YODOGAWA PLANT

A new level of comfort results from the meeting of diverse ideas and advanced technology


Chemicals Division


Oil Hydraulics Division


Air Conditioning Division


Defense Systems Division


Technology and Innovation Center

Daikin uses advanced air conditioning technology to bring comfort to people's lives. Beginning with the Chemicals Division, the world's second largest manufacturer of fluorochemicals, the Yodogawa Plant is home to four manufacturing divisions, including air conditioning, oil hydraulics, and defense systems, along with the Technology and Innovation Center (TIC), our global research and development base. In this way, the Yodogawa Plant serves as the place where technologies from these different fields converge. When people from such diverse fields gather and exchange ideas, new possibilities are born. These possibilities include air conditioning systems that consider both people and the environment, new materials developed to improve our daily lives, and seeds of new technology that support industries. Various Daikin technologies can be found in all aspects of our lives, helping us to enjoy greater comfort and convenience.

History of Yodogawa Plant

February 1941
Yodogawa Plant is built in Mishima, Osaka Prefecture (for the manufacture of aircraft).

August 1942
Yodogawa Plant begins the production of chlorofluorocarbons.

October 1942
Kanzakigawa Plant is built (for the manufacture of aircraft parts).

June 1951
Kanzakigawa Plant is closed and absorbed into the Yodogawa Plant.

October 1962
General Technical Research Center is established at Yodogawa Plant. (Yamada Commemorative Hall)

May 1968
Heater manufacturing plant is completed at Yodogawa Plant (transfers from Sakai Plant).

August 1971
The first "Bon" dance festival is held at Yodogawa Plant.

January 1975
The children's "Kendo" gymnasium, "Yushinkan" is opened at Yodogawa Plant.

May 1993
Daikin Sunrise Settsu, Ltd. is founded to provide employment opportunities for the physically and mentally challenged.

May 1994
Yodogawa Plant's Air Conditioning Divisions receives ISO 9001 certification and Chemicals Division receives ISO 9002 certification.

October 1996
Oil Hydraulics Division receives ISO 9001 certification.

January 1997
Yodogawa Plant's Environmental Management System receives ISO 14001 certification.

March 1997
HFC-32 Plant begins operation.

September 1998
Daikin Sunrise Settsu, Ltd. receives the Minister of Labor's Excellence Award in a nationwide competition for improving the working environment for the physically and mentally challenged.

August 1999
Defense Systems Division receives ISO 9001 certification.

December 1999
HFC destruction facilities are completed (operation begins following year).

June 2000
Activities for reducing chemical waste at Yodogawa Plant receive the Osaka Environment Prize, Special Encouragement Prize for the year 2000.

January 2001
Machinery sector achieves 100% recycling of production waste.

April 2001
Defense Systems Division's new factory begins operation.

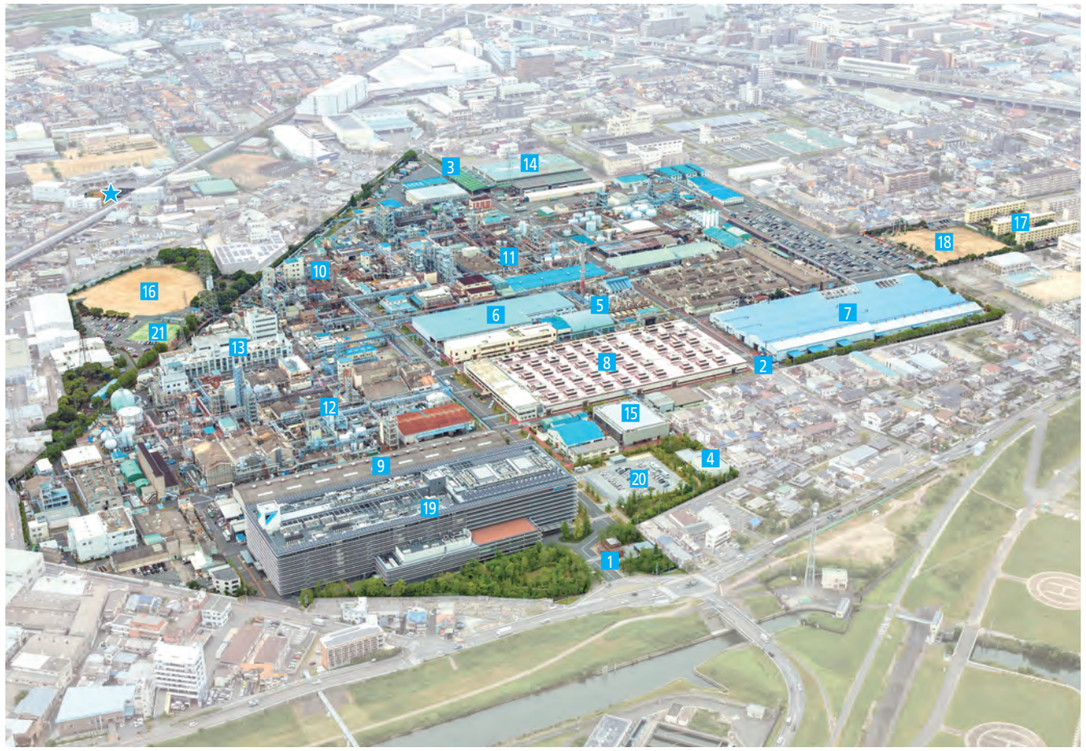
June 2009
New Daikin Sunrise Settsu Plant is completed.

November 2015
Technology and Innovation Center is completed.

December 2017
Daikin Information and Communications Technology College is completed.

June 2019
Oil Hydraulics Division's new factory begins operation.

Linking the Communities Inside and Outside



At the Yodogawa Plant, concerted efforts are made to promote exchanges between people of the four divisions and the Technology and Innovation Center. Various new ideas generated from these exchanges are reflected in our daily activities to create products with new value. Placing importance on interacting with those around us, we actively promote exchanges and communication with the local community so that both Daikin and society can grow and develop together. In this way, we are working to make the Yodogawa Plant a dynamic factory where everyone can take part and lead active lives.

Operations

Chemicals	Fluorocarbon gas, fluoropolymers, fluoroelastomers and other fluorochemical products, and dry air supply systems and other chemical processing equipment
Oil Hydraulics	Pumps and motors, control valves and other hydraulic components and systems, hydraulic products for industrial equipment (hydraulic units, hydraulic pumps, hydraulic valves), and hydraulic products for construction vehicles (hydraulic pumps, hydraulic motors, control valves, hydraulic transmissions)
Air Conditioning	Chilling units, single-screw chillers, centrifugal chillers, cab coolers, fan coil units, and air handling units
Defense Systems	Ammunition, guided missile warheads, aircraft components, and units for home oxygen therapy
Technology and Innovation Center	As the core facility for technology development of the global Daikin Group, the TIC brings together people from both inside and outside Daikin to carry out "Kyoso" collaboration that produces technological innovations, truly distinctive products, and new value.

Outline of the Yodogawa Plant

Establishment : 1941
Site area : 413,000m²

Factory layout

1 Front gate
2 East gate
3 North gate
4 Gymnasium (Yushinkan)
5 Energy Center
6 Factory 1
7 Factory 4
8 Factory 5
9 Factory 6
10 Plant No.1
11 Plant No.2
12 Plant No.3
13 Chemical Research Laboratory
14 Product Distribution Warehouse
15 Cafeteria
16 Multi-purpose sports ground
17 Dormitory
18 Sports ground
19 Technology and Innovation Center
20 Planned area for visitor car park
21 Tennis courts
★ Daikin Sunrise Settsu CO.,LTD.

Safety and Health Initiatives

Safety

Aiming to create an industrial accident-free factory under the motto "Safety: Our Top Priority"

With the aim of creating an environment where all employees can work worry-free, the Yodogawa Plant undertakes numerous safety initiatives in which we follow rules, consider each other's safety, and work together to make correct decisions and take appropriate action. For example, activities such as risk assessment and safety awareness training are conducted to identify risk factors and prevent industrial accidents. We have drawn up a customized risk procedures manual, and we conduct joint drills with the Settsu Fire Department so that we are prepared and able to minimize damage should an accident or natural disaster such as earthquake or tsunami occur.

Health

Creating a workplace conducive to the physical and mental health of employees

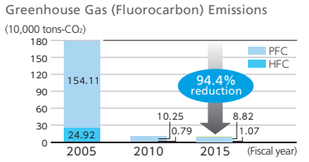
The Yodogawa Plant's occupational health measures cover the proper management of chemicals and other matters with the goal of preventing employee health problems. The measures take a three-pronged approach of managing the work environment, the work itself, and employees' health. Every effort is made to ensure all employees can do their jobs in good physical and mental health; for example, an industrial physician provides ongoing guidance on preventing lifestyle diseases, ongoing health education is provided, and more than 1,000 people take part in Daikin's annual sports day for employees and their families. Based on the results of employees' stress check-ups, we analyzed the workplace and took measures to eliminate the causes of work-related stress. The Yodogawa Plant holds periodic mental health seminars and provides counseling whenever it is needed. Employees also have a mental health handbook so they can monitor and care for their own mental well-being.

Environmental Initiatives

Environmental Preservation

Reducing the environmental impact of manufacturing processes

Reducing the environmental impact of manufacturing is an important theme at the plant. For example, we do everything possible to recover fluorocarbons, a type of greenhouse gas, which are released during manufacturing processes. We have also significantly reduced CO_2 emissions and recycled waste products to achieve a 100% recycling rate since 2005.




Destruction facilities for recovered fluorocarbons
After being completely broken down at a combustion destruction temperature of 1,250°C, the fluorocarbons are recycled.

Biodiversity Protection

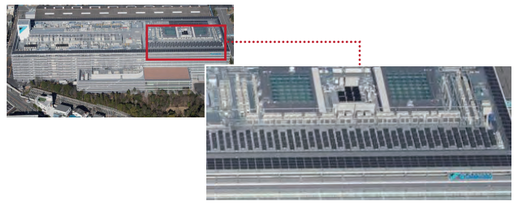
Protecting and rejuvenating the gifts of nature

In unison with the opening of the TIC in 2015, we created an approximately 4,000-m² forest at the Yodogawa Plant. With evergreens planted in a rectangular pattern, this green belt has a wide grassy area and a walking path along which visitors can enjoy flowers and trees that change with the four seasons. The forest has become the habitat for many species of birds and insects from the nearby Yodogawa River and Kanzakigawa River basins, and has helped raise awareness among employees of the importance of protecting biodiversity. We also invite local residents for nature walks in the forest so that this space can enhance exchanges between Daikin and the community.

Energy Conservation

Working to increase energy efficiency to prevent global warming

The Yodogawa Plant employs a cogeneration system that effectively reuses waste heat from power generation and has reduced CO_2 emissions by approximately 25% over fiscal 2005.
The TIC uses Daikin technologies such as air conditioning control, thermal insulation coating, and solar tracking photovoltaics to achieve energy consumption that is about 70% lower than conventional office buildings.



Aiming to Grow Together with the Community

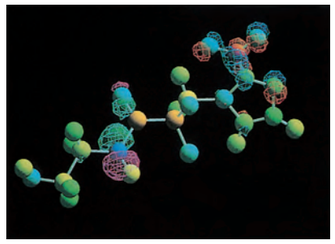
Valuing the relationships we have with our neighbors, we hold numerous activities at the Yodogawa Plant with the aim of contributing to the local community. Examples are the summer "Bon" dance festival, which attracts over 20,000 participants, and roadside cleanups held in unison with neighborhood associations. We also provide youngsters with sporting and educational opportunities by, for example, giving local elementary schools factory tours, holding work experience days, opening our sports field to the public, and teaching children kendo, an activity that has been going on for over 40 years. With the aim of living and growing with the community, we will continue to be a base where Daikin and the community get together.


The "Bon" dance festival attracts more than 20,000 people

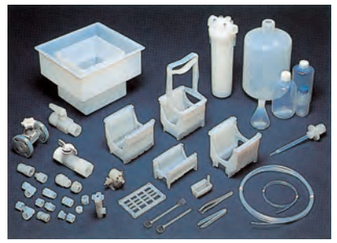
Pursuing the Possibilities of Fluorine to Develop New Business Fields

Fluorite, the basis for fluorochemicals

Since 1933, when Daikin became the first company in Japan to enter the field of fluorochemicals, we have brought a wide variety of fluorine compounds to the market. As the centre of our fluorochemical operations, the Yodogawa Plant is engaged in everything from basic and applied research to product development. To date we have developed over 1,800 different types of fluorine compounds, including fluoropolymers, fluoroelastomers, and fluorine-based gases. These products are now used in a broad range of applications, from those that have become commonplace in everyday life, to leading-edge technologies. At the plant, we are continuing the development of materials and applications ideally suited to the needs of the times, as well as probing the future of fluorochemicals.



A molecular model of fluorine intermediate



Various molded items made with NEOFLON PFA

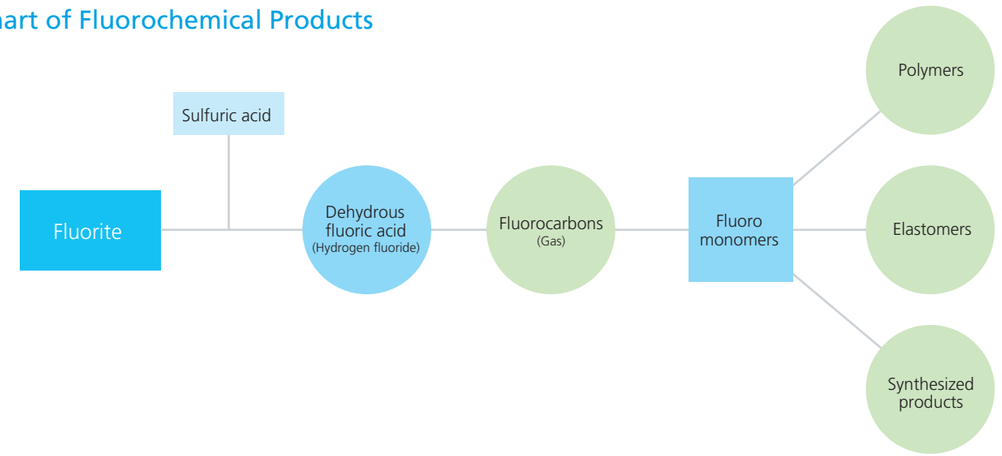
Utilizing the inherent properties of fluorine to provide desired functions

Although fluorine violently reacts with almost every type of element, once it becomes chemically stable in the form of a fluoropolymer or fluororubber, it displays many invaluable properties such as non-stickiness and heat resistance.
In order to discover optimum compounds and to explore potential applications in new fields, we continuously pursue research and development of the unlimited potential of fluorine. This is carried out through our comprehensive research system, which includes everything from molecular design to synthesis, analysis and fabrication.

Applying experience and advanced technology to develop new compounds like NEOFLON PFA

NEOFLON PFA is a high-purity fluoropolymer used in semiconductor manufacturing. We completed successful development of this compound in a remarkably short time by the full application of our process development technology. This in turn was made possible by making use of a wide range of know-how that Daikin has accumulated over the years, beginning with the technology for the production of highpurity fluoric acid, and encompassing polymer analysis and chemical analysis technologies. Based on this foundation, we at Daikin continue to pioneer new fields for development.

Chart of Fluorochemical Products



Innovative Fluorochemical Solutions for Industry Challenges

Fluorocarbon gas

Plant for the production of HFC

Daikin is the only company in the world dedicated to manufacturing both air conditioning systems and refrigerants. With this unique situation, we continue to develop new refrigerants, which can raise energy efficiency on equipment and lessen the environmental impact. Daikin is committed to explore and adopt cutting-edge technology, in order to continually offer value-added and solution-based products and services to customers.

HFC refrigerants

HFC-32

HFC refrigerants
NRC canisters

ISO tank

HFC-134a service canisters

Fluoropolymers

Applications for semiconductor manufacturing

Fluoropolymers are widely used in automotives, semiconductors, electronics and common household appliances because of their unique non-adhesive and low friction properties as well as their superior heat, chemical and weather resistance and electrical properties.

Wire insulation

Kitchenware (fluoropolymer coatings)

LAN cable

Car air conditioning compressor (fluoropolymer coatings)

Automotive piping materials

Architecture coating (ZEFFLE coating resins)

NEUROFINE high-performance fluoropolymer air filter

Fluoroelastomers

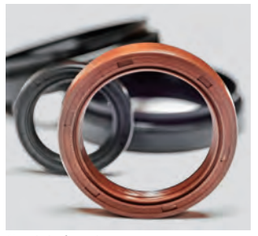
Automotive parts (engine compartment)

Fluoroelastomers are widely used in automotives, semiconductors and chemical plant applications because of their excellent heat resistance, chemical and fuel resistance.

Valve stem seal

O-ring

Fuel hose

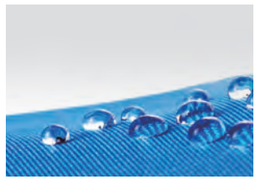


Crankshaft seal

Intake manifold gasket

Diaphragm

Specialty chemicals



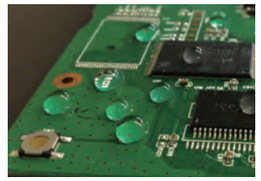
UNIDYNE
Water and oil repellents

DEMNUM
Fluorinated oil

DAIFREE
Mold release agents

OPTOOL
Anti-smudge coating

Etching agents for
semiconductor manufacturing



OPTOACE
Conformal coating

Equipment and systems

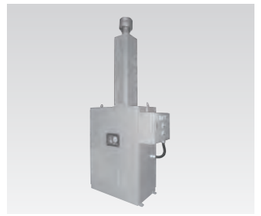
Dry air supplier

HONEY DRY

OPEN DRY CHAMBER

Air pollution control system

HONEY DACS



CATA DACS

Creating for Future of Power Control
By Pursuing Excellent Hydraulic Technology Today


Cylinder block of a piston pump

The fusion of hydraulics with a wide range of leading-edge technologies has led to a revolution in hydraulic technology, expanding the range of applications in which hydraulic devices are deployed. Long used in various industrial equipment, machine tools, and construction equipment, hydraulics are finding new opportunities in smaller vehicles such as tractors and snowplows, as well as in popular leisure equipment.
To serve this trend, the Oil Hydraulics Division is developing a wide range of hydraulic equipment responding to industry's needs for high precision, low noise, compact size, and energy saving, including innovative hydraulic pumps, control valves, and hydraulic units. Today, Daikin is marshaling the expertise it acquired from developing these elemental devices to offer a range of complete products. We are also integrating our hydraulic control, inverter, and motor technologies to develop hybrid hydraulic systems, a unique line of products that deliver incredible environmental performance.
From individual devices to complete system products, Daikin is constantly raising power control technology to new levels. We are committed to the continued development of hydraulic devices that contribute to a better world, both in the industrial field and in everyday life.


Hybrid hydraulic pump system "ECO-RICH SERIES"


Highly-functional Super Unit


Inverter Oilcon


"Picking" system capable of selecting a desired part from over 1,000 different types

Automatic machining line

Smooth Flow Production Line

With efficient and streamlined manufacturing as our watchword, we are automating our production lines, using smart technology in our shipping inspections and upgrading our information network system. The aim is to regulate the manufacturing process and flow of information throughout the entire factory so that we can establish a flexible production system which provides reliable products at the greatest possible speed.


Operation inspection

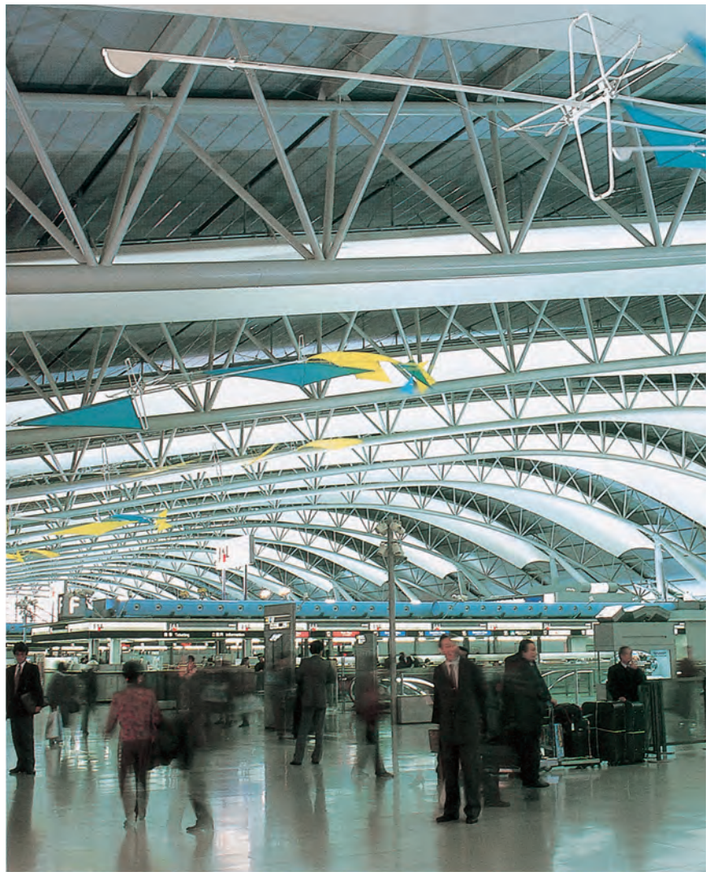
Daikin-Sauer-Danfoss Ltd.

Daikin's production arena expands throughout the world

We developed a joint venture company with Danfoss Power Solutions (formerly Sauer-Danfoss), one of the world's leading developers, manufacturers, and sellers of hydraulics for off-highway vehicle, to cast our sights on manufacturing, for customers throughout the world, not just in Japan.
Since starting development of two joint ventures for manufacturing and sales in 2001, we have substantially increased our know how in development, manufacturing and sales.
Based on this know how, we reorganized the organization into one unified joint venture and established "Daikin-Sauer-Danfoss Ltd." in January 2013.
Daikin provides advanced systems technology response and sales bases within Japan, while Danfoss Power Solutions provides outstanding product development capability and sales bases throughout the U.S. and Europe.
While further refining each of its individual strengths, the Yodogawa Plant will continue to play an important role as a manufacturing center to supply our global customers.

Main Products	Characteristics and Installation Examples
 LDU 32 medium-load integrated transmission	Integrated transmission for tractors optimized for installation in major tractor models. Can be fitted with a range of optional attachments. 
 DDC 20 medium-load closed-circuit pump	Pump for professional-use Zero Turn lawn mowers, which have amazingly small turning radius and ease of operation, and that leave no uncut grass. 
 Medium-load closed-circuit pump (S42T) and wheel drive (BMVT)	System for compact track loaders with outstanding performance on rough roads mainly used for land development (highly durable dual-pass hydrostatic system) 
 Medium-load closed-circuit pump (MP1P)	A modular-design pump with various options that can be combined in order to quickly meet a range of specification needs for small construction machinery in high demand in urban areas. 

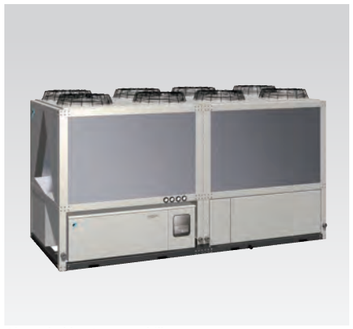
Combining Our Expertise in Air Conditioning, Refrigeration, and Environmental Systems to Create Solutions for People and the Environment



Kansai International Airport

In the field of applied air conditioning systems, Daikin is working to bring comfort to large spaces, such as factories and office buildings, while making efficient use of energy and preserving the global environment.
Daikin provides complete system solutions, from heat sources to air side equipment to production and environmental systems. Our air conditioning, cryogenic, and environmental systems exploit our strengths to the full to provide maximum comfort in an ecologically friendly manner, as part of our efforts to expand the business activities of Daikin Applied Solutions.

Hexagon module chiller



Air cooled heat-pump chiller

Developing and manufacturing equipment and systems for a wide range of needs

The Air Conditioning Divisions develop, design and manufacture various air conditioning equipment including chilling units and centrifugal chillers installed mainly in office buildings and factories; ice thermal storage units that help equalize power loads; heat source equipment used in chillers for low-temperature processes; and air handling units.
To increase production efficiency and quality at factories and create comfortable environments for all interior spaces, Daikin utilizes advanced cooling and refrigeration technology to produce a wide variety of products, such as module chillers that meet the need for even greater energy saving and other diverse and complex requirements.
We are constantly developing further improved products and systems based on our abundant experience and adding them to our product lineup to satisfy the full range of customer requirements and potential needs.

Example of Centrifugal chiller installation

Example of module chiller installation (JIZAI)

Magnetic bearing turbo refrigerator equipment

Water cooled chiller

Exhaustive quality control and 24-hour monitoring ensure customers' peace of mind

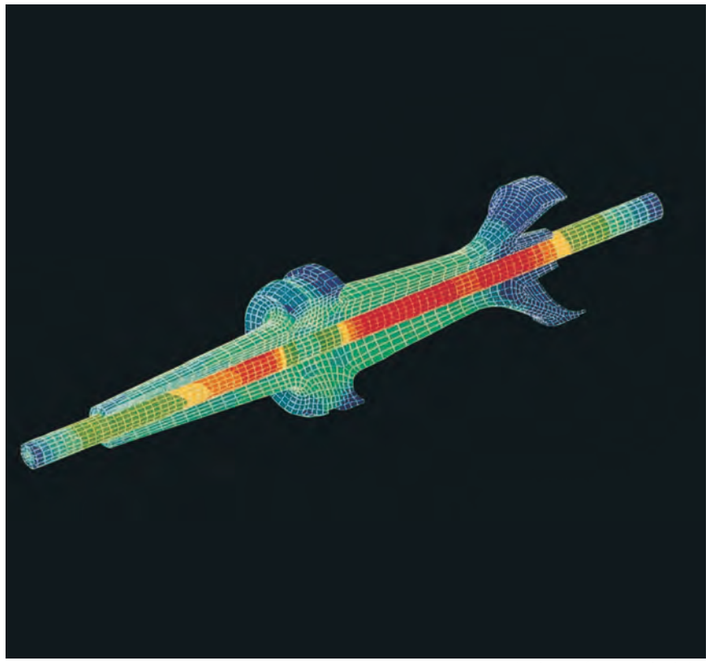
Even the smallest problems can seriously affect entire applied air conditioning systems. That is why Daikin is working to prevent problems before they occur, through both quality control and maintenance. The first priority is to ensure that our products are subjected to the strictest quality control at the production stage. After delivery, Daikin's 24-hour maintenance system constantly monitors operating status through our online "Air-Net Service" to prevent and warn of malfunctions in air conditioning equipment before they lead to serious breakdowns.

Compact air-handling unit (UAVZ Series)

High-airflow compact air-handling unit modular

Fan coil unit (round flow series)

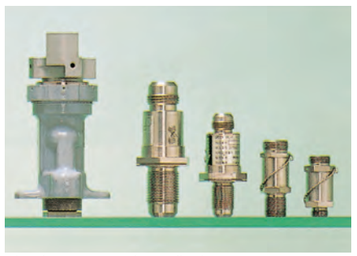
Pursuit of Higher Levels of Quality and Precision



Product performance simulation

Product refinement and reliability supported by analysis, evaluation, and precision machining technology

The Defense Systems Division conducts research and development on such defense-related products as ammunition, guided missile warheads, and aircraft components. Because this field is driven by constant demand for the most advanced technology, we utilize precision processing technology, as well as analytical and evaluation technologies enabled by computer simulations, to continue creating products that are ahead of their time. Aiming at continual expansion of this business segment, we also offer products for the consumer market, such as home oxygen therapy equipment, and have been commissioned to manufacture hot-water tanks for the Daikin EcoCute (natural refrigerant heat pump water heater).



Aircraft components for applications demanding trouble-free operation

Quality control testing of precision components in a clean room

Oxygen conserver

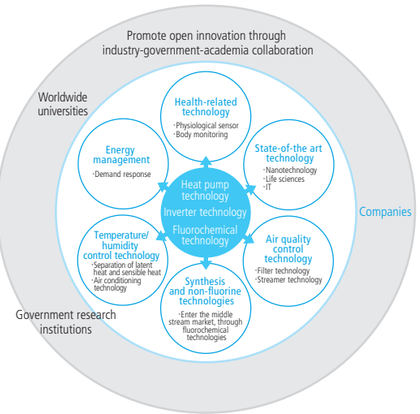
Oxygen concentrator unit

Driving Daikin's Growth by Fostering New Technologies through "Kyoso". New Technologies Creates New Business for Further Development

In November 2015, Daikin Industries opened its Technology and Innovation Center, an R&D base bringing together about 700 persons, including our outside partners and Daikin engineers involved in the R&D of air conditioning, chemicals, oil hydraulics, and defense systems.

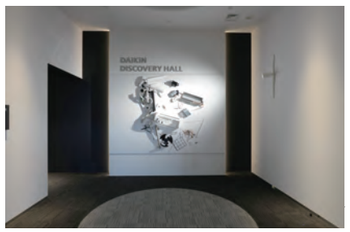
Daikin incorporates a variety of its state-of-the-art technologies to realize the world's highest level of environmental performance. The result has been incredible energy savings and comfortable room environments. Our Technology and Innovation Center (TIC) has also achieved "S" grade certification, the highest rank of Japan's CASBEE (Comprehensive Assessment System for Built Environment Efficiency), and a rating of Platinum, the highest rank of LEED for New Construction (LEED-NC) (LEED, or Leadership in Energy & Environmental Design, is a certification system established and managed by the U.S. Green Building Council). The TIC boasts the world's most advanced research and development facilities: air conditioner testing rooms where we can recreate the temperature and humidity of any region in the world; the world's first* electromagnetic semi-anechoic chamber that individually measures the electromagnetic noise of indoor and outdoor units while they operate; and a clean room for testing fluorochemicals.
*Daikin survey

To realize the world's highest level of technological prowess and products, the Technology and Innovation Center strives to further advance Daikin's core technologies of heat pump, inverter, and fluorochemicals and to collaborate with universities, research institutions, cross-industry partners, start-ups, and suppliers in the creation of new technologies.
We are striving for a system of R&D innovation more open than anything in our past by having the Technology and Innovation Center incorporate the technologies from our worldwide bases in North America, Europe, and China.



Future Lab, the center's starting point, a space where outside experts from a range of fields discuss future technologies

Chi No Mori, a space where technical exhibits and other events foster communication within Daikin and between Daikin and external parties



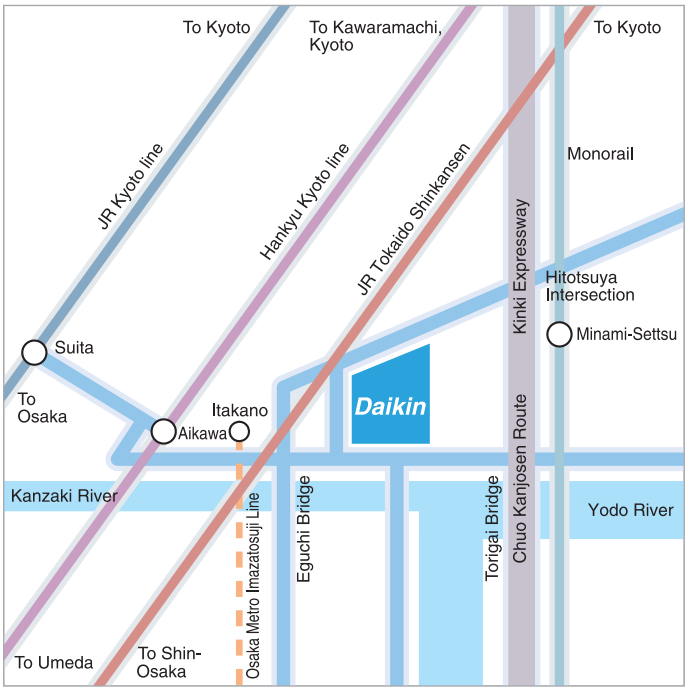
Daikin Discovery Hall, a space where visitors can learn Daikin's history and how the genes of innovation have been passed down through the generations

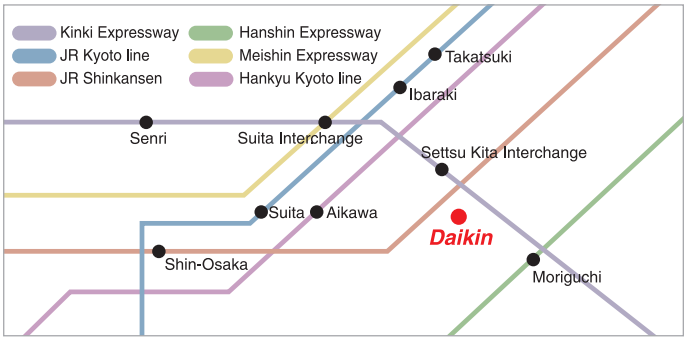
"Challenge," the Newsletter of the TIC

"Challenge" is a newsletter not just for the engineers and researchers who Daikin has been involved with over the years, but for anyone in any field of industry who is interested in the TIC's philosophy, initiatives, technologies, and human resources. "Challenge" aims to promote exchange both inside and outside the Daikin Group with the hope of achieving totally new "Kyoso" innovation. If you remove the letters "lle" from the title, it leaves "change," and this publication reflects the change that comes from taking on challenges.

You can see it from the website (http://www.daikin.com/about/corporate/tic/magazine/)

Getting to the Yodogawa Plant





- Take a Hankyu bus from JR Suita Station, central exit bus terminal No.3, and get off at Daikin Kogyo-mae (20 minutes)
- Take a bus from Hankyu Aikawa Station, west exit, and get off at Daikin Kogyo-mae (13 minutes).
- Walk from Monorail Minami-Settsu Station (20 minutes).
- Walk form Itakano Station on Osaka Metro Imazatosuji Line (20 minutes).

DAIKIN INDUSTRIES, LTD.
https://www.daikin.com

Yodogawa Plant: 1-1, Nishi-Hitotsuya, Settsu, Osaka 566-8585, Japan Phone: (06) 6349-7361
Head Office: Umeda Center Bldg., 2-4-12 Nakazaki-Nishi, Kita-ku, Osaka 530-8323, Japan Phone: (06) 6373-4312

VEGETABLE OIL INK

PG-Y028(20-10-0005)YK.DN