TAKADA CORPORATION

TAKADA

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TAKADA

CORPORATE GUIDE

TAKADA CORPORATION

TAKADA CORPORATION

Toward the most trustful and powerful business partner of yours and a new business model creation-oriented enterprise.

TAKADA has been and will be on its course of evolutionary efforts.
Since its foundation in 1940, TAKADA has grown as a general plant construction entity engaging in the design, manufacture, construction and maintenance of facilities and equipment in the fundamental materials production industry as well as in other various industrial domains, contributing to industrial development both at home and abroad.
TAKADA's current efforts are shifting to making it a "New business model creation-oriented enterprise" that as a powerful and trustful business partner would be able to constantly produce new business models based on newly developed technology and to offer innovative problem-solving proposals that would benefit its partner accounts as well as itself.
Toward a brilliant future;TAKADA under its company creed of " Pure heart, passion and hope," and together with united efforts of employees, is pressing ahead with its efforts of fusing those technologies passed down with those that would be newly born.

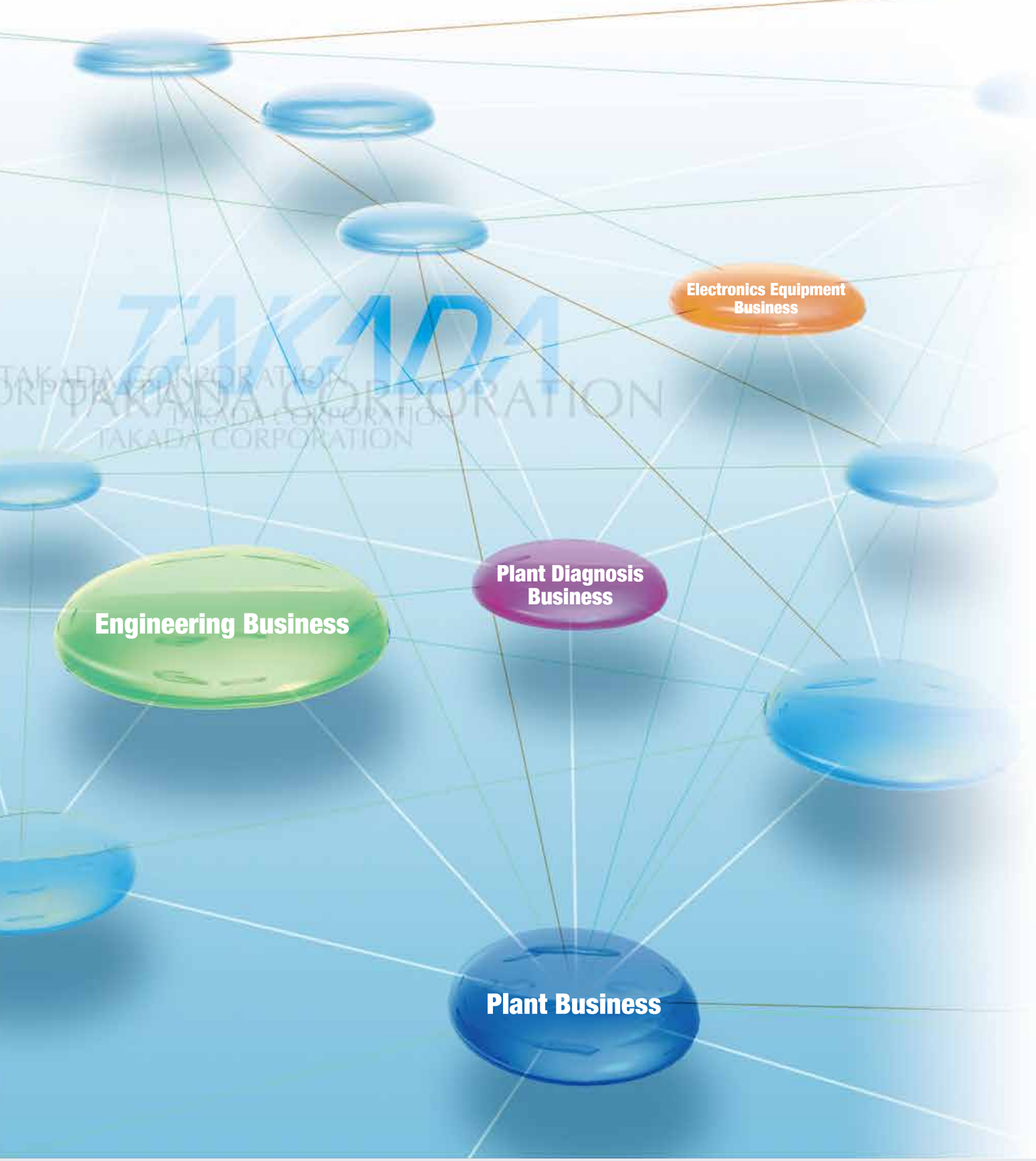
With promine nt technology and skill power.

President Juichiro Takada

Juichiro Takada

TAKADA CORPORATION
President Message

Business Field



The 4 Business

Operations making up TAKADA

After establishment, TAKADA developed various business operations with the Plant Business as the foundation.
TAKADA is working to improve added value and productivity by further expanding into new business areas derived from these business operations.
The 4 business operations, “Plant Business,” “Engineering Business,” “Plant Diagnosis Business,” and “Electronics Equipment Business,” making up TAKADA were established to be linked to each other forming the foundation that supports TAKADA.
By making full use of advanced technological capabilities and accumulated technology, TAKADA is becoming well known throughout the world for each of these businesses.

TAKADA

Plant Business

From technology to business operations. TAKADA supporting businesses in fields of every description.

TAKADA since its foundation has been harboring an ever-lasting corporate motto “Benefit customers by responding their needs with technologies and skills.” This traditional business spirit has been a backbone through all of TAKADA’s construction projects of industrial facilities, including design, procurement, manufacture, construction and maintenance. Thorough Implementation of safety control and quality control in all projects.
TAKADA boasts its track records that have been highly reputed in industrial worlds at home and abroad. TAKADA’s challenges “Remain a company capable of offering quickly products of better quality and competitive prices to customers” and “Become a powerful and dependant business partner” will continue as its basic policies.

Realization of sophisticated and diversified needs.

The “TAKADA TOTAL SYSTEM” is a system of its own that merges advanced quality control and safety control technologies. This system enables thorough implementation of quality and safety control measures at every step of a project. With a concept of project management flexibly adjustable to suit the nature of a project, combined, the system has entertained its elevated reliability.

TAKADA TOTAL SYSTEM

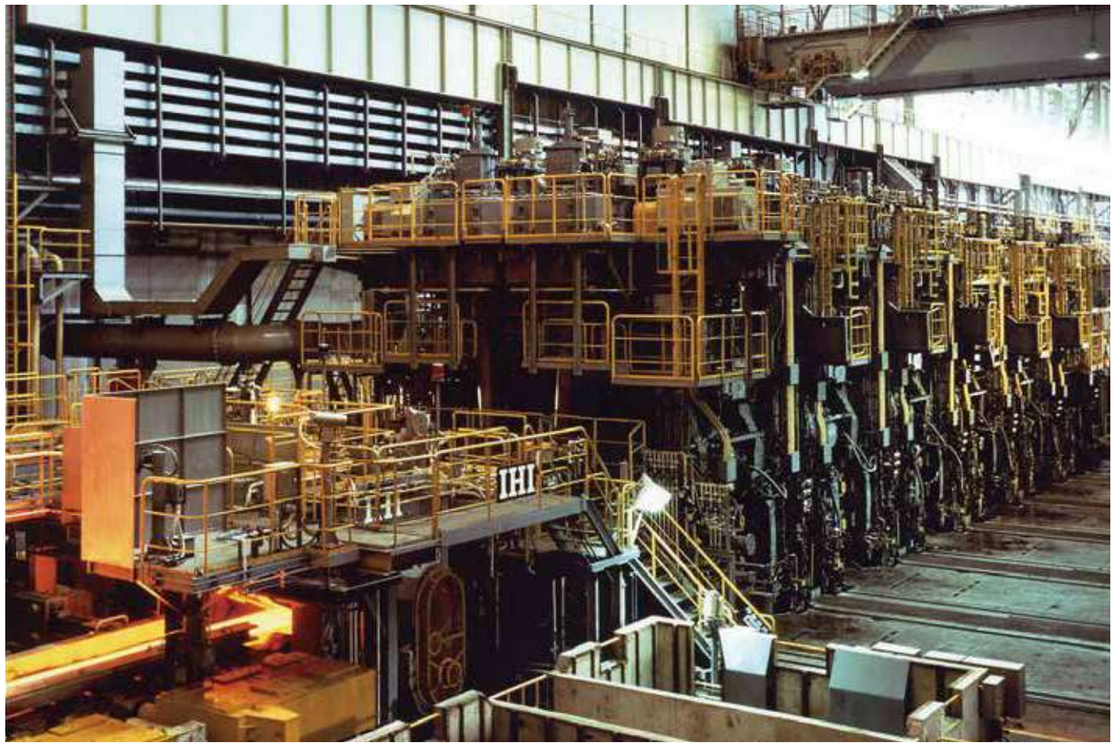
Steel Manufacturing Plant

Positive and quick response to customers' diverse needs from construction through maintenance of production lines.

Construction and maintenance of steel manufacturing plant, where every day sees emerging new technologies and materials is one of the main business lines of TAKADA.
TAKADA manages comprehensive aspects of a plant project including design and installation of necessary equipment, engineering and installation of piping work and follow-up maintenance service thereof.
The abundance of technical knowhow and engineering skills it has amassed so far has enabled TAKADA to offer promptly effective and consistent support services.
TAKADA has successfully systematized maintenance procedures for plants that demand stabilized accuracy for a long period of time.
TAKADA's readiness as such to responding customers' diversified needs is highly appreciated.

TAKADA offers responsible maintenance service backed with the technology it has nurtured during its long history of business.

Photographs presented by : NIPPON STEEL CORPORATION



Unique"My machine"campaign of TAKADA making full use of sophisticated maintenance technology and skills it has amassed since its foundation.

TAKADA has been pushing forward "My machine" campaign, in which customers' equipment are maintained and protected as if they were of my own, assigned to groups of highly trained engineers, who take initiative in consecutive maintenance, management and improvement of the equipment.

Chemical Plant

Sophisticated fusion of manufacture/construction technology with design capability enables construction of highly rational and reliable plants.

Construction of chemical plants involves rational and high-level capability of designing the fundamental process, and designing, manufacturing and constructing equipment, machines and piping work.
Furthermore, indispensable is a maintenance technology to have the plant to keep operating safely after being put in service.
Comprehension of chemical process as well as armaments of knowledge, experience and technology lead customers to their deep confidence in TAKADA's capability.
Unrivaled plant engineering from A to Z provides safety and high quality.

Embodiment of customers' needs through rational completion of plants as planned.

Photographs presented by : Mitsubishi Chemical Corporation

Amassed track records and spade works enhancing reliability.

Chemical plant engineering inevitably involves diverse range of technology and knowhow. TAKADA invests all-out engineering capability and knowhow it has amassed in realizing customers' needs. TAKADA offers a plant engineering service of its own that is a fusion of its outstanding design capability and construction technology.

TAKADA aims at becoming a partner of yours through establishing an A-to-Z construction service system.

Overseas Constructions

Takada has engaged in chemical plant construction works and maintenance services in Southeastern Asian countries for more than 40 years. We have contributed to the development of these countries through these works.
We engaged in the piping work and other works of one of the largest special resin plants in the world in the chemical plant construction project on the Jurong Island, Singapore. We have developed a strong trust with Japanese companies and local companies alike for the technologies we have accumulated.

Oil / Natural Gas Plant

An army of knowhow amassed through a lot of experiences is reflected upon appropriate and special technologies, shortening of work periods and security measures in plants construction.

In the oil and natural gas fields, appropriate and special construction and management technologies contribute to the construction of highly efficient and reliable plants including those for petroleum refinery and liquefied natural gas processing.
Specific piping technologies for laying and welding in large-size piping work are highly evaluated by customers.

A bunch of knowhow is applied also in the construction of liquefied natural gas terminals.

Photographs presented by : KITAKYUSHU LIQUEFIED NATURAL GAS CO., INC.

Safe and high quality engineering services offered.

TAKADA has engaged in engineering of natural gas plants that demand diversified elemental technologies and knowhow, and also constructed petroleum storage stations annexed to petroleum refineries, which serves as proofs of high reliability.

TAKADA is committed to safety in workplace and shortening of work periods as well as the provision of quality technologies and techniques.

High-level welding quality.

TAKADA is qualified for welding requirements specified in currently applicable laws and regulations. Deployment of qualified welders ensures stable welding quality.

Overseas Constructions

Takada has engaged in construction works and maintenance services for oil and natural gas plants of Japanese companies in Southeast Asian countries for many years.
Among them, our welding technologies and installation technologies have received great reviews from clients in the ethylene decomposition furnace renewal work. We have many experiences in this field.

Electronics-related Business

TAKADA is ready for offering unique “Process equipment and technologies” and also “Utilities facilities” reflecting its sophisticated clean technology and equipment techniques.

Electronics-related industries are witnessing high-paced technological innovation, and increasingly demanding update construction and maintenance technologies to suit manufacturing processes in progress.
The “Knowhow on equipment techniques” and “Total clean technology” as results of long-year efforts, backed with the substantial armament of equipment, has enabled an integrated system covering design, field kickoff through after-maintenance service to timely satisfy customers’ every need.

Clean room at head factory

Automatic welding machine

Particles counter

Equipment supporting clean technology

- Number of clean rooms set up across Japan: Five locations
- Clean room at Sri Takada Industries (Malaysia) Sdn. Bhd.
- Clean room at Singapore Takada Industries Pte., Ltd.

Original knowhow of equipment technique realizing users’ needs.

Knowhow on advance piping technique.

Process equipment

TAKADA offers custom-made process equipment including “Single wafer wet processing unit”. Following the successful demonstration test of a test model, the development of a commercial model of high value is underway while consulting the user.

Automatic wafer cleaning unit

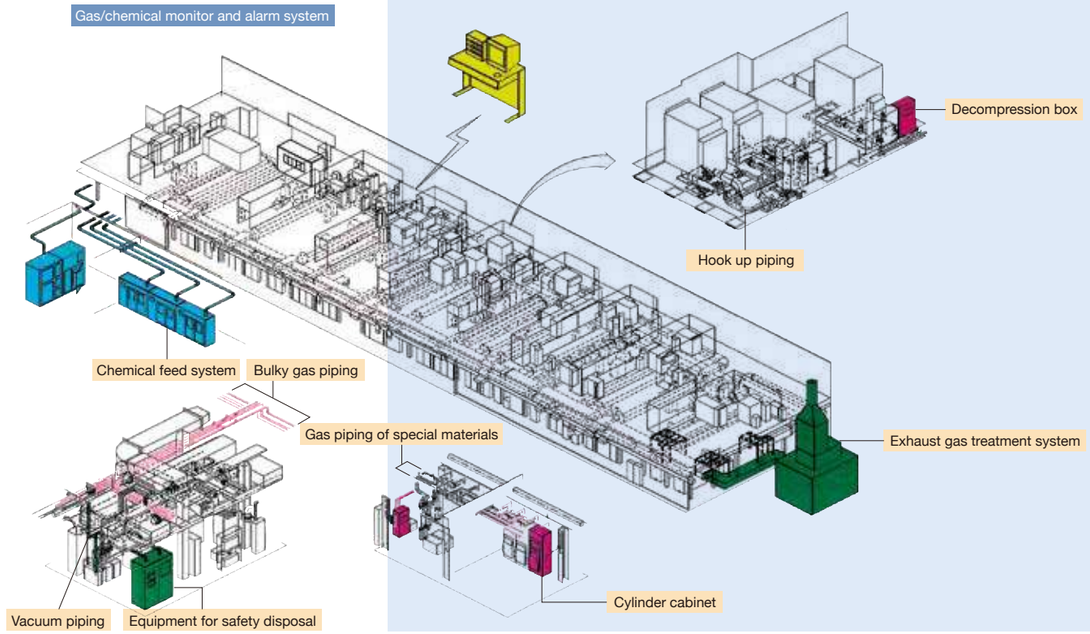
IPA vapor dryer

Utilities equipment

TAKADA offers quality piping systems for a competitive delivery term based on its construction management technology evidenced by a wealth of successful track records.

TAKADA has established an integrated system for designing and constructing safe and quality gas/chemical feed systems.

CMP slurry mixing and supply system



Energy Plant

TAKADA focuses efforts in pursuit of safety in nuclear energy plants operations through offering best-quality products, sophisticated technical and management capabilities.

Nuclear energy as foothold for 21-century energy demand.
The management system today of nuclear energy plant equipment is built up to respond to high-level safety requirements involving two-to-threefold protection measures.
In order to keep supplying this clean energy indispensable for the future, the nuclear facility needs be insured of their safe operations.
TAKADA, in its efforts to ensure the supply of high quality products, has established a quality assurance system that covers the entire production processes from design to delivery, thereby contributing to the enhanced safety of nuclear facilities.
In addition, even with new energies, such as solar power generation, wind power generation and hydrogen power generation clean energies, we utilize our skills to support consistent enforcement.

Unique management system devoted to nuclear energy facility.

Photographs presented by : Kyushu Electric Power Co., Inc.

Thorough responsibility for entire project from design through site construction.

The advanced engineering capability and construction technology TAKADA has amassed for many years has been reflected on various equipment in nuclear energy plants it has so far constructed. Among others, the stainless steel pool as storage of used nuclear fuel is one of TAKADA's major lines, whose entire construction process TAKADA undertakes from design to site construction.

TAKADA has a factory devoted to nuclear power equipment, where high-level quality assurance and management system is implemented, is highly evaluated by the customers.

Stainless lining at nuclear energy plant

Automatic TIG welding machine

Maintenance work at nuclear power plant

List of Delivery

Chubu Electric Power Co., Inc.
Electric Power Development Co., Ltd.
Hokkaido Electric Power Co., Inc.
Hokuriku Electric Power Company
Japan Atomic Energy Research Institute
Japan Nuclear Cycle Development Institute
Japan Nuclear Fuel Limited
Japan Radioisotope Association
Kyushu Electric Power Co., Inc.
Nuclear Fuel Industries, Ltd.
Shikoku Electric Power Co., Inc.
The Chugoku Electric Power Co., Inc.
The Kansai Electric Power Co., Inc.
The Japan Atomic Power Company
The Japan Nuclear Ship Development Agency
The Tokyo Electric Power Co., Inc.
Tohoku Electric Power Co., Inc.

Environmental Plant

TAKADA is ready to offer technologies on its own to the construction of environmental facilities.

Waste treatment facility and sewage treatment facility are social infrastructures indispensable in the contemporary world where people clamor for environmental conservation. As roles of those facilities grow increasingly important, requirements for strict quality control as well as efficient performance become imperative.
TAKADA has so far developed advanced engineering technologies while constructing a lot of and a variety of industrial plants, and is positively addressing environmental projects applying those technologies.

Sewage treatment facility

PCB waste treatment facility

Prior process equipment for recycling waste plastics

Photographs presented by : NIPPON STEEL CORPORATION, Japan Environmental Storage & Safety Corporation

TAKADA BUSINESS FIELD

Plant Diagnosis Business

Engineering Business

Electronics Equipment Business

Engineering Business

High design power and construction management achieve the rationality and a highly reliable plant.

In order to construct a rational plant that best matches the customer's design conditions, we provide plant engineering that aims to minimize the total cost by maximizing our own expertise and accumulated technical experience. We have received high praise for completing plants as construction scheduled and safely by fusing and making full use of design capability and construction technology.

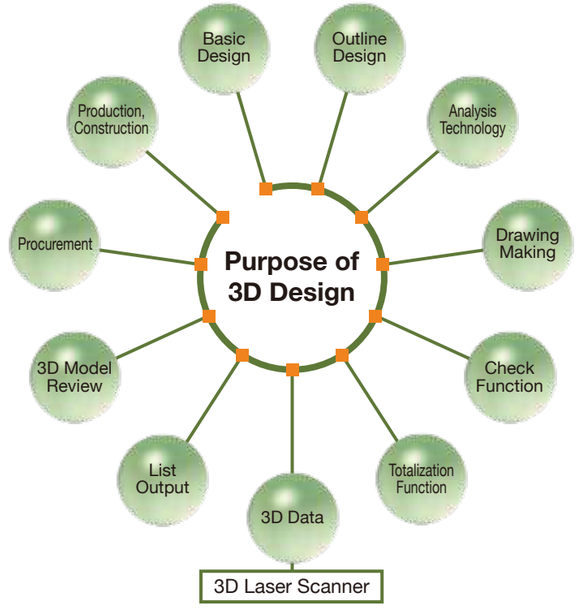
Projects

Project Management

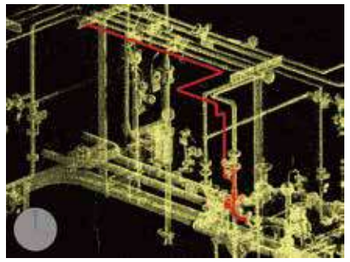
Project Scheduling and Progress Management, Cost Management, Quality Control, Safety Management, Equipment and Materials Control, Document Control

Customer	Project Execution	TAKADA
Notification of Basic Conditions	General Planning, Adjustments	Cooperation for Basic Research
Determination of Process Design Conditions	Process Design	Cooperation of Process Design Document making
Determination of Basic Design Conditions	Basic Design	Cooperation of Basic Design Document making
Determination of Detailed Design Conditions	Detailed Design	Creation of Detailed Design Document Creation of Procurement Plan and Specifications
Acceptance of Construction	Procurement, Construction	Procurement of Equipment and Materials Civil Engineering and Construction Equipment Production Equipment Installation Piping Works Electrical and Instrumentation Insulation Works
Commissioning, adjustments	Commissioning	Commissioning, Adjustments Completion, Turn Over
Maintenance	Maintenance	Maintenance Contract Execution of Maintenance

Design



3D CAD is employed to identify and clear problems at the initial design stage and to streamline planning work, whereby making it possible to supply consistent and quality products for a short period of time.



3D Laser Scanner

Electrical and Instrumentation

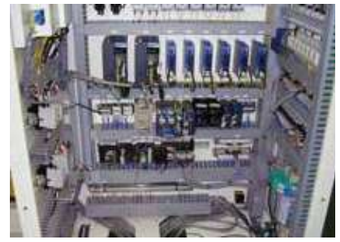
A plant or facility is a collection of mechanical parts that need to be very accurate, control parts that need to perform strict control, and electrical parts. In addition, the foundation for these is "electrical and instrumentation" technology. By making full use of our accumulated know-how, we provide immediate, high level support for various project sizes and provide the data required for the project to progress.

Construction

Maintenance

Air Conditioning Instrumentation Construction

Control Construction



Plant Diagnosis Business

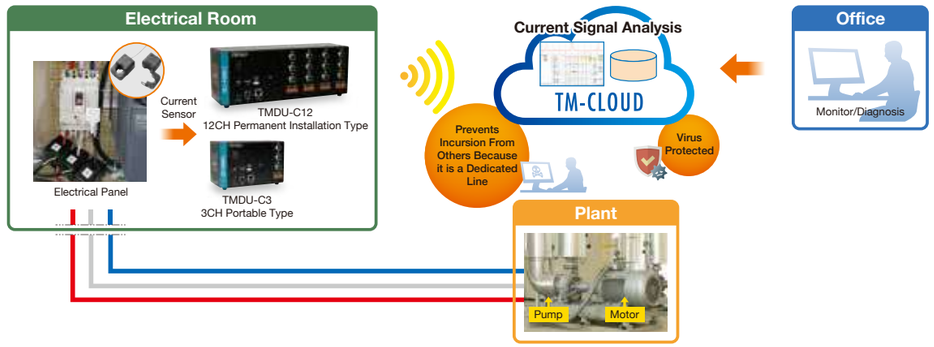
Contributions to “Maintenance Optimization” with recent plant diagnosis technique.

We have performed research and development of vibration diagnosis technique for rotary machines and corrosion damage analysis technique for static machines and pipes over many years and have pursued “maintenance optimization” for increasing the service life of plant facilities.

Current Information Diagnosis System (T-MCMA* System)

Implements multiplex analyses on motor-current signals to diagnose motor and rotating machine statuses. Because the current signals are measured on an electrical panel, it is possible safely, accurately, and simply to implement status diagnoses of rotating machines vibration measurement of which is difficult. Also, the cloud (TM-CLOUD) enables high-speed and safe status monitoring of rotating machines at remote locations.

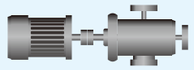
*T-MCMA:Takada Motor Current Multiplex Analysis



T-MCMA Features

- Measurement and diagnostics are made possible simply by attaching a clamp to the electrical panel regardless of the rotating machine installation site
- Diagnoses the motor body and the load-side machine
- Wide range of applications (general rotating machinery/low speed rotating machinery/high-pressure motors) and the like
- Inverter diagnostics, winding insulation deterioration diagnostics, power quality monitoring, transient current diagnostics, process diagnostics
- Multi-channel, online monitoring and diagnostics using a wireless network and cloud computing
- Monitoring and diagnostics offline/online/remotely with little initial investment

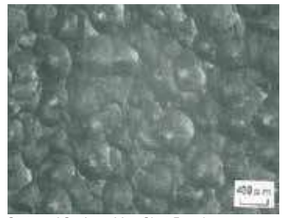
Detects Errors At Various Locations

Locations	Detectable Items
Motor 	・Rotor errors ・Stator errors ・Rotating shaft eccentricity ・Inverter-control motor errors ・Coil insulation errors
Rotating Machine Body 	・Coupling errors ・Rotating shaft errors ・Blade errors ・Inverter-control rotating machine errors ・Bearing errors
Power Supply 	・Power noise (quality) ・Inverter errors ・Power consumption

Technology for prevention of stress-corrosion cracks

Stress corrosion cracks may occur in the inner walls of carbon steel, in liquid ammonia tanks. These cracks can be prevented by implementing the shot peening method.

External View of Tank Inner Surface


Status of Surface After Shot Peening

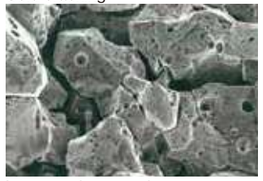
Investigation Technology of Cause of Fractured Materials

We contribute to improve the safety of plant equipment by investigating the causes of material damage generated at the equipment proposing measures and recurrent prevention measure. Therefore we can perform repair work appropriately.


Forging defect


Cold cracking


Pitting corrosion


Intergranular corrosion

Maintenance Technology of Cracking Furnace

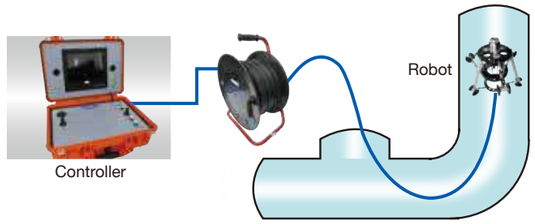
For over a half century, we have engaged in maintenance work of cracking furnaces in ethylene manufacturing equipment. Therefore we respond to periodic maintenance work and to provide trouble-shooting of problems during operation.

Technology to Inspect the Inner Surface of Large Diameter Pipes

The inner surface of difficult-to-inspect large diameter pipes are inspected with specialized robots. It is possible to visually inspect vertical runs, elbows, and horizontal runs as well as the inner surfaces of large diameter pipes and to expand the range of maintenance support.


A Piping Inspection Robot for Large Diameter Pipes

Inspection Use Example



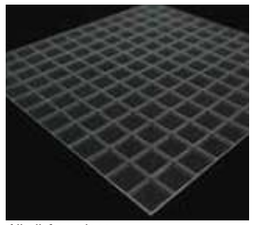
Electronics Equipment Business

Equipment evolution with the development of electronics technology. Providing new value as solution provider.

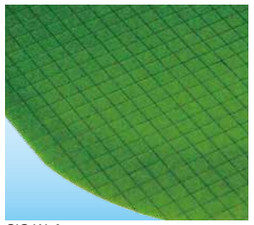
Advanced equipment technology for customer needs based on long experience in electronics field.

Ultrasonic Cutting System

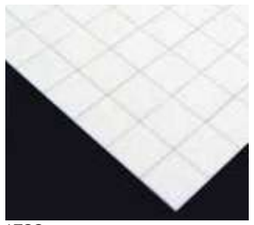
High-quality and high-efficiency cutting from difficult-to-cut materials such as SiC or ceramic to composite materials such as glass and resins.



Alkali-free glass



SiC Wafer

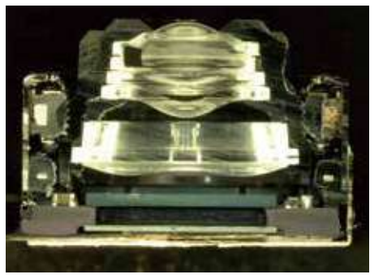


LTCC

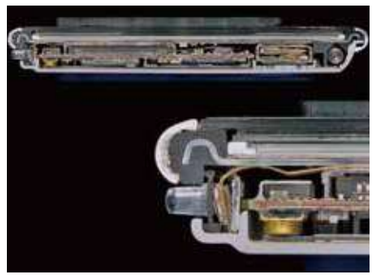
Ultrasonic Cutting System
(CSX501)

Polish Cut System

The machine specialized to prepare samples for cross-section observation. Saving labor and time in cross-section observation work by using the ultrasonic polishing effect.



Cross-section of smartphone camera module



Cross section of smartphone

Polish Cut System
(CSX-100Lab)

Single Wafer Wet Processing System

The machine specialized for the wet treatment processing such as small-diameter, compound semiconductors, new materials and new devices, etc.

Single Water Wet Processing System(TWP/TWPm)

Features

- Unique jet-liftoff mechanism with high resist stripping performance
- Improved flexibility for supporting production of many models in small quantities and fluctuations in mass production volume, and reduced running costs
- Improved quality and yields through single-wafers processing

High pressure jet

Ultrasonic shower

Dicing Frame Cleaner

The machine for cleaning of tape residue and fingerprints on dicing frames. It's non-contact cleaning mechanism using the special jet nozzle with high performance.

Dicing Frame Cleaner(TFC)

Other Cleaning Systems

Batch cleaning equipment (TWS)

We manufacture regardless of acid-based (RCA cleaning) and organic-based (organic peeling) chemicals. You can select IPA drying or SPIN drying for your preferred drying method.

IPA vapor dryer (IPD)

Washing and drying apparatus in an IPA (isopropyl alcohol) steam atmosphere.

*The IPA washing feature can be added as an option.

Minimizes amount of IPA carried out by separation into a vapor zone and a dry zone (cooling recovery).

TAKADA CORPORATION

Technology & Skill Tradition

The keyword is “Men are at the core of TAKADA”.

“Men” are the assets of TAKADA.

How far technology may advance,
“Men” remain the foundation of businesses.
Men develop technologies and put them in use.
How to transfer the mastership of its expert technicians or engineers will prove to be a key to the successful survival of TAKADA.
“To live together”, ”To grow up together” and
“To prosper together” are three pillars in TAKADA’s human resources development program.

TAKADA Education Center

Tapping out potential talent and intelligence from individuals, employees are trained to become independent, aggressive and creative.

Training program for new employees

TAKADA’s training program focuses on training young technicians for as short a time as possible. New employees are first sent to their expected workplaces for experiential on-the-job training, and afterward are given the intensive four-month technical training course at the TAKADA Education Center designed to inculcate them with basic techniques all employees are supposed to possess. This training program is designed based on the traditional strategy unique to TAKADA to have candidate technicians full-fledged as useful technicians during the course.

Expert technicians give tutorial instruction to instill necessary skills into candidate technicians.

In-house Skill Competition

This company-wide competition is designed to encourage young employees’ motivation for polishing up their skills. The interdepartmental competition serves also as an opportunity for seniors to hand over their skills to juniors. A scene of young employees with their intense eyes while fighting for better workmanship is indeed emotive.

This completion is instrumental in the transfer of high-level skills.

Development of high-level skilled technicians

TAKADA has implemented an award system for the development of skilled technicians who would reassure customers of TAKADA’s engineering capability, under which technicians are encouraged to attempt recognition for “High-level skilled technician” or “Excellent technician”. TAKADA believes that the generation-to-generation transfer of proud skills and techniques as well as DNAs of ancestor experts is one of corporate missions.

It is possible for trainees to receive training in an environment designed close to actual workplace.

TAKADA CORPORATION

Corporate Profile & Network

Outline of the Company

Company name : Takada Corporation
Head office : 1-1 Tsukijimachi, Yahatanishi-ku, Kitakyushu-shi, Fukuoka 806-8567, Japan
Establishment : September 26, 1940
Incorporation : June 30, 1948
Representative : President Juichiro Takada
Capital : 3,642. 35 million jpy

Head Office

History

Sep. 1940 Takadagumi Ltd. founded.
Jun. 1948 Takada Corporation incorporated.
Nov. 1965 First equipment supplied for use at a nuclear energy plant.
Jan. 1966 First overseas project undertaken to construct an ammonium/urea plant in Vadodara, India.
Feb. 1971 Singapore Takada Industries Pte. Ltd. established.
Sep. 1982 Sri Takada Industries (Malaysia) Sdn. Bhd. established.
Nov. 1983 Listed on the Fukuoka Stock Exchange.
Jan. 1993 Listed on the Osaka Stock Exchange Section 2.
Jun. 1995 Takada Education Center constructed and put in operation.
Feb. 2005 First In-house Skill Competition held.
Apr. 2007 Launched on ultrasonic-related business.
Dec. 2012 Thai Takada Co.,Ltd. established.
Nov. 2015 Kikuchi Industry (Thailand) Co.,Ltd. acquired.
Feb. 2017 Transferred Thai Takada Co.,Ltd. to Takada Corporation Asia Ltd. as international headquarters.

Domestic Network

Overseas Network

TCA

Takada Corporation Asia Ltd.

STK

Singapore Takada Industries Pte., Ltd.

TKM

Sri Takada Industries (Malaysia) Sdn. Bhd.

KIT

Kikuchi Industry (Thailand) Co.,Ltd.