



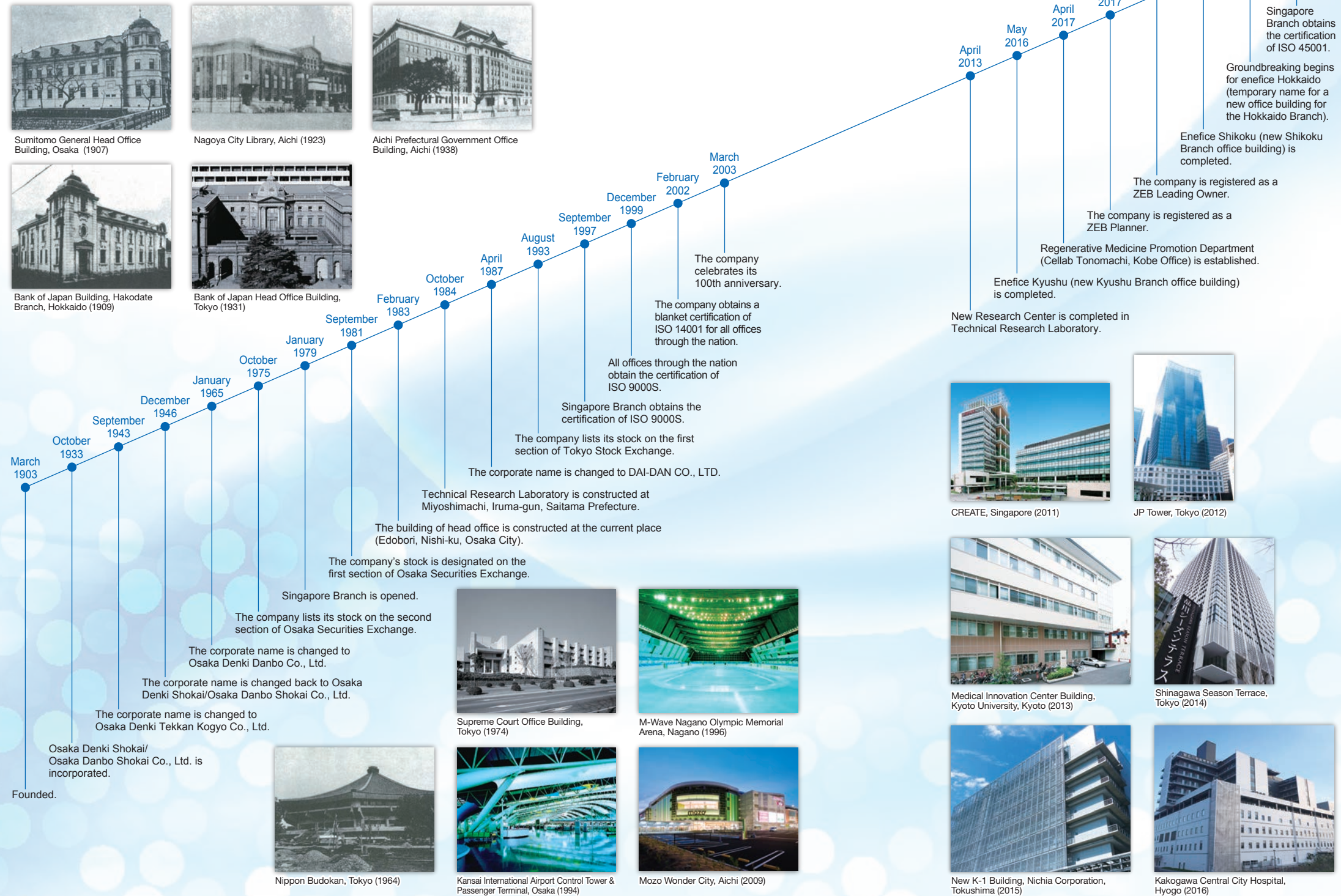
DAI-DAN REPORT 2019–2020

**Inspired by Light,
Air & Water**



Inspired by Light, Air & Water

As a comprehensive building services engineering and installation provider, Dai-Dan has continued to use its advanced technology to add comfort and vibrancy to interior spaces where people gather. For more than a century, we have been expanding the breadth of our expertise and securing the trust of our customers. At the same time, we are helping to achieve greater harmony with nature.



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Editorial Policy
 Since fiscal 2008, we have been publishing our CSR report as a means of informing our stakeholders of our business operations and CSR initiatives. In fiscal 2014, we renamed this publication the Dai-Dan Report. Compiled as an integrated corporate report, it contains both financial and non-financial data in addition to the conventional content. This year, we added a special feature on new initiatives, activities and projects we have under taken to steer ourselves towards sustainable growth. In it, we lay out the issues we consider important and report the progress we have made with the corresponding efforts.

Scope of This Report
Target organization
 This report covers the operations of DAI-DAN CO., LTD. All financial information is reported on a consolidated basis.
Period
 This report covers the fiscal year spanning April 1, 2018, to March 31, 2019. Some data refers to activities after April 1, 2019.

Report Guideline References
 ISO 26000
 Ministry of the Environment *Environmental Reporting Guidelines* (2018)
 GRI *Sustainability Reporting Standards*

The next generation in “comfort” created from light, air and water

Dai-Dan is creating value for next-generation buildings by leveling off building energy balance, building environments required for regenerative medicine and optimizing lighting and air conditioning through IoT.

Shohei Kitano

Representative Director
Chairman
DAI-DAN CO., LTD.

Ichiro Fujisawa

Representative Director
President
DAI-DAN CO., LTD.

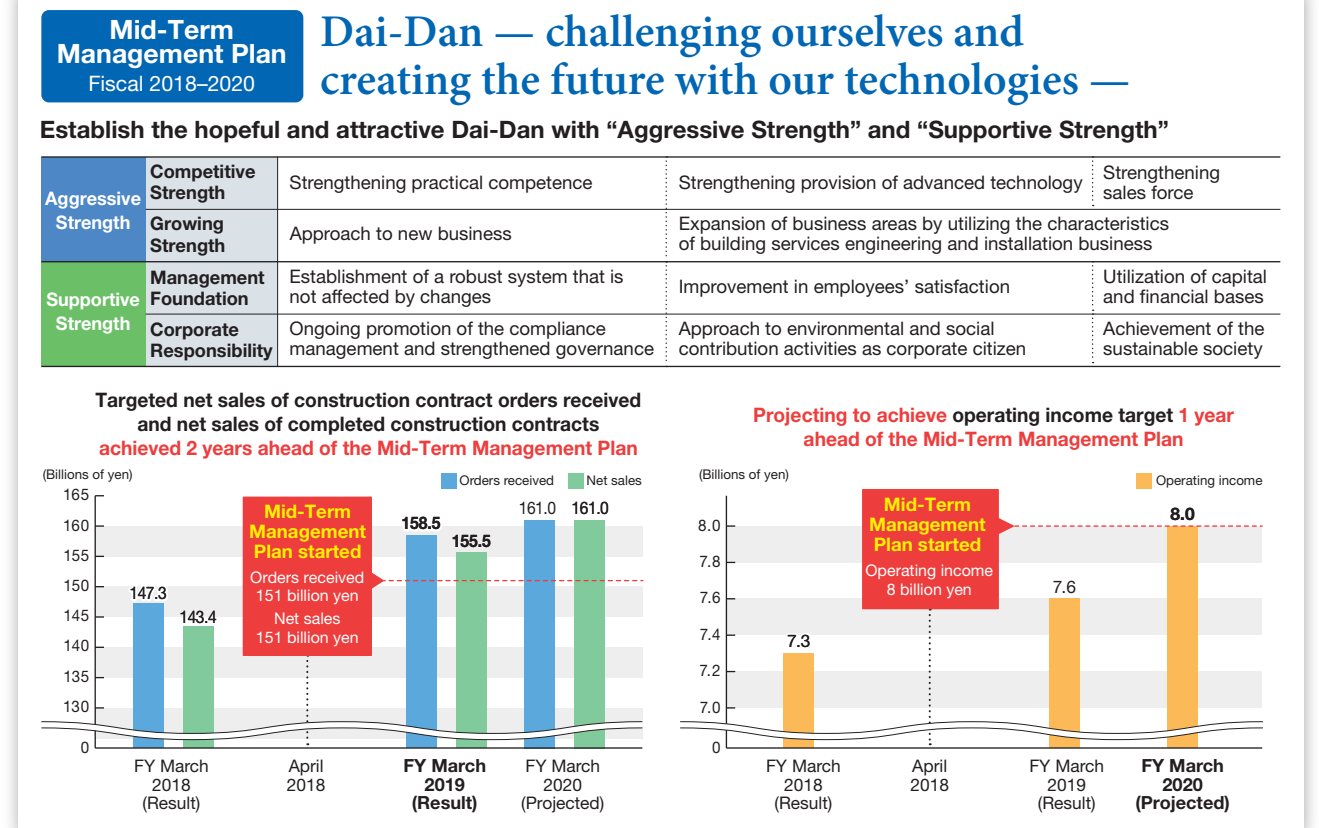
Creating better environments

In April 2018, we began implementing a 3-year Mid-Term Management Plan loaded with new strategies and policies to swiftly respond to changes in the business environment. We have since been promoting a variety of initiatives and efforts with which we are “challenging ourselves and creating the future with our technologies,” under the catchphrase of “establishing the hopeful and attractive Dai-Dan with ‘Aggressive Strength’ and ‘Supportive Strength.’”

On the performance front, we achieved our targets for both net sales of construction contract orders received and

net sales of completed construction contracts two years ahead of plans, thanks to increased investment in factories, data centers and other industrial assets and multiple orders for large projects overseas. And, we are hoping to attain our operating income target one year ahead of time.

Moreover, we have already started retooling our Mid-Term Management Plan and formulating a mid- and long-term vision with our eyes fixed on our 120th anniversary four years down the road.



Making maximum use of business resources

With industrial structures and social practices changing as much as they have as of recent, we are seeking intelligent ways to innovate our business processes so that, no matter what the times, our customers will continue to choose Dai-Dan. So, in April 2019, we reorganized our technical divisions to quickly meet rising demands for more sophisticated and specialized technologies. This included newly establishing an Engineering Division to strengthen our engineering proposal activities and build environmentally advanced buildings like ZEB*, and an Innovation Division to better promote R&D and develop business in regenerative medicine and IoT. Both will be working with the Technical Construction Division to improve our engineering performance in large projects and

facilities that require high-tech building systems, and to challenge new areas of business via innovation.

Moreover, in order to more flexibly relate to markets, we divided operations geographically into the three markets of East, Central and West Japan. As a part of that, we have tuned our strategies for gaining orders to regional characteristics and are allocating business resources with our eyes on the future.

At Dai-Dan, we are making maximum use of our business resources to establish for ourselves management foundations that enable us to adapt to changes.

* ZEB (Net-Zero Energy Building) is a state-of-the-art building technology combining photovoltaic power generation with highly energy-efficient designs aiming at a Net-Zero energy balance throughout the year.

Our take on ZEB as a building services engineering and installation provider



At Dai-Dan, we are working to develop and spread ZEB technologies that improve energy efficiency and utilize renewable energy from a building systems perspective. As a part of those efforts, we took our ZEB technologies to the next level through lab verifications and pilot testing at buildings of our own, which included building a new research center at our Technical Research Laboratory, retrofitting our research centers with smart technologies and rebuilding enefice Kyushu (Kyushu Branch) and enefice Shikoku (Shikoku Branch).

Furthermore, as a new endeavor, we broke ground on enefice Hokkaido (temporary name for a new office building for the Hokkaido Branch) with the aim of bringing ZEB to cold regions. In addition to our position as a ZEB Leading Owner¹ and ZEB Planner², we view it as our responsibility to spread ZEB because it is essential to shrinking carbon footprints and will, therefore, continue the support we provide customers so that they can build or retrofit their building assets with ZEB technologies.

ZEB projects

Completed May 2016
enefice Kyushu



Completed May 2019
enefice Shikoku



Completion planned for March 2021
enefice Hokkaido
(Temporary name for a new office building for the Hokkaido Branch)
ZEB for cold regions

¹ A widely publicized program for registering businesses that are proactive in promoting energy-efficient buildings as "ZEB Leading Owners."
² The ZEB Planner registration system is a widely publicized program for registering design, installation, and consulting companies as "ZEB Planners" who proactively promote the ZEB concept among building owners.

Taking on the challenges in the regenerative medicine business



At Dai-Dan, we are pursuing a variety of challenges intended to make regenerative medicine readily and widely available because of the promising uses with incurable and untreatable diseases. As one such effort, we developed an "All-in-One CP Unit" with new technologies. It can be easily installed in existing medical care facilities and enables hospitals to build compact cleanrooms for culturing and processing treatment cells at low cost.

We are also hosting periodic seminars and exchanges on regenerative medicine at our Cellab Tonomachi open innovation center and disseminating information with the cooperation of various companies.

Going forward, we will push open innovation to promote development that serves the needs for regenerative medicine

and continue our contribution to the development and practical application of this budding field of medical care.



Cellab Tonomachi open innovation center

Our employees are our greatest assets.

The more than a century of history we have as a company was built entirely by "people." We have always thought of our employees as "our greatest assets" and, therefore, respected each and every one as individuals and gone to great lengths to create workplace environments where all could bring any distinguishing qualities and demonstrate their abilities to the best extent possible.

One effort we are making to modernize the way people work and improve productivity at the same time is to promote i-Construction via "remote field support teams." Intended to efficiently provide support from a remote location, this new practice has steadfast produced good results by using webconferencing and cloud file servers so that – for example – women working shorter hours because of childcare responsibilities are afforded greater flexibility

that allows them to work efficiently. By accumulating, improving and diffusing this know-how, we will make productivity-improvement-driven workstyle reform even more visible.

In May 2019, Dai-Dan announced a Health Policy based on the underlying belief that it is important that everyone in the corporate workforce lead a happy life and be part of a concerted effort to grow the company and contribute to society. Therefore, as an employer, Dai-Dan takes constructive action to enhance health awareness and create motivating workplace environments so that all employees can build careers and feel fulfilled. Going forward, we will modernize our recruiting practices, work requirements and employee benefits so that, in a world premised on diversity, Dai-Dan looks like an interesting company to work for.

Working with stakeholders

As a corporate entity, Dai-Dan agrees with the purport of the Sustainable Development Goals (SDGs) adopted by the United Nations General Assembly and, in connection thereto, is promoting various efforts to steer the company along a path of sustainable growth and to help solve social issues. We position "people-friendly environments," a "sustainable society" and "solid corporate foundations" as important topics of corporate management and promote efforts to maximize the value we provide to our stakeholders.

Moreover, Dai-Dan signed the UN Global Compact and became a registered participant-company in this global platform for realizing a sustainable society in July 2019. Under the four categories and ten principles raised in the UN Global Compact, Dai-Dan will help to protect the global environment by applying its latest environmental control technologies to first and foremost realizing a low-carbon society.

SUSTAINABLE DEVELOPMENT GOALS 17 GOALS TO TRANSFORM OUR WORLD



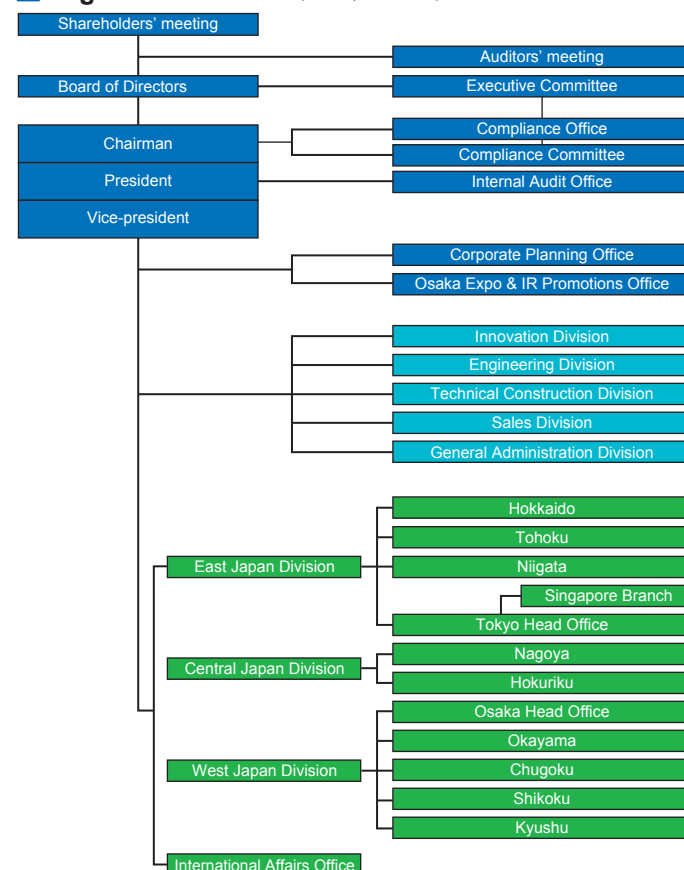
In the lead-up to our 120th anniversary four years from now, we will strive to continuously improve our corporate value by maintaining a constructive dialog with our stakeholders — customers, shareholders and investors, subcontractors and employees — and continuing to meet their expectations.

We hope that you understand and support what we do as a business.

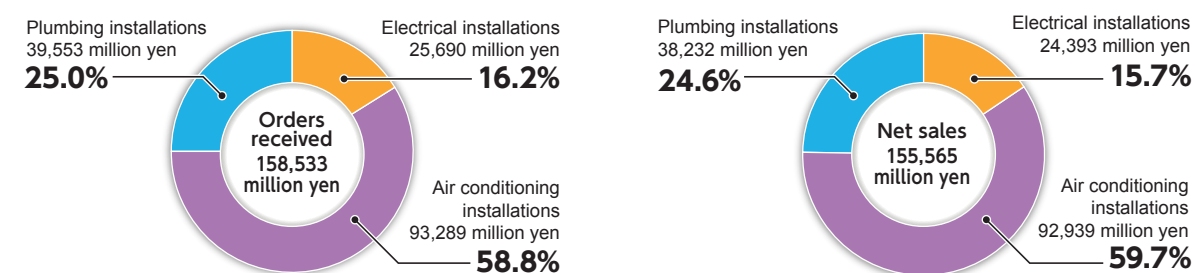
Corporate Profile

Company name	DAI-DAN CO., LTD.
Head office	1-9-25 Edo-ori, Nishi-ku, Osaka, Japan
Founded	March 4, 1903
Incorporated	October 10, 1933
Capital fund	4,479,725,988 yen
Employees	1,600 (as of March 31, 2019) consolidated
Stock listing	The first section of Tokyo Stock Exchange

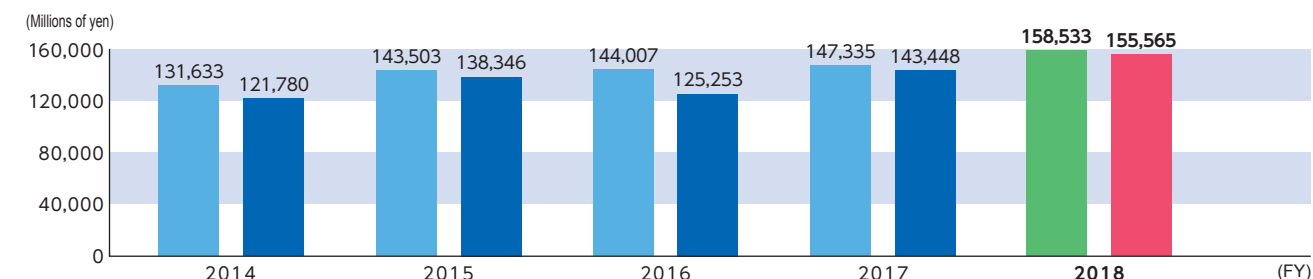
Organization Chart (as of September 2019)



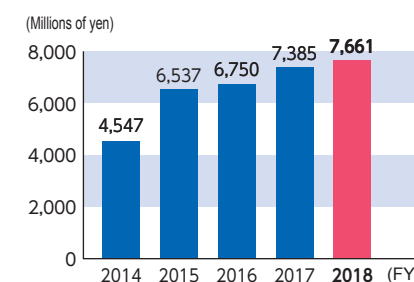
Fiscal 2018 Orders Received and Net Sales Ratios by Segment



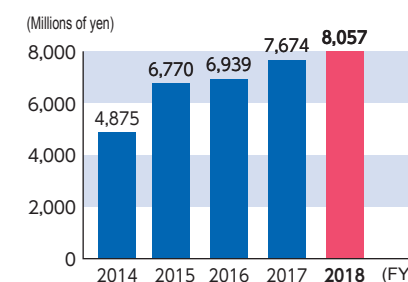
Orders Received/Net Sales



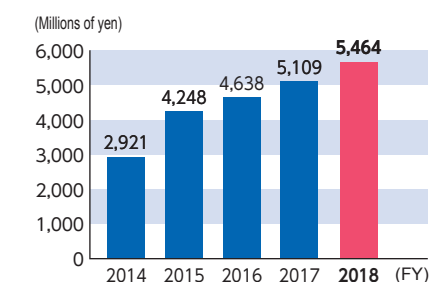
Operating Income



Ordinary Income



Net Income



Financial Highlights

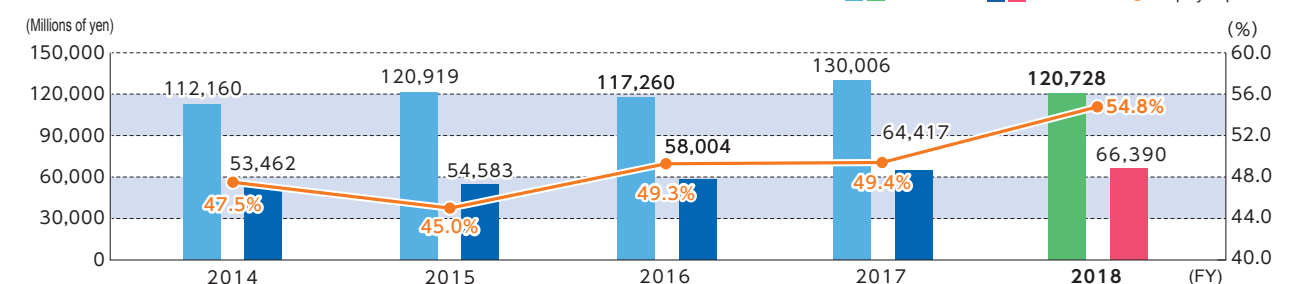
Accounting Year

	FY2014	FY2015	FY2016	FY2017	FY2018
Orders received	131,633	143,503	144,007	147,335	158,533
Net sales	121,780	138,346	125,253	143,448	155,565
Selling, general and administrative expenses	10,016	10,176	11,038	11,400	11,450
Operating income (loss)	4,547	6,537	6,750	7,385	7,661
Ordinary income (loss)	4,875	6,770	6,939	7,674	8,057
Net income (loss)	2,921	4,248	4,638	5,109	5,464
Return on assets (ROA) (%)	4.4	5.8	5.8	6.2	6.4
Return on equity (ROE) (%)	5.9	7.9	8.3	8.4	8.4
Cash flows from operating activities	2,427	611	5,395	3,320	(13,541)
Cash flows from investing activities	(401)	(493)	(1,442)	(315)	(232)
Cash flows from financing activities	(2,344)	(894)	(925)	(1,711)	(1,317)
Cash and equivalents at end of period	24,358	23,536	26,549	27,858	12,776

Fiscal Year-End

	FY2014	FY2015	FY2016	FY2017	FY2018
Total assets	112,160	120,919	117,260	130,006	120,728
Net assets	53,462	54,583	58,004	64,417	66,390
Equity capital ratio (%)	47.5	45.0	49.3	49.4	54.8

Total Assets/Net Assets/Equity Capital Ratio



Operational Highlights

Non-Financial Data

	FY2014	FY2015	FY2016	FY2017	FY2018
Number of employees (consolidated)	1,498	1,493	1,505	1,540	1,600
Number of workplace accidents	36	26	18	36	42
Frequency rate of workplace accidents ¹	0.461	0.173	0.190	0.168	0.160
Severity rate of workplace accidents ²	0.021	0.017	0.004	0.024	0.008
CO ₂ emissions from offices (tonnes)	1,745	1,618	1,732	1,749	1,645 ³

¹ Number of workplace accidents per million work hours ² Number of workdays lost per thousand work hours
³ Beginning in fiscal 2018, the target was changed to reflect the new CO₂ equivalent.

Our Services

Electrical installations

Electrical systems supply electricity throughout a building to run equipment and support services. Electrical installations install the step-down transformers that receive power from the grid and the panels that distribute power to lighting, outlets, pumps, fans and other loads, and wire all of the connections.

Electrical systems are instrumental in reducing the building's power consumption and carbon footprint, and effectively using renewable energy. They are composed of a variety of equipment, such as high-efficiency transformers, solar power systems for generating electrical power, LED lighting fixtures that help to lower power consumption, storage batteries for optimizing power usage and IoT-driven control systems.

Dai-Dan assembles the various pieces of equipment into electrical systems that serve the intended purpose whether to build or retrofit buildings with ZEB technologies, ready buildings for disasters as part of business continuity planning, or other need.

Air conditioning installations

Air conditioning systems are important towards "comfort" and "human productivity" because they control the temperature, humidity, airflows and cleanliness of the indoor environments of buildings that envelope people. They vary widely in size and performance from typical AC systems for office buildings to precision models required by semiconductor manufacturing plants.

Dai-Dan has advanced technologies and vast experience with planning, designing and installing air conditioning systems. In fact, the large data centers that underscore today's internet society adopt many of our technologies — for example — to introduce cold outdoor air in order to reduce air conditioning load and to effectively direct cooled air towards IT equipment. Moreover, we can tap renewable geothermal energy as a heat source in order to efficiently manage a building's energy balance. We can provide customers with whatever support they need.

Plumbing installations

Water is a precious resource. So much so, the SDGs adopted by the UN include access to safe drinking water and toilets. Plumbing systems serve to supply clean safe-to-drink water and properly drain wastewater.

At Dai-Dan, we believe plumbing systems can fulfill other purposes than just supplying and draining water, such as to use rainwater and recycle wastewater, therefore we have our hands on a lot of equipment that is designed to conserve water resources. Moreover, with piping technology you can rely on, we can design and install utility piping systems for delivering materials critical to production, like chemical solutions or compressed air or gas that is needed to operate factory equipment, to wherever they are needed.

Renovations

The renovation of building systems enhances their functioning in addition to improving performance and upgrading the interior environment. In addition, renovations enhance the value of the customer's asset while extending its service life and improving the building's energy efficiency.

We formulate a renovation plan to meet the various needs of the customer by leveraging our own equipment diagnostic technology developed through the construction expertise we have gained from dealing with building systems through our comprehensive building services business. We provide installations that accommodate existing needs as well as follow-up service to address any issues that might arise.

Overseas operations

In Singapore and Thailand, Dai-Dan has provided equipment for large projects in addition to using our engineering expertise to design and install factory systems, etc. Moreover, besides being directly involved in projects, we have also lent constructive support from Japan by imparting technical training to local staff, in order to provide high-quality equipment in both countries.

Recently Completed Noteworthy Projects

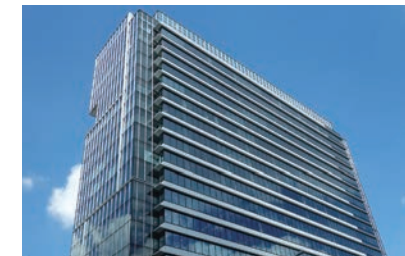
Projects completed in FY2018



msb Tamachi Station Tower S / Pullman Tokyo Tamachi
(air conditioning installation)



Namba SkyO
(electrical, air conditioning and plumbing installations)



Shibuya Solasta
(air conditioning and plumbing installations)



R&D Bldg. and Factory No. 5, Fukushima Plant
Hitachi Automotive Systems
(air conditioning and plumbing installations)



Obihiro Kosei Hospital
(plumbing installation)

Projects completed in FY2017



Agricultural Research Building, Ito Campus,
Kyushu University
(air conditioning installation)



GINZA SIX
(electrical installation)



Building D, Toyama Murata Manufacturing
(air conditioning and plumbing installations)



Kurashiki Municipal Hospital, Kojima
(air conditioning and plumbing installations)



Wakayama Regional Joint Government Building
(air conditioning and plumbing installations)

Dai-Dan's Corporate Social Responsibility

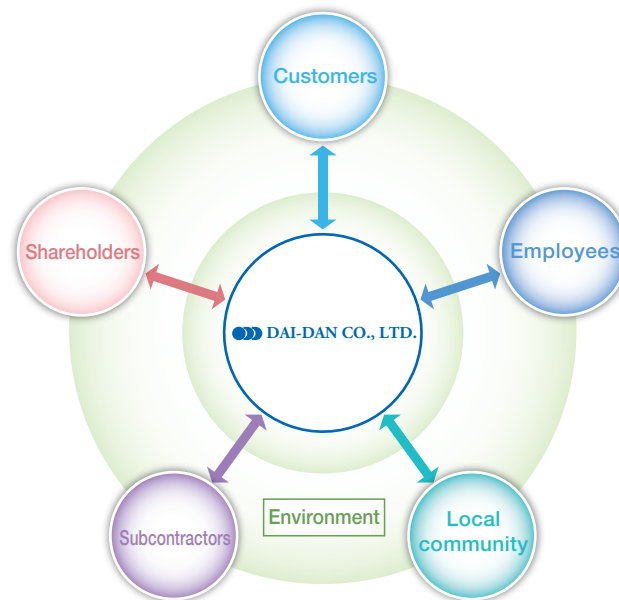
Day after day, Dai-Dan aspires to create value through the work we do.

The ties we share with each of our stakeholders underscore the business activities we conduct. For us, it is our social responsibility as a corporation (CSR) to emphasize ESG (Environment/Society/Governance) and continuously provide value to our stakeholders and grow our business day-in and day-out.

Stakeholder Relations

Customers, shareholders, employees, subcontractors and local communities—collectively, our stakeholders—are always the focus of any action we take when conducting our corporate activities. We believe that it is imperative that we accurately identify the expectations and requirements of our stakeholders through communication and respond to these needs, in order for us to grow as a company.

We therefore hold semiannual briefings on earnings for analysts in addition to communicating with stakeholders by offering tours of our facilities, issuing press releases, and disseminating information through our corporate website.



Value that Dai-Dan Provides to Its Stakeholders

Dai-Dan is continuously providing value to its stakeholders by “creating people-friendly environments,” “doing what it can to build a sustainable society” and “maintaining its corporate foundations solid.” Each of these directions is closely correlated with the UN's SDGs.

How Dai-Dan provides value to its stakeholders

Creating people-friendly environments We create healthy and comfortable environments where people are active.	Related SDGs 3 GOOD HEALTH AND WELL-BEING, 9 INDUSTRY, INNOVATION AND INFRASTRUCTURE, 11 SUSTAINABLE CITIES AND COMMUNITIES
Helping to build a sustainable society We promote energy conservation and resource recycling via building systems.	7 AFFORDABLE AND CLEAN ENERGY, 12 RESPONSIBLE CONSUMPTION AND PRODUCTION, 13 CLIMATE ACTION
Maintaining solid corporate foundations We remain fair and impartial in all of our business activities.	5 GENDER EQUALITY, 8 DECENT WORK AND ECONOMIC GROWTH, 10 REDUCED INEQUALITIES, 16 PEACE, JUSTICE AND STRONG INSTITUTIONS, 17 PARTNERSHIPS FOR THE GOALS






Steering Our Way to Sustainable Growth

Important Issues and Progress of Corresponding Efforts

At Dai-Dan, we keep it mind to assess the impact of our business activities, products and services on society, therefore we have defined important issues (materiality) related to building a sustainable society from ESG perspectives. The initiatives, activities and projects we promote for these important issues are meant to maximize the value we provide to our stakeholders. In this special feature, we introduce three of the efforts we are making in relation to what we treat as important issues.

Important Issues (Materiality) at Dai-Dan

Creating people-friendly environments	Helping to build a sustainable society	Maintaining solid corporate foundations
Proposing, designing and building environments that meet customer needs	Feature 2 Promoting energy efficiency by popularizing the next generation in ZEB	Fair and impartial procurement and coprosperity with subcontractors
Pursuing the maximum comfort technology can offer	Extending equipment service-life using IoT and AI	Promoting workstyle reform and health management
Realizing comfortable environments at low cost via i-Construction	Effective use of resources for business activities	Promoting diversity
Feature 1 Providing high-quality environments for promoting regenerative medicine at low cost	Feature 3 Contributions via Environment-friendly Technologies	Stronger governance and risk management
		Promoting local community contribution activities

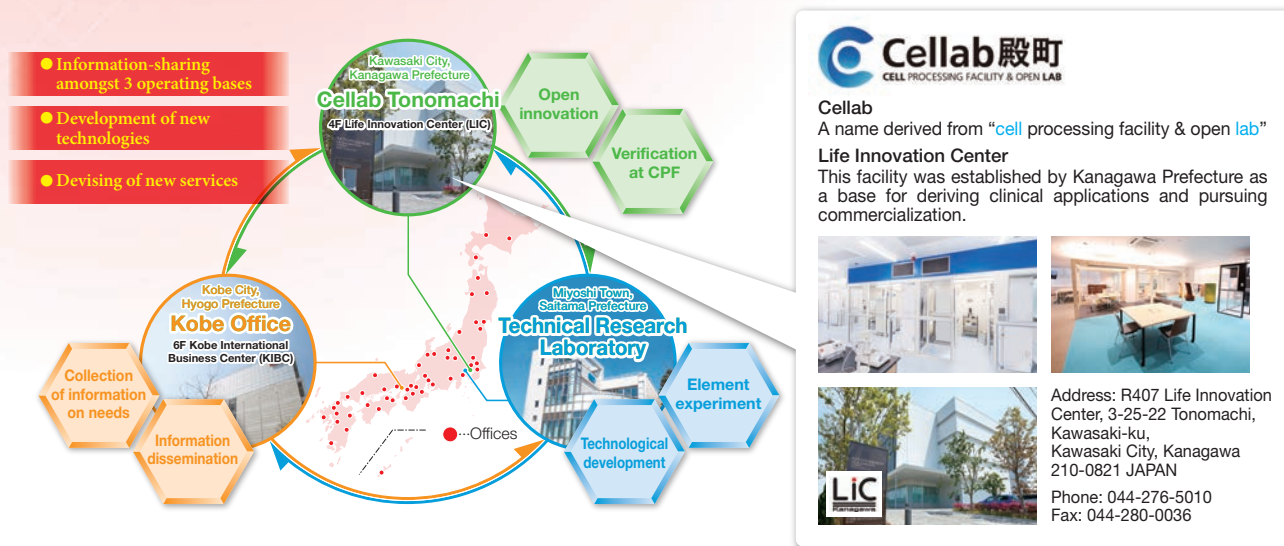
Feature 1 P.13-14 Taking on the Challenges in the Regenerative Medicine Business  3 GOOD HEALTH AND WELL-BEING, 9 INDUSTRY, INNOVATION AND INFRASTRUCTURE	Feature 2 P.15-16 Our Take on ZEB as a Building Services Engineering and Installation Provider  7 AFFORDABLE AND CLEAN ENERGY, 13 CLIMATE ACTION	Feature 3 P.17 Contributions via Environment-friendly Technologies  12 RESPONSIBLE CONSUMPTION AND PRODUCTION
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Feature 1

Taking on the Challenges in the Regenerative Medicine Business

With hopes and expectations growing over regenerative medicine, Dai-Dan is helping to make this promising field of treatment readily available to all by industrializing the core processes.

The market is steadfast expanding to global scale, but if Japan is to be the first to industrialize the science before the rest of the world, it is going to take technological innovation and practical application from supporting industries. Therefore, Dai-Dan is engaged in new areas of technological development and launching new services via the coordinated operations of our Kobe Office (Kobe City, Hyogo Pref.), Technical Research Laboratory (Miyoshi Town, Saitama Pref.) and Cellab Tonomachi open innovation lab that we created within our Life Innovation Center (LIC) in Tonomachi, Kawasaki City, Saitama Pref. specifically to head up development in the field of regenerative medicine.



Cellab 殿町
CELL PROCESSING FACILITY & OPEN LAB

Cellab
A name derived from “cell processing facility & open lab”

Life Innovation Center
This facility was established by Kanagawa Prefecture as a base for deriving clinical applications and pursuing commercialization.

Address: R407 Life Innovation Center, 3-25-22 Tonomachi, Kawasaki-ku, Kawasaki City, Kanagawa 210-0821 JAPAN
Phone: 044-276-5010
Fax: 044-280-0036

Open innovation activities at Cellab Tonomachi

The whole point of operating our open innovation lab is to build an environment suited for regenerative medicine. So, we have installed a Cell Processing Facility (CPF) and an Air Barrier Booth¹ we developed and are giving tours and doing performance tests. Moreover, with the cooperation of related companies, we are holding seminars for users to try out our products and proactively networking with different industries by participating in and showing at LIC events. These open innovation activities at Cellab Tonomachi were introduced on the “Dejima” webpage operated by the Japan Productivity Center.

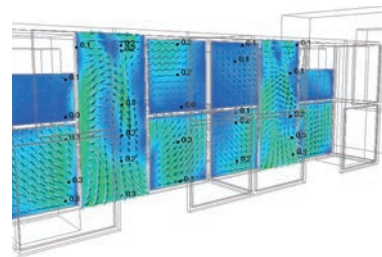
Tours

We give about 100 tours a year. The tours are open to academia, users and cooperating companies, so we are exchanging a wide range of information. We are also using the facility for employee training by offering opportunities to learn about our products in the field of regenerative medicine.



Performance testing

Performance tests are run on the CPF and developed products of ours installed at Cellab Tonomachi. With the cooperation of users, we evaluate system performance, operation and management using environmental data acquired during actual use.



Hands-on seminars

These seminars are co-organized and conducted as a cooperative efforts of 4 companies (Kaneka Corp., Terumo BCT, Inc., Ikeda Scientific Co., Ltd and Dai-Dan) using Smart CP Units².



Exhibitions

We collaborated in and exhibited at the RINK Festival 2019 organized by the Regenerative Medicine & Cell Therapy Industrialization Network of Kanagawa (RINK), held at the LIC.

¹ A booth that provides an enclosed space of a very high clean factor
² A space-saving cell processing environment that can be built by combining our Air Barrier Booth with the automatic cell processing units made by Kaneka and Terumo BCT

On the stump to diffuse new technologies

To contribute to the industrialization of regenerative medicine, we share new technologies on building clean environments acquired at Cellab Tonomachi and things we learn proposing CPF to users at conferences and tradeshows. We also participate in the Forum for Innovative Regenerative Medicine (FIRM) and network with the industrial world as a whole through the activities of the Supporting Industries Committee.

Giving a tangible shape to needs: Development of the All-in-one CP Unit

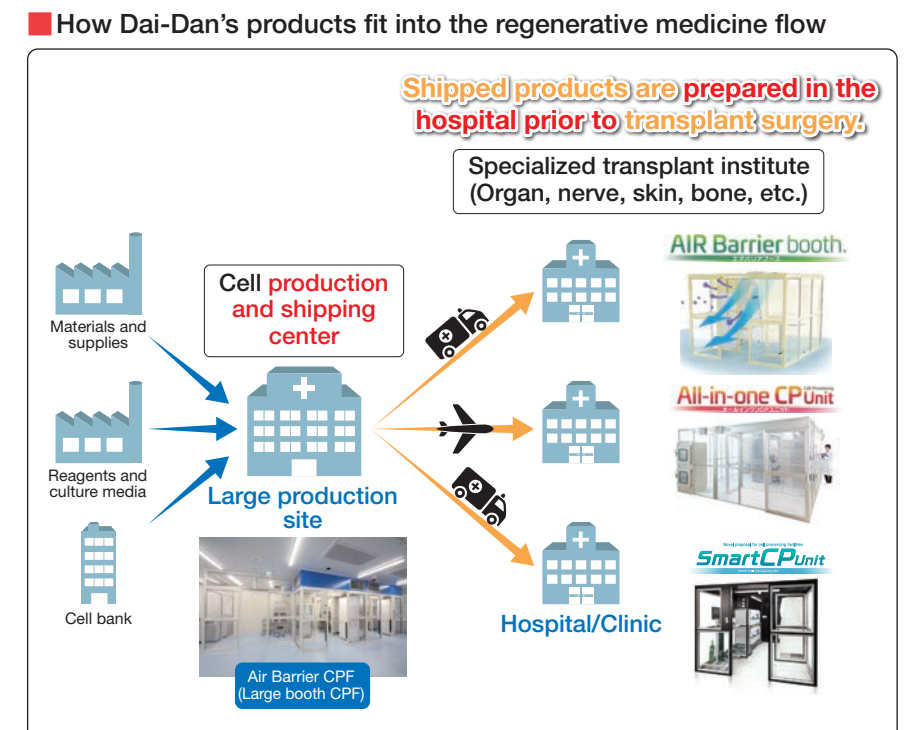
At Cellab Tonomachi, we received diverse requests from physicians and researchers regarding clean environments for culturing and processing cells. But, one that kept popping up was for a CPF that could be easily installed within the limited space of a hospital or clinic. Our All-in-one CP Unit meets those needs. It packages everything required of a CPF from a changing room to a cell preparation room into a single space-efficient unit that can be installed in a short amount of time and at low cost, effectively bringing a cell processing environment and, by virtue thereof, regenerative medical care to patients.

The unit has already been introduced by the Kobe Eye Center of the Kobe City Hospital Organization, where it is being jointly used for research by the RIKEN National Research and Development Agency, the Kobe Eye Center Hospital and Dai-Dan.



Getting medical care to the patient: Building a support system by providing customized clean environments

The clean environment required for regenerative medicine varies in size and capabilities depending on the purpose. By adding the All-in-one CP Unit to our lineup of the Air Barrier Booth and the Smart CP Unit, we can propose a wide range of clean environments of guaranteed quality and safety, and tailored to the purpose of use. Further yet, we are developing an Air Barrier CPF (large booth CPF) under new concepts. Dai-Dan is promoting the industrialization of regenerative medicine and helping users to build their value chains, by developing cell processing environments that are safer and better tuned to user needs.



Our Take on ZEB as a Building Services Engineering and Installation Provider



The amount of energy consumed by buildings is increasing all across Japan. Net-Zero Energy Buildings or ZEB are trying to reverse that and realize a low-carbon society. In fact, ever since the national government set targets on ZEB realization and spread, there has been a rise in ZEB concepts for public structures. ZEB trends are also seen amongst privately owned buildings, as businesses are growing more and more conscious of the importance of the environment in corporate management. Moreover, revisions to ZEB standards have made it easier for large buildings to win ZEB certification. This backdrop has set the stage for Dai-Dan to use proprietary technologies it has cultivated in-house to promote the diffusion of ZEB.

Completed enefice Shikoku (Shikoku Branch)



BELS¹ 5☆ ZEB

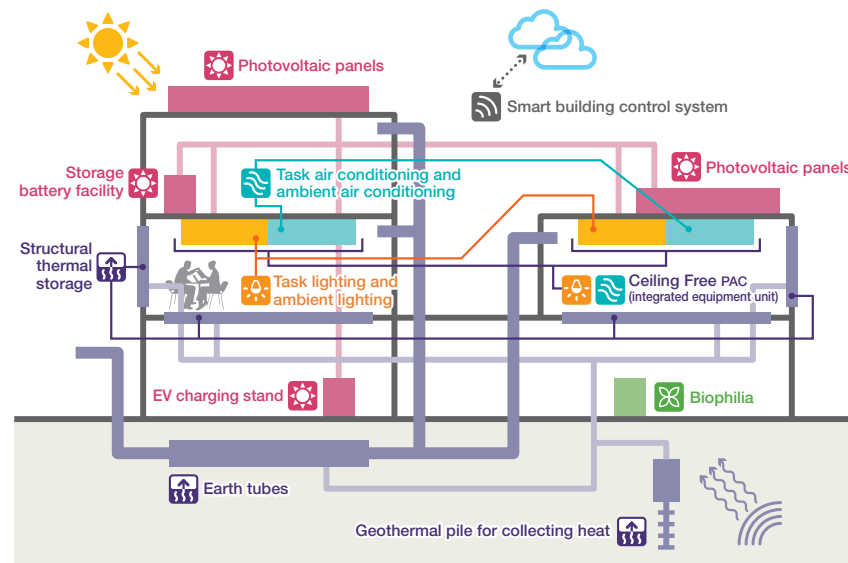


CASBEE² rank S



Completed on May 18, 2019, enefice Shikoku was built as an office building where human activity could coexist with the planet under the concepts of “greater use of ZEB technologies,” “increased comfort through the use of IoT” and “improved economic efficiency by using general-purpose equipment.”

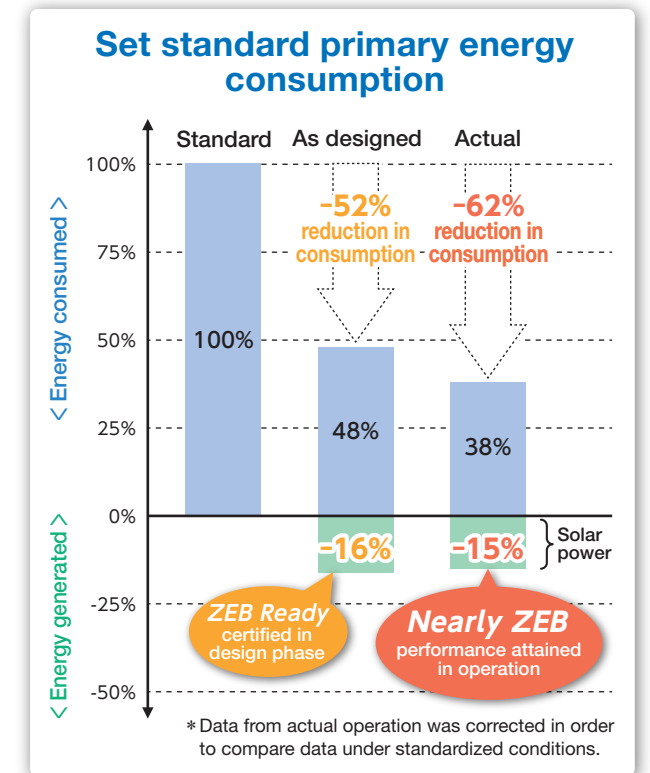
In terms of building systems, Ceiling Free package air conditioners that bundle everything into neat units were introduced and Clima chairs (air-conditioned chairs) were brought in to enhance individual comfort. Then, to improve comfort and economic efficiency, indoor conditions are analyzed and the temperature setting of the package air conditioners is adjusted by the cloud-based REMOVIS automatic control system. Other equipment and amenities include earth tubes that exchange heat between the outdoor air that is drawn in and the ground, structural thermal storage that collects and stores underground heat, storage batteries as a backup power supply under BCP, and biophilia (indoor greenery) that is effective towards relieving mental and physiological stress.



Performance of enefice Kyushu (Kyushu Branch)

Enefice Kyushu, which was completed in 2016, is drawing attention from all over since it has acquired CASBEE, BELS and LEED³ certifications and various awards from academic societies. It was also introduced on the “Innovation for SDGs” website operated by Keidanren.

Enefice Kyushu acquired ZEB Ready certification in the design phase as energy consumption was projected to be 68% of the standard level. In the three years since the building was completed, operating method has been improved and systems continuously tuned via a PDCA cycle just for energy efficiency. As a result, energy consumption in the operating phase has reached 77% of the standard level, which equates to a Nearly ZEB performance.



Exhibited at ENEX 2019 and EcoPro 2018

We showed and gave presentations of our ZEB technologies at the ENEX 2019 and EcoPro 2018 energy and environmental technology tradeshows. In both cases, we welcomed numerous visitors to our booth. At ENEX 2019, we introduced enefice Kyushu and enefice Shikoku via panels and had actual Clima chairs on site for visitors to try and experience the IoT control technology, all of which met with great reviews.



ZEB Leading Owner



Dai-Dan has been registered as a ZEB Leading Owner, an advanced building owner that has constructed a net-zero building. We contribute to the adoption of ZEB by disseminating information through tours and by encouraging customers to experience the benefits of net-zero construction.

Construction record
Number of ZEB assets 2 units

ZEB Planner



Having been registered as a ZEB Planner, we offer potential customers consulting services such as proposal and planning for ZEB conversions as well as design, installation, and operation services.

Planning record
ZEB 2 units
Others 15 units

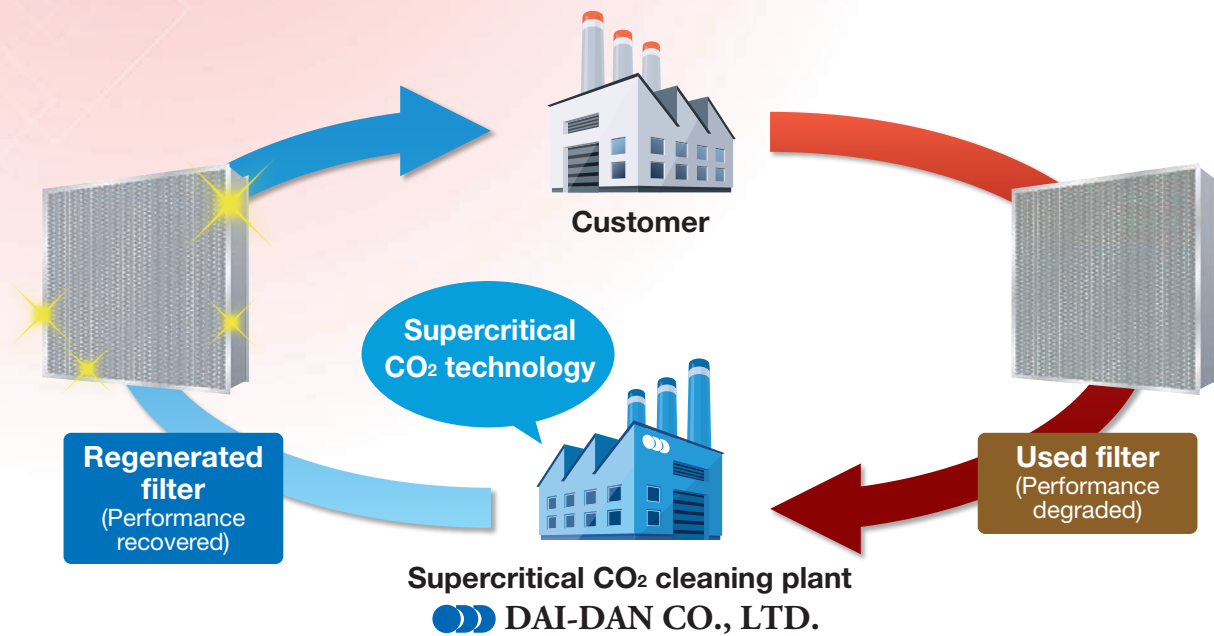
¹ Building-Housing Energy-efficiency Labeling System ² Comprehensive Assessment System for Built Environment Efficiency
³ Leadership in Energy and Environmental Design, a green building certification system

Contributions via Environment-friendly Technologies

Air filter regeneration technology utilizing supercritical CO₂*



Dai-Dan's air filter regeneration business is helping to realize a sustainable, recycle-oriented society by effectively using resources and reducing waste. Before we started doing it, used air filters that had adsorbed volatile organic compounds (VOC) and adsorbent were being discarded in large quantities. So, we developed and applied regeneration technology to reduce the associated environmental load. We now do business by cleaning and regenerating the air filters with supercritical CO₂ and returning them to customers for reuse.



100 cleaning orders attained!

Supercritical CO₂ is a pro-environmental way to clean air filters because no organic solvent is used whatsoever and it effectively reduces waste since the filters can be used over and over. We have also been applauded for using this approach by businesses who contribute to SDGs and invest in ESG, and we have been fortunate to have many repeat customers. Business is going well and, in fact, since we launched the service in 2014, we have delivered on 100 orders. This is good for the environment, too, since 100 orders equates to about 1,000 filters, which we calculate to be about a 20-tonne reduction in waste.



Supercritical CO₂ cleaning plant

Similar technology reported elsewhere!

Mie Fujitsu Semiconductor Limited included in its environmental report an article about a new process they built to regenerate VOC adsorbent used to clean exhaust gas.

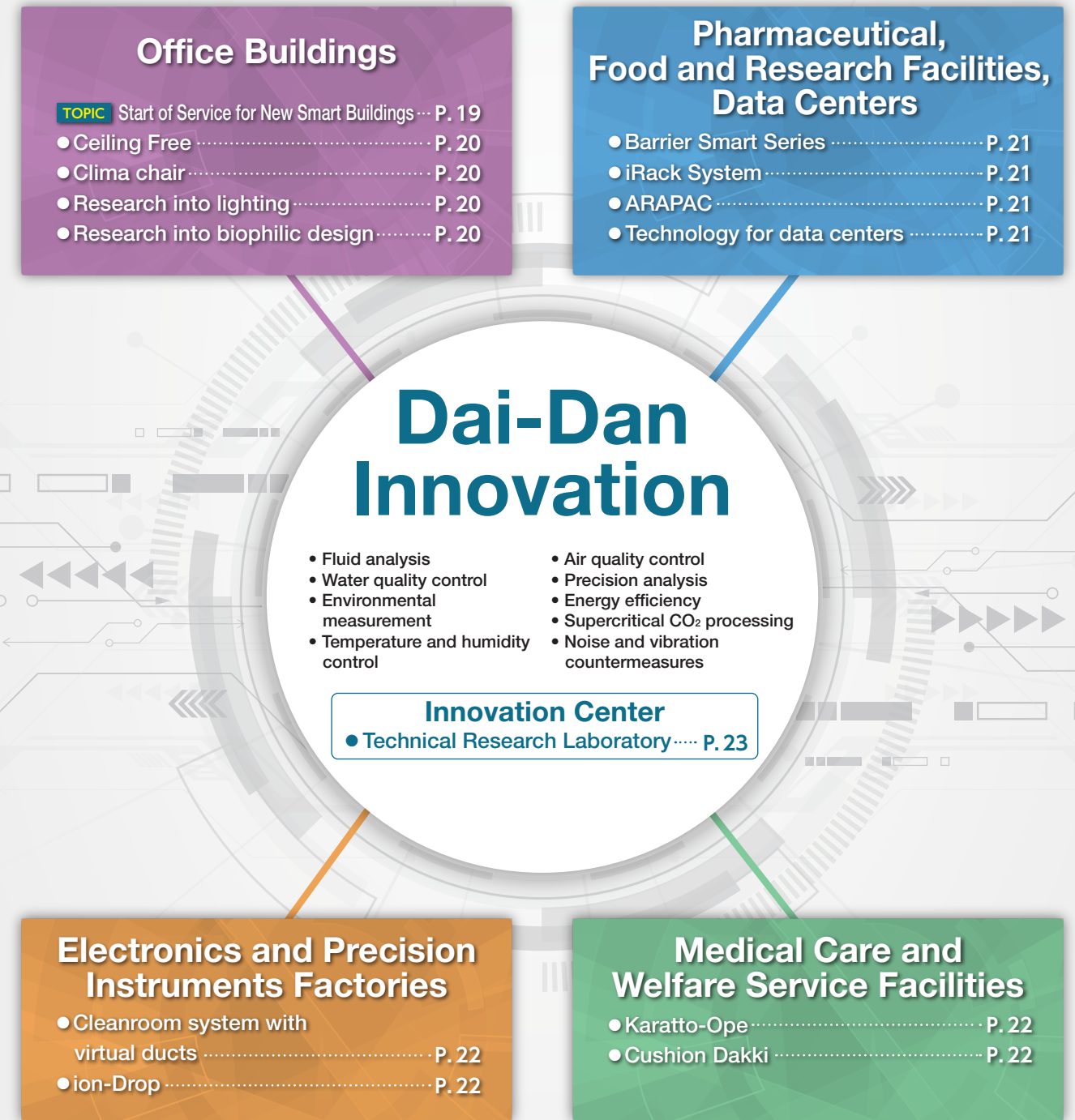


Mie Fujitsu Semiconductor successfully prolonged the service-life of the high-performance activated charcoal used to remove organic exhaust gases, by regenerating the activated charcoal with supercritical CO₂. They estimate a 75% reduction in the amount of activated charcoal they previously discarded, which obviously helps them to reduce their environmental load.

* CO₂ at a temperature (31.1°C) and pressure (7.4 MPa) above the critical points that behaves as a fluid exhibiting both the diffusibility of a gas and solubility of a liquid.

Creating the Environments that Meet Customer Requirements with Dai-Dan Innovation

To meet the increasingly diverse needs of our customers and contribute to the emergence of a sustainable society, we employ light, air and water more organically and with greater functionality. With our technological capabilities, we create the environments our customers require.



Start of Service for New Smart Buildings

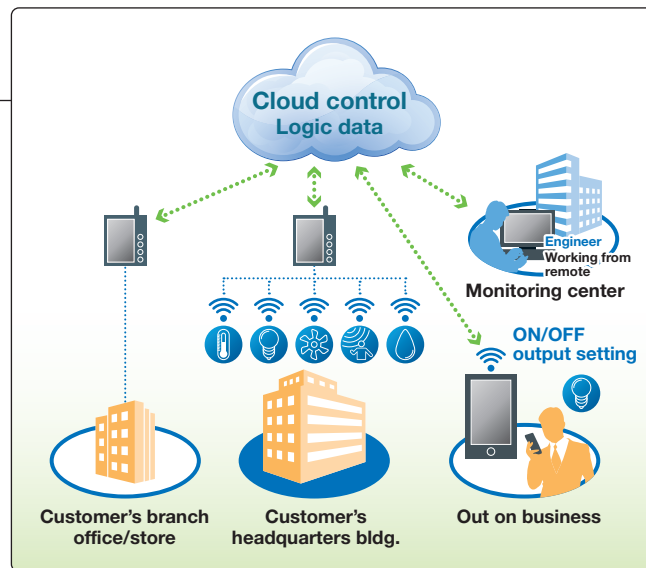
New building concepts like ZEB and the Wellness Office have been hatched for good reasons. So, to keep pace with the “smart” building trend, we developed a cloud-based automatic control system that is perfect for controlling and managing “smart” building systems.



In July 2019, Dai-Dan began providing commercial service of its “REMOVIS” platform, a cloud-based application for automatically controlling building systems.

Highly compatible with IoT and cloud applications

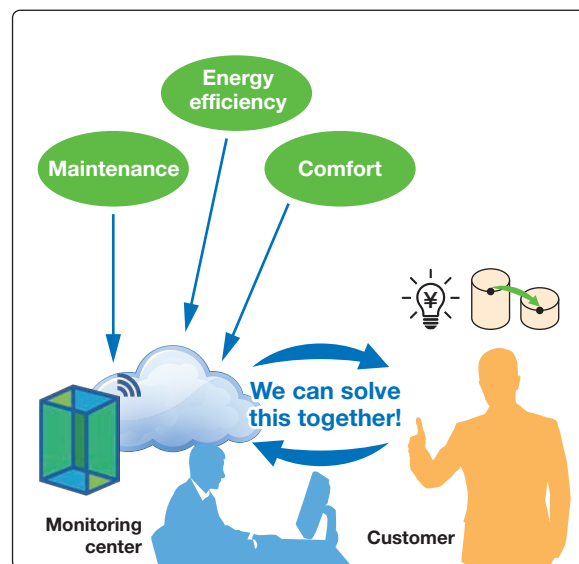
Information and communication technologies (ICT) continue to evolve in leaps and bounds. Now, in this day and age, home appliances can connect to the internet and be operated from smartphones and AI speakers. And, the time is coming as well when systems and units installed in buildings will individually connect to the internet (IoT). Our cloud-based automatic control system recreates the controller hardware as a software application that is designed for locating in the cloud, therefore it can easily work with all sorts of IoT-ready devices and cloud services.



Illustrated view of cloud-based automatic control system

Reduces the maintenance and management costs of building systems

With building systems, it is necessary to check that the indoor environment they create is comfortable to users and that the equipment is running properly. If there is a problem, action must be taken to fix it. REMOVIS enables an expert to support this kind of maintenance and management from a remote location, which reduces the maintenance and management costs of sophisticated building systems. As an example, simulations have shown that, with a midsize building that has about 20,000 m² in gross floor area, costs associated with maintaining and managing building systems can be reduced by about 10% over the lifecycle (about 60 years) of the building.



Office Buildings

Ceiling Free

Ceiling Free is an integrated systems package for office buildings that neatly bundles lighting, air conditioning and fire prevention features into an easy-to-install ceiling unit. The lighting design and air conditioning system balances comfort and energy efficiency by taking into account the perceived brightness¹ and by providing an active chilled beam².

Illustrated view of Ceiling Free installation



- 1 The level of brightness perceived by the occupant from the amount of light entering the eye not only from the desk surface, but also from the entire room
- 2 An air conditioner that incorporates cool and warm water coils. It works by blowing air supplied by the outdoor unit from nozzles at high speed, which draws the indoor air into the unit where it is cooled and heated by the coils.

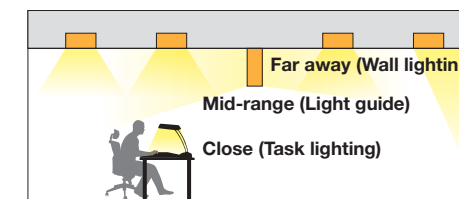
Research into lighting

It was an issue with task ambient lighting* that indoor environments seemed a little dark. So, we researched this type of lighting in relation to how indoor brightness is perceived by increasing the brightness at close, medium and far distances in the human field of view. We came up with an inexpensive, energy-efficient system that effectively augments the perception of indoor brightness, by using task lighting for short distances, light guides with light-emitting panels facing vertically downward for medium distances and wall lighting for long distances.

Room that seems brighter than it is



Illustrated view of task ambient lighting system



* A highly energy-efficient lighting system that minimizes the output of ceiling (ambient) lighting that luminates the whole room and makes up for lower brightness by using local (task) lighting that luminates only areas that require lighting such as desks.

Clima chair

The Clima chair is an air-conditioned chair that allows the user to adjust how hot or cold it is. The preferred level of comfort is obtained from the drafts blow from both sides of the chair and the heater in the seat. It incorporates data communication capabilities and can send data on usage to the cloud. This data can then be used to optimize the air conditioning such as – for example – to lower the temperature setting if the air conditioner is used a lot.

Clima chair



Cloud-based automatic control system



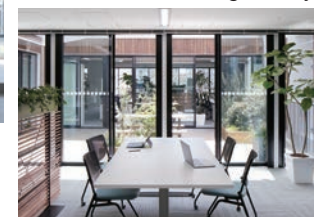
Research into biophilic design

Biophilic design plays off the concept of biophilia* and is said to have a positive effect on people’s happiness and health. At Dai-Dan, we see biophilic design as a beneficial component of office environments and health management. So, thinking that it could help to create a comfortable office environment, we are conducting research to identify the psychological effects that office vegetable gardens and indoor/outdoor greenery have on people.

Office vegetable garden



Office with indoor greenery



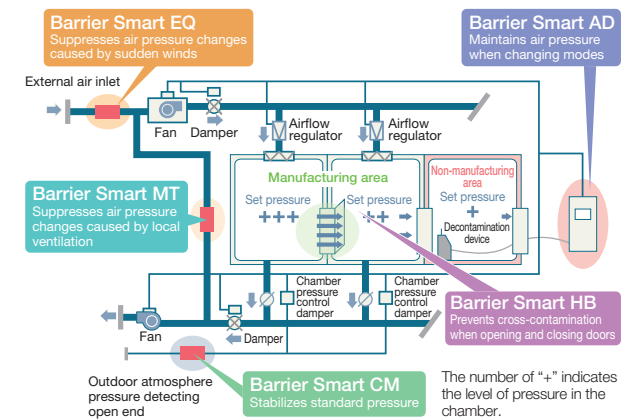
* A concept that holds mankind to be instinctively connected to the natural environment and to feel healthy and happy when in contact with the natural environment.

Pharmaceutical, Food and Research Facilities, Data Centers

Barrier Smart Series

Biological clean rooms such as those found in pharmaceutical manufacturing facilities require room air pressure (and air pressure in each individual room) to be closely controlled in order to prevent dust from getting mixed in with the pharmaceuticals, as well as to prevent hazardous materials from leaking out of the room. The Barrier Smart Series is our proprietary pressure control technology that makes it possible to inhibit the effect of various external disturbances* which could disrupt room air pressure.

Illustrated view of Barrier Smart Series



* The main causes of changes in chamber pressure are the opening and closing of doors, fluctuations in the outside air pressure, and changes and mode switching of air intake and exhausts.

iRack System

Animal experiments are a necessity in the development of pharmaceuticals and medical technologies. The rooms in which laboratory animals are kept can harbor foul odors and allergens*, in addition to carrying the risk of microbial contamination. Controlling animal room environments has long been a challenge.

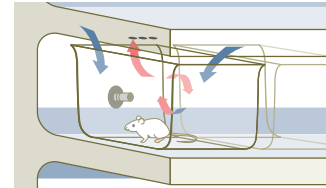
Over many years, Dai-Dan has developed a number of different animal housing options in an effort to improve animal housing environments, reduce energy consumption, and accommodate animal welfare standards.

The iRack System improves operability and prevents the air in cages from leaking outside via unidirectional ventilation that makes use of our air conditioning technology. iRack also limits ventilation only to cages, reducing the required airflow to a minimum and realizing energy savings. The iRack System improves ventilation and ease of use, creating a more desirable environment for both laboratory animals and handlers.

iRack System



Diagram of animal cage



* Substances that cause allergies

Electronics and Precision Instruments Factories

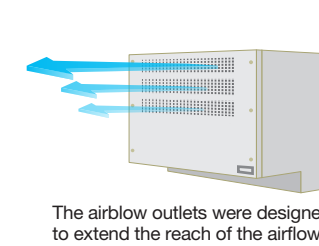
Cleanroom system with virtual ducts

Clean rooms used to manufacture electronic devices customarily require a number of air-conditioning ducts and HEPA filters* to maintain a high clean factor and the precision-controlled temperature and humidity. However, we developed a cleanroom system with virtual ducts that, without ducts, delivers good temperature, humidity and clean factor uniformity.

Example of system introduction



Illustrated view of blow airflows

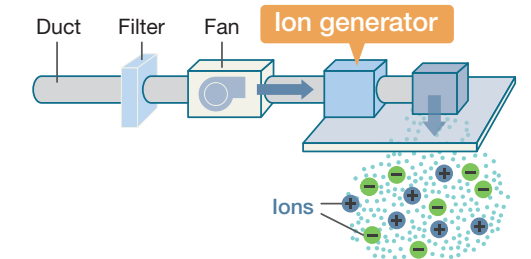


* Acronym for High Efficiency Particulate Air filter

ion-Drop

Dust and other particulate matter that clings to surfaces because of static electricity can degrade manufacturing environments, which can in turn impact product quality and cause any number of other problems. Focusing on the electrical force of ions, we developed technology that prevents particles from adhering by removing the electrostatic charge from surfaces. By blowing ionized air* into target areas, our ion-Drop technology is helping to enhance both the clean factor of manufacturing rooms and the quality of products made there.

The principle of ion-Drop



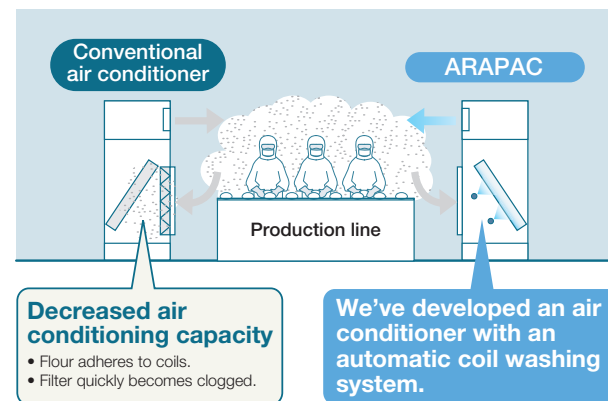
* Through ionization, a high voltage is applied to the air to create positive and negative ions, which can eliminate static electricity.

Medical Care and Welfare Service Facilities

ARAPAC

Food processing plants that make flour, bread or confectioneries and, therefore, handle large quantities of flour were running into problems with their air conditioning not putting out and units dying because flour was sticking to the heat exchanger coils and clogging filters. So, we developed the ARAPAC package air conditioner with self-cleaning heat exchanger coils that prevent performance loss due to buildup and effectively prolong the service-life of the unit.

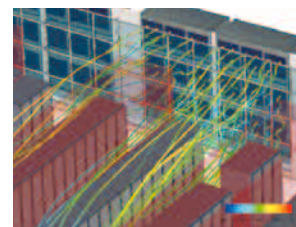
ARAPAC vs. Conventional air conditioners



Technology for data centers

The wall ventilation systems that have been increasingly used to keep data centers cool in recent years have had to balance competing requirements in that blown air must be slowed before hitting the server racks yet has to reach across the entire room. At Dai-Dan, we have many a time explored ways to improve air flows through simulations and full-scale mockups. Moreover, data centers are known for having trouble with controlling humidity. So, to keep our customers' server rooms at the best temperature and humidity, we developed a vaporizing humidifier with motorized louvers that is both energy-efficient and highly controllable.

Simulation of airflows from wall ventilation



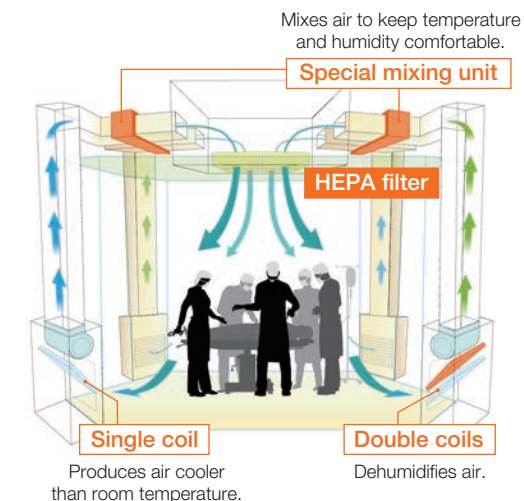
Vaporizing humidifier with motorized louvers



Karatto-Ope

Hospitals that do not reheat outside air before it is blown into operating rooms see troubles like high humidity and condensation on medical equipment during the rainy seasons. Karatto-Ope is an air conditioning system that recovers waste heat from refrigerant during cooling to dehumidify the air. Compared to conventional electric heater systems, it is far more energy-efficient and creates a more comfortable environment.

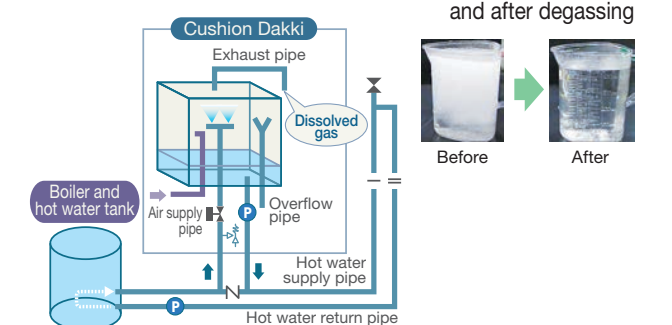
Illustrated view of Karatto-Ope



Cushion Dakki

This product serves to absorb the volumetric expansion in piping of centralized hot water systems* caused by heating makeup water, and reduce corrosion in supply line piping. It does this by spraying the fed water supply inside a tank that connects to the supply pipe. Because it increases the surface area of the supplied water and subsequently contact with the air, spraying quickly releases the heat that causes expansion, and more efficiently separates and removes the residual chlorine, dissolved oxygen and free carbon dioxide that cause corrosion.

Illustrated view of Cushion Dakki



* Hot water systems equipped with a return pipe and supply circulating pump

Technical Research Laboratory

At Dai-Dan, research and development activities are organized and managed on the following three pillar concepts in order that the “controlled environments we offer are friendly to people, things and the planet.”

1 Basic research to ensure quality

In our basic research operations, we obviously develop technologies for making buildings comfortable and energy efficient, but we also research measures against noise, vibrations and pipe corrosion, conduct preinstallation studies using thermal fluid dynamics, and perform duct and piping tests using mockups.

2 Technological development that offers customers new value

Our development work is promoted to offer growth areas such as the pharmaceutical and medical care field, electronic devices industry and green products and services market technologies for reducing environmental load, efficiently controlling indoor spaces and more in a timely manner.

3 Innovation that reaches beyond the building systems industry

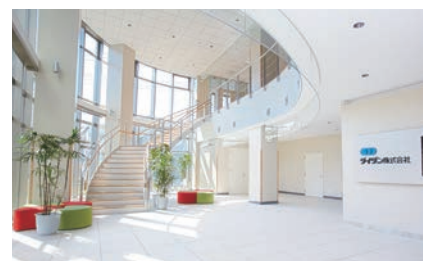
We collaborate with universities and businesses from other industries to develop and apply new technologies. A good example of a cooperative project that has been loudly applauded both in Japan and abroad is the air filter cleaning business that we created through joint research with academia and government into regeneration technology using supercritical CO₂.



Aerial view of our Technical Research Laboratory in Miyoshimachi, Iruma-gun, Saitama Prefecture



Outside view of the new wing



Entrance to the new wing



Zero Cubic model office



Supercritical CO₂ cleaning plant

Exceeding customer expectations
with knowledge, experience and action

Dai-Dan's Practical Competence

Every building system we deal with is unique and different, which requires us to employ flexibility and creativity when challenged to accommodate a variety of building structures, usage patterns and customer needs. As a building services engineering and installation provider, we are committed to exceeding the expectations of our customers by applying the knowledge and experience we have gained throughout our history. Moreover, since our establishment, we have exhibited the ability to provide design solutions and installation expertise with inherent skill. This is Dai-Dan's practical competence in the field.

Introducing Our Installations



Installation example ①
Takamatsu Municipal
Hospital



Installation example ②
netXDC
Sanda Center No. 2



Installation example ③
Teral Inc.
New ZEB Office

TOPIC What Dai-Dan Is Doing to Improve Productivity in the Field

Enhancing Our Installation Expertise and Ability to Provide Design Solutions

Continuously Improving Health and Safety Initiatives with the Goal of Eradicating Industrial Accidents

Application of the Meister Program and Establishment of Partnerships with Our Subcontractors across Japan



Installation example ①

Takamatsu Municipal Hospital

Takamatsu Municipal Hospital opened on September 1, 2018 following the merger between its predecessor Takamatsu Municipal Hospital and the Kagawa Medical Office.

It is a general hospital that aspires to improve medical care in Takamatsu City as a leading hospital with a mission of “supporting the will to live.” Dai-Dan installed the air conditioning and plumbing systems.

Building outline

The hospital is designated for handling type II infectious diseases by the governor and reserves 6 of the 305 beds for cases involving those diseases.

Moreover, 6 of the 45 beds in the West Wing Infectious Disease Ward on the 4th floor are located in rooms that can switch between equal pressure and negative pressure. And, in preparation for explosive outbreaks (pandemics) of new strains of flu, a ventilation system that can isolate the entire 4th floor under negative pressure is provided.

Location	Takamatsu City, Kagawa Prefecture
Use	General hospital
Scale	Gross floor area: About 28,800 m ² 6-stories aboveground, 1-story rooftop facility
Beds	305 (General care: 299, Infectious diseases: 6)
Construction	RC + Partial SRC with base isolated structure
Completed	May 2018

Equipment

Heat sources	Gas-fired absorption-type cold/hot water supplier	1,055 kW × 2 units
	Air-cooled heat pump chiller	1,043 kW × 2 units
	Once-through steam boiler	219 kW × 2 units
	Non-pressure hot water heater	465 kW × 2 units
Air conditioning Ventilation	FCU × 805 units, individual PAC	
	Outdoor AC unit + Mechanical ventilation	
Operating room: Clean fan unit with direct expansion coil		5.6 kW × 24 units



Gas-fired absorption-type cold/hot water supplier

Customer review

Takamatsu Municipal Hospital is helping residents of Takamatsu City to live safe, secure lives by newly adding dental and oral care to emergency care, oncology, perinatal care and pediatrics, infectious disease treatment, psychiatrics, health management and disease prevention, remote care and more. The hospital's air conditioning and plumbing systems are critically important to patient lives and must operate stably. Much of the equipment is out of sight, but I have to give credit to Dai-Dan for coming through on all of the equipment requirements despite the tight time frame.

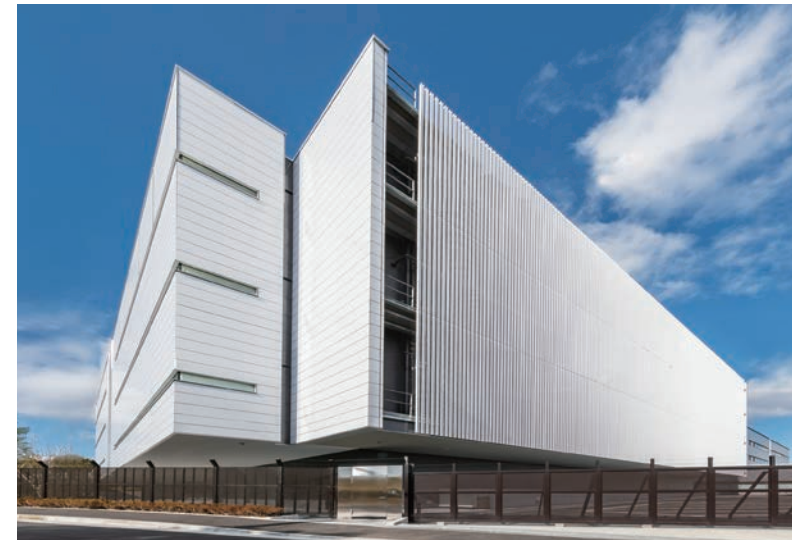
Kunishi Yamada
Director, Takamatsu Municipal Hospital

VOICE Straight from the frontline

For this project, we crafted the plans for switching the pressure in rooms in the infectious disease ward and installed the equipment to do that, in line with the owner's request to provide “full care for disaster scenarios and infectious diseases.” The project was completed without a hitch and the owner got the hospital they wanted because of the cooperation provided by all of the parties involved, beginning with the owner.



Koichi Kento
Deputy Manager of Engineering Section 2
Engineering Department, Shikoku Branch



Installation example ②

netXDC Sanda Center No. 2

SCSK Corporation completed construction on its 10th data center in Japan. Dai-Dan was tasked with installing the air conditioning and plumbing systems. An overview of the building and featured systems is given below.

Building outline

Location	Sanda City, Hyogo Prefecture
Use	Data center
Scale	Gross floor area: About 13,200 m ² 5-stories aboveground, 1-story belowground, 1-story rooftop facility (Equipment installed in 4 of 6 server rooms)
Construction	Steel with base isolated structure
Server room	Floor area per room: About 560 m ² About 250 racks/room planned Server: Max. ave. 8 kVA/rack
Completed	December 2018

Equipment

Heat sources	High-efficiency inverter-driven, turbo chiller	• 1,000 USRT × 5 units (2 of which are for backup)
	Cooling tower water supply tank capacity for 72 hr continuous running	• Water-cooled primary, pumped secondary
Air conditioning	Water-cooled heat storage tank (effective 900 m ² capacity)	(About 15 min cooling water supply available for power outages)
	Floor-blown air conditioning for server room × 80 units	Electrical/UPS room air conditioning × 18 units Package outdoor air conditioning × 2 units Redundant cooling water lines
Sanitary	Water receiving tank + Pressurized water supply pump unit	• Indoor fire hydrants, standpipes, fire extinguishers, inert gas fire extinguishing system

In this project, we conducted various performance tests on equipment using mock loads equivalent to the 1,734-kW server load in the server rooms. Testing was done to:

- 1) Verify that air conditioners could cool server rooms.
- 2) Verify operation in the event of an air conditioner failure.
- 3) Verify that the specified number of air conditioners stop running if the temperature rise detected by the reference sensor is over 10°C.

- 4) Measure how long it takes the temperature detected by the reference sensor to rise 35°C if all air conditioners shut down.
- 5) Verify that heat sources and air conditioning continue running on backup power from generators in the event of an outage.

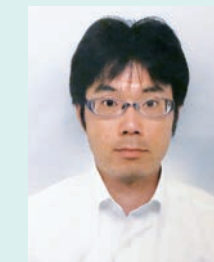
Customer review

We had the cooperation of designers and installers not just for “safety and security” but also to meet the diversifying needs of customers. For the first time ever, we ran performance tests under mock loads assuming overheating in the servers. It was repeated trial and error, but we got the bugs out beforehand and smoothly started providing services.

Hirokazu Ishida
Data Center IT Architecture Dept., Data Center Business Div.
netX Data Center Business Div.
IT Management Group
SCSK Corporation

VOICE Straight from the frontline

Data center projects often conduct test-runs and adjustments under no load, but we ran performance tests in this case assuming server overheating. Since there were no prior examples to work from, planning out the tests was a challenge, but it was a learning experience.



Hiroshi Nishimoto
Project Master of Engineering Section 3
Engineering Department 2, Osaka Head Office



Installation example ③

Teral Inc. New ZEB Office

The new headquarters that Teral Inc. built for its 100th anniversary was the first office building in Hiroshima Prefecture to acquire Nearly ZEB status. Planned as a model case in next-generation office building, it realizes both energy efficiency and comfort as a workplace environment. Dai-Dan installed the air conditioning and plumbing systems in coordination with the builder, Obayashi Corporation.

Building outline

Energy consumption was reduced by 77% by effectively using a combination of “passive” architectural features to note eaves, external fins and use of outdoor air, and “active” architectural features like the use of well water heat, solar power, wind power and micro-hydroelectric power.

Location	Fukuyama City, Hiroshima Prefecture
Use	Office building
Scale	Gross floor area: 2,986 m ² 2-stories aboveground
Construction	Steel construction
Completed	November 2018



Indoor space with ceiling cooling panels

Customer review

A comfortable office environment that has helped to improve the mental productivity of employees was produced via ceiling cooling panels that utilize well water and floor heating.

Toshiki Katayama
Director of General Affairs
Teral Inc.

Main air conditioning equipment for ZEB

- Panel cooling with well water heat source
- Floor heating
- Heat pump air conditioning using well water heat source
- Micro-hydroelectric generator
- Solar collectors + Heat storage tank for air conditioning
- Multi-mode rotary air conditioner (Desiccant air conditioner)



Desiccant air conditioner

VOICE Straight from the frontline

We opted to use well water in order to meet ZEB requirements, but we were not sure there would be enough water until we actually dug the well. Fortunately, there was. Moreover, thanks to the cooperation we got from everyone in introducing the various advanced systems, we were able to deliver as the customer wanted, so I am grateful for all of that.



Yuki Murakami
Chief of Engineering Section 1
Engineering Department, Chugoku Branch

TOPIC

What Dai-Dan Is Doing to Improve Productivity in the Field

1 Remote support teams armed with ICT and staffed with women

Workstyle reform requires that employees do less overtime work and actually take holidays, but a field support system and greater productivity are pressing issues in the business Dai-Dan is in. So, we killed two birds with one stone by mobilizing women on our workforce into “Remote Support Teams” and equipping them with ICT tools.

Who is on our remote support teams

Each site has a remote support team consisting of full-time CAD operators and clerical staff that interact with the assigned site every few days depending on how busy things are. To make it easier for women to handle the job, consideration is being shown – for example – to women who are raising children by allowing them to work shorter hours.

What kind of support is given

Document preparation support by RTR* * Remote Team Review

The remote support team coordinates the work and scheduling that go into preparing the plethora of drawings (studies, sleeves, integrated drawings, etc.) needed to begin work. They also prepare documents that require more time and the backoffice work associated therewith, such as final drawings, instruction manuals, inspection records, text labels, etc.



Document preparation support (Dai-Dan)

Document review

Document reviews serve the dual purpose of assuring work quality and improving the technical skills of young employees. Now that web conferencing is available and CAD data can be projected in 3D views, it is a lot easier to spot and share errors.



Document review (Dai-Dan)



Document review (Jobsite)

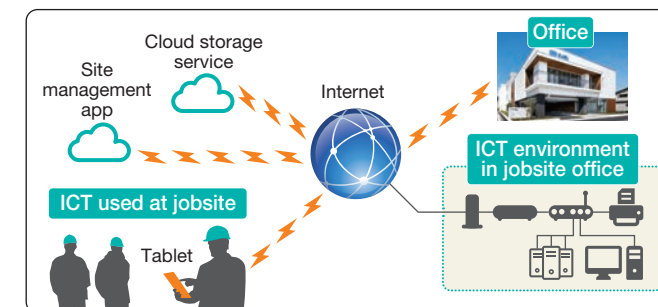
2 Using ICT to enhance installation efficiency

To enhance the efficiency of our site management responsibilities, we are using cloud services and tablets for quality control operations (viewing drawings, recording site patrols, recording inspection results, etc.). We are also employing the following tools in site evaluations.

- Beacons* for managing scaffolding
- 3D recording
- New marking systems (Tablet-linked laser pointers)
- Drones for site surveillance and progress management
- Helmet-mounted cameras
- Transport robots (Electric automated transport carts)

* Bluetooth device that emits location identifying signals

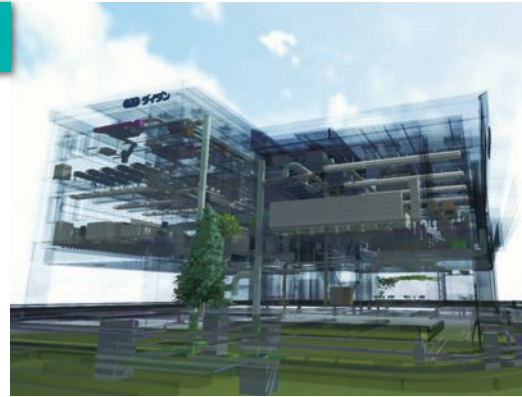
Illustrated view of ICT used for site management operations



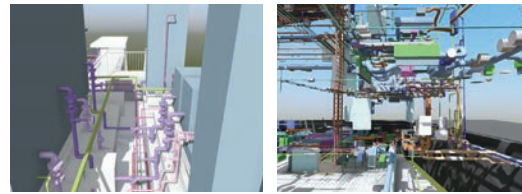
3 Use of BIM*

At Dai-Dan, we use Building Information Modeling (BIM) in our design and installation studies of building systems to ensure quality and enhance work efficiency. In fact, we used it from the planning and design stage of the rebuilding project for our own Shikoku Branch (enefice Shikoku). It allowed us to verify piping connections, routing, maintenance space and other important specifications in 3D during the design process and to create a walk-through movie for confirming and sharing not only outer appearances but also completed images of interiors and how installed equipment is supposed to look. Moreover, thanks to BIM, we were able to efficiently realize a high-quality building by running simulations of the indoor environments in respect of factors like winds and changes in sunlight and shadows, and optimizing lighting and ventilation equipment.

We also used BIM in another project to confirm safety of rooftop transport by doing simulations of those operations under diverse scenarios.



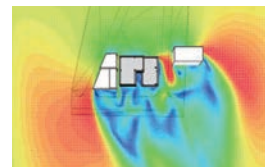
Model of enefice Shikoku by BIM



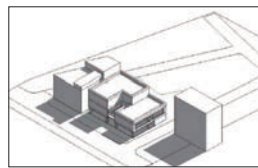
Routing study



Walk-through movie



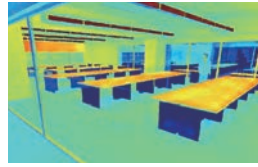
Wind simulation



Shadow simulation



Indoor environment simulation (Brightness perception)



Indoor lighting simulation

* Building Information Modeling

A computer system not only for designing and making structural calculations for a building but also for managing the entire building project including material selection, installation planning, costs, etc. Because all of the building's information is centrally managed, it enhances communications between architects, builders and owners and, by virtue thereof, the efficiency of construction work.

4 Use of AI and VR and research into platform integration with BIM

We are using AI-driven image recognition to identify installed equipment and enhance the efficiency of work operations for verifying installation status. Moreover, we are conducting research into superimposing BIM data over 3D images of machine rooms and other places we have photos of, in order to monitor work progress from a remote location. Virtual Reality (VR) will allow us to share information from remote locations like our head office where veteran engineers can check and instruct work. Applications in BIM like these are also making work more interesting at Dai-Dan and promoting workstyle reform that everyone seeks.

Jobsite



Camera images are used to create a virtual reality of the jobsite.

Remote locations



Installation drawings created by BIM are superimposed over VR images of the jobsite to verify progress and quality.

Enhancing Our Installation Expertise and Ability to Provide Design Solutions

Sharing and utilizing the enhanced value generated by our on-site expertise

Case study presentations for sharing expertise and integrity throughout Dai-Dan

We held our "11th Case Study Presentations" in November 2018. This event gives our employees an opportunity to present the achievements they have made through expertise and integrity in the course of their day-to-day work. Awards are also presented. A video conferencing system is used so that employees across the country can participate. We also use a web conferencing system to broadcast the presentation live to employees.

By taking lessons and ideas presented through the case studies at the presentations and bringing these remarkable achievements into our offices and jobsites to share and utilize them in in-house education, we are contributing to the further enhancement of Dai-Dan's technical capabilities, safety, and quality.



Award recipients

VOICE

Comment from the winner of the Chairman's Award

It is truly an honor to have been chosen for the Chairman's Award at the 11th Case Study Presentations from amongst the many design and installation proposals and improvement examples that were sent in from across the country. My presentation on the "Establishment, Operation and Results of the Field Support System" reported on efforts begun by Engineering Department 3 of the Tokyo Head Office in May 2017. In that initiative, we used ICT tools and deployed women from the workforce to provide field support activities. We saw for ourselves the improvement in productivity that resulted from properly managed installation and less working hours required of engineers. Going forward, we will get more behind this activity in order to develop it further. Thank you.



Hiroko Taguchi
Chief of Engineering Section 3
Engineering Department 3
Tokyo Head Office

Publication of the DAI-DAN Technical Current News

With the objective of publicizing the technology we develop and our research initiatives, we publish the DAI-DAN Technical Current News every September. The publication gives comprehensive explanations of experiments, assessment methods and analysis results using charts and images.

The 113th edition was published in September 2019. Copies of these publications are donated to the National Diet Library.



Technical Reports

Our engineering prowess has been underscored by the various efforts, hardships, failures and successes in our design rooms and jobsites. So that these personal experiences translate into corporate assets and technologies, we report them within the company as essays in our "Technical Reports." In our most recent edition, we included award-winning case studies from our Case Study Presentations and select essays from across Japan, and introduced advanced activities such as i-Construction, which is being used to improve productivity.



Step Up Training

Step Up Training is a component of our workshops for employees engaged in a technical capacity, though it is open to all in the workforce. It teaches participants fundamental knowledge in the fields of "hospitals," "pharmaceutical plants," "electronic device plants," "ZEB and energy-efficiency" and "ZEB and electricity" where Dai-Dan's core technologies play significant roles. For employees who cannot attend workshops because of work constraints, videos are recorded and made available for self-study through the cloud.

Training content over the past year

Hospitals

- Hospital equipment guidelines for test lab departments
- Hospital equipment guidelines for radiology departments

Pharmaceutical plants

- Basic knowledge of pharmaceutical plants
- Basic knowledge of pharmaceutical plants, validations and equipment installation

Electronic device plants

- Basic knowledge of air conditioning and utility systems for electronic device plants

ZEB and energy-efficiency

- Basics of cogeneration systems
- Basics of inverter control

ZEB and electricity

- Basics of grid connections
- Basics of solar power generating systems

Continuously Improving Health and Safety Initiatives with the Goal of Eradicating Industrial Accidents

Our Policies for Health and Safety

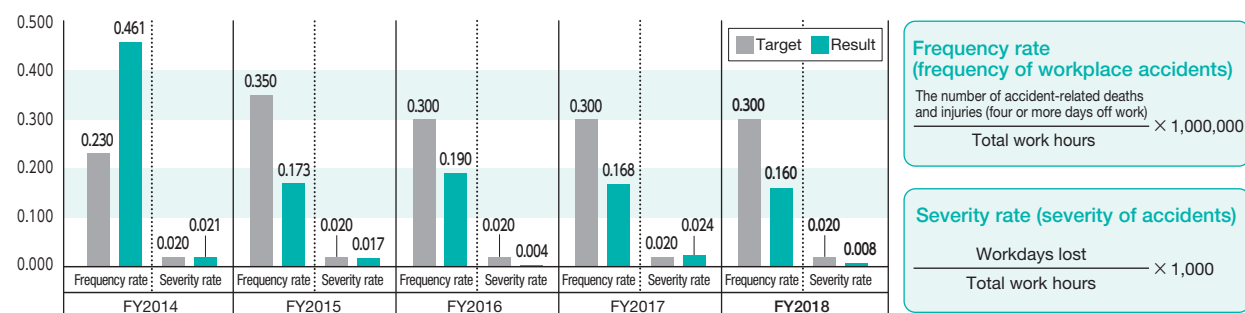
Health and Safety Philosophy

“Ensuring Health and Safety” is our obligation to all the employees of our companies, their families and the society. Dai-Dan considers the health and safety of everyone working for the company as a top priority, regardless of age, gender, country of origin or level of ability. All employees from top management down are expected to cooperate in improving productivity, building a motivating workplace environment, and earning and maintaining the trust of society.

Action Statements

- 1 We shall utilize “Health and Safety Management Systems” to eradicate all industrial accidents. We shall endeavor to eliminate risk and hazards in all work activities, and continuously improve and enhance the health and safety of our workplace.
- 2 In compliance with workplace safety and health-related laws including our company’s internal health and safety management systems regulations, we shall enhance health and safety standard of our employees and executives, preserve and improve their health, and create comfortable rewarding workplaces.
- 3 By continuing to reform our work style and improve work-life balance, we aim to become a desirable employer and an appealing company that places people at the center.
- 4 We shall regularly communicate with subcontractors and encourage them to launch and promote self-directed health and safety activities with clear role assignments.
- 5 We shall educate all people working for Dai-Dan in our policies for health and safety and also disclose them to the public.

Safety performance



Initiatives for fiscal 2018

Targets

- Elimination of accidents involving falls
- Reduction of long working hours

Priority items

- Observing rules and the code of conduct when working
- Keeping track of work hours and encouraging employees to take holidays

In fiscal 2018, there were 42 work related accidents at jobsites, which was 6 more than the previous year. This included 7 accidents due to falls from ceilings, stepladders and platforms despite the fact that we raised “eliminating accidents involving falls” as a target. Nevertheless, we will doggedly pursue this same target by doing preliminary studies as part of job planning and procedures for work in

high places, taking all safety measures required by law and attentively managing daily operations. Moreover, each individual will be held accountable for observing standard practices, Dai-Dan’s code of conduct and established rules, as no compromises will be made when it comes work safety.

Because of our inability to secure sufficient human resources for our own ranks, we have to increasingly rely on temporary labor, recruits from other fields of industry and the inexperienced. Therefore, for this new labor force, we will be imparting periodic training beginning first and foremost with education in safety and health management when contracted or hired.

In fiscal 2019, we are raising the following themes across the company to improve our safety performance.

- ① Safety management premised on prevention
- ② Keeping track of work hours and encouraging employees to take holidays

Application of the Meister Program and Establishment of Partnerships with Our Subcontractors across Japan

Maintaining quality assurance through strong partnerships with our subcontractors

Dai-Dan Meister Program

We have been offering our Dai-Dan Meister Program since 2011 in order to improve job safety, efficiency and quality, and secure skilled foremen from our subcontractors.

Within the program, financial aid for high-level certifications is given to test candidates to offset the associated costs and financial incentives are paid to Meisters and Excellent Foremen for the work they do at job sites of ours, as a way of developing more Excellent Foremen and High-Level Foremen, in addition to Meisters.

In July 2019, awards were presented to 44 certified foremen from 30 companies and cash rewards were presented to 139 Meisters and Excellent Foremen.

Meister Award Ceremony

The 8th Meister Award Ceremony was held in December 2018. 760 foremen serving at Dai-Dan sites were designated High-level Foremen, 17 of whom were named Excellent Foremen. Furthermore, the four best foremen were certified as Meisters.

A total of 34 Meisters have been certified to date, with 10 electrical workers, 14 plumbers, five duct installers, two refrigerant pipers, and three insulation workers by trade.



Meister Award Ceremony

VOICE Comment from a Meister

I earned the title of Dai-Dan Meister this past December and, though I’m happy on the one hand, I recognize that the honor carries a lot of responsibility on the other. For instance, at our morning heads-up meeting every day, I check each and every worker is physically and mentally fit. Obviously, I have to make sure that, as a team, jobsite rules and quality controls are being observed, but I personally believe that everyone’s physical and mental wellbeing come first. There are also things I stress as a part of workflows. One is that anyone in the work area must implement the practice of “pointing a finger at the potential dangers and calling them out in a loud voice” to make themselves aware of the risks and go about work safely. Another thing is to constructively communicate with others so that the jobsite is always organized and work proceeds as planned.

Going forward, I will keep reminding myself that I am a Dai-Dan Meister because, as such, I want to be on the same page as the site supervisor and do my part to keep the jobsite organized and the project on schedule, and, as a Registered Essential Technician, concern myself with

passing down skills and boosting work efficiency. I intend to devote myself to the job day-in day-out with a forward-looking attitude and openly proud to be a Dai-Dan Meister.



Tadashi Kitazume
Sankyo-Giken Co., Ltd.

Dai-Dan’s network of subcontractors



In the building installation services industry, the availability of human resources varies greatly from region to region, to the degree that labor pools can be considered unstable. Moreover, many of the available workers are getting older and retiring, which is making the labor shortage even worse.



















In order to maintain flexibility in our installation schedules under these circumstances, we built a nationwide network of subcontractors that extends beyond the purview of individual offices. Through this network, we can send workers from around the country to offices where labor shortages are anticipated. We are effectively using this network to ensure every job site has the workers it needs and, by promoting interaction between subcontractors, we are creating in the process more opportunities for subcontractors to improve their skills. Moreover, the network helps us to safely provide customers with high quality building systems.

FY2018 CSR/ESG Performance and FY2019 Targets

In order to enable continuous improvement of our CSR activities, we set targets for each fiscal year and complete the PDCA cycle accordingly.

In this report, the FY2018 performance and the FY2019 targets are summarized according to the seven core themes of ISO 26000*. The information is organized into ESG (Environmental, Social and Governance) categories.

Self evaluation  Target achieved  Target not achieved

Theme	Items	Target/Task	FY2018 performance	Self evaluation	FY2019 targets	Core subjects of ISO 26000							Page	
						Organizational governance	Human rights	Labor practices	The environment	Fair operating practices	Consumer issues	Community involvement and development		
Governance (G)	Fair and Transparent Business Practices	Corporate governance	Build and maintain a system to ensure ethical execution of operations	<ul style="list-style-type: none"> Management conducted reasonably and efficiently based on Dai-Dan's Corporate Governance Guidelines Corporate law internal control system functioned appropriately Proactively disclosed information at the appropriate time 		Strengthen corporate governance to meet changes in social trends	✓					✓		35
		Compliance	Strengthen the compliance system (compliance with the Antimonopoly Act and other relevant laws and regulations) and promote sound corporate management	<ul style="list-style-type: none"> Group training sessions, briefings, and seminars were held to familiarize attendees with the importance of compliance with laws and regulations Published issue No. 20, 21 and 22 of Compliance News to raise awareness 		Perform ongoing awareness-raising activities regarding compliance and ensure our business activities comply with the Antimonopoly Act and other relevant laws and regulations	✓	✓			✓			37
		Risk management	Periodically review and revise business continuity plans (BCP)	Emergency drills of the safety check system were conducted at each office under a hypothetical disaster scenario, to deepen everyone's understanding of how the system works.		<ul style="list-style-type: none"> Improve and strengthen the risk management system to maintain the integrity of business activities Conduct emergency drills Review and restructure business continuity plans (BCP) as business continuity management (BCM) 	✓					✓		
Environmental (E)	Environmental Contribution	Environmental conservation initiatives	Solution proposal Planning Designing	Number of solutions that leverage Dai-Dan technology adopted CO ₂ emission reduction through design solutions CO ₂ emission reduction through adopted solutions		Achieve environmental management system plan targets * Refer to page 39 for FY2019 environmental targets.								39
			Installation	Promoted sustainable procurement Promoted sorting and recycling of industrial waste Removed thermal insulation of drainpipes			✓							
			Office initiatives	Reduced the energy consumption Reduced the use of photocopy paper Introduced hybrid vehicles										
Social (S)	Meeting Customer Expectations	Quality improvement initiatives	Achieve quality management system plan targets	<ul style="list-style-type: none"> Reduced customer satisfaction Reduced quality issues 		Achieve quality management system plan targets						✓		41
		Initiatives with subcontractors	Continue the activities of the sectional committee	Implemented the activities of the sectional committee		Continue the activities of the previous fiscal year						✓		42
	Valuing Our Employees	Work-life balance and the work environment	Check and review the effectiveness of the Dai-Dan Mentor System	Monitored individual circumstances through additional interviews with each mentor.		Continue the activities of the previous fiscal year			✓					43
			Strengthen technical expertise	Improved technical expertise through major reviews of training session plans		Continue to strengthen technical expertise			✓					
			Continue initiatives to raise awareness of human rights	Raised awareness through new employee training session		Continue initiatives to raise awareness of human rights		✓						
			Work style reformation initiatives	<ul style="list-style-type: none"> Conducted mental health seminars Conducted stress checks for all employees Percentage of persons working long hours who saw a physician (92.7%) Percentage of persons working long hours (1.58%) 		Correct issues that cause long working hours			✓					
	Partnering with Hosting Communities	Dissemination of technical information to external parties	Contribution to the construction industry	<ul style="list-style-type: none"> Delivered 3 lectures at the nationwide meeting of the Institute of Electrical Installation Engineers of Japan Delivered 3 lectures at meetings of the Society of Heating, Air-Conditioning and Sanitary Engineers of Japan 		Continue the activities of the previous fiscal year							✓	45
		Social contribution activities	Targeted number of activities: more than 450	Dai-Dan's offices across Japan voluntarily conducted 454 activities		Continue the activities of the previous fiscal year							✓	46
	Dai-Dan's Practical Competence	Sharing of technical information	Share information obtained at workshops	Held the Case Study Presentations		Continue the activities of the previous fiscal year							✓	30
				Presented activity outcomes via teleconference		Continue the activities of the previous fiscal year							✓	
Workplace health and safety management system		Achieve workplace health and safety management system plan targets	<ul style="list-style-type: none"> Work-related accidents increased relative to the previous fiscal year Safety results (frequency and severity rates) 		Achieve workplace health and safety management system plan targets			✓				31		
Partnerships with subcontractors		Ensure the Dai-Dan Meister System is implemented	Held the 8th annual Dai-Dan Meister Award Ceremony		Improve and entrench the Dai-Dan Meister System						✓		32	

* A guide on how businesses can operate in a socially responsible way

Fair and Transparent Business Practices

In order to ensure the sustainable creation of corporate value, we seek to improve and strengthen our corporate governance system in a sustainable manner.



Corporate Governance

Our approach to corporate governance

As a building services engineering and installation provider, we are committed to the management principles of always taking on the challenge of creating value for our customers while contributing to the development of a better environment and stronger communities. In justifying the trust placed in us by all stakeholders including shareholders, customers, business partners, employees, and local communities, we remain focused on continuously enhancing our corporate governance in order to maintain effective management practices.

Our basic policy on corporate governance is as follows.

- Ensure the rights and equality of shareholders
- To ensure transparency, fairness, speed, and decisive decision making, the Board of Directors will carry out its functions appropriately and efficiently
- Endeavor to disclose information appropriately and hold constructive dialogues with shareholders
- Work appropriately with stakeholders other than shareholders

Dai-Dan's Corporate Governance Guidelines

We have established the Dai-Dan Corporate Governance Guidelines, a policy that systematically expresses our views concerning such matters as the protection of shareholders' rights, running the Board of Directors, dialogue with shareholders, and issues relating to social and environmental problems and other sustainability issues. We will continue taking measures to strengthen and improve corporate governance to make it more effective.

Our corporate governance system

The objective of Dai-Dan's corporate governance system is to ensure appropriate and efficient management by maintaining discrete decision-making, oversight, and administrative functions, thereby enabling swift and appropriate deliberation and implementation of decisions. We adopted a corporate auditor system and effectively utilizes the following managerial structure.

Board of Directors

The Board of Directors comprises 10 directors, three of which are external directors. It convenes monthly and holds special meetings as necessary. In addition to overseeing business operations, the board deliberates on important matters related to corporate management, including subjects discussed in Executive Committee meetings. The articles of incorporation of Dai-Dan provide that the Board of Directors should consist of 12 people or less.

Board of Auditors

The Board of Auditors comprises four auditors (two of whom are external auditors). In principle, they meet prior to Board of Directors meetings. They thoroughly examine the issues discussed at Board of Directors meetings, attend the meetings in person, and contribute their views as necessary.

According to the audit policy and audit plan established by the Board of Auditors, the auditors monitor the directors' fulfillment of their duties by conducting audits of offices in cooperation with accounting auditors. Their responsibilities include attendance at Board of Directors meetings and other important gatherings as well as reading of important documents requiring approval.

Executive Committee

Executive Committee meetings are held when necessary. The committee comprises regular members (directors, auditors and corporate officers) who are appointed by the Board of Directors and temporary members selected according to the subject of the agenda. The committee develops management policies and other policies for Dai-Dan and its group subsidiaries, and extensively examine the progress of goal achievement. In addition, the committee members discuss important matters concerning management strategy and management of the company itself. The committee then makes recommendations to the Board of Directors as needed.

Corporate Officers' Committee

The Corporate Officers' Committee, in principle, meets once a month. The committee members meet to discuss management policies, important operational policies and decisions made by the Board of Directors. The committee members also report on work carried out by corporate officers.

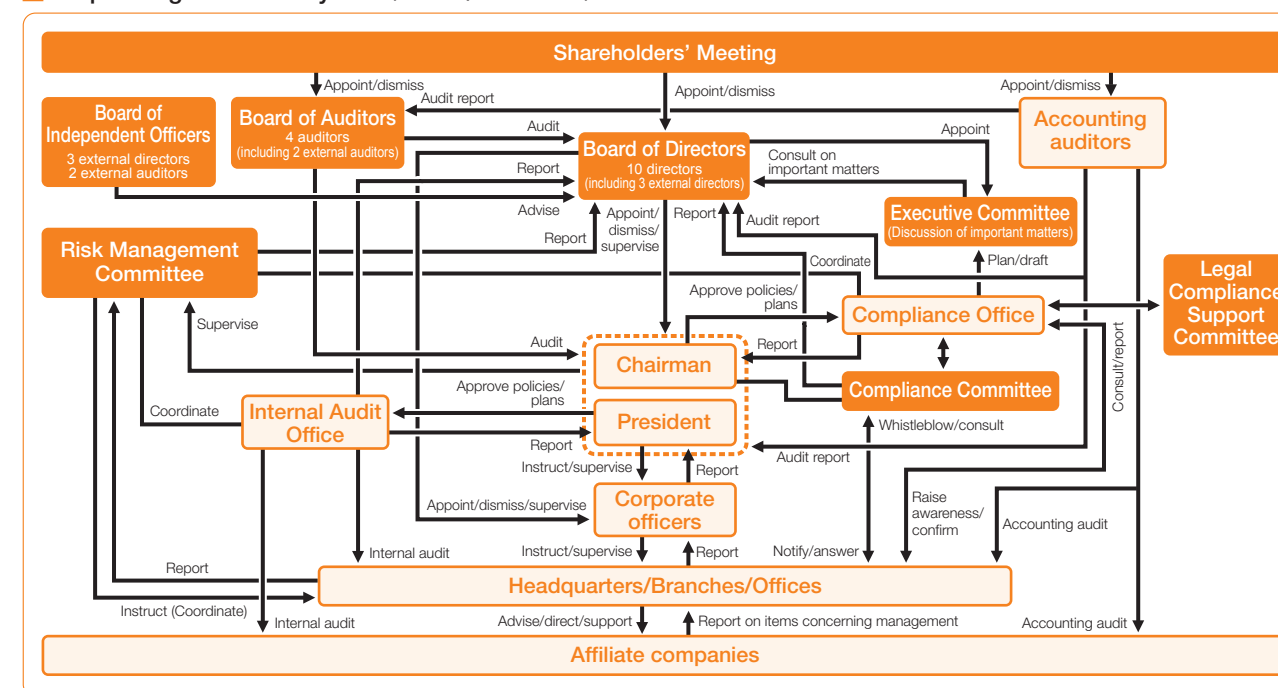
General Managers' Meeting

General Managers' Meetings are, in principle, held once a month to ensure that tasks are being executed in an integrated manner. Management policies and measures are explained, and the state of business operation of each office and their respective issues are discussed, and prompt solutions sought.

Board of Independent Officers

Composed of three outside directors and two outside auditors, the Board of Independent Officers meets periodically or as needed to share information and exchange opinions (including exchanges with the representative directors). More importantly, they analyze the performance of the Board of Directors via a self-evaluation survey, extract issues and report those results to the Board of Directors, and propose improvements on how the Board of Directors and Executive Committee operate. They also provide advice on rules governing the selection of representative directors, remuneration for directors and corporate officers, and the payment of performance-based bonuses.

Corporate governance system (as of September 2019)



Internal control system

We have developed an internal control system that focuses on the improvement of internal rules. This is intended to ensure compliance across our entire company and subsidiaries and includes the execution of tasks by directors in compliance with laws and the articles of incorporation as well as appropriate performance of all tasks. In addition, we confirm the operational status of the company's internal control system each fiscal year and report our findings to our Board of Directors while continuing to revise and improve this system in order to improve efficiency and legal compliance.

Internal control system for financial reporting

In April 2008, we implemented an internal control system for financial reporting under the Financial Instruments and Exchange Act. The Internal Audit Office under the president examines and assesses the effectiveness of the system.

The fiscal 2018 assessment concluded that, as of the end of fiscal 2018, our internal control system for financial reporting is effective. An independent auditor also provided a similar opinion.

Compliance (Legal Compliance and Corporate Ethics)

Corporate Code of Ethics

We have developed five Action Principles and 14 Action Standards to guide our officers' and employees' compliance with laws and regulations and support their demonstration of good social conscience. The Action Principles summarize the concepts to be kept top of mind during the performance of day-to-day tasks.

Excerpt from our Corporate Code of Ethics Our Action Standards serve as practical guidelines to the Action Principles on which they are based.

Action Principles

1. Observe laws and social norms and conduct business activities in a sensible manner.
2. Participate in the building of a society that can sustain its development.
3. Respect the fundamental human rights of all.
4. Maintain a fair and transparent relationship with stakeholders.
5. Recognize our place in society and strive to contribute to the emergence of a better society.

Action Standards

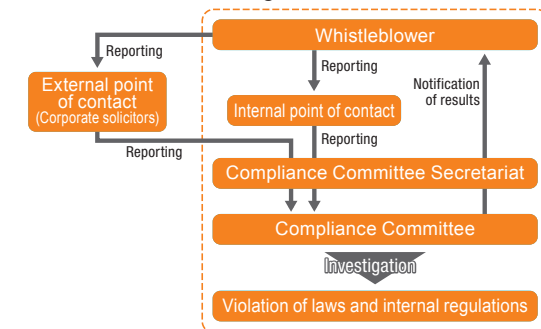
1. Maintain positive relationships with customers and users
2. Ensure safety and quality
3. Ensure fair and open competition
4. Engage in ethical business transactions
5. Fairly disclose corporate information
6. Ethically manage critical information
7. Protect and respect intellectual property rights
8. Improve working conditions and work environments
9. Respect human rights and individuality
10. Address environmental issues
11. Practice proper accounting and tax payment
12. Maintain sound relationships with politicians and the government
13. Eliminate any dealings with antisocial forces
14. Avoid engaging in self-serving actions

The whistleblowing system and consultation system

Dai-Dan has established a whistleblowing system and consultation system with the purpose of swiftly identifying issues in the workplace, which are otherwise difficult to identify (behavior or actions that contravene laws, internal regulations or social ethics). We have implemented this by establishing a reporting route independent from the operational chain of command. Reports can be made internally through these systems, but they can also be made externally via our corporate solicitors.

Any individuals that file a report are guaranteed by the Corporate Code of Ethics that they will not be subjected to any unfair treatment. Reports can also be submitted anonymously to ensure the privacy of the whistleblower.

Internal whistleblowing and consultation flowchart



The Compliance Committee Secretariat acts as an internal point of contact.

Compliance Committee

The Compliance Committee was established to ensure compliance with laws and internal regulations, and to strengthen fair and ethical company operations with strong compliance. The committee is chaired by the president, and is responsible for boosting officers' and employees' compliance awareness, receiving and investigating reports of violations, and developing preventive measures. During fiscal 2018, the committee met on five occasions.

A system to ensure thorough, fair and appropriate business operations

Dai-Dan has strengthened its compliance promotion system with the recognition that "managing the company in conformity with the spirit of compliance" is part of our management foundation. We continue to improve awareness of compliance while ensuring thorough business operations in accordance with relevant laws and regulations.

Compliance Office

The Compliance Office is under the direct control of the chairman while ensuring it remains independent from the headquarters and offices. This office collaborates with the Compliance Committee in planning, drafting, and implementation to help ensure that our business activities comply with the Antimonopoly Act and other relevant laws and regulations.

In cooperation with the Internal Audit Office, this office continues to monitor the compliance activities in our offices.

Legal Compliance Support Committee

The Legal Compliance Support Committee is a professional organization supporting the Compliance Office. The Committee is composed of external experts and provides expert advice applicable to the initiatives carried out by the Compliance Office. It also holds seminars on legal compliance and conducts awareness-raising activities for all our offices.

Risk Management

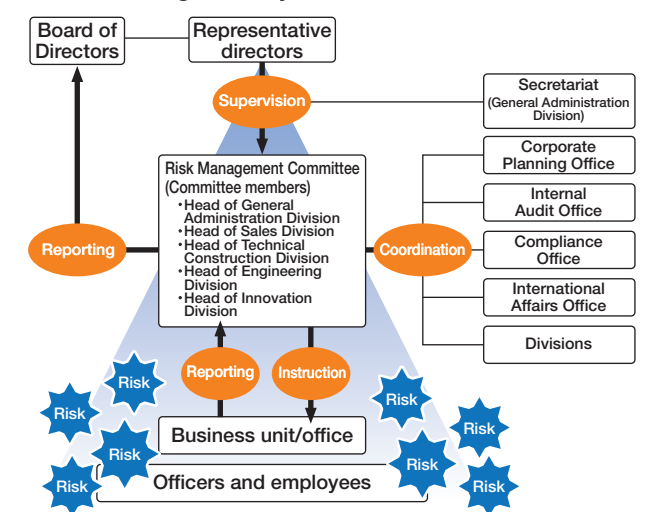
Risk management policy and system

In order to continue providing value for years to come, we have built a risk management system to prevent risks from unexpectedly emerging and minimize the risks that do emerge. We have established a Risk Management Policy to guide us in the best direction for managing all of the risks we face.

In line with our Risk Management Rules, we have a Risk Management Committee. Their job is to discuss risk management decisions, look for new risks and reexamine countermeasures, all of which they report to the Board of Directors.

Moreover, if there is a natural disaster, leak of confidential information or some other event that damages the company, a crisis management headquarters is set up as per the Risk Management Rules. So, at Dai-Dan, a risk management system that enables us to act quickly and keep losses to a minimum is in place.

Risk management system



Primary risks and countermeasures

Risk	Description	Countermeasures
Information leak	Unauthorized use or external leak of information, shutdown or malfunction of information systems, etc.	Publish a "Security Handbook," etc. Impart training in information security.
Human resource related	Unattained hiring plans, loss of human resources, drop in morale, etc.	Promote workstyle reform. Conduct stress tests.
Legal	Legal compliance, contractual inadequacies, responding to changes in social systems, etc.	Impart compliance training. Use the whistleblowing system.
Natural disasters	Typhoons, river flooding, earthquakes and other natural disasters	Craft a BCP. Introduce a safety check system.
Work related	Safety, degraded quality of installed systems, etc.	Craft a safety and health management plan. Conduct jobsite patrols.
Trust	Credit recipient in financial difficulty, non-performance on contract obligations, etc.	Take action to manage credit as appropriate. Seek an objective assessment from an outside institution.

Initiatives to strengthen information security

The Information System User's Guidelines are available to officers and employees on the corporate intranet, providing cautions regarding the use of electronic equipment in everyday work.

Information security training is conducted via e-learning, and drills are conducted on how to handle targeted e-mail attacks to increase information security awareness and prevent the occurrence of accidents such as information leaks.

Moreover, for the purpose of strengthening information security at jobsites, we established "Network Building Guidelines for Jobsites" and "Information Security Guidelines for Jobsites," and make sure that countermeasures are implemented in line therewith. We also offer training in information security to jobsite personnel.

Implementation	Date
e-learning	January 2019
Drill on how to handle targeted e-mail attacks	August 2019

Business continuity planning (BCP)

At Dai-Dan, we formulated a business continuity plan (BCP) to prevent chaos, minimize damage, ensure the safety of our officers, employees and their families, quickly provide customers with support and maintain the trust society places in us, in the event of a major disaster. We tested it in September 2019 by conducting evacuation drills at all offices in Japan. We will continue to review and tune our BCP so that it works bet for us and our stakeholders should we ever have to use it.



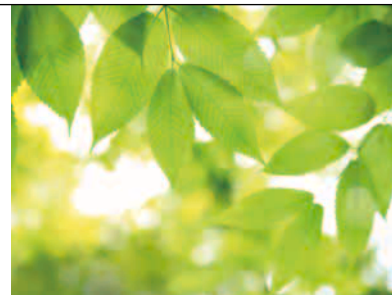
First aid lesson



Fire extinguishing drill

Environmental Contribution

We believe it is our mission to contribute to the emergence of a society committed to global environmental sustainability.



Environmental Conservation Initiatives

Our environmental stance

To help realize a sustainable global environment, Dai-Dan has been providing building systems that reduce environmental loads and effectively use resources. Going forward, we will continue to seek ways to lower the environmental load of our business activities, enhance environmental awareness amongst our workforce, suppliers and subcontractors, and further address the challenges of sustainable economic growth and finding solutions to troublesome social issues.

Moreover, we will make sure the building systems we install and the facilities we manage comply with environmental laws and regulations. This includes preventing leaks of hazardous substances like global warming-causing fluorocarbons, and properly managing waste.

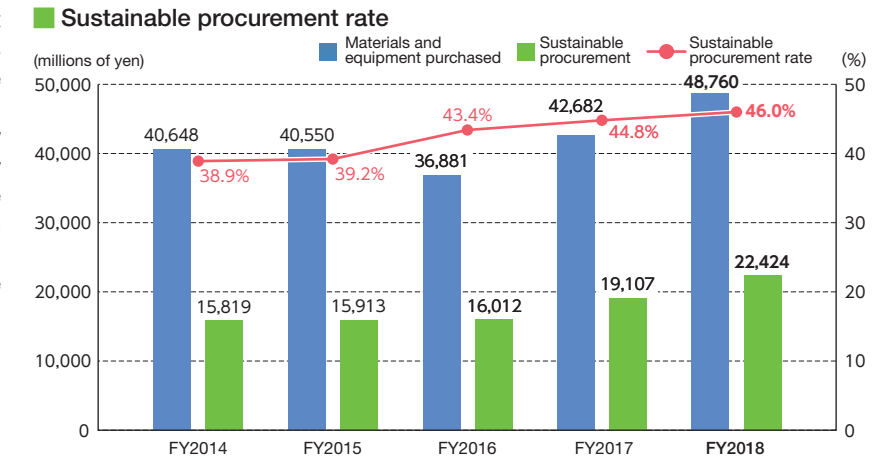
Our Environmental Management System: FY2018 environmental targets and results/FY2019 environmental targets

○: Target achieved △: In progress

Activities and responsible departments		Main target or item to be monitored	FY2018 target	FY2018 result	Assessment	FY2019 target
Proposal, planning, designing	Sales department	Number of solutions that leverage Dai-Dan technology adopted	More than 90	99	○	More than 100
	Design department	CO ₂ emission reduction through design solutions	More than 35,000 tonnes	43,314 tonnes	○	More than 45,000 tonnes
		CO ₂ emission reduction through adopted solutions	More than 15,000 tonnes	24,669 tonnes	○	More than 25,000 tonnes
Installation	Installation department	Energy consumption converted to CO ₂ emissions	—	1,303 tonnes	—	—
		Promotion of sustainable procurement	More than 45%	46.0%	○	More than 50%
	Procurement department	Promotion of sorting of industrial waste Quantity sorted in the field	More than 3.8/workplace	4.0/workplace	○	More than 4.0/workplace
		Promotion of recycling Recycling sales proceeds	More than 60 million yen	43.259 million yen	△	More than 60 million yen
		Reduction of thermal insulation used for drainpipes	More than 90,000 m	97,652 m	○	More than 100,000 m
Office activities	All employees	Energy consumption converted to CO ₂ emissions	Less than 1,600 tonnes	1,645 tonnes	△	Less than 1,600 tonnes
		Water consumption	—	13,854 m ³	—	—
		Copy paper usage	Less than 58 tonnes	58.0 tonnes	○	Less than 56 tonnes
		Increasing adoption of hybrid vehicles and other next-generation vehicles	80%	82%	○	More than 85%
		Improvement of sorting rate of general waste	—	62.3%	—	—

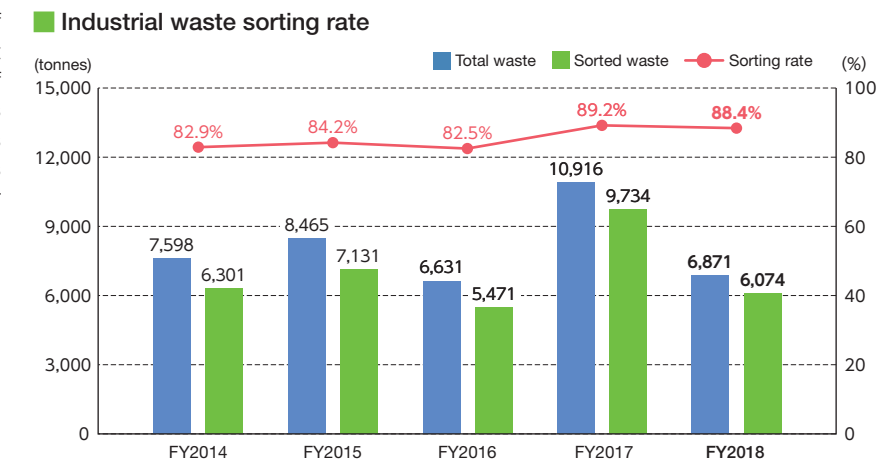
Initiatives to promote sustainable procurement

Dai-Dan promotes sustainable procurement to our customers, and has designated items that are applicable to sustainable procurement in the following five areas: introduction of energy saving, high efficiency equipment; use of environmentally friendly material; introduction of highly durable equipment; introduction of low emission devices; and introduction of water saving equipment. Sustainable procurement rate during fiscal 2018 was 46.0%.



Initiatives to sort industrial waste

At Dai-Dan, we promote the sorting of waste at all our installation sites. Throughout fiscal 2018, we produced 6,871 tonnes of industrial waste, of which 88.4% was sorted. Furthermore, we promote awareness of reducing industrial waste at our offices and encourage sorting. In fiscal 2018, our offices produced 113 tonnes of general waste, of which 62% was sorted.



Quality and Environmental Management System

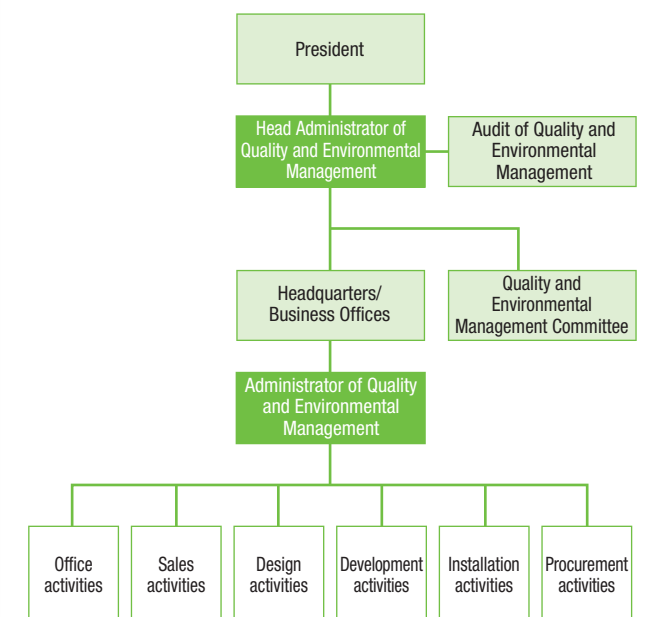
Our environmental management system was integrated with our quality management system for more effective implementation.

Our Policies Regarding Quality and Environmental Protection

"As a building services engineering and installation provider, we continually take on the challenge of creating value for our clients while contributing to the development of a better environment and stronger communities"; in keeping with these management principles, we ensure our business practices contribute to quality and environmental preservation. Moreover, with the goal of improving customer satisfaction, we are contributing to the emergence of a society committed to a sustainable environment.

- We strive to contribute to social development and environmental preservation by complying with laws and norms of society regarding quality and environmental standards as well as regulations established by our company.
- While working to strengthen our field capabilities and improve productivity, we strive to improve the skills of our employees and strengthen our partnerships with subcontractors to provide assured quality.
- We are dedicated to developing, proposing, and applying technologies that help to reduce environmental impact and promote the effective use of resources and energy.
- Through our corporate initiatives, we will contribute to the mitigation of climate change and the conservation of water resources while conserving biodiversity and protecting ecosystems.
- We, as a good corporate citizen, carry out environmental and social contribution activities as well as positive information disclosure, to enhance communications with society.
- We publicize our quality and environmental targets internally and continue to strengthen them in order to improve the results of our initiatives.

Quality and Environmental Management System



Meeting Customer Expectations

We continue to work towards ever-higher levels of quality in order to further improve customer satisfaction.



Quality Improvement Initiatives

Our vision of quality

We aim to provide building systems and services of reliable quality that assures safe use. Toward that end we are working to improve our preliminary examination of installations, which includes risk assessments, and working to build the competency of employees and subcontractors. We also aim to further improve after-sales service through our Customer Consultation Office and in-house information system.

Works Review Meetings

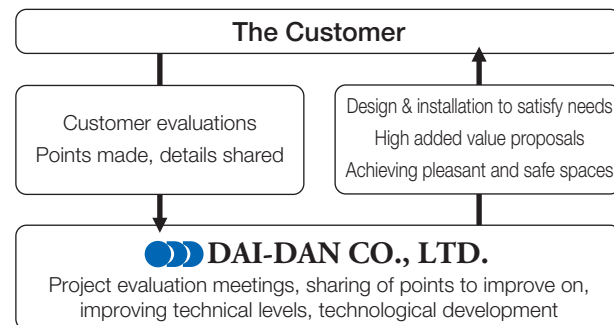
Throughout our long history we have provided building systems and services to customers in various industries with diverse building applications. In order to capitalize on our long track record of installations and our knowledge of customer systems, we hold Works Review Meetings for each project with the attendance of the sales, engineering and other specialized departments concerned. We strive to provide high-quality systems that best serve our customers from the perspectives of functionality, quality, cost and energy efficiency.

Building Chart System

We have been using a Building Chart System, an internal information system, in order to make the most of our installation experiences. The Building Chart System is used to record the details of the installation and recommendations, as well as customer requirements for each building. We enhance customer satisfaction by recommending detailed renovation options that contribute to comfortable use of a building.

Customer evaluations

We conduct written customer satisfaction surveys after completing installations to obtain detailed evaluations and feedback from customers, which we use internally to improve future installations and proposals. A completed project evaluation meeting is held to analyze the survey responses, organize the feedback, confirm technical problems, and determine how to make improvements. Additionally, we take the data from the time of installation and enter it into a "Building Chart System" for managing records of our proposals and to facilitate follow-up service.



Customer satisfaction survey results

4-point scale
(4: Satisfied 3: Generally satisfied 2: Somewhat dissatisfied 1: Dissatisfied)

		1	2	3	4
Overall evaluation	2018				3.53
	2017				3.56
	2016				3.53
Installer capacity	2018				3.50
	2017				3.54
	2016				3.50
Installation management	2018				3.46
	2017				3.51
	2016				3.49
Creativity and solution proposals	2018				3.46
	2017				3.48
	2016				3.46
Backup capacity	2018				3.44
	2017				3.47
	2016				3.43

Number of surveys completed: FY2016; 736/FY2017; 613/FY2018; 650

Initiatives with Subcontractors

Activities with subcontractors

To safely deliver high-quality building systems to customers by a date they desire, it is imperative that we, as the party responsible for planning and managing projects, and the many subcontractors that handle the installation work operate as one in a cooperative effort underscored by both technical expertise and skills.

Every one of our offices has a network of subcontractors whom we have known and trusted for years. So much so that we work together with them via sectional committees in various fields of specialty where they are highly qualified. The activities of these sectional committees address a wide range of themes, recently being how to increase efficiency and reduce labor in the wake of the ongoing manpower shortage stemming from an aging workforce of skilled technicians and smaller numbers of young recruits.

At Dai-Dan, we are aiming to further improve our "technical expertise" in terms of safety, quality and costs, and will continue to meet customer hopes and expectations through "manufacturing" in cohort with our subcontractors.

Sectional committee activities (Details of initiatives)

FY2018 initiatives of the sectional committees of the Nagoya Safety, Health & Technology Association

Sectional committee	Topics and principal activities
Electricity Sectional Committee	<ul style="list-style-type: none"> Creation of a collection of manufacturer warnings Holding classes for acquiring electrician qualifications
Piping Sectional Committee	<ul style="list-style-type: none"> Creation of a comparison table of stainless steel couplings for hot water supply Review of piping installation rules Holding hands-on training classes for acquiring Class 1 piping technician qualifications
Refrigerant Sectional Committee	<ul style="list-style-type: none"> Comparative study of indoor unit drain hoses Comparative study of indoor unit vibration damping brackets
Duct Sectional Committee	<ul style="list-style-type: none"> Preparation of reference drawings for external wall penetration processing
Instrumentation Sectional Committee	<ul style="list-style-type: none"> Work related accident prevention activities, quality trouble prevention activities
Insulation & Painting Sectional Committee	<ul style="list-style-type: none"> Adoption of new materials, investigations into new building methods Creation of a list of "Don'ts" for painting works
Work Sectional Committee	<ul style="list-style-type: none"> Creation of a calendar with mottos for safety, quality, the environment and cost
Delivery Sectional Committee	<ul style="list-style-type: none"> Cost reduction proposals from all members Holding meetings to explain new products

VOICE

Comment from a subcontractor

The Nagoya Branch has 174 subcontractors in its Safety, Health & Technology Association. The association views "safety" and "health" as topics of the highest priority and, therefore, continuously holds discussions, workshops and other learning opportunities that delve into those subjects. It is working to raise the bar on safety and health by making the dangers of work-related accidents widely known, reducing hazards and promoting health management. Through the sectional committees, members are looking for solutions to the current labor shortage and depleting numbers of skilled technicians due to aging by exploring ways to make installation methods more efficient, the introduction of new materials and other initiatives. Efforts to enhance productivity are being promoted by sharing and honing "technical expertise" and "practical competence."

With regard to natural disasters, the association has a quick-response emergency support system in place that includes putting BCPs that have been prepared for major disasters through periodic reviews and tuning.

Going forward, the association will increase its cooperation with Dai-Dan in order to better meet customer expectations.



Yutaka Wakuda
Chairman of Nagoya Dai-Gen Kai
Chairman of Nagoya Safety, Health & Technology Association
Chairman of Daidenkouji Co., Ltd.

Sectional Committee Activity Report

This report summarizes the activities conducted by Dai-Dan and subcontractors over the course of the year. It serves as a platform for sharing the activities of each regional area with other areas of Japan.



Sectional Committee Activity Report

Valuing Our Employees

Respect for everyone, Support for work-life balance.



Work-Life Balance and the Work Environment

Initiatives to reform work styles

Dai-Dan addressed work style reform by creating a committee for spearheading the effort in September 2017. The committee then created a roadmap of actions that corresponded to the 19 measures of the government's Action Plan for the Realization of Work Style Reform, before pushing ahead with the various changes to the plethora of corporate systems and practices needed to realize work style reform. This included changes instituted in fiscal 2019 to improve how non-regular employees were treated. Based on the same-job same-pay justification, improvements were made to the pay scale and benefits of contracted workers and persons who came out of retirement to work.

To correct the entrenched practice of working long hours, a structured holiday system was introduced in fiscal 2019 and a new practice of encouraging employees to take long holidays

after completing a project and during Golden Week, summer break and other regular holidays was put in place across the organization.

ICT is also being used to enhance work efficiency.

With regards to recruiting people out of retirement, we are exploring changes to our corporate systems that would extend both the retirement age and post-retirement working age, with the intention of:

- Keeping the elderly motivated by hiring them for their talents and potential;
- Complying with amendments to the Law concerning the Stabilization of Employment of Older Persons, and;
- Supplementing pension payments with income (in periods that pensions are not paid).

Health Management

At Dai-Dan, we are promoting better health and wellbeing for our people. So much so that top management's message in May 2019 spoke to the "Dai-Dan's Aims in Health Management." We have also created a Central Health Promotion Committee and similar committees for offices to explore improvements to workplace environments, health improvement activities for officers and employees, dietary guidance, and lifestyle guidance for single persons and those living away from their families because of business. Our idea is to develop the company and contribute to the realization of a sustainable society by helping our workforce lead healthy, happy lives.

"Dai-Dan's Aims in Health Management"

As a company, Dai-Dan firmly believes that it is critical towards corporate growth and the contributions we try to make to develop society for the better that each and every man and woman on our workforce leads a happy life and operates as one to achieve the aforementioned goals. Guided by this train of thought, we will be seeking ways to improve the "Quality of Life" of our people and make it possible for all of them to lead healthy, happy lives, as a platform for corporate growth and contributing to a sustainable society.

1. Raising everyone's awareness of health

As a company, we will constructively support efforts to maintain and improve health in order to raise health awareness and improve the health literacy of each and every employee.

* Health literacy: The ability of an individual to obtain, understand and effectively use health information

2. Creating healthy, motivating workplace environments (for corporate growth)

We can expect to grow as a company by creating healthy, motivating workplace environments where work style reforms allow each and every one to balance work and life, and exhibit the best of their abilities.

3. Extending one's healthy years (as a contribution to local communities and society as a whole)

As a company, we can and will contribute to the local communities who host our business operations and society as a whole, by supporting and training our employees and our subcontractors' employees so that they can be healthy and active longer.

We will promote health management activities in cooperation with group companies and subcontractors.

"Eruboshi" company certification

On June 1, 2018, Dai-Dan received a Class 2 "Eruboshi" certification from the Minister of Health, Labour and Welfare in recognition of its efforts to promote the active involvement of female employees based on standards set in the Act on Promotion of Women's Participation and Advancement in the Workplace.



"Eruboshi" certification is designed for companies that have formulated and submitted an action plan based on the act mentioned above. Those that are making excellent progress in their efforts are able to receive the certification from the MHLW.

In a social environment growing increasingly diverse, we want to enable our employees to take full advantage of their talents and abilities, regardless of gender, age, or other factors.



Follow-up training

Leave system

A variety of leave options are available to employees so that they can use their off time to refresh themselves. We also introduced a structured holiday system and set 3 paid holidays in summer and 2 over the New Year's break in compliance with the 5 paid holidays mandated in amendments to the Labor Standards Act. Within that same system, we require employees to schedule their annual 7-day holiday at the beginning of the fiscal year so that holidays are taken systematically. As an added benefit for extended service, the company gives travel coupons scaled to the years of service to persons who have been with the company for a long time.

Major leave systems (excluding statutory paid annual leave)

Type of holiday	Details
Summer holiday	3 consecutive days in summer (July – Sep)
Refresh leave	Within 7 consecutive days (annual)
Long service leave	10 years: 3 days 20 years: 5 days 30 years: 7 days 40 years: 5 days
Congratulatory or condolence leave	Predetermined number of days for occasions such as weddings

"Refresh leave" take-up rate

Fiscal year	Rate
FY2016	86.6%
FY2017	89.9%
FY2018	96.8%

Supporting the balance between work and home

By creating an environment in which all employees can work with ease and employees can balance work with childcare, we are working towards our next goal by devising an action plan in line with the "Act on Advancement of Measures to Support Raising Next-Generation Children" so that all employees can exercise their abilities to the full.

Action Plan

(April 1, 2015–March 31, 2020)

- Target 1** To improve the workplace environment to ensure that childcare leave is easy to take and the staff easy to return
- Target 2** To have at least one or more male employees take childcare leave while the action plan is in operation
- Target 3** To introduce a system of reduced working hours that exceeds the provisions of the Child Care and Family Care Leave Act

Initiatives to address mental health issues

At Dai-Dan, we educate our workforce about mental health so that they remain mentally fit and feel comfortable in their workplace environment. We also conduct annual stress tests as required under amendments to the Industrial Safety and Health Act and recommend to anyone with a high stress level to see a physician. Moreover, follow-up interviews are done after the stress tests, as part of providing a good a workplace environment.

Employee training

Employee training at Dai-Dan begins with our program for new recruits and continues with specialized level-based training as employees develop their careers. Our training program for new recruits gives incoming employees a general understanding of equipment and systems via studies in introductory and basic engineering, lets them see the hardware up-close through facility tours, and educates them in the fundamentals of our work flows. The rest of our training system features multifaceted content that is geared to the level of experience and skill of the individual. At Dai-Dan, we view human resource development as a business priority because training passes on knowledge and skill that are instrumental to personal growth.



Facility tour

Hands-on training about ducts

Partnering with Hosting Communities

We undertake a variety of initiatives to make contributions to the industry and community in our position as a responsible corporate citizen.



Dissemination of technical information to external parties

In order to contribute to the development of Japan's building services industry, Dai-Dan supports the running of academic conferences and dispatches lecturers to external organizations. In particular, Dai-Dan's engineers are dispatched to external training centers and educational institutions across Japan as lecturers to provide classes on building service technologies.

External organization memberships and positions (as of September 2019)

Organization	Position
The Society of Heating, Air-Conditioning and Sanitary Engineers of Japan	Vice Chairman
Institute of Electrical Installation Engineers of Japan	General Director
Air-conditioning & Plumbing Contractors Associations of Japan	Vice Chairman
Japan Electrical Construction Association	Advisory committee member
Association of Japan Instrumentation Industry	Administration council member
Japanese Association of Building Mechanical and Electrical Engineers	General Director
Association of Building Engineering and Equipment	General Director
Japan Architecture Facilities Inspection Association	General Director
Japan Electrical Engineer Association	General Director

Organizations to which Dai-Dan employees are dispatched as lecturers

Organization	Position
Kanto Gakuin University	Part-time lecturer
Kogakuin University	Part-time lecturer
The Society of Heating, Air-Conditioning and Sanitary Engineers of Japan	Lecturer
Japan Construction Training Center	Lecturer
Kanto Plumbing Contractors Cooperative Association	Lecturer
Osaka Piping Higher Training School	Lecturer

Signing of the Disaster Prevention Agreement (cooperation with local communities)

Dai-Dan has, through its industrial associations, signed a Disaster Prevention Agreement with local governments concerning post-disaster emergency activities. We have also entered into agreements directly with some municipalities and industry organizations, and have established a system that allows for the swift provision of post-disaster emergency assistance.

We aim to assist with the swift recovery of the local community and local businesses by proactively participating in reconstruction efforts of the affected region.

Exhibited at Riko-challe 2019

Spearheaded by the Cabinet Office, Riko-challe is an event intended to guide students interested in STEM fields to the right career choices. Over 30 construction companies and groups participated under the theme of "Designing My City" and drew a crowd of some 350 visitors. At the Dai-Dan booth, visitors got to experience the Clima chair (air-conditioned chair) and ion-Drop (static remover).



Assistance through the Dai-Dan Society Activity Fund

In April 1993, as part of our social contribution activities for our 90th anniversary, the Dai-Dan Society Activity Fund was established in the Osaka Community Foundation. From returns on fund assets, we support social welfare enhancement activities especially for persons with physical disabilities, including human rights education.

Donations

Dai-Dan contributes financial support for various causes to help create and build a better community.

Our contributions include donations to organizations that protect the global environment, donations to university scholarship funds and art-related activities, and the sponsoring of community events in areas across the country where our sites are based. We continued to donate to the areas affected by the 2011 Great East Japan Earthquake—Miyagi, Iwate, and Fukushima Prefectures—to support children orphaned by the disaster. We also gave donations to Hiroshima, Okayama, and Ehime Prefectures, which experienced flooding due to torrential rains in July 2018.

In addition, we are a corporate supporting member of NEXT VISION, a public service corporation that runs the "isee! movement," which supports participation in society for people with visual impairments.



Social contribution activities (initiatives at offices across Japan)

Dai-Dan promotes social contribution activities. Our major activities are clean-up of the local community, which we encourage all employees to participate in. All the activities we run are published on the intranet notice board to raise awareness of social contribution activities.

Forest maintenance, tree planting, and flower planting

Sites	Names of the projects or details
Hokkaido Branch	Planting flowers amid shrubbery along the sidewalk in front of the branch office
Chiba Branch	Town Open Garden Operation
Chugoku Branch	Tree planting volunteer activity in Peace Park
Technical Construction Division Engineering Division Innovation Division	<ul style="list-style-type: none"> Miyoshi Green Support Squad Mixed-tree forest rejuvenation project Project to promote a healthy sawtooth oak forest



Miyoshi Green Support Squad

Other activities

Activity	Details
Traffic Safety Guard Activity	We posted traffic safety guards at the North intersection of Toyota-shi Tsuchihashi Station. (Toyota Branch)
Donation of funds from charity vending machines	Drinks are sold at the regular price to consumers, with three to ten yen per drink donated to charity. The donations go to street children and their families for education and living costs. (Okayama Branch)
Nichiban Core Eco Project	We participated in Nichiban Core Eco Project involving "Collection of discarded tape cores to protect the green earth." The funds are used to plant mangrove trees. (Kyushu Branch)
Donation of emergency reserves	When it was time to restock emergency reserves, food that was no longer needed but still safe to eat was donated to a food bank that distributed it to welfare facilities and groups, and the needy. (Nagoya Branch, Toyota Branch and Hokuriku Branch)
Blood Drive	A blood drive bus from the Japanese Red Cross Society is parked in front of the branch office and we call upon employees and subcontractors to give blood. (Hokkaido Branch, Tohoku Branch, Niigata Branch and Nagoya Branch) Many employees throughout Japan have given blood through these drives.



Traffic safety patrol activities

Company-wide activities

Activity	Details
Eco-cap Project	In fiscal 2018 we collected 558,000 caps, used as a source for reprocessed plastic that is converted to money and donated to causes that provide medical support, vaccines, assistance for people with disabilities, and children's environmental education.
Charity Calendar Market	In January 2019, we collected 2,057 calendars and datebooks for use in support activities in areas of West Japan stricken by heavy rains and elsewhere across the country.
Donation of used stamps	<p>We donated the used stamps collected by the offices to the following groups:</p> <ul style="list-style-type: none"> Japan Overseas Christian Medical Cooperative Service Helps to improve the state of medical care covered by health insurance in Asia and Africa. Tanzania Pole Pole Club Assists in afforestation activities at Mount Kilimanjaro in Tanzania, East Africa. Japan Animal Welfare Society Concerned with animal welfare (funding for animal rescue, financial assistance for paying/neutering, etc.).
Donation of T-shirts for volunteers at the 5th JDFA Festival 2019	This festival is spreading and drawing attention to soccer for people with hearing disabilities and other physical challenges, and promoting better understanding between healthy and handicapped persons. Dai-Dan donated T-shirts for the volunteer staff through event-cosponsor Resonet GIA.



5th JDFA Festival 2019



Volunteers wearing T-shirts donated by Dai-Dan

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