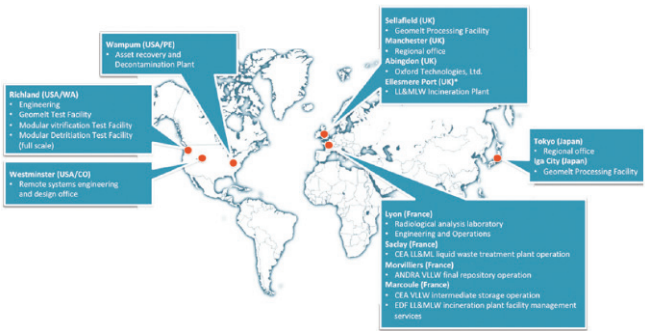
Address	Uchisaiwai-cho Dai Building 5th floor, 1-3-3 Uchisaiwai-cho, Chiyoda-ku, Tokyo 100-0011, Japan				
Contact Person	Mr. Akira Ikeda（Technical Strategic Director of Veolia Nuclear Solutions - Kurion Japan K.K.）				
Phone	+81-3-6205-7351	Fax	+81-3-6205-7353	E-mail	akira.ikeda@veolia.com

Corporate Information

About Veolia: With over 171,000 employees worldwide, the Group designs and provides water, waste and energy management solutions that contribute to the sustainable development of communities and industries. Through its three complementary business activities, Veolia helps to develop access to resources, preserve available resources, and to replenish them.

About Veolia Nuclear Solution: Veolia Nuclear Solutions is Veolia's world-class player in nuclear facility clean-up and treatment of radioactive waste. Veolia Nuclear Solutions includes the most comprehensive range of technologies and services for facility restoration, decommissioning of plants, and the treatment of radioactive waste, all nurtured by our nuclear experts and backed by thousands of Veolia staff worldwide.

Our Multi-local Presence



Main Activities

Investigation and Characterization: Our Investigation and Characterization team provides solutions before, during and after nuclear maintenance, cleanup or decommissioning operations.

Remote Access Solutions: Veolia Nuclear Solutions' Remote Access activity is the undisputed leader of advanced engineering, Remote/Robotic technologies and Decommissioning/Remediation solutions for a variety of high-hazard end markets where quality and timely delivery are paramount.

Separation of Radioisotopes: Veolia Nuclear Solutions develops effluent treatment systems to separate and remove radioisotopes from the most challenging effluent streams. A comprehensive package of best-in-class technologies are used to resolve the most complex radiological waste water challenges.

Radioactive Materials Processing: We have our own facility in Wampum, PA. This U.S.-based facility with worldwide expertise and nuclear experts, is adept at processing radioactive waste, equipment and materials for disposal or recovery related services.

Stabilization of Radioactive Waste: Our GeoMelt® technologies are a group of vitrification processes that are configured in a variety of ways to meet a wide range of radioactive and hazardous waste treatment and remediation needs.

Nuclear Facility Management and Operations: Veolia Nuclear Solutions has a proven competency in Nuclear Facility Management and Operations with experience and expertise in safe nuclear operations in Europe, Japan and the United States.

Veolia Nuclear Solutions value chain

Emergency Management

Feature Companies

- Nohmi Bosai Ltd. 62
- Tokyo Bosai Setsubi Co., Ltd. 63

NOHMI BOSAI LTD.

http://www.nohmi.co.jp/english

Address	4-7-3, Kudan-Minami, Chiyoda-ku, Tokyo 102-8277, Japan				
Phone	+81-3-3265-0329	Fax	+81-3-3265-5348	E-mail	kouhou@nohmi.co.jp

Corporate Information

A pioneer in the fire protection industry in Japan

Nohmi Bosai Ltd., established in 1916, listed on the Tokyo Stock Exchange First Section, is an international company who is responsible for the development, marketing, installation and maintenance of a wide variety of state-of-the art fire protection systems. Nohmi has branch offices all over Japan besides two factories, three Research and Development laboratories in Japan. Nohmi occupies more than 40% of market share in gaseous fire suppression systems and 30% of fire alarm systems in Japan. Being an international company, Nohmi has a world-wide distributor channel and subsidiaries in China, Taiwan and India.

Main Activities

Nohmi continues to strive to give customers an assurance of "safety" by providing optimum fire protection systems and a wide variety of services. To this end, the company, as a pioneer in the fire protection industry, is always aggressively challenging new fields of fire technologies, which include the following:

- Manufacturing and engineering intelligent fire protection systems that can be flexibly adapted for the diversified urban spaces and industrial facilities
- Survey of properties to be protected, analysis of the fire risks, and proposals for optimum fire protection systems
- Consistent responsibility setup for all works ranging from basic research, development, manufacturing, engineering installation and to maintenance

Main Products

Nohmi manufactures a wide range of fire alarm system and fire suppression system products such as follows:

Analog Addressable Integlex Multicrest Fire Alarm Systems

The Integlex Multicrest systems are analog addressable fire alarm systems. With the features of Nohmi's state-of-the-art technologies, the Integlex Multicrest can be flexibly adapted to meet the diverse requirements of today's buildings.

MIDEX Ⅲ Foam Fire Extinguishing Unit

MIDEX Ⅲ is a packaged type foam fire extinguishing unit, which was developed to suppress industrial fires, especially fires of machine tools and combustible oils.

NN100 Nitrogen Gas Fire Suppression System

NN100 is a 99.99% nitrogen gas fire suppression system. NN100 has no adverse affect not only to natural environment but also to human beings. NN100 has been recognized by the below organizations.

- Underwriters Laboratories Inc. (UL)
- National Fire Protection Association (NFPA)
- US Environment Protection Agency (US EPA)
- Fire Protection Equipment Safety Center of Japan (FESC)
- International Standard Organization (ISO)

Tokyo Bosai Setsubi Co., Ltd.

http://www.tokyo-bosai-setsubi.co.jp/

Address	2-28-7, Kamiochiai, Shinjuku-ku, Tokyo 161-0034, Japan				
Phone	+81-3-3363-9761	Fax	+81-3-3363-9765	E-mail	info@tokyo-bosai-setsubi.co.jp

Corporate Information

In 1955, Tokyo Bosai Setsubi Co., Ltd. (TBS) opened for business with a foundation philosophy of maintenance of fire protection systems installed on US military bases in Japan. In 1965, Japan's first commercial nuclear power plant was built in Tsuruga, Fukui Prefecture. TBS was selected by General Electric (GE) of the United States and successfully designed, supplied, installed and commissioned the fire protection systems, which put us in the position of having established Japan's first fire protection and technical consulting business for nuclear power plants. Since then, TBS has delivered fire protection systems and security systems to 19 nuclear power plants in Japan and 7 overseas.

Main Activities

Consultation for fire protection systems and security systems

TBS's Nuclear Power Plant Group focuses on the provision of fire protection systems for nuclear power plants. TBS develops and builds the best fire protection/security systems for clients, complying with regulations and laws. TBS designs, procures and sets up complete systems, based on the full engineering experience.

Maintenance and inspection of nuclear power plants

Not only design and installation, but maintenance on the systems is provided by TBS's engineers who are well-versed in the system itself.

Research and development on fire extinguishing products and systems for special needs, which can be also set up to nuclear power plants.

- ***Compact Foam /Water Monitor™***
  Powerful but compact water monitor capable of 400 ~5,000ℓ /min (various flow types available).
- ***Intelligent AFEX™***
  Standalone automatic fire extinguishing robot, absolutely suitable for unattended environments during evening hours or 24hrs.
- ***Mini AFEX™***
  Automatic small scale fire extinguishing system for an electrical fire inside an enclosures/panel.

Mission

TBS aims to create ultimate fire extinguishing systems capable of extinguishing a fire in a few seconds. In addition, TBS proposes antiterrorism measures to prevent vandalisms based on tests and verifications.
TBS' mission is to eliminate danger of fire and to provide safety. It develops various fire extinguishing systems such as follows:

- Local application foam-based fire extinguishing systems for auxiliaries, and various cable trays equipped with power supply cables for the nuclear reactor coolant pumps, which are one of the most important machineries in nuclear power plants.
- Gas-based fire extinguishing systems against electrical cabinet fires inside metal-clad switchgear cabinets and control cabinets.
- Ultra high-speed foam-based fire extinguishing systems for semiconductor plants.

TBS has provided fire protection systems and security systems based on persistent efforts, extensive experience and deep insight for more than 50 years in co-operation with clients.

TBS's Saku Test Facility in Nagano Prefecture

Fire Extinguishing Demonstration of Intelligent AFEX™

Services

Feature Companies

- Association for Nuclear Technology in Medicine 66
- Computer Simulation & Analysis Japan 67
- Japan Environment Research Co., Ltd. 68
- The Japan Power Engineering and Inspection Corporation 69
- Marubeni Utility Services, Ltd. 70
- Nuclear Engineering, Ltd. 71
- Nuclear Engineering and Services Company 72
- Sojitz Corporation 73

Association for Nuclear Technology in Medicine

http://www.antm.or.jp

Address	Nikkei Bldg., 7-16, Nihombashi-kodemmacho, Chuo-ku, Tokyo 103-0001, JAPAN				
Contact Person	Mr. Naoki Uenoyama				
Phone	+81-3-5645-2230	Fax	+81-3-3660-0200	E-mail	support@antm.or.jp

Corporate Information

The Association for Nuclear Technology in Medicine (ANTM) is a public interest incorporated foundation established in March 1996. The prospectus of ANTM aims to promote research related to nuclear technology in medicine, such as medical treatment and diagnosis technologies using various kinds of radiation, in addition to advanced particle radiation therapy. We carry out various activities such as holding lectures and seminars, publishing public relations magazines and brochures, developing human resources, promoting facilities planning, distributing technical information, providing calibration service for radiotherapy instruments, and others. Thus, we have played an important role as a nonprofit/public interest organization, which differentiates us from both national and local governments and the private sector.

Main Activities

1. Particle beam cancer therapy

Japanese particle beam radiation cancer therapy has been driving the world's advanced medical technology as a promising technology. ANTM supports facility improvement promotion, human resources development projects and facility operation in each part of the process from facility construction planning to management.
Especially, we have implemented human resources development of experts, and fulfilled the crucial role as core institution.

2. Boron Neutron Capture Therapy (BNCT)

ANTM supports R&D and technical development toward practical use of BNCT as the only public interest foundation in Japan. Not only do we share information about BNCT, but we also address issues and collaborate with experts from domestic and overseas research organizations.

3. Accuracy improvement of radiation and quality control

ANTM carries out calibration services for therapy level dosimeters to assure the accuracy and the treatment quality as a third-party organization. As the only accredited organization in Japan, we have been playing a critical role in this field. Our calibration testing service accepts orders from almost all the domestic hospitals and institutions as a secondary standard dosimetry laboratory.

In addition, we conduct output dose audit service for radiotherapy equipment as a third-party. The output dose audit service is growing gradually.

Projects for foreign countries

1. International Training Course on Carbon-ion Radiotherapy

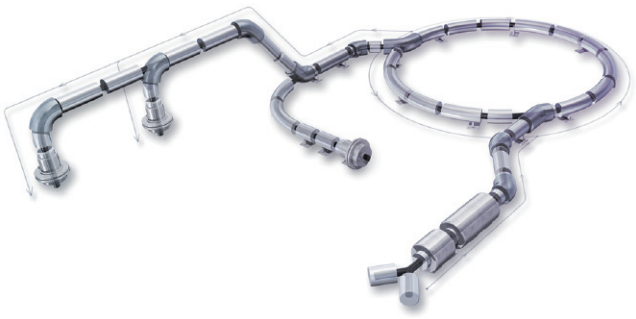
We hold International Training Courses on Carbon-ion Radiotherapy (ITCCIR), aiming to develop necessary human resources for medical doctors, medical physicists, and radiological technologists once a year in Japan. The contents of the training course consist of basic lectures by experts using textbooks as well as visits to heavy ion radiotherapy centers.

2. Support for oversea patients desiring a consultation services on heavy ion radiotherapy, and facility construction planning

We provide consultation and support service for oversea patients on heavy ion radiotherapy in cooperation with partner organizations, "Particle Radiotherapy Clinic", and others. In addition to that, we provide consultation services for oversea organizations regarding construction of radiotherapy facilities and supply of medical equipments.

Donations

Nuclear technology is an indispensable technology which has been making great contributions to human health and welfare. We ask for your understanding of our objectives and activities, and look forward to your heartwarming support and donations.



Computer Simulation & Analysis Japan

https://www.csaj.co.jp/

Address	1-3-9, Shibadaimon, Minato-ku, Tokyo 105-0012, Japan				
Contact Person	Dr. Tomoaki Uchiyama				
Phone	+81-3-5776-1838	Fax	+81-3-5776-1859	E-mail	uchiyama@csaj.co.jp

Corporate Information

Computer Simulation and Analysis Japan（CSAJ）was founded in 1999 by a group of nuclear safety analysts with the idea of providing the industry and projects with an independent and neutral view on nuclear safety as an independent company.
CSAJ is a consulting company located in Tokyo, Japan. The staff of CSAJ consist of nuclear and software engineers that specialize in providing services to the nuclear industry. CSAJ has provided technical and consulting services to nuclear electric utilities, national research laboratories, private research organizations and government agencies. This experience base allows CSAJ to provide support in nearly every aspect of the nuclear industry.

Main Service

Thermal Hydraulic Analysis

Thermal hydraulic analysis is one of the most important analyses for nuclear power plant safety. CSAJ staff has profound knowledge, skills and experience about thermal hydraulic analysis and has been successfully doing it for over 20 years. For example,

- We have analyzed numerous commercial and test reactors.
- We have developed many computer programs for thermal-hydraulic analysis.
- We have made improvement to analysis codes by adding new models.

We have experience and are skillful in using the major thermal hydraulic analysis codes such as RELAP, TRAC, RETRAN and COBRA.

Probabilistic Risk Analysis

• Quantitative Solutions - PRA

Probabilistic Risk Analysis（PRA）is one of the solution techniques to estimate reliability by using statistics. PRA can provide valuable information to design, operate, and maintain complicated systems.

• Cost Effectiveness

Accident sequence analysis, that is one of the tasks in PRA, can provide occurrence frequencies of several accident sequences. By comparing relative magnitude of them, it helps to make a decision on how the safety-related equipment works. This analysis also helps to reduce accident frequencies. PRA can show the effectiveness to a change, and the cost associated with the change. We can make relationship between the effectiveness and the cost of a change. This helps to run your business better.

• Application of PRA

CSAJ has a lot of experience to use this methodology for the nuclear plants and the nuclear fuel plants. We are also experienced in seismic PRA analysis of nuclear plants. Our track record provides confidence in helping you. We have a lot of knowledge in nuclear plants and skills of the PRA methodology.

• Software Services

CSAJ offers the following software services.
1）Supporting Sales of Software
2）Developing Software
3）Software Maintenance
4）Technical Research Services

Support of Business Expansion in Japan

CSAJ provides the various services to support the business development in Japan.

We support you to

- Introduce, market, and consult your premier products to government organization and industries in Japan.
- Coordinate meetings with your clients in Japan.
- Negotiate for establishing partnership.

We have experiences to tie up with the following companies.

- Zachry Nuclear Engineering, Inc., CSA-Analysis Division
- Micro-Simulation Technology
- ABS Group of Companies, Inc.

Japan Environment Research Co., Ltd.

http://www.jer.co.jp/ (Japanese only)

Address	Nishishinnjyuku Mitui Bldg., 6-24-1, Nishi-Shinjyuku, Shinjyuk-ku, Tokyo 160-0023, Japan				
Contact Person	Mr. Masashi Kawamura				
Phone	+81-3-5322-2271	Fax	+81-3-5322-2272	E-mail	masashi-kawamura@jer.tokyo-biso.co.jp

Corporate Information

Japan Environment Research Co., Ltd. (JER) was founded in 1973. We have been certified as a public working environment measurement authority (radioactive material). We provide measurement and analysis services of the radioactive materials based on ISO9001 (JQA-QM9735). We also provide safety services and manufacture specialty equipment for all customers working in the radiological workplace.

Main Activities

- General environmental study and workplace environmental study
- Management of radioactive material handling facilities
- Manufacturing and sales of radiation protection equipment
- Maintenance and management of radioactive material handling facilities
- Environmental Management of waste treatment facilities and radioactive material handling facilities
- Civil engineering work such as dismantling and carrying out of pollution control facilities
- Dispatch of workers
- All tasks associated with each of the above business activities

Leading Products

ALARA Series

ALARATM Ventilator

Durable and transportable ventilator for radioactive environment



ALARA®Survey

One-hand GM survey meter equipped with judgment function for contamination.

ALARA®SD

ALARA®SD is a film-stripping-type decontamination agent having chelate capacity. It is used in the TMI accident and has a track record in nuclear power plants in Japan.

ALARA® kappa suit

ALARA®kappa suit is designed as protective clothing with low body load using waterproofing and moisture permeable materials.
Work efficiency is improved by reducing the thermal load of the operator.

ACF filter for radioactive iodine

A filter made from activated carbon fiber (ACF) to adsorb organic or inorganic radioactive iodine (left), and a ventilating system equipped with ACF filter (right).


Unique Service

CN leakage test

High sensitive leakage test to find extremely small leaks in heat exchanger and condensers tubes.


The Japan Power Engineering and Inspection Corporation

http://www.japeic.or.jp/english/e_index.htm

Address	KDX Shibadaimon Bldg. 3FL., 2-10-12, Shiba-daimon, Minato-ku, Tokyo 105-0012, Japan				
Contact Person	Mr. Hirotake Nakai				
Phone	+81-3-5404-3876	Fax	+81-3-5404-3883	E-mail	kensa@japeic.or.jp

Corporate Information

The Japan Power Engineering and Inspection Corporation (JAPEIC) was established in 1970, with contributions from the government, utility companies and manufacturers, as a highly specialized organization which provides inspection services to ensure safety of power plants in Japan. Our competence exists in our ability and experiences to evaluate and certify the safety of welding of boilers, pipes and peripherals which have to endure high temperature and high pressure in power plants.
For more than 40 years, JAPEIC has been engaged in inspection and research activities. Activities of JAPEIC are carried out by well-experienced inspectors and competent staff in Tokyo Head Office, Osaka Regional Office, two branch offices of Hiroshima and Fukuoka, and Yokohama Nondestructive Evaluation (NDE) Center.

NDE Center

Main Activities

Safety Management Reviews

JAPEIC is a registered safety management reviewer of thermal power plants in accordance with the Electric Utility Law of Japan. We provide major electric power companies and IPP with high quality review services which are required by the law to ensure safe operation of power plants. The reviews are submitted to the government for approval. We have the biggest share in this business in Japan.

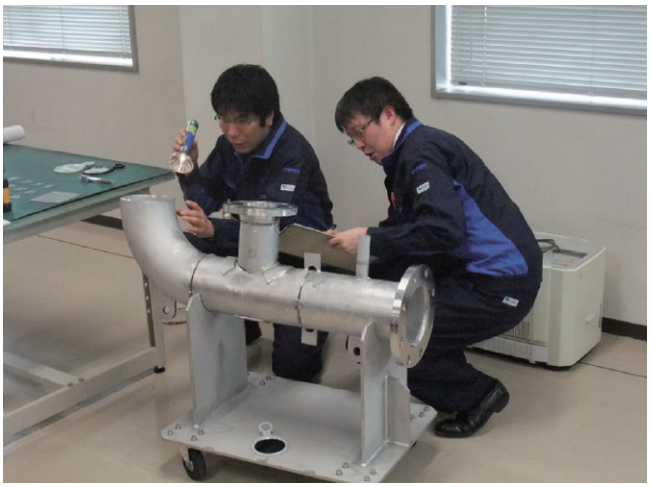
Welding Inspection and Engineering Services

We also provide engineering support services, especially welding inspection services, to thermal and nuclear power plants, including plant components which are imported from overseas to Japan. The components and materials of power plants have to abide by the strict regulations stipulated by the Electric Utility Law or the Nuclear Regulation Law. We have long and abundant experiences in support of welding inspection of thermal and nuclear power plant operators in Japan. Our highly trained inspectors include CWI and AI holders, and are ready to provide necessary engineering services to power plant operators and manufactures inside and outside Japan.

Inspection of Welding

Research and Development

The NDE center conducts research and development on welding and nondestructive inspection, which include ultrasonic testing technologies, electromagnetic nondestructive testing technologies, welding engineering to improve reliability, etc. The detail of our R&D activities in the technical review is available on JAPEIC's website.
The center also provides training courses in nondestructive inspection and welding technologies based on accumulated knowledge and expertise.



Training of Inspection

Marubeni Utility Services, Ltd.

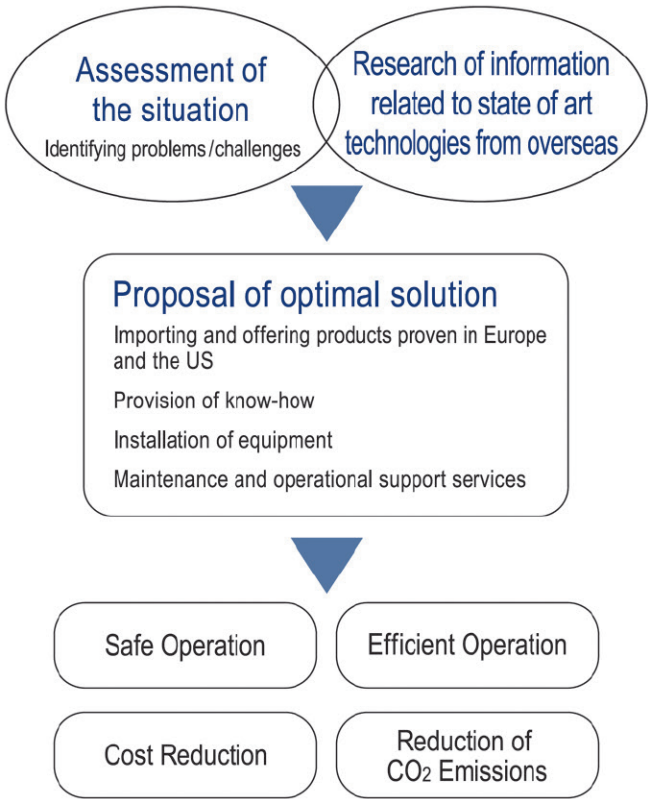
http://www.mus.co.jp/en/index.html/

Address	2nd Floor, Palace Side Bldg., 1-1-1, Hitotsubashi, Chiyoda-ku, Tokyo 100-0003, Japan		
Contact	http://www.mus.co.jp/en/index.html/		
Phone	+81-3-3214-8481	Fax	+81-3-5218-8710

Corporate Background

Marubeni Utility Services, Ltd. was established in 1998 through the merger of three corporations in the Marubeni Corporation's nuclear group. As a Marubeni group trading house specializing in the nuclear field, we offer nuclear-related products and services, excluding nuclear fuel, mainly to electric power companies and heavy electric plant manufacturers in Japan. We supply overseas products involving a high degree of technical expertise to domestic power companies, and we are renowned as a unique trading house that has a wealth of technical knowledge in nuclear-related businesses. We compete against - and from time to time work with - domestic plant manufacturers who have strong relationships with electric power companies. We sometimes even provide plant manufacturers with superior technologies and products - a unique business practice.

Corporate Function



Business Category

Hardware

As a Japanese agent, we import and distribute equipment and hardware from Europe and the US while also supporting our customers during the installation phase.

Material and Services

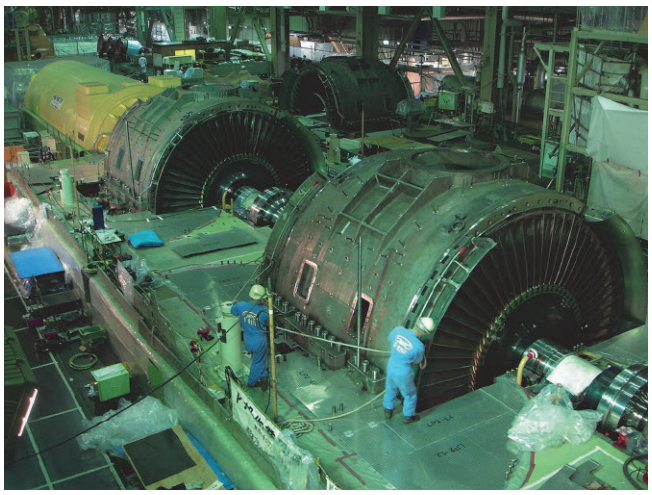
We import a wide range of materials from other countries and distribute them to nuclear power plants, nuclear research institutes, and the nuclear power industry as a whole.

Software

We offer software based on unique technologies for a wide range of activities, such as improving operational efficiency and monitoring the system status to predict failures. These software products have been developed based on many years of operational experience at nuclear power stations and other plants, mainly in the US.

Case Study

- Contributing to the power uprates and reduced outage periods for nuclear power plants
- Helping to increase the power output and efficiency of nuclear power plants
- Helping to further improve the safety and reliability of nuclear power plants through the adoption of technologies designed to prevent severe accidents
- Adopting off-the-shelf computers to improve performance and reduce costs
- Introducing US products for implementing emergency safety measures at power plants



Nuclear Engineering, Ltd.

http://www.neltd.co.jp/html/top-eng.html

Address	1-3-7, Tosabori, Nishi-ku, Osaka City, Osaka 550-0001, Japan				
Phone	+81-6-6446-1141	Fax	+81-6-6446-1218	E-mail	tmizuno@neltd.co.jp

Corporate Information

NEL utilizes the best technologies developed by others at home and abroad, as well as through our own research and development efforts. Our objective is to maintain and further improve our world-class engineering and technological capabilities. As an ISO 9001 certified company, we are committed to enhancing customer satisfaction by making continual improvement to our quality management system. We are also committed to rigorous compliance activities, through which we meet the goals of our corporate policy and build a corporate culture that earns trust from all concerned.
NEL is determined to continue providing top quality advanced engineering services in which man and technology have been integrated.

Main Activities

1. Safe and Reliable Operation of Nuclear Power Plants
- Reload Core Design, Core Physics Testing
- Development of PSA Models

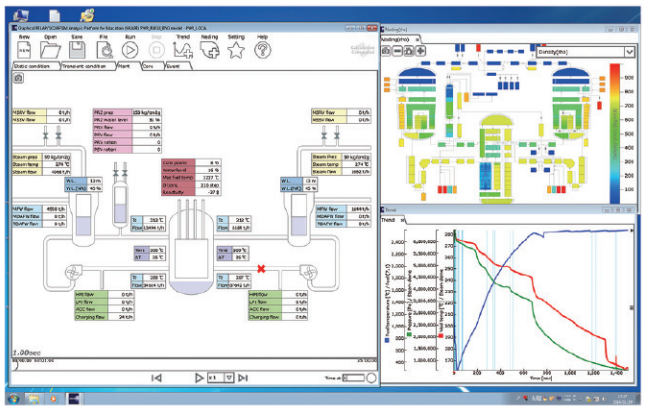
2. Monitoring Plant Operation and Developing Human Resources
- Designing, Manufacturing and Installation of Plant Simulator, Support for Operator Training
- Development of Operating Parameter Monitoring System and Support of Data Analysis
- System Development for Plant Administrative Activities

3. Providing NDT Services
- Development of Advanced ECT Inspection Technology for SG Tubes
- Visual Inspection of SG Secondary Side

4. Providing Plant Maintenance Related to Engineering Services
- Advancement of Maintenance Program
- Support of Japanese PWR utilities on PLM
- Preventive Maintenance of SS Components by Tough Joint Resin Coating Technique
- Support for Development and Revision of Private-Sector Codes

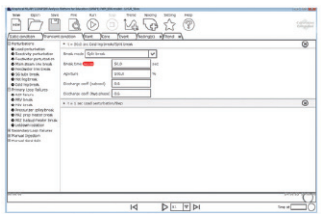
5. To Secure Future Energy Needs
- Engineering Services Related to Decommissioning and Building New Plant Facilities

Technologies

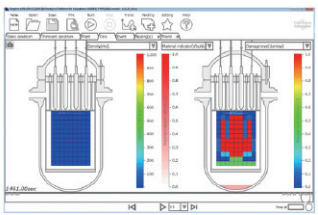


GRAPE : Graphical RELAP5-based Analysis Platform for Education/Engineering

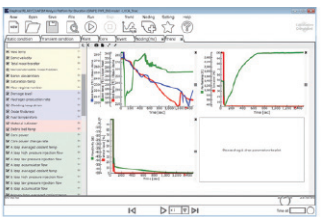
GRAPE is an innovative platform for a nuclear plant simulation for education and engineering where reliable plant models for RELAP/SCDAPSIM code are available. With an intuitive and easy-to-use GUI, students can perform simulations using an engineering-grade system analysis code without deep knowledge of the calculation code itself.
Visualization capability of GRAPE makes it possible to show the calculation results from various angles with quite simple manners. Even novice users can obtain in-depth understanding of nuclear power plants in a short time.
GRAPE provides additional values for education and engineering with its flexibility and extensibility such as multiple language support, sensitivity analysis support with the built-in macro language, and incorporation of user-defined plant models.



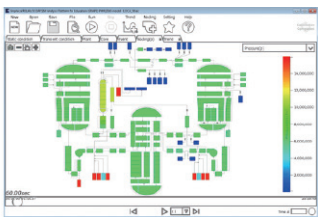
Analysis Condition Input Screen



Core Detail Diagram



Trend Graph



Noding Diagram

Nuclear Engineering and Services Company

http://www.gnesc.co.jp/

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Contact Person	Mr. Yoshiharu Ogura				
Phone	+ 81-3-6371-4845	Fax	+ 81-3-5846-0744	E-mail	yoshiharu.ogura@gnesc.co.jp

Corporate Information

Nuclear Engineering and Services Company (GNESC) was established in 2015 as a wholly-owned subsidiary of JAPC*1 and has extensive and proven expertise in maintenance of nuclear power stations, radiation control, operation of nuclear power stations and auxiliary facilities, development and maintenance of IT application software, etc.

*1: The Japan Atomic Power Company (JAPC) is an electric power company which owns and operates two nuclear power stations in Japan and has a leading role as a pioneer in nuclear power through various projects.

Nuclear Engineering

GNESC has been working together with JAPC to challenge new business fields as a pioneer of nuclear power company.

Our technical fields are as follows:

- Core management analysis: We have specialists for calculating the reactor core characteristics and planning the core designs for both BWR and PWR.
- Development of PRA model for Nuclear Power Plant: PRA (Probabilistic Risk Assessment) is today mandatory in the countries with nuclear power plants. We can provide a PRA model and results for your nuclear power plants.
- Radiation analysis: We have specialists for calculating radioactivity inventory evaluation using ORIGEN, GIP and SCALE systems.
- Development of nuclear power plant simulator: Our full-scope classroom simulator has both BWR and PWR models for operator team training, and it provides realtime simulation of accurate condition of the reactor core, balance of plant and instrumental reaction with user operation.

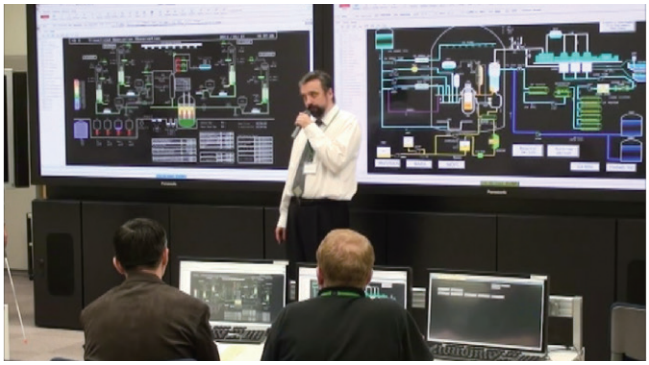
The classroom simulator is ideal for education for engineers of electric power companies, nuclear administration staff of government agencies and students in nuclear engineering.

Information Service

GNESC provides various IT solutions to nuclear-related organizations as well as JAPC.

Our services include the following:

- Development of the customized OA systems that specializes in nuclear power business
- Computer and telecommunication infrastructures' design, installation, operation and maintenance including network security and protection
- Document management including development and operation of the management system and digitization of the documents
- Consulting on the development of business continuity plan
- Education of computer literacy
- Sales and lease of computers, network equipments and software



Classroom Simulator of Nuclear Power Plant

Sojitz Corporation

http://www.sojitz.com/en/

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Phone	+81-3-6871-3375	Fax	+81-3-6871-2667	E-mail	nakamoto.mitsuo@sojitz.com

Corporate Information

Sojitz Corporation was formed as the union of Nichimen Corporation and Nissho Iwai Corporation, both companies that boast incredibly long histories. For more than 150 years, our business has helped support the development of countless countries and regions. Today, the Sojitz Group consists of approximately 400 subsidiaries and affiliates located in Japan and throughout the world, and it is developing its wide-ranging general trading company operations in a multitude of countries and regions across the globe.

As a general trading company, the Sojitz Group is engaged in a wide range of businesses globally, including buying, selling, importing, and exporting goods, manufacturing and selling products, providing services, and planning and coordinating projects, in Japan and overseas. The Group also invests in various sectors and conducts financing activities. The broad range of sectors in which Sojitz operates includes those related to automobiles, plants, energy, mineral resources, chemicals, foodstuff resources, agricultural and forestry resources, consumer goods, and industrial parks.

Main Service

Sojitz has served as the sole distributing agent in Japan for France's Orano Cycle（ex Areva NC）, the world's top integrated nuclear fuel company since the 1970s. This allows us to provide a full range of services in the nuclear fuel cycle to Japanese electric power companies. Other operations include the sale of equipment, fuels and materials related to nuclear power plants through a subsidiary.

e-Energy Corporation

URL	http://e-energy.co.jp/en/
Contact Person	Mr. Hiroki Nishio（Sales Dept.）
E-mail	nishio@e-energy.co.jp

We will continue to expand the scope of our business in nuclear energy and related industries in Japan and overseas.

Products

- Nuclear Equipment
- Nuclear Fuel, Transportation and Material
- Equipment for the Fukushima Nuclear Accident Recovery and Other Projects
- Equipment for General Industries
- Offshore Trade, etc.

Consulting

Feature Companies

- Able Company Limited 76
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ABLE Company Limited

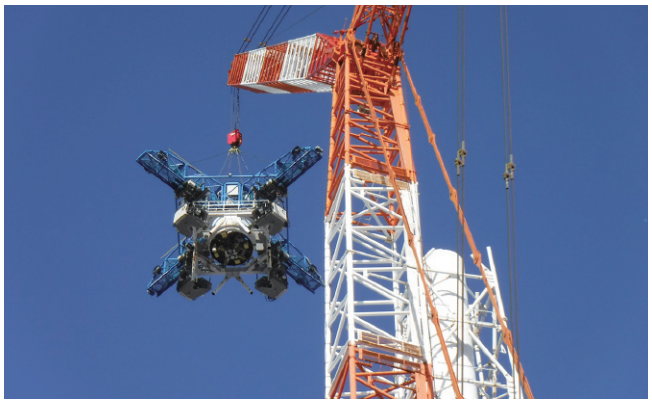
https://www.able-can.jp

Address	1-9, Iwasawa, Shimokitaba, Hirono-machi, Futaba-gun, Fukushima 979-0401, Japan		
Contact Person	Ms. Mariko Chuman	E-mail	chuman.mariko@able-can.jp
Phone	+81-240-25-8996	Fax	+81-240-25-8997

Corporate Information

ABLE Co., Ltd. was established on April 12, 1992, as a maintenance, construction, and modification company in Fukushima. In addition to the activities that we pursued at the time of our founding, we now also focus on the use of robotics in fields such as decommissioning and renewable energy engineering.

CEO: Mr. Yukihide Sato
Paid-in capital: 36.7 million yen
Workforce: more than 200 employees
FY2018 sales volume: 6.7 billion yen

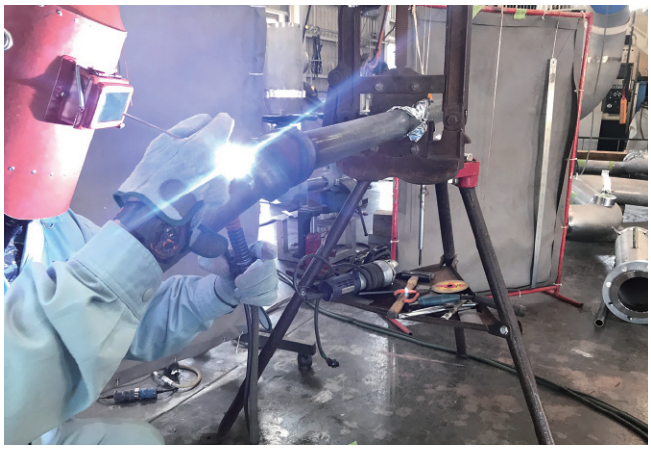


Main Activities

- Dismantling of exhaust stack at Fukushima Daiichi through robotics
- Construction of Japan's largest woody biomass power plant in Fukushima
- Support for local elderly care activities
- Expansion of welding department for construction and maintenance

Main Services

Our main services include the following: inspection of reactor internals; inspection of control rods; inspection of diesel generators; HD-1 construction work; construction work at the OMA nuclear plant; stress corrosion cracking (SCC) countermeasures for PWRs and BWRs; and other nuclear-related maintenance and construction projects.



Dia Consultants Co., Ltd.

http://www.diaconsult.co.jp/english/index.html

Address	2-272-3, Yoshino-cho, Kita-ku, Saitama-city, Saitama 331-0811, Japan（Geoengineering HQ）		
	6-3, Sanban-cho, Chiyoda-ku, Tokyo 102-0075, Japan（Head office）		
Contact Person	Mr. Yuto Ishimaru	E-mail	overseas@diaconsult.co.jp
Phone	+81-48-654-5299（Geoengineering HQ）	Fax	+81-48-654-6600（Geoengineering HQ）
	+81-3-3221-3205（Head office）		+81-3-3221-3209（Head office）

Corporate Information

Dia Consultants Co.,Ltd is a consulting company in the field of geology, ground, groundwater and natural disaster and participates in construction of almost all nuclear power facilities in Japan. Dia was incorporated in 1963, as a geological survey company for natural resources and construction. For more than 50 years, Dia has offered professional services with highly experienced and trained engineers. Dia's services include, but not limited to, survey, analysis and evaluation in the field of geology, ground, groundwater and natural resources, as well as investigation and evaluation in the field of earthquake and natural disaster at nuclear power plants.

Main Activities

Dia performs survey, analysis and evaluation at nuclear power plants and nuclear power facilities in both Japan and foreign countries.

- Geological survey and geological structural investigation, ground test and groundwater test, analysis and evaluation from these results
- Volcanic survey, analysis and evaluation
- Ground motion analysis and evaluation
- Groundwater survey, analysis and evaluation
- Tsunami sediments investigation and prospective analysis
- Paleoseismic study of capable fault
- Safety examination about the above items
- Proposal, planning, advice and guidance for survey and analysis

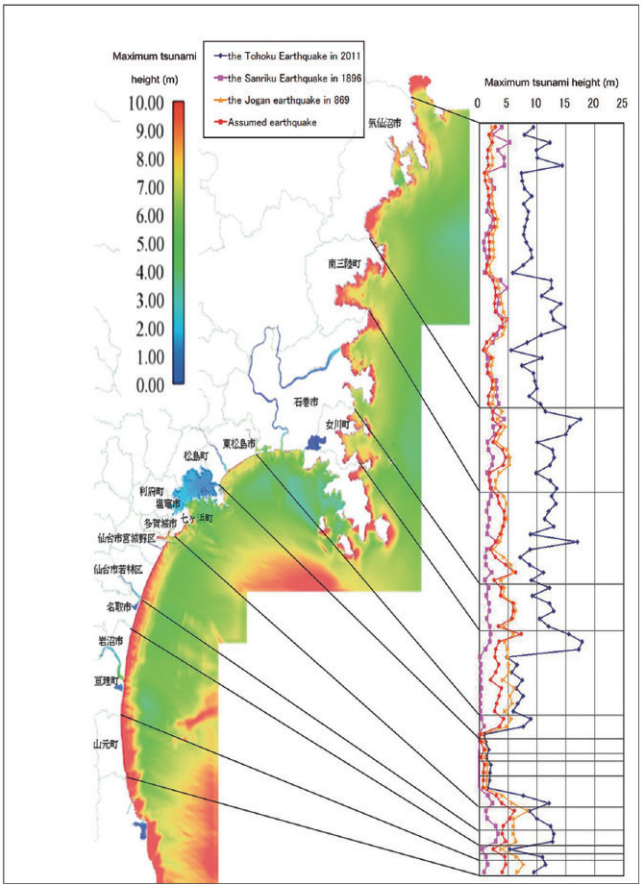
TEPCO's Kashiwazaki-Kariwa Nuclear Power Station

Main Performance Records

- Almost all nuclear power plants in Japan, such as Tokyo Electric Power Company, Inc.
- Nuclear power plants in Vietnam and Turkey
- Nuclear power facilities, such as Japan Nuclear Fuel Ltd. and Recyclable-Fuel Storage Company
- Japan Atomic Energy Agency, Nuclear Waste Management Organization of Japan, Nuclear Regulation Authority, etc.

Services

Dia contributes to earthquake-resistant evaluation and prior investigations to prevent accidents caused by natural disasters, such as earthquakes, tsunamis and volcanic eruptions at nuclear power facilities. At Dia, its highly experienced engineers in the fields above provide top-notch technical improvement guidance and comprehensive study to its valued clients.



Result of Tsunami Simulation

The Japan Atomic Power Company

http://www.japc.co.jp/english/index.html

Address	5-2-1 Ueno, Taito-ku, Tokyo 110-0005, Japan				
Contact Person	Mr. Mitsumasa Fujita				
Phone	+81-90-6729-7612	Fax	+81-3-5807-4359	E-mail	Mitsumasa-fujita@japc.co.jp

Corporate Information

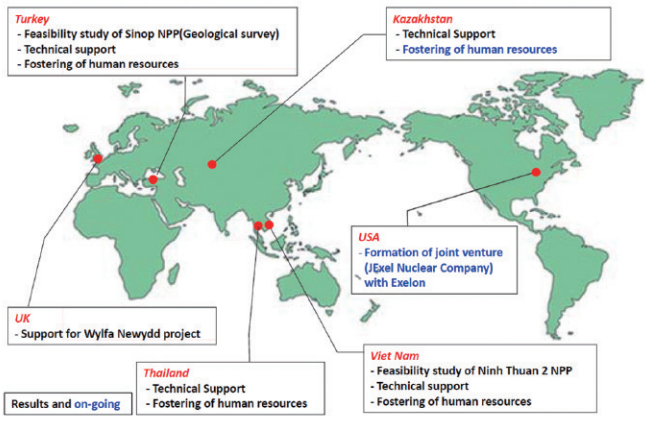
The Japan Atomic Power Company (JAPC) was established in November 1957 as a power company solely engaged in nuclear energy in Japan.
Since then, JAPC has continued to play a leading role in the electric power industry as a pioneer in nuclear power generation through various projects, including the construction, operation and decommissioning of the first commercial nuclear power plant (GCR) in Japan and the construction and operation of BWR and PWR.
We operate our nuclear power stations in accordance with our "Safety First" policy and the understanding of the Japanese people, including residents of areas where our power stations are located.

Business Objectives

1. We conduct the following operations to develop civilian nuclear power generation business:
   - To construct and operate nuclear power plants and to supply electricity generated thereby; and
   - To engage in other businesses relating to the preceding

2. We may contract out the conducting of surveys, design work, construction supervision, construction operations and other relevant engineering assistance relating to nuclear power plants.

Major Projects



Services

JAPC has much experience of planning and construction of the first commercial nuclear power plant in Japan, and of more than 40-year operation, maintenance and decommissioning. In addition, JAPC has provided consulting services such as Feasibility Study of nuclear power project for foreign countries that plan to introduce nuclear power generation. Based on this experience, JAPC can provide valuable consulting services and support from the viewpoint of power utilities.

Project Management
- Overall planning from design to operation

Feasibility Study
- Gathering design data, geological survey, environmental impact assessment, radiation dose evaluation, reactor type evaluation and economical evaluation

Construction Management
- Management of construction schedule, procurement, construction, design and commissioning

Operating Support
- Operating support of plant operation and maintenance

Human Resource Development
- Training of personnel for management of nuclear power plants

We contribute to energy security and work on realizing a low-carbon society.
We have continued to play a leading role in addressing new challenges regarding nuclear power generation.

JAPAN NUS Co., Ltd.

http://www.janus.co.jp/eng

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Contact Person	Dr. Junko Sugaya				
Phone	+81-3-5925-6710	Fax	+81-3-5925-6715	E-mail	webmaster@janus.co.jp

Corporate Information

Established in 1971, Japan NUS Co., Ltd. (JANUS) offers technically advanced consulting services that aim to balance energy supply and economic growth with environmental conservation. JANUS has been the choice of hundreds of customers for more than 45 years because of our wealth of knowledge and experience, and our high-quality and sincere services. We specialize in technical consulting in the field of energy and environment.

Main Activities

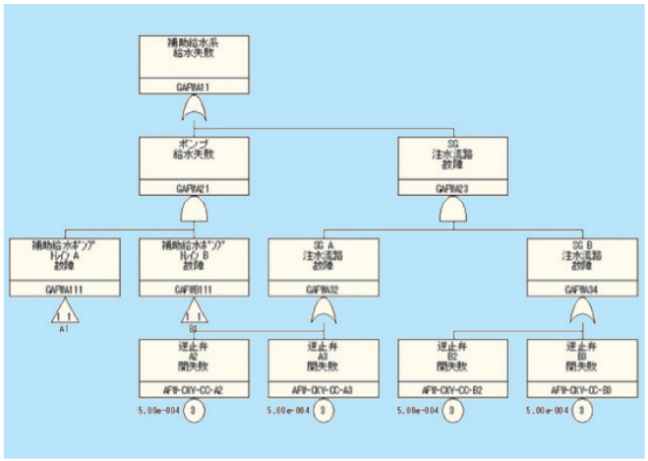
We address the problems of energy and resources. In particular, we have been providing technical consulting services related to nuclear power generation since our foundation.
We have various safety analysis technologies in reliability risk assessment, environmental diffusion of radioactive materials, exposure evaluation, radioactive waste management, etc.
We have deep insights in the regulations in overseas nuclear power generation programs including areas of nuclear power plant licensing, operation and maintenance, plant aging management, nuclear fuel cycle, decommissioning, and health effects of radiation.
We have the most thorough experience and insights for these topics in Japan.
Recently, we are expanding our business to support the overseas development of nuclear power plants by our domestic clients.

Consulting Services

Radiation Protection & Exposure Evaluation:
We develop codes that are applicable to various fields from plume modeling to 3D modeling, and carry out analysis work of atmospheric advection and diffusion, environmental impact assessment, etc.

AREDES (Atmospheric Release Emergency Dose Estimation System) Model

Reliability & Risk Assessment:
We support Probabilistic Risk Assessments (PRA) and risk-based management of facilities, including nuclear power plants.



PRA Fault Tree Model

Radiation Effects on Human Health and Environment:
We conduct and support surveys in Japan and overseas on research trends related to radiation effects and regulatory trends related to radiation protection.

Nuclear Information Services & Consulting:
We provide nuclear-related information of the nuclear power plants in Japan and overseas, in various fields such as nuclear regulations, safety issues, operating experience, good practices in maintenance, aging management, etc.

Fuel Cycle and Waste Management:
We carry out surveys on the latest trends in Japan and overseas, safety analysis, etc. in order to support the operation of nuclear fuel cycle facilities, decommissioning of nuclear facilities, and the disposal of radioactive waste.

Environmental Impact Assessments:
We offer broad support for environmental impact assessment procedures in Japan and overseas, namely by helping with surveys, projections, assessments, creation of assessment statements from impact statements, stakeholder meetings, etc.

PESCO Co., Ltd.

http://www.pesco.co.jp

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Corporate Information

PESCO was established in 1988 based on scientific and technological knowledge of nuclear power and radiation. Under the slogan "What we can do now for the future," we are committed to high-quality work.

Our greatest property without hardware is people. Although it is a small company with about 100 employees, we are working on the daily training and the business innovation to overcome the competition.

Headquartered in Tokyo, our main activities are performed in Ibaraki and Fukushima prefectures with branch offices covering a wide region from Horonobe in Hokkaido to Toki in Gifu. We are engaged in a wide range of operations, from the job on the worksites to the investigation on overseas technologies.

Through our activities, we have accumulated and refined a lot of experience and knowledge. Furthermore, it is our new mission to give top priority to reconstruction support so that all the people suffered from the accident of Fukushima Dai-ichi Nuclear Power Station can return to the previous local society where they can live with peace of mind.

Main Activities

Our current activities cover a wide range as follows:

1. SUPPORT TO FUKUSHIMA

- Measurement of internal exposures to the general public of Fukushima
- Training of workers engaged to decontamination of the environmental radioactivity

2. NUCLEAR TECHNOLOGY

- Investigation research and evaluation of nuclear fuel cycle techonology and advanced nuclear reactors
- Design for process and facilities.
- Consultation of running and operating of nuclear facilities including hot facilities
- Analysis and evaluation of scientific database

3. PUBLIC RELATIONS

- Management and operation of science museum
- Support for communications between experts and the general public on nuclear development and safety issues to establish mutual confidence
- Research and consulting on social environment

4. EDUCATION & TRAINING:

- Personnel Education and Training
- Preparation of materials for training and education
- Support to seminars for safety and nuclear disaster management

5. INTERNATIONAL COOPERATION AND SUPPORT

- Research and development on MOX fuel assemblies for thermal and fast reactor in Russia（2004～2008）
- Physical protection system support in Kazakhstan（2008）
- Collection, analysis and evaluation of overseas nuclear information
- Translation of overseas reports on nuclear technology

Shearman & Sterling

http://www.shearman.com

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Corporate Information

Shearman & Sterling represents many of the world's leading corporations and major financial institutions, as well as emerging growth companies, governments and state-owned enterprises, often working on ground-breaking, precedent-setting matters.

With over 850 lawyers across 24 offices around the world speaking more than 70 languages, we act on the largest and most complex nuclear development and financing projects around the world, particularly focusing on groundbreaking and first-of-a-kind transactions in major regions of the world.

Dedicated Nuclear Team

We have a dedicated group of nuclear lawyers with experience in all possible nuclear-related activities and transactions. Our global team is located in Asia, Europe, the Middle East and the U.S. Our nuclear lawyers include engineers with technical understanding of nuclear technologies.

Our lawyers have worked on the most recent nuclear new build projects in established and emerging nuclear markets and on the largest international arbitration in the nuclear sector. Our lawyers have an unrivalled understanding of nuclear project risks（legal, financial and technical）and have advised on every type of nuclear-related contract and transaction.

Comprehensive Nuclear Expertise

We have a full-scope global nuclear energy practice. Combining with Shearman & Sterling's world-leading project development and finance group with experience under English and New York law, we focus on procurement, construction and financing for nuclear new build, as well as related nuclear-industry specific advice on international nuclear law, nuclear liability and nuclear trade issues. Our work covers:

- Development, Construction and Operations of Nuclear Power Plants
- Nuclear Finance
- Nuclear Arbitration and Litigation
- Nuclear Liability
- Nuclear Export Controls
- International Nuclear Law
- Licensing and Facility Regulation
- Nuclear Fuel Cycle Transactions
- Public Policy

Nuclear Industry Understanding

We are part of the nuclear industry and our lawyers have a special appreciation for the opportunities and challenges involved in doing business in this industry. In particular, we assist our clients in managing their nuclear export businesses and transactions in foreign countries.

Our clients include electric utilities, governments, export credit agencies, commercial banks, nuclear reactor power plant vendors and equipment suppliers, investment/commercial/advisory banks, universities, trading companies, universities and other major companies involved in the nuclear energy sector.

Our clients have priority access to, a team which brings lessons learned from previous first-of-a-kind nuclear and conventional power projects, as well as practical and tested deal-making solutions to challenges which may arise in developing international nuclear power projects and associated transactions.

Shearman & Sterling Global Presence

*Dr. Sultan Almasoud & Partners in association with Shearman & Sterling LLP

3R Corporation

http://www.3r-net.com

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Corporate Information

3R Corporation was founded in 2001 as a technical consultant specializing in energy, resources, and the environment. It is located in Sendai, the largest city in the Tohoku region of Japan. The company name 3R originates from three Rs: reduce, reuse, and recycle. We are particularly interested in reducing waste and consumption of energy and resources, as well as reusing and recycling waste and other materials. Many of our activities are related to the nuclear industry.

Main Activities

- Technical survey and consultation conducted by collecting and analyzing scientific and technical information on nuclear power, new energies such as hydrogen power, renewable energies such as solar and wind power, and environmental issues
- Technical survey and consultation on the treatment and disposal of radioactive material
- Technical survey and consultation on the recovery and reuse of mining and industrial products/byproducts containing rare metal and other valuable materials
- R&D and consultation on technologies for the separation, purification, and measurement of radioactive and chemical materials as well as technologies for environmental analysis and improvement
- Sale of nuclear equipment and provision of technical guidance and information for such sale

Translation Services

Through our subsidiary company Transwords Co. Ltd., we offer technical translation services in various industrial fields including energy, resources, and the environment. We are particularly experienced in nuclear energy (from uranium mining to final disposal of radioactive waste), renewable and alternative energies (including solar, wind, geothermal, biomass, and hydrogen power), geological exploration, and technologies for reducing waste and other environmental loads.

Our translation work is done by rigorously selected translators specializing in the above fields, and final quality is carefully checked by adept translators having a Ph.D. in either Science or Engineering.

Our translators are well experienced, for example, in English-to-Japanese translation of Radwaste Solutions published by the American Nuclear Society, English-to-Japanese translation of Nucleonics Week published by McGraw-Hill, Japanese-to-English translation of JAERI News published by Japan Atomic Energy Research Institute, and Japanese-to-English translation of the Denki Shimbun newspaper.

We mostly deal with the language pair of English and Japanese and also handle such languages as French, German, Russian, and Chinese. Our rates depend on the language pair and the level of complexity of the subject. Please contact us for a free cost estimate on your project. All information received will be treated with strict confidentiality.

Contact information for our translation services:

Transwords Company Limited

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Wood

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Corporate Profile

Wood, previously Amec Foster Wheeler is a global leader in the delivery of project, engineering and technical services to energy and industrial markets. We operate in more than 60 countries, employing around 55,000 people, with revenues of around $10 billion. We provide performance-driven solutions throughout the asset lifecycle, from concept to decommissioning across a broad range of markets including nuclear, upstream, midstream and downstream oil & gas, chemicals, environment and infrastructure, power & process, clean energy, mining and general industrial sectors. We strive to be the best technical services company to work with, work for and invest in. We have worked with Japan's nuclear industry since the 1960s when, as National Nuclear Corporation, we drew on our work as designer and owner's engineer for the UK's nuclear power programme to help build Tokai. We also participated in the fast breeder programme at Joyo and Monju and are now supporting the remediation efforts for Fukushima.

Main Activities

Decommissioning and Clean-up

Clean-up and management of the nuclear legacy is one of the most demanding challenges facing the industry today. Wood brings decades of experience to this task, drawn from our work at the most complex sites in the UK and overseas. Underpinned by our research and development base, practical technology and an unrelenting safety ethos, we bring practical, cost-effective solutions that are both technically and commercially innovative. Our teams provide innovative, safe and cost-effective solutions for decontamination, dismantling, deactivation and demolition of high-hazard plants and sites. And we combine safety case management, environmental and radiological consultancy, and health physics support with our core engineering capabilities.

Technology and Research

A consortium led by Wood recently won a British Government-funded competition to design a robotic system for cleaning and dismantling highly radioactive rooms at Sellafield in Cumbria, Europe's most complex nuclear site. We host the UK's High Temperature Facility, which is testing materials for use in Generation IV reactors. We operate 12,000m^2 of laboratories and test rigs, including the UK's only UKAS accredited Inspection Validation Centre carrying out non-destructive testing for the nuclear new build market. SIAL®, Wood's proprietary geopolymer solidification technology, has been used successfully for more than 20 years to immobilise sludge, resins and crystalline borates and has been held up as good practice by the World Association of Nuclear Operators. In partnership with Fuji Electric and on behalf of the Japan Atomic Energy Agency, we are examining whether SIAL® can be used at Fukushima.

Reactor Support and Generation Services

Wood achieves outstanding results for our customers thanks to a comprehensive knowledge of reactor technology and regulatory requirements combined with a flexible, collaborative approach. We have developed innovative approaches to life extension and provide technical and engineering solutions to avert or resolve emerging problems. Our specific capability in the management of ageing and obsolescence allows us to define cost-effective solutions and deploy them rapidly, improving operability, generation and ultimately plant life.

New Build

Wood understands the complex commercial, political and technical challenges facing new build programmes. We have substantial heritage in reactor design, including a significant role as principal designer of the first and second generation of nuclear power plants in the UK. Today we work with EDF Energy, China General Nuclear Power Corporation, Hitachi, Horizon and others on all of the UK's third generation nuclear new build programmes. We are the lead partner in MOMENTUM, which is the Construction Management-as Agent contractor to ITER, the world's largest nuclear fusion project.

Jacobs last year announced plans to acquire Wood Nuclear and at the time of writing, the sale is being considered by the UK's Competition and Markets Authority.

Wood's ScanSort System at Work in Japan

Japan Atomic Industrial Forum, Inc.

https://www.jaif.or.jp/en/

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Corporate Information

The Japan Atomic Industrial Forum, Inc. (JAIF) was incorporated on March 1, 1956, as a comprehensive nonprofit organization for nuclear energy. Its objective has been to promote peaceful uses of nuclear energy and technology to support sound development of the national economy and well-being.
JAIF became the first NGO that was awarded "consultative status" by the International Atomic Energy Agency (IAEA) in 1960.
JAIF is unique in having a broad membership comprising about 400 member organizations, ranging from nuclearrelated businesses, including utility companies, vendors, and R&D institutes, to organizations such as local governments.

Enhancing International Cooperation

Sharing Nuclear Information with International Community

Interactivity with Public, Nuclear Industry and International Community

Promoting Public Understanding of Nuclear Energy

Supporting Human Resources Development

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Toward a Sustainable Future

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