

Toward advanced plant services in changing times

RAIZNEXT

CORPORATE PROFILE



RAIZNEXT Corporation

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<https://www.raiznext.co.jp/e/>

MISSION

Protecting and nurturing plants in every industry.

At this very moment, plants of all kinds are operating without stop to create the energy and the products indispensable to people's lives. We will continue supporting the operation of these plants and enhancing their value for the future. That is the mission of RAIZNEXT.



Oil



Petrochemicals



General chemicals



Pharmaceuticals



Gas



Electricity



Iron manufacturing



Non-ferrous metals



Food products



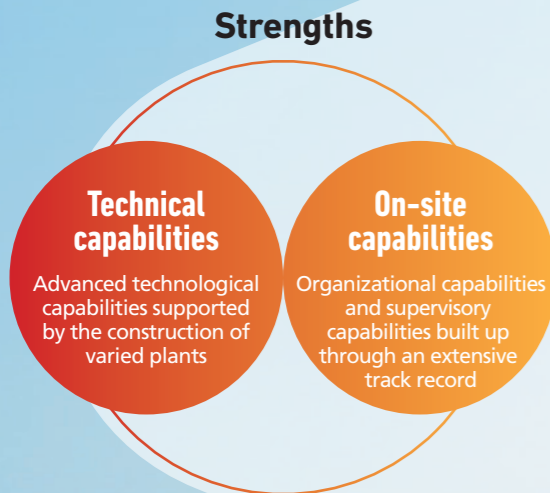
Paper products

As a partner supporting plants throughout their lifespans.

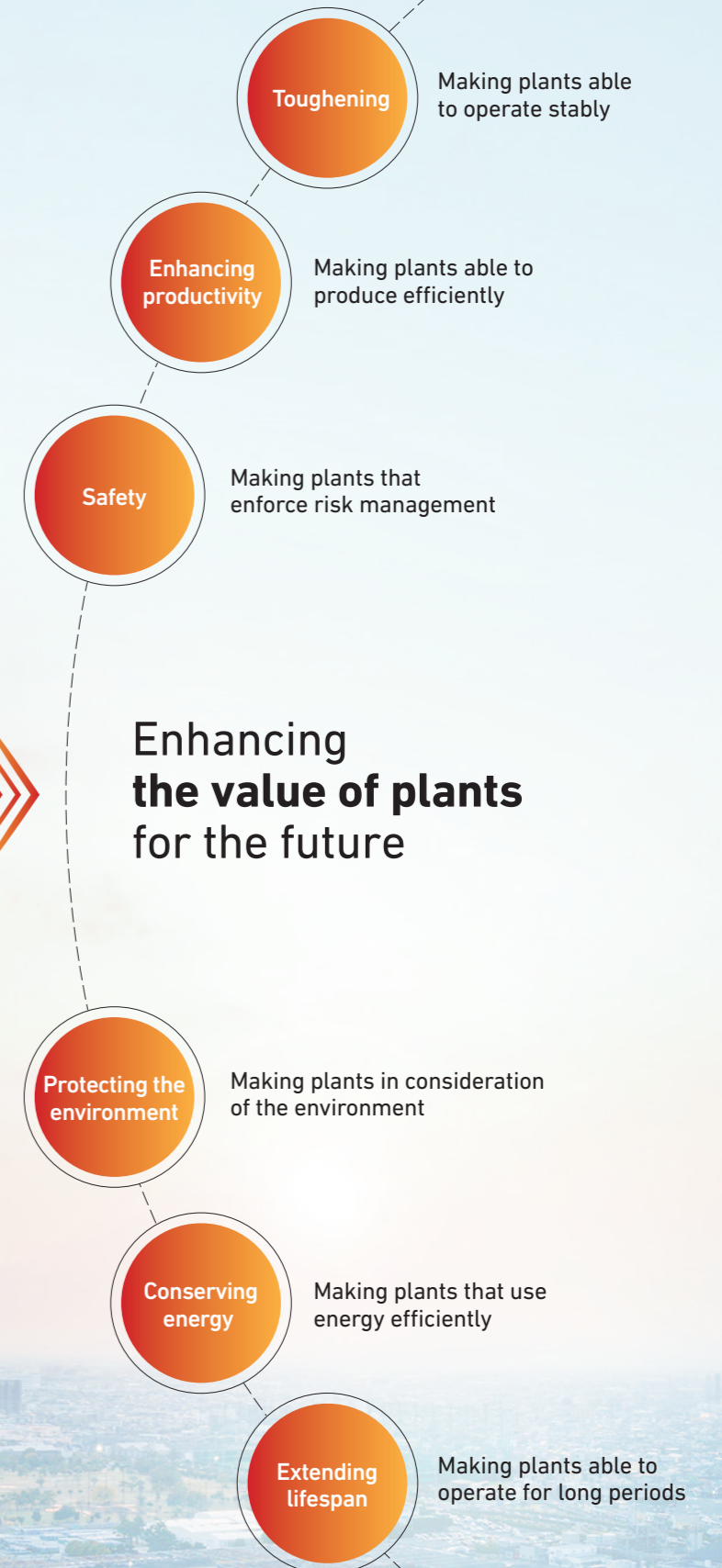
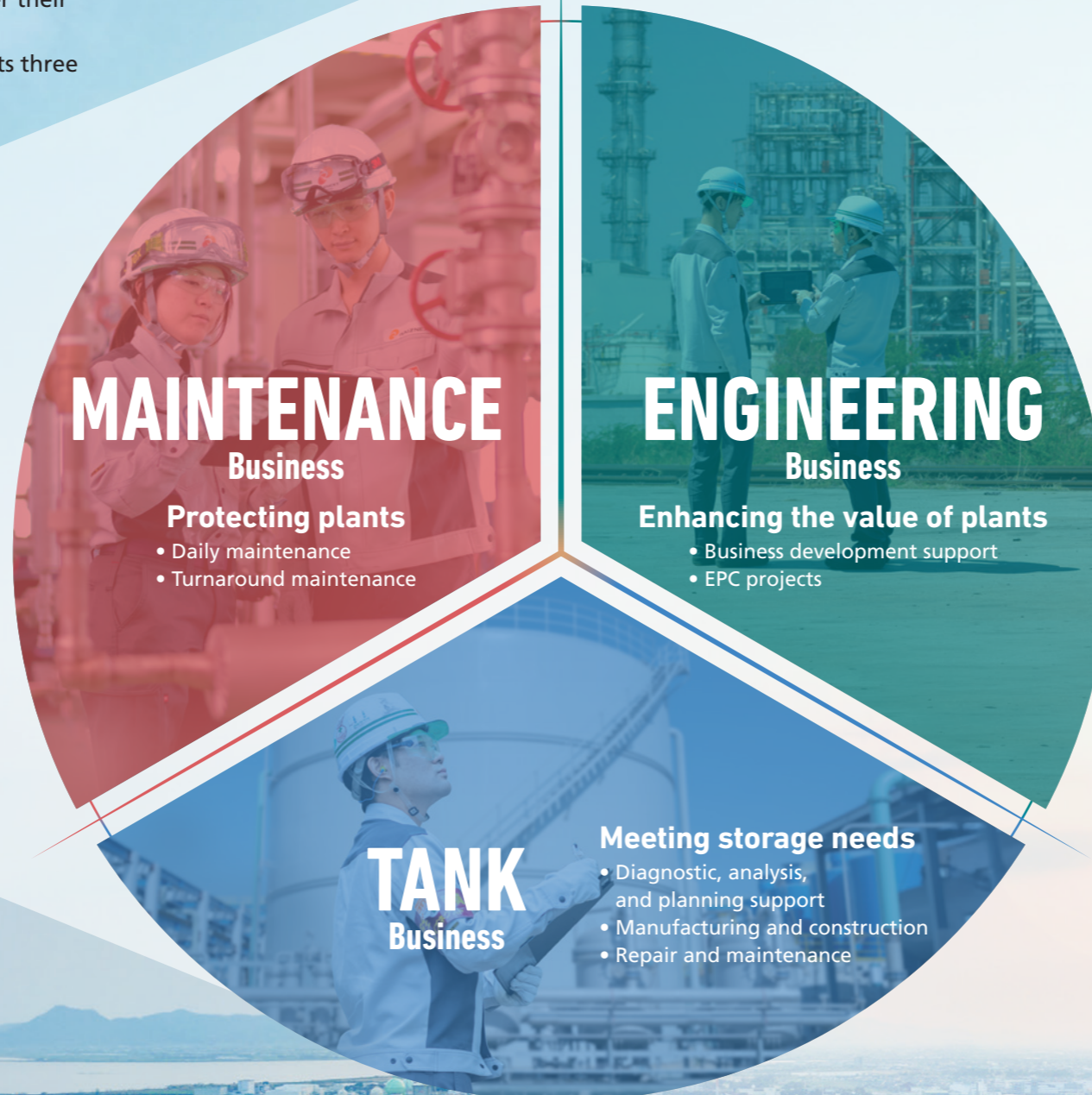
Amid ongoing drastic change in the environment surrounding manufacturing, the functions and performance required of plants also change over their decades of operation.

Drawing on the strengths that we have built up, RAIZNEXT fuses its three business domains—Maintenance, Engineering, and Tank—to offer solutions that meet customer expectations and enhance the value of plants at every stage of their life cycles.

Business domains
Fusing three domains to offer wide-ranging solutions



Achieve high-level services by leveraging two strengths



Enhancing the value of plants for the future

MAINTENANCE

Protecting business as usual for plants

We support wide-ranging domains such as various types of equipment, tanks, piping, instrumentation/electricity, rotary machinery, and civil engineering/construction, contributing to the safe and stable operation of plants 24 hours a day, 365 days a year. Through close communication with customers and deep understanding of work sites, we offer maintenance tailored to every plant. We meet the need for high quality and cost optimization through integrated maintenance that spans daily maintenance to turnaround maintenance.

Maintenance business domains



Daily maintenance

We station technical staff in customers' plants to speedily address emergency work as well as perform routine inspections and repairs. Through support that leverages our extensive track record in maintenance, we work as one with customers' maintenance departments to contribute to the safe and stable operation of plants.



Turnaround maintenance

For turnaround maintenance, during which a plant is shut down for a set period of time for overall maintenance, we work in close cooperation with the customer on all matters from the basic plan to construction and inspection work. We offer high-value-added engineering that leverages equipment expertise and know-how gained through our extensive track record.

Strengths of our Maintenance Business

Adapting to conditions and circumstances at individual plants through advanced on-site construction capabilities

Technical capabilities

Optimization of construction through varied technologies

Transitioning on-site work from humans to machines

We are advancing the mechanization of work to improve maintenance efficiency, enhance quality, and ensure safety.

We propose mechanization and construction methods tailored to facilities, such as disassembly and assembly of potentially hazardous heavy objects such as heat exchanger tube bundles, or removal of stubborn fouling through ultra-high pressure water jet cleaning.



Special repair technologies and construction methods that achieve reliability and efficiency

By introducing special processing technologies to work sites, we achieve high-reliability repairs.

These include the CAR-BER method (partial pressure resistance testing method) that allows easy isolation of pipes and nozzles to enable welding work and pressure resistance/airtightness testing, a unique technology that, in Japan, is handled only by RAIZNEXT. This technology reduces the ancillary work typically generated during conventional construction work, significantly improving efficiency and ensuring safety.



Proprietary inspection technology that offers high precision and data analysis

Using a variety of inspection technologies, we conduct accurate diagnoses of damage and deterioration and investigate their causes. The interpolated rotary ultrasonic inspection system FREND™ can accurately detect thinning in the piping of heat exchangers, boilers, and other equipment, and can even handle sharp bends in boiler tubes. It has been used for many years in facilities such as power plants and waste incinerators.



Making expertise and know-how visual to strengthen our adaptability

Creating a database of maintenance achievements to adapt to any case

Systematizing our technologies by creating a database of over 1,500 facilities diagnosis cases and over 600 facility functional recovery engineering cases. Another great strength of RAIZNEXT is the ability to handle cases based on precedents. In the case of maintenance requiring special technologies, specialist departments propose optimal construction methods and offer technical support for the work site.



On-site capabilities

Handling large-scale projects with high efficiency and quality

Staffing capabilities that utilize our nationwide network of partner companies

We are able to quickly organize staff from our company and from partner companies to meet the scale of projects. Our network of over 4,000 partner companies nationwide gives us the ability to tackle large-scale turnaround maintenance mobilizing over 2,000 on-site staff members and workers.



Supervisory capabilities that enhance the quality of engineering and construction

We work to improve the capabilities of every staff member and to enforce rules by appropriately allocating on-site staff, eliminating idle time for heavy machinery, and developing human resources who work as one with our partner companies. We achieve rationalized construction through supervisory capabilities that perform integrated management of safety, quality, processes, and costs.



Optimization of maintenance work by fully leveraging IT

Proceeding without delays in the wide-ranging processes of turnaround maintenance and other projects requires an understanding of the status of large numbers of staff members and types of machinery. At every site, we introduce an information sharing and progress management system that we have developed, to proceed with work efficiently while sharing the status of progress with customers.



A support structure based on our own factories

We manufacture varied types of piping and equipment at our two factories. In addition to supporting on-site engineering work, we respond quickly and flexibly to emergency projects, achieving both quality and efficiency.

Isogo Factory

Manufacture of piping and repair of equipment.



Chiba Factory

Manufacturing and processing of tanks, pressure vessels, vessels, and piping. Mechanical equipment maintenance shop, etc.





Business development support

In the construction, modification, or revamping of plants, we support customers' investment decisions by carrying out feasibility studies (FS) and Front-End Engineering Design (FEED). Through collaboration with our maintenance department, participation is possible from the initial stage.



EPC projects







Drawing on our extensive knowledge of maintenance, we cover from end-to-end engineering, procurement, and construction (EPC) with post-construction considered as well. By using technologies in a wide range of EPC business domains, we are able to respond comprehensively to the diverse needs of our customers.

ENGINEERING

We will optimize your plants.

We will support plant engineering in diverse industries, from the oil refining and petrochemical industries to the general chemical, pharmaceutical, and food industries. In addition to the construction of new plants, we have expertise in revamping and renovation work that extends the life of existing plants, improves seismic resistance, and augments capacity. We offer end-to-end support that spans from initial business development support to EPC, post-construction test operation, and after-sales follow-up, meeting customers' needs as a devoted consulting partner in order to realize plants that offer value.

EPC business domains

-  Oil refining plants
-  Petrochemical plants
-  Chemical plants
-  Renewable energy
-  Tanks
-  Building structures

Strengths of our Engineering Business

Achieving rationalization in engineering work, high quality, and short delivery time through an integrated structure spanning from FS/FEED to EPC

Technical capabilities

Honing our expertise to meet advanced challenges

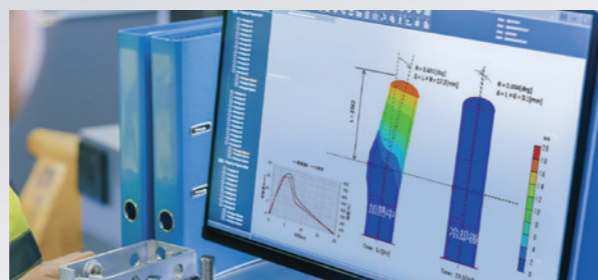
FS/FEED (basic design) to guide projects to success

As part of our business development support services, we support our customers' investment decisions by researching and examining their needs and conditions, and studying feasibility and profitability through in-depth simulations. Once the commercialization of the project has been decided, we conduct basic design according to the plan, identify technical issues, and calculate estimated costs.



Engineering with the latest technologies

We are proactively introducing all kinds of new engineering tools to create sensible designs. This includes 3D scanning with drones and terrestrial lasers to efficiently assess plant conditions; 3D-CAD to create detailed designs and conduct verification; and CAE to conduct structural and fluid analysis. These technologies are enhancing the reliability of our design and construction plans.



On-site capabilities

Verifying feasibility and deriving optimal solutions

Reduction of risk through feasibility design

We calculate the feasibility and profitability of projects through in-depth simulation, reducing customers' investment risk. Leveraging knowledge of equipment gained through maintenance, customers' requests, and our extensive track record in engineering, we take part in planning from the initial stage and propose concrete measures that achieve projects based on customers' drafts.



EPC that supports the construction of entire plants

We deploy our expertise and know-how in a wide range of fields including civil engineering, construction, piping, and electrical instrumentation to shoulder complex project management. We also leverage engineering technologies and on-site expertise built up through maintenance to support engineering work in existing plants, which faces numerous technical issues and engineering constraints.



Case studies

Contributed to improving plant productivity and extending the life of the plant
Relocation of equipment between oil refining plants



Key points

- Relocated equipment between refineries under various constraints and having different facility layouts.

RAIZNEXT's approach

- Proposed optimal equipment layout design using know-how based on rich experience with new and renovation projects.

Supported manufacturing facilities for increasingly diverse chemical products
Capacity expansion work to strengthen cosmetics production and supply structure



Key points

- Integrated distribution flows for production, storage, and shipping to enhance efficiency.

RAIZNEXT's approach

- Drafted a flexible construction plan matched to the customer's needs, drawing on our track record of construction and remodeling work at varied chemical plants.

Contributed to the increased production of high-quality petrochemical products
Expansion project for fluororesin raw material supply facility



Key points

- Expanded facilities within a constrained area.
- Construction working in existing plant in operation.

RAIZNEXT's approach

- Planned a facility layout that makes the most of the construction area.
- Achieved high-level safety management and completed construction without hindering existing plant operations.

Contributed to the effective use of scarce resources
Construction of metal recovery and recycling facilities



Key points

- Handled design through construction of rare metal recovery facilities.
- Met required performance within limited spaces.

RAIZNEXT's approach

- Proposed optimal facility designs that leveraged our know-how and experience gained through construction of hydrometallurgical plants.
- Conducted many site visits to fully understand on-site needs, then implemented designs tailored to the given space.

Contributed to a renewable energy business
Construction of a mega solar power plant



Key points

- Constructed a 72 MWh (equivalent to usage of 17,500 ordinary households) mega solar power plant.
- Controlled numerous risks in design, procurement, and construction.

RAIZNEXT's approach

- Applied management techniques built up in plant EPC projects. Executed the large-scale project with over 1,000 workers continually active.
- Supported varied sloping ground locations through 30 types of trestle designs.



Designed and built a state-of-the-art factory building
Construction of semiconductor product fabrication plant

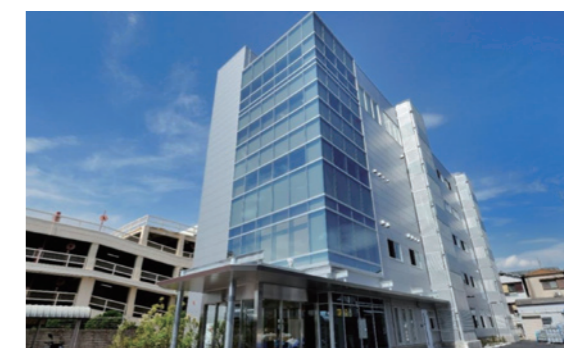


Key points

- Constructed a semiconductor product fabrication plant requiring high-level dust management.

RAIZNEXT's approach

- Constructed a building equipped with a cleanroom with a cleanliness degree of class 1000.
- Proposed a structure tailored to the customer's product manufacturing environment and R&D environment.



TANK

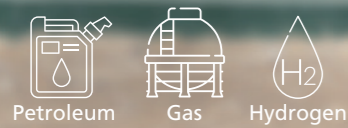
Supporting the storage of energy resources

We provide integrated support—from basic planning to design, manufacturing, construction, and post-operation maintenance—for tanks storing petroleum, gas, and various other energy resources.

To prepare for a carbon-neutral society, we are also engaged in technical research of tanks for next-generation energy sources such as liquefied natural gas (LNG) and liquefied hydrogen.

We provide comprehensive support for optimizing the tank life cycle by leveraging our know-how cultivated through constructing and servicing approximately 5,300 tanks.

Tank business domains



Tank manufacturing

At our factories, we manufacture various tanks (petroleum, cryogenic) and tank components such as containers, side plates, roofing materials, and stairs.



Tank construction

We first develop an optimal plan that takes into account construction conditions such as the existing facilities, tank site, and legal regulations. We then use an integrated system, from geological surveying to final inspection of the completed tank, to design and construct the tank's foundation, groundwork, and main structure.



Tank protection

We handle maintenance for all types of tanks—floating roof, cone roof, dome roof, spherical, underground, etc.—contributing to longer service life.

Providing support as tank experts throughout the entire life cycle—from design and construction to post-operation maintenance

Technical capabilities

Leveraging our expertise as a tank manufacturer and construction company to meet diverse needs

Over 5,000 units of varying tanks constructed to date

We have a proven track record of constructing over 5,000 tanks. We can handle all types of tanks: aboveground, underground, and floating roof tanks; ambient temperature and cryogenic tanks; atmospheric, low-pressure, and high-pressure tanks; and tanks for hazardous materials. We are also conducting R&D in-house, pursuing seismic retrofitting and strength enhancements to create better tanks.



Cylindrical tanks

Spherical tanks

Underground tanks

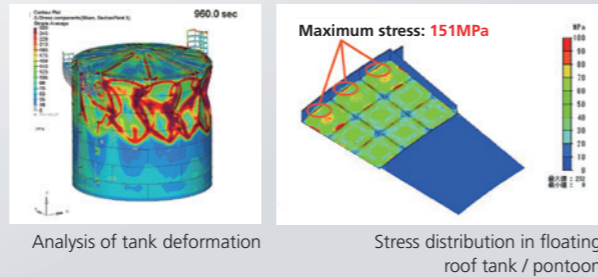
Developing various tank construction methods

Leveraging years of research and accumulated technology, we have developed various proprietary construction methods for tank construction and repair. For example, when renovating a tank, we propose from various options the optimal construction method tailored to the circumstances, accounting for challenging work environments such as those where heavy machinery cannot be installed or large-scale scaffolding cannot be erected. We also use automated welding machines to improve both construction efficiency and quality.

Streamlining tank maintenance and servicing with the latest technology

Using CAE and 3D scanning for diagnostics and analysis

We create 3D models of tanks with CAE technology to analyze the causes of deformation and other issues. We can also analyze the extent of defects and deformation by cross-referencing the 3D modeling with measurement data from 3D laser scanners. This technology is primarily used to investigate causes of tank deformation and analyze stresses due to changes in internal pressure within the pontoon, and can also help verify the soundness of new construction and modification designs.



Analysis of tank deformation

Stress distribution in floating roof tank / pontoon

Automated CO₂ welding method for horizontal joints of tank side plates

RAIZNEXT automates welding of horizontal joints for tank side plates by combining a simple automated trolley with a semi-automatic welding machine or a plasma gouging machine. This approach addresses labor shortages while also improving work quality. In addition, we have shortened lead times by automating post-processing. This technology can be used not only when constructing new tanks but also for renovation projects.



Welding tank side plates with an automatic welding machine

Case studies

Case study 1 Construction of an aircraft fuel tank



Key points

- Constructed a tank with a diameter of 18.9m, height of 15.2m, and capacity of 3,999 kiloliters.
- Extended the tank's service life for continuous fuel supply.

RAIZNEXT's approach

- Proposed tanks tailored to customer requirements by relying on our extensive track record with petrochemical and LNG tanks.
- Realized end-to-end management, including post-construction repairs and periodic inspections.

Case study 2 Modifying existing tanks for efficiency and versatility



Key points

- Modified CRTs¹ to FRTs² to reduce tank weight.
- Modification to CFRTs³ that combined CRTs and FRTs.
- Modified the number of side plate tiers.
- Modified CRTs to concentric double-walled tanks and multi-segmented tanks.

RAIZNEXT's approach

- Proposed and made tank modifications tailored to customer requirements.

- 1 CRT: Cone Roof Tank
- 2 FRT: Floating Roof Tank
- 3 CFRT: Closed Floating Roof Tank

Products and construction methods only we can provide

Internal floats

Installing an internal floating roof in a fixed roof tank reduces evaporation losses of stored products and improves storage efficiency. RAIZNEXT offers the HC Internal Float, which combines high strength and buoyancy through its honeycomb structure, and the AL Internal Float, available in aluminum alloy and stainless steel for installation in a wide range of tanks.



HC Internal Float

Tank renovation method #1: Jacking method

For replacement and foundation work of bottom plates and lowest-tier side plates, we use the jacking method and other techniques to support the tank without generating moments in the side plates. This allows for safe construction that prevents damage to the tank body—and at a lower cost than conventional methods. The jacking method can also be used when there isn't sufficient space around the tank.

Patent No.: 6468970

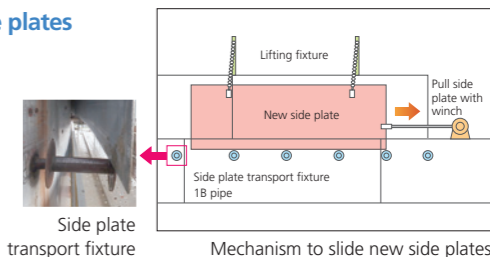


Replacing a tank side plate with the jacking method

Tank renovation method #2: Slide-type replacement method of side plates

This method is suitable for replacing the upper section of side plates. Shaped steel is attached to the inner surface of the side plate, onto which the roof trusses are welded and temporarily supported. The shaped steel is also used as a lifting fixture, where new side plates are slid over this fixture for easy installation. This method makes work efficient even in areas inaccessible to cranes, leading to cranes becoming smaller and used less often, and ultimately resulting in shorter lead times and lower costs.

Patent No.: 4549402



Side plate transport fixture

Mechanism to slide new side plates

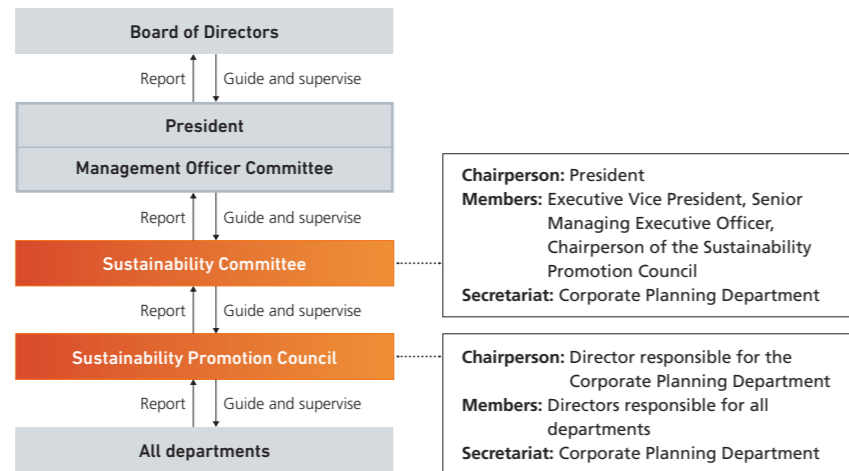
01 Sustainability

Basic policy on sustainability

Guided by our corporate philosophy to “Support Industrial Infrastructures, Create a Prosperous Future,” the RAIZNEXT Group is working to gain even greater trust from our stakeholders by practicing proper and transparent management while conducting business activities that are in harmony with society and the environment. At the same time, we are actively engaged in sustainability activities aimed at contributing to greater social sustainability and improving medium- to long-term corporate value.

System to promote sustainability

RAIZNEXT has a Sustainability Committee, chaired by the President, to discuss strategies for sustainability management so we can contribute to the sustainable development of society and enhance corporate value over the medium to long term. The Sustainability Promotion Council, a subordinate body of the Sustainability Committee, manages the progress of specific measures based on these strategies.



Material issues

Environment	Contribute to achieving a carbon neutral society	11 CLIMATE ACTION, 12 RESPONSIBLE CONSUMPTION AND PRODUCTION, 13 CLIMATE ACTION
	Provide environmentally-conscious plant services	11 CLIMATE ACTION, 12 RESPONSIBLE CONSUMPTION AND PRODUCTION
Society	Provide safe, high-quality services	9 INDUSTRY, INNOVATION AND INFRASTRUCTURE
	Develop along with partner companies	4 QUALITY EDUCATION, 10 DECENT WORK AND ECONOMIC GROWTH, 12 RESPONSIBLE CONSUMPTION AND PRODUCTION, 16 PEACE, JUSTICE AND STRONG INSTITUTIONS, 17 PARTNERSHIPS FOR THE GOALS
	Create rewarding and inviting work environments for all	3 GOOD HEALTH AND WELL-BEING, 5 GENDER EQUALITY, 8 DECENT WORK AND ECONOMIC GROWTH, 10 DECENT WORK AND ECONOMIC GROWTH, 16 PEACE, JUSTICE AND STRONG INSTITUTIONS
Governance	Enrich people's daily life and contribute to a safe and secure society	11 CLIMATE ACTION
	Strengthen corporate governance	16 PEACE, JUSTICE AND STRONG INSTITUTIONS

We identify and prioritize sustainability issues (material issues) from two perspectives: material issues for society (societal issues) and material issues for the Company (Company issues).

Environmental initiatives

Transitioning to low-carbon company vehicles

We are working to switch our company (gasoline) cars to low-carbon vehicles, such as by installing EV charging equipment in the parking lots of our offices.



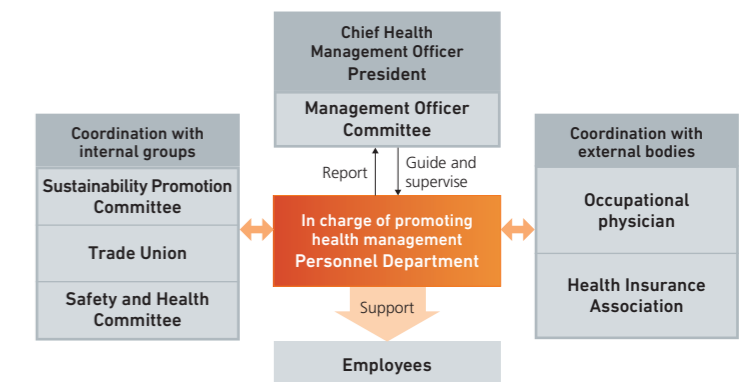
A company EV being charged

Creating a rewarding work environment

Established a system to promote health management

At RAIZNEXT, we are working to strengthen health management as part of our efforts to create rewarding and inviting work environments for all. We established a system to promote health management and issued a health management declaration so that employees perform at their best and we ensure the long-term retention of talent who can pass on their experience. Our goal is for every employee to be physically and mentally well, happy, and able to work and live vibrantly.

System to promote health management



Social contributions

Official Partner of the Yokohama Marathon

The Yokohama Marathon is a community-based marathon held in Yokohama City, Kanagawa Prefecture, attracting 30,000 runners, 500,000 spectators, and over 5,000 volunteers. As a company headquartered in Yokohama City, we support the event's mission of promoting sports and health as an Official Partner. Furthermore, employees volunteer annually at the water station in front of our Isogo Head Office.



Sponsoring the Yokohama Marathon

02 Human resources development

At RAIZNEXT, our greatest asset is our people. With “lifelong development” as our theme, we are building an integrated education program that begins when people join the company. We offer educational opportunities at every level, from new employees to mid-career and veteran employees, to develop professionals who are well versed in plant maintenance and plant engineering.

Exhaustive basic education for training supervisors

We conduct exhaustive basic education that begins when people join the company. After acquiring necessary qualifications, new employees undergo design training, training at the training facility in our Isogo head office, and other forms of training to gain first-hand experience with the varied forms of work carried out in plant engineering and to lay a groundwork for becoming supervisors and engineers in project management positions in our company.



Training in a mock-up plant

Honing authentic skills in environments similar to working sites

In specialized education, we offer education and training tailored to technical categories. As an example of our curricula, employees undergoing heat exchanger maintenance training at our mock-up facilities experience work that is identical to the real thing, learning the names of components and the steps in engineering work procedures and gaining other knowledge and skills that will form a foundation for supervision.



Plant design training

Developing engineers proficient in both engineering and maintenance

New technical employees acquire a thorough understanding of job duties and foundational knowledge through a two-phase basic training program. Starting from their second year, employees acquire specialized expertise in their assigned duties through elective specialized training based on their individual CDP (Career Development Program). Those who wish to further deepen their expertise can take the ICT Library Training course. We also offer training to our partner companies as well as dispatched employees hired to work at our offices, fully committed to talent development across our organization.



Training for technical employees

03 Approach to safety and quality

Ensuring the safety and health of our field staff is essential to providing the highest-quality products and services that satisfy our customers. We have established internal standards and technical standards that we work to implement and enforce through initiatives with partner companies.

Safety and quality patrols from a third-party perspective

We conduct safety and quality patrols that include people from the head office, providing instruction to staff in the field. Checking sites from a third party perspective allows us to discover overlooked dangers and areas that could impair quality, thereby preventing accidents and trouble.



Safety and quality patrol

Enforcement of safety education

Prior to on-site construction, we conduct safety education together with partner companies to enforce safety awareness across the entire team. We also enhance the risk sensitivity of every individual by concretely indicating dangers that exist at work sites, making use of hazard experience facilities and virtual reality (VR).



Hazard experience education



Experiencing hazardous events through VR

Obtaining permits and ensuring quality

Starting with ISO 9001 certification, we conform to the requirements of laws and standards, and carry out construction in compliance with relevant laws and regulations. We also strive to provide better products and services by conducting periodic internal and external audits, improving our business operations, and reviewing our systems.



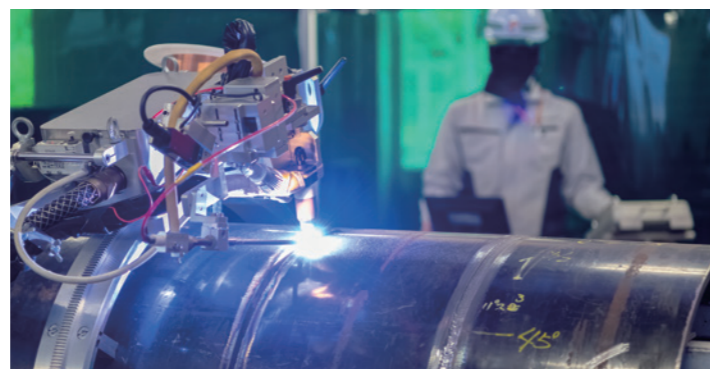
Internal audit

04 Strengthening technological development capabilities

We are tackling technological development in a number of fields to provide optimal services and solutions that meet the issues and needs of customers and to achieve working style reforms for the upkeep and development of maintenance operations.

Technological development system

A specialized department engaged in developing maintenance technology works constantly to develop and introduce machines, jigs, and tools and to develop advanced technologies. Moreover, since everyday refinements and suggestions for improvement at work sites are the starting points of technological development, we have established a "test and research system" that allows all employees, not the development department alone, to participate in development.



Testing and research of automatic pipe welding machines

Mechanization of field work

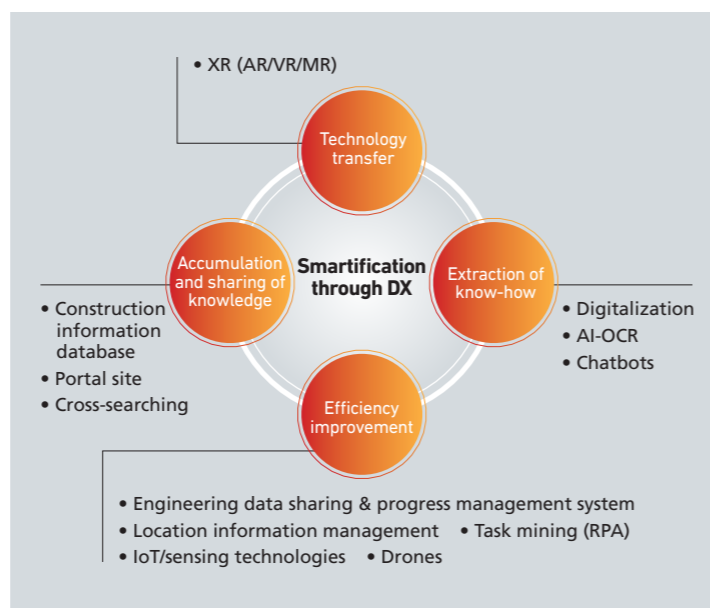
We are advancing the mechanization of field work that requires considerable manpower and the skills based on experience of experts. Through mechanization, we can reduce field workloads and ensure safety and construction quality.



Exterior cleaning of heat exchanger tube bundles

Smarter plant services through DX

To enhance the efficiency of maintenance work, we have developed systems including ICT-based process progress management and engineering data mapping. We are moving ahead with research and adoption of AI, the IoT, and other advanced technologies to realize even smarter technologies.

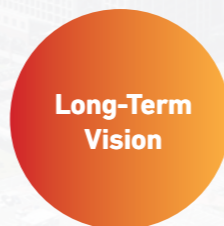


Support Industrial Infrastructures, Create a Prosperous Future.

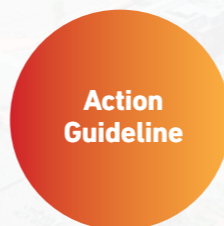


- We support the secure and stable operation of plants, contributing to the future of people, life and the environment.
- We realize the optimization of plants and facilities through our maintenance and engineering.
- We respect diversity and independence and seek happiness for our employees and partner companies.

RAIZNEXT Group V-2032 Toward advanced plant services in changing times



- We will fulfill our social responsibilities as a company involved in the energy sector and contribute to the realization of a carbon-neutral society.
- We will constantly introduce and refine the latest technology to continue providing maximum customer value in maintenance and engineering together with our partners.
- We will aim to be a company that enables employees to work with satisfaction, taking pride in playing a central role in maintaining the stable operation of plants that support people's lives.



Aggressively with Brave Spirits

We aggressively take on challenges with unconventional ideas.

Sincerely and Devotedly

We sincerely work on every single business, meeting our customers' needs.

Coexistence and Coprosperity

We respect all of the people concerned, and evolve together with stakeholders.