

# DAI-DAN REPORT 2017





# 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.



Sumitomo General Head Office Building, Osaka (1907)



Nagoya City Library, Aichi (1923)



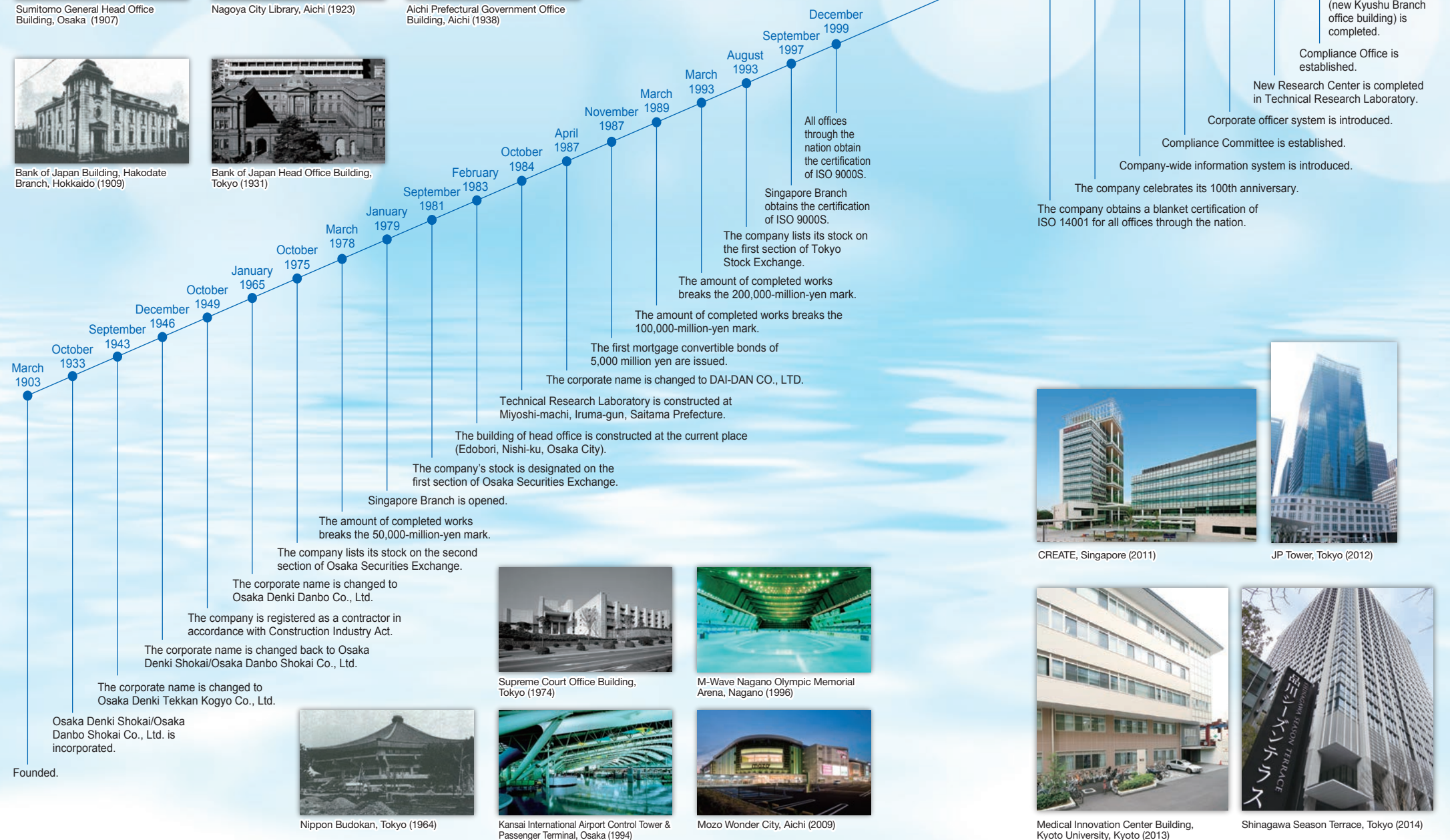
Aichi Prefectural Government Office Building, Aichi (1938)



Bank of Japan Building, Hakodate Branch, Hokkaido (1909)



Bank of Japan Head Office Building, Tokyo (1931)



Haneda Airport Terminal 2, Tokyo (2010)



Labs and Center Building, Okinawa Institute of Science and Technology Graduate University, Okinawa (2010)



CREATE, Singapore (2011)



JP Tower, Tokyo (2012)



Medical Innovation Center Building, Kyoto University, Kyoto (2013)



Shinagawa Season Terrace, Tokyo (2014)



Supreme Court Office Building, Tokyo (1974)



M-Wave Nagano Olympic Memorial Arena, Nagano (1996)



Kansai International Airport Control Tower & Passenger Terminal, Osaka (1994)



Mozo Wonder City, Aichi (2009)

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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. Beginning 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 have included feature articles on some new efforts with which we are pursuing "continued growth".

### 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, 2016, to March 31, 2017. Some data refers to activities after April 1, 2017.

### Report Guideline References

Japanese Standards Association "ISO26000:2010"  
Ministry of the Environment *Environmental Reporting Guidelines* (2012)  
GRI *Sustainability Reporting Guidelines*, 4th edition (G4)



# Seeking continuous value creation in order to contribute to a better environment and the development of society

At Dai-Dan, we believe it is our duty to maintain an environment in which people can live their lives in safety and comfort. Our efforts are guided by our management principles of creating value for our customers while contributing to the development of a better environment and stronger communities in our role as a building services engineering and installation provider.

## Staking new challenges to continued growth

All throughout the 100-plus years that we have doing business as a building services engineering and installation provider, we have sought and delivered the electrical, air conditioning and sanitary environments our customers have required.

Over these years, the environments demanded by customers and human society as a whole have changed greatly, and the technologies we have been expected to provide for that have become much more sophisticated and specialized. In a world like this, we must stay on top of changes and think outside the conventional bounds of building services and systems. For that reason, we are already challenging new fields of business.

One example of these new challenges is the “**regenerative medicine**” business.

Here, we developed an “Air Barrier Booth” for the next generation of cell processing facility (CPF)<sup>1</sup>, by applying the airflow control technology that we cultivated with hospital and pharmaceutical plant systems that must be capable of managing their environments with fail-safe precision.

Going forward, we will be exploring ways to create business as a supporting industry to the regenerative medicine field, by collecting information, building relations with universities, research institutes and businesses, and pursuing innovation in cohort with other industries through the Cell Processing Facility & Open Lab (Cellab Tonomachi) that we opened inside the Life Innovation Center in Kawasaki City, Kanagawa Prefecture and our Kobe Office that we newly established in the Kobe Biomedical Innovation Cluster in Kobe City, Hyogo Prefecture.

Another example of the new challenges we are pursuing is the “**Zero Energy Building**” (ZEB)<sup>2</sup> business.

We are a step ahead of other businesses in the ZEB field, having introduced smart energy technologies to our Technical Research Laboratory and built a Smart Energy Lab dubbed “enefice Kyushu” at the Kyushu Branch.

These efforts received good reviews and resulted in our registration as a “ZEB Planner” in the ZEB Planner registration system that the Ministry of Economy, Trade and Industry created to promote ZEB construction, in May 2017.

Moreover, we registered as a “ZEB Leading Owner” in the ZEB Leading Owner registration system launched by the Sustainable Open Innovation Initiative to recognize and widely publicize businesses that are proactive about low energy buildings.

In the energy field, we feel it our duty as a building services engineering and installation provider to continue sending the ZEB message by way of our building facilities, to encourage others to get onboard the Net-Zero Energy Buildings<sup>3</sup> targeted in Japan’s Basic Energy Plan.

One last example of our new challenges to continued growth is in the “**Internet of Things (IoT)**”<sup>4</sup> for buildings.”

We began exploring the utilization of IoT in buildings way ahead of other companies. This has led to a prototype “Smart Building Control System” that we developed in cohort with an information system developer and are currently field-testing. These field tests focus on building lighting and air-conditioning control in response to the location and actions of individual subjects, but in the future, we will use artificial intelligence (AI)<sup>5</sup> to optimize operation and reduce energy consumption of the entire building including heat source control.

In this way, we are staking new challenges to continued growth by expanding the scope of our engineering and installation services, and by applying the light, air and water technologies that we have cultivated in building design services to developing new technologies and getting into new areas of business either as an extension of what we already do or in areas that are separate and detached from what we have done before.



Setsu Sugaya  
Representative Director  
Chairman  
DAI-DAN CO., LTD.



Shohei Kitano  
Representative Director  
President  
DAI-DAN CO., LTD.

## Getting back to our origins in design and installation services

At Dai-Dan, we have always adapted to the times, so the ongoing changes in social and industrial structures and the accelerating pace of technological innovation you see today are why we are restructuring ourselves into an organization that can continue to create and provide the environments that customers demand, no matter what the day and age. This is also the reasoning behind our establishing of a Technical Development Group in April 2016 and a Technical Construction Group in April 2017. These two groups are working hand-in-hand to extend our engineering reach to larger projects and facilities that require state-of-the-art technologies, and to enhance our design proposal services and technical abilities as a company.

Precisely because today’s dramatic changes are spawning larger projects and broadening business domains, we believe the time is right to return to our origins as a design and installation company and strengthen our expertise in advanced technologies so that we are better positioned for the anticipated construction projects of the near and distant future.

## ~ Always With You. ~ Together with our stakeholders

Since our company was established, we have continued to work together with our customers, shareholders, investors, subcontractors, employees, and local communities — a diverse assemblage known collectively as “our stakeholders.”

Today, we are going beyond our engineering scope of the past by applying those assets and skill sets to new business areas in anticipation of our 120th anniversary six years down the road.

Going forward, we will step up our challenges to continued growth and plot a course in business together with our stakeholders, in order to improve our value as a sustainable company and maintain our place and presence as a company that society can trust.

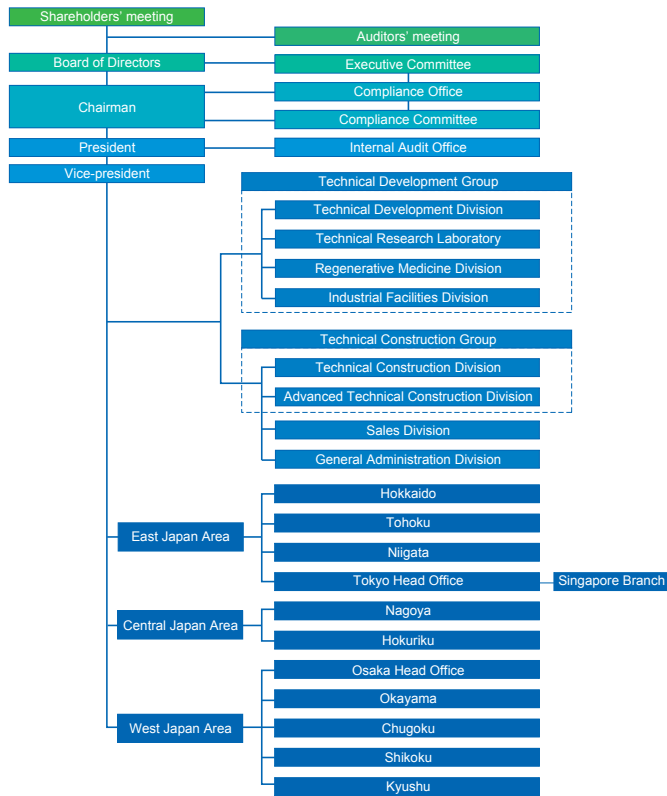
As we address the challenges of the future, we very much look forward to your continued support and cooperation.

1 A facility that produces cells needed for regenerative medicine.  
2 A building that achieves a zero energy balance in operation and use by way of energy-saving measures and use of renewable energy.  
3 A ZEB that achieves a zero energy balance without using fossil fuels as its primary energy source.  
4 A concept for creating innovative services and added-value by connecting all sorts of appliances to the internet.  
5 A computer system that possesses human faculties for learning, reasoning, recognizing, making decisions, etc.

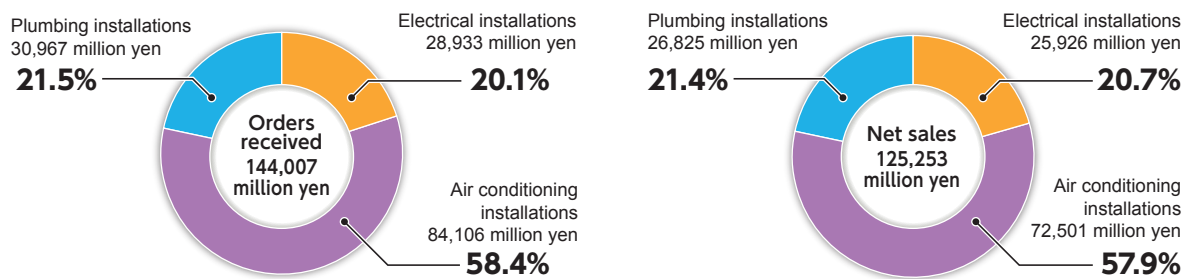
Corporate Profile

Company name	DAI-DAN CO., LTD.
Head office	1-9-25 Edobori, Nishi-ku, Osaka, Japan
Founded	March 4, 1903
Incorporated	October 10, 1933
Capital fund	4,479,725,988 yen
Employees	1,505 (as of March 31, 2017) consolidated
Stock listing	The first section of Tokyo Stock Exchange

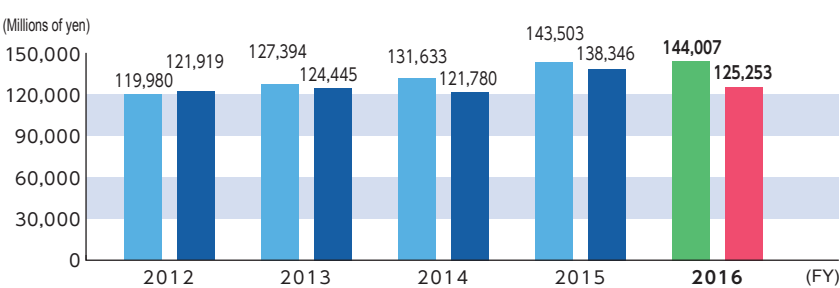
Organization Chart



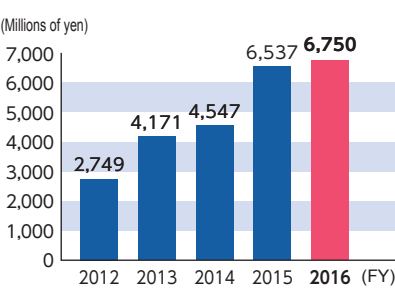
Fiscal 2016 Orders Received and Net Sales Ratios by Segment



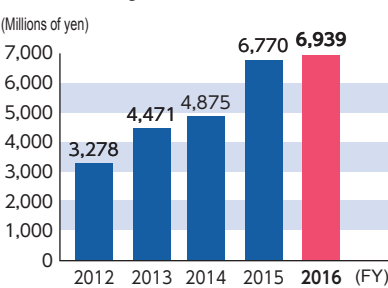
Orders Received/Net Sales



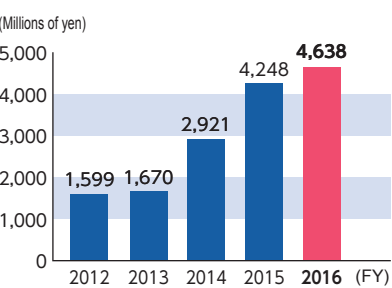
Operating Income



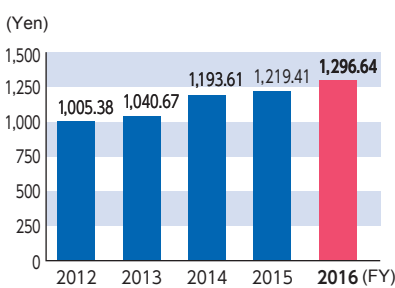
Ordinary Income



Net Income



Net Assets per Share



Financial Highlights

Accounting Year

	FY2012	FY2013	FY2014	FY2015	FY2016
Orders received	119,980	127,394	131,633	143,503	144,007
Net sales	121,919	124,445	121,780	138,346	125,253
Selling, general and administrative expenses	9,992	9,966	10,016	10,176	11,038
Operating income (loss)	2,749	4,171	4,547	6,537	6,750
Ordinary income (loss)	3,278	4,471	4,875	6,770	6,939
Net income (loss)	1,599	1,670	2,921	4,248	4,638
Return on assets (ROA) (%)	3.1	4.1	4.3	5.7	5.8
Return on equity (ROE) (%)	3.7	3.7	5.9	7.9	8.3
Cash flows from operating activities	1,261	3,117	2,427	611	5,395
Cash flows from investing activities	(740)	(172)	(401)	(493)	(1,442)
Cash flows from financing activities	(955)	(892)	(2,344)	(894)	(925)
Cash and equivalents at end of period	22,420	24,598	24,358	23,536	26,549

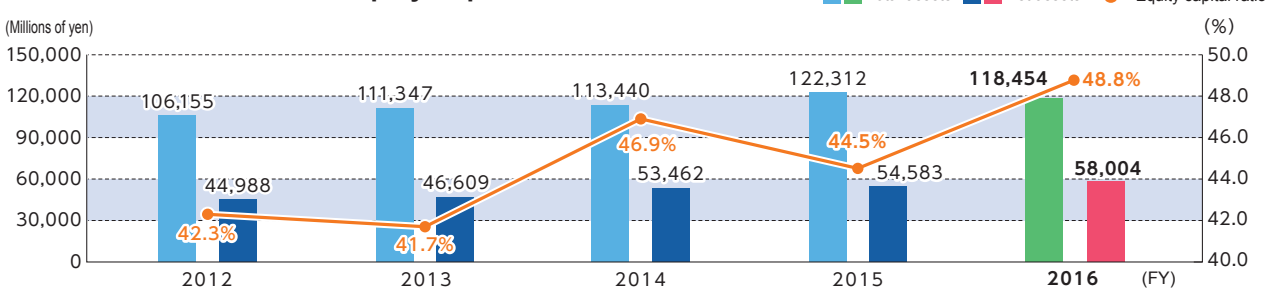
Fiscal Year-End

	FY2012	FY2013	FY2014	FY2015	FY2016
Total assets	106,155	111,347	113,440	122,312	118,454
Net assets	44,988	46,609	53,462	54,583	58,004
Equity capital ratio (%)	42.3	41.7	46.9	44.5	48.8

Per Share Data

	FY2012	FY2013	FY2014	FY2015	FY2016
Net income	35.83	37.45	65.50	95.26	104.02
Net assets	1,005.38	1,040.67	1,193.61	1,219.41	1,296.64
Dividends	19.00	16.00	18.00	20.00	23.00

Total Assets/Net Assets/Equity Capital Ratio



Operational Highlights

Non-Financial Data

	FY2012	FY2013	FY2014	FY2015	FY2016
Number of employees (consolidated)	1,445	1,472	1,498	1,493	1,505
Number of workplace accidents	29	38	36	26	18
Frequency rate of workplace accidents <sup>1</sup>	0.522	0.536	0.461	0.173	0.190
Severity rate of workplace accidents <sup>2</sup>	0.069	0.077	0.021	0.017	0.004
CO <sub>2</sub> emissions from offices (tonnes) <sup>3</sup>	1,421	1,428	1,745	1,618	1,732

<sup>1</sup> Number of workplace accidents per million work hours    <sup>2</sup> Number of workdays lost per thousand work hours  
<sup>3</sup> Beginning in fiscal 2014, the target was changed to reflect the new CO<sub>2</sub> equivalent.



Our Services

Major Projects Completed in FY2015 and FY2016

● Projects completed in FY2016



Kakogawa City Hospital  
(air conditioning installation)



Miyota Saku Factory, Citizen Watch Manufacturing  
(air conditioning and plumbing installations)



JA Niigata Kouseiren Ojiya General Hospital  
(air conditioning and plumbing installations)



CP-R3 Project, Kao Odawara Research Laboratories  
(air conditioning and plumbing installations)



Toyosu Smart Energy Center  
(electrical and air conditioning installations)

● Projects completed in FY2015



Fukuoka Mirai Hospital, Souseikai Medical Group  
(air conditioning and plumbing installations)



New Building Phase 1, Hachioji Campus, Teikyo University  
(air conditioning installation)



Minimally Invasive Surgery Ward, Kobe University Hospital  
(electrical, air conditioning, and plumbing installations)



New K-1 Building, Nichia Corporation  
(air conditioning and plumbing installations)



Hiroshima Red Cross Hospital & Atomic-bomb Survivors Hospital  
(air conditioning installation)

Electrical installations

Electricity and the electrical equipment on which it flows are the lifeblood of a building. They supply the power to equipment and services that allows a building to fulfill its function.

Electrical installations involve the installation of a high-voltage transformer, a distribution board and the wiring that supplies electricity to lighting, outlets, pumps and fans.

Electrical equipment is crucial to the saving, generation and storage of energy. Dai-Dan converts ordinary buildings to smart buildings by, for instance, reducing power consumption through LED lighting installations, generating electricity by installing solar panels and enabling energy storage that is critical for the efficient use of solar generated electricity.

Dai-Dan's electrical equipment technology is not limited to energy-efficiency applications; it also extends into diverse areas such as supporting business continuity plans (BCP) that take effect during times of disaster.

Air conditioning installations

The temperature, humidity, flow and purity of air are indispensable to maintaining a comfortable interior environment in a building. Air conditioners help to create and maintain this environment.

Air conditioners vary from general-purpose types for office buildings to precision models used in semiconductor fabrication plants. At Dai-Dan, we respond to the needs of our customers by applying expertise gained through long experience and developing advanced air conditioning technologies at our Technical Research Laboratory.

Our air conditioning systems have been installed in many advanced facilities, including energy-efficient green data centers, hybrid operating rooms, and cell-processing facilities (CPF) required for regenerative medicine.

We also can turn to our advanced technologies and vast experience in order to assist customers with the planning, design and installation of any future ZEB (Zero Energy Building) wishes they might have.

Plumbing installations

Water is a precious resource. Plumbing components are used to supply safe, clean water and facilitate appropriate drainage of waste water. In addition to providing plumbing installations, we are also involved with plumbing systems that harvest rainwater and reuse wastewater as an important step toward preserving the natural environment.

We also strive to ensure safety and protect building assets with sprinkler facilities that reduce the possibility of fire as well as indoor and outdoor fire hydrants that provide water.

Renovations

The renovation of building facilities 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 facilities through our comprehensive general facilities business. We provide installations that accommodate existing needs as well as follow-up service to address any issues that might arise.

Overseas operations

Dai-Dan has operations in Singapore and other countries where we provide services to factories and research centers that can fully utilize our expertise.

We have completed a number of contracts overseas, primarily in our field of expertise. We have built cleanrooms and installed energy saving systems that have been very well regarded by our customers.

Dai-Dan provides high quality systems and strives to establish a strong presence in each of the respective countries.



# Mid-Term Management Plan 2016–2018

## Dai-Dan — Creating the environments our customers require

~Always With You.~

As the first step to implementing reforms in the lead-up to our 120th anniversary, Dai-Dan crafted a Mid-Term Management Plan spanning the three years from fiscal 2016 to 2018 in April 2016.

### Management Principles

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.

### Management Policies

- 1 We maintain focus on our customers as the business environment changes so that we can meet all their needs.
- 2 We operate the business in compliance with all legal and regulatory requirements.
- 3 We ensure that our corporate activities assure the safety and quality of products and services and contribute to environmental preservation.
- 4 We attain our corporate targets by pursuing both our strategies and policies.

### Mid-Term Management Plan

Vision of our three-year plan focused on our 120th anniversary



Targeted Earnings [Fiscal year ending March 31, 2019 (90th fiscal period)]

	Consolidated	Non-consolidated
Orders received	151 billion yen	150 billion yen
Net sales	151 billion yen	150 billion yen
Operating income	7.5 billion yen	7.5 billion yen

Management Indicator Operating Income Ratio: 5%

## Vision of Our Three-year Plan Focused on Our 120th Anniversary

The focus of our strategies and policies is to create different types of environments. These include the environments our customers in a variety of fields require for their business operations as well as support for earth-friendly environments. By implementing these strategies and policies, we aim to become the company that creates the different types of environments our customers require.

### Advanced Technology

Becoming a partner that excels at creating environments for our customers

Our goal is to become a partner that excels at providing our customers with the environments they require for their business operations.

#### Strategy 1 Strengthening our engineering capabilities for buildings requiring high-technology facilities

1. Disseminating the ZEB initiative and proposals for smart energy applications through building facilities
2. Developing advanced technology for high-technology facilities (biotechnology and devices)
3. Enhancing our ability to accommodate special facilities
4. Establishing the Technical Development Group

#### Strategy 2 Approach to environmental users

1. Training of sales engineers
2. Development of new fields that will serve as next-generation revenue bases
3. Sales of proprietary systems

#### Strategy 3 Establishing a system for sharing growth with our subcontracting companies

1. Utilization of a network of subcontracting companies
2. Implementation, together with subcontracting companies, of integrated measures to increase construction efficiency
3. Provision of support for recruiting to subcontracting companies
4. Strengthening the ability to accommodate our business continuity plan in cooperation with subcontracting companies

### Management Foundation

Establishing a management foundation capable of responding to shifting markets

Establishing a management foundation resistant to economic fluctuations

#### Strategy 1 Creating an organizational administration that can accommodate changing markets and social conditions

1. Obtaining orders for new strategic projects (national projects)
2. Directing an organization focused on market scale (goal-setting and assignment of engineers)
3. Policies to obtain orders based on local characteristics

#### Strategy 2 Strengthening our capital and financial foundation

1. Building relationships with stakeholders through capital policies
2. Researching investments characterized by a solid financial foundation

#### Strategy 3 Strengthening practical competence

1. Increased cost-reduction efforts
2. Increased accident eradication efforts
3. Establishment of a field support system
4. Utilizing IT to increase field operational efficiency
5. Implementation of a cycle of design, construction, maintenance and renewal

#### Strategy 4 Accommodating diverse ways of working

1. Promoting a more appealing work environment for women
2. Securing skilled personnel and reforming the educational system
3. Reviewing the retirement system and revising the terms and conditions for re-employment

### Business Development

Taking advantage of light, air, and water technologies to develop new areas of business

In order to meet the diverse environmental needs of our customers, we are utilizing our technologies to develop new business areas.

#### Strategy 1 Developing businesses that make full use of the characteristics of a building services engineering and installation provider

1. Developing businesses through collaborations with companies in various fields by leveraging underlying technologies as a building services engineering and installation provider
2. Researching capital tie-ups and M&A in areas where growth is expected
3. Developing a challenging spirit

### Corporate Responsibility

A company that meets the demands of society

To survive as a company, we will ensure compliance and respond to social demands as a good corporate citizen.

#### Strategy 1 Continued compliance management and strengthening of corporate governance

1. Continued strengthening of governance and education to ensure fair and appropriate business transactions

#### Strategy 2 Promoting social contribution initiatives as a good corporate citizen

1. Promoting company-wide social contribution initiatives
2. Engaging in activities outside the company to contribute to the development of the building facility industry



# Dai-Dan's Corporate Social Responsibility

We strive to provide comfort that is friendly to both people and the environment.

Dai-Dan believes that we play our part in the sustainable development of society by delivering safety, security and comfort to people's lives through our building services engineering and installation work. CSR at Dai-Dan is about encouraging each employee to pursue the realization of a better environment and the development of society as they perform their tasks in keeping with the five Action Principles of our Corporate Code of Ethics (p. 49).

## 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.



## Dai-Dan's Responsibility

### Environment

We strive to protect our environment and prevent global warming by strengthening our initiatives to develop low environmental impact installation processes and energy saving technology.

#### Customers

We strive to meet our customers' needs and provide them with high value-added solutions as well as high quality, comfortable spaces.

#### Shareholders

We recognize that it is our duty to enhance corporate value, maintain transparent and sound operations and disclose appropriate information in a timely manner.

#### Employees

We place priority on our employees' safety and health, and are committed to ensuring that their workplace is comfortable.

#### Subcontractors

- We conduct business negotiations with our business partners including subcontractors, while striving to adhere to principles of the utmost fairness and transparency.
- We are committed to improving safety and quality by building healthy partnerships with our subcontractors.

#### Local community

We recognize that we are a member of society and strive to exist in harmony with the local community through our social contributions in our position as a responsible corporate citizen.

## Feature

# What We Are Doing to Ensure Continued Growth

At Dai-Dan, rather than confining ourselves to the conventional bounds of building services engineering and installation providers, we are taking on new challenges with our eyes on the future. Here, we introduce some of the new things we are doing to ensure continued growth.

## Feature 1



P. 13-16

## Facing Challenges in the Regenerative Medicine Business

Business creation by open innovation

## Feature 2



P. 17-19

## What Dai-Dan Is Doing with ZEB

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

## Feature 3



P. 20

## IoT Applications in Building Systems

IoT and collaboration in automatic building control innovation





## Why regenerative medicine?

The chances of you seeing or hearing about regenerative medicine in the news are increasing. Much of the focus is on iPS cells and the like, but technological innovation will have to come from surrounding industries before regenerative medicine will be readily available to all. At present, regenerative medicine is expensive because of the financial burden of revamping and maintaining facilities for culturing and processing cells (Cell Processing Facility, CPF).

At Dai-Dan, we are using air-conditioning technologies that we have long cultivated to build advanced CPFs of significantly lower construction and running costs. As a part of those efforts to promote innovation in the regenerative medicine field, we opened our Cellab Tonomachi in April 2017.

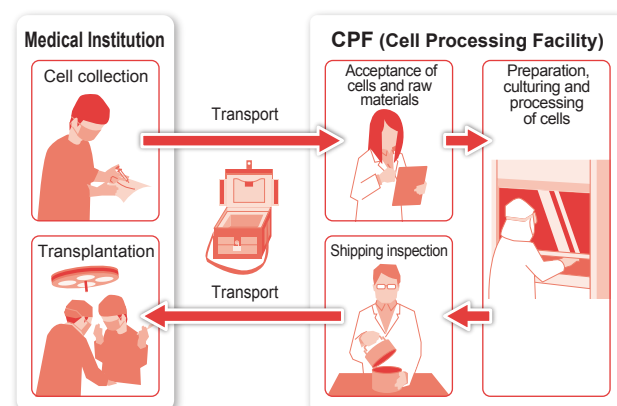
## Current status of regenerative medicine

In regenerative medicine, cells taken from the patient or a donor are prepared, cultured and processed outside the body, then transplanted back in the patient. The facility that prepares the cells is called a “cell processing facility” and is currently built on the same concepts as a pharmaceutical plant.

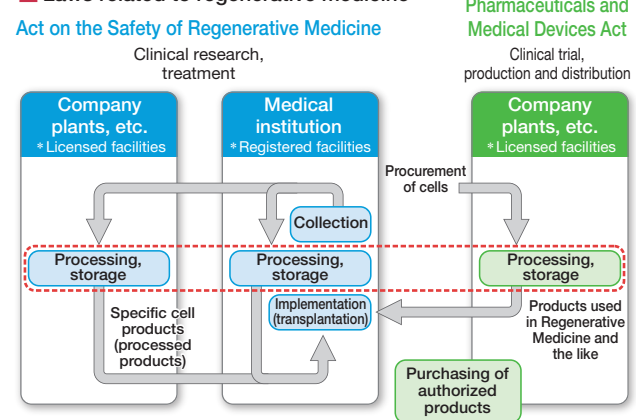
Two laws that apply to regenerative medicine are the Act on the Safety of Regenerative Medicine and the Pharmaceuticals and Medical Devices Act. Future applications in regenerative medicine are expected to be based on these two laws.

The capabilities demanded of CPFs differ according to the medical product and procedure. In response to those demands, we propose CPFs that are easy to use and can ensure the required levels of quality and safety.

### Flow of regenerative medicine



### Laws related to regenerative medicine



## Combining knowledge related to medicine and pharmaceuticals with a focus on the field of regenerative medicine

Dai-Dan has conducted wide-ranging R&D into air-conditioning systems as a precursor and component of the extensive track record we have posted in the medical and pharmaceutical fields. With regard to hospitals, we are tops in the industry for customized air conditioning for hybrid operating rooms, immunocompromised patient rooms and other special applications. And, for the pharmaceutical industry, we have done numerous jobs including vaccine production plants and GMP-qualified facilities for producing sterile products. We are applying these experiences and our vast portfolio of technologies to products and services for the regenerative medicine applications pursued in both the medical and pharmaceutical fields.

## Sharing the latest technologies through seminars and exhibitions

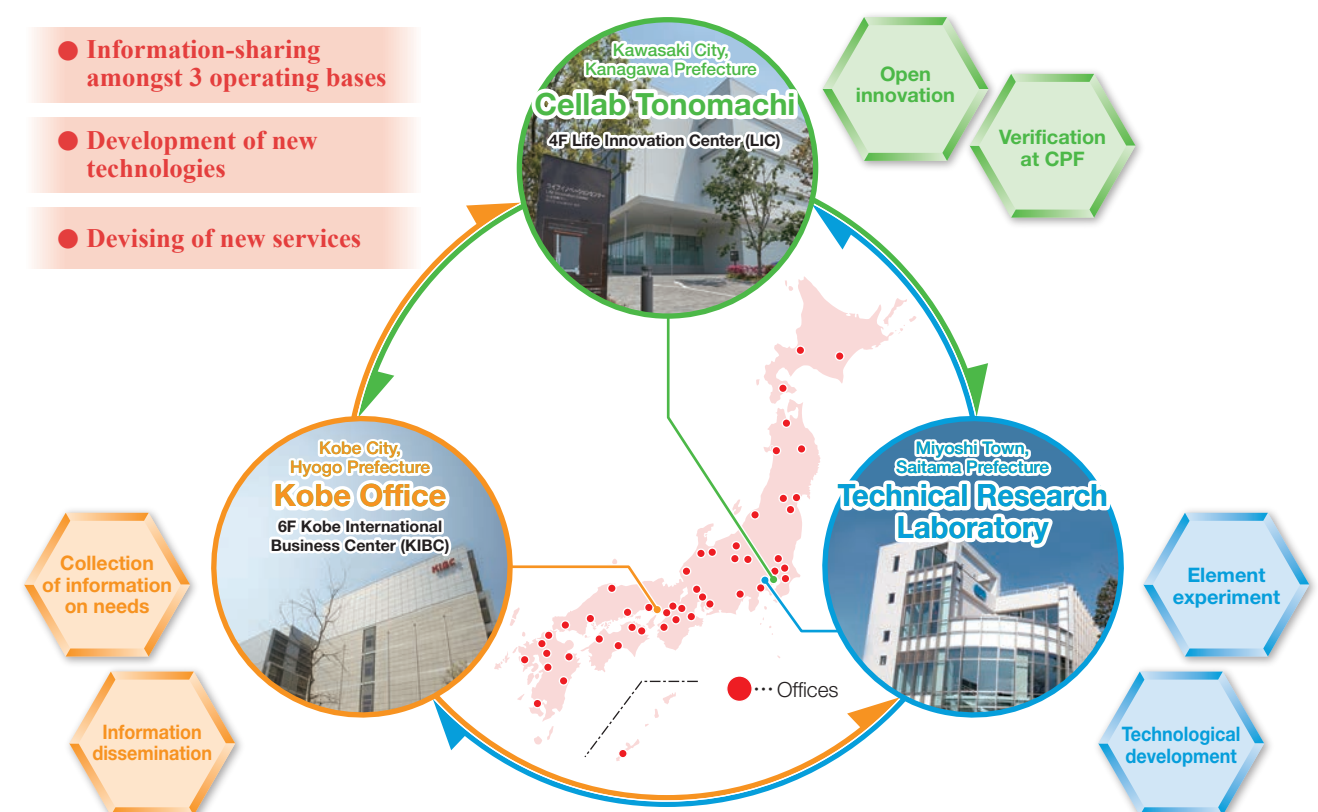
Dai-Dan has organized and hosted various carefully planned seminars on regenerative medicine. One such program that was staged in November 2016 looked at current issues in regenerative medicine and reported on trends and prospects in related industries with a special focus on CPFs. Representatives from industry, academia and government spoke to a large audience about the “Latest News from the Frontline of Regenerative Medicine.”

Moreover, Dai-Dan showcased regenerative medicine technologies at both the Tokyo and Osaka venues of Interphex Japan.

And, Dai-Dan partakes in the Forum for Innovative Regenerative Medicine (FIRM) where, through the activities of the Supporting Industries Committee, communicates with everyone in industry.

## Launch of the Regenerative Medicine Division

In April 2017, Dai-Dan launched a Regenerative Medicine Division to oversee corporate strategies and planning for the regenerative medicine business. Parallel to that, we established our Cellab Tonomachi inside the Life Innovation Center that was established in Kawasaki City, Kanagawa Prefecture as a business incubator for industrializing regenerative treatments and cell therapies. This new lab is the centerpiece of a 3-pronged coordinated offensive with our Kobe Office (Kobe City, Hyogo Prefecture) and our Technical Research Laboratory (Miyoshi Town, Saitama Prefecture) aimed at developing new technologies and devising new services.





## Cell Processing Facility & Open Lab

As its name suggests, Cellab Tonomachi is positioned as an open innovation lab where researchers in the field of regenerative medicine gather with supporting equipment developers and service providers to develop, test and verify better production processes. The research environment has been designed and built to produce results more quickly by connecting institutes and businesses so that they can practice open innovation.

The CPF was designed and built for ease of use, safety and cost-performance, under the guidance of Dr. Masayo Takahashi of RIKEN who performed the first successful surgery in the world using iPS cells.



### CPF area

Provides a clean environment for culturing and processing cells. Rooms are spacious and fully advanced with eyes on the future.

### Open innovation area

What cannot be solved by one business alone can be accomplished by open innovation. Workshops and other learning opportunities are held here.

### Exhibition area

This common area is used to display history of products created through collaborative efforts and explanatory panels. Exhibits are open to visitors.

**State-of-the-art environment for culturing and processing cells**

**Labs for developing and assessing products**

**Training facility for developing cell culture technicians**



## Open innovation process

### 1 Identification of issues

Persons from research institutes and private companies culture and process cells at the CPF, then identify issues from the work process that are of interest.

### 2 Setting of themes

Participating businesses hold a workshop on the identified issues to explore solutions and development themes.

### 3 Development and verification

Products and technologies researched and developed by the participating businesses are verified at the CPF.



## Development system

The "Smart CP Unit" combines our "Air Barrier Booth" with Kaneka's "Programmable Closed Circuit Cell Culture System." The new concepts these integrated technologies present have received good reviews, leading to the first unit being delivered to Matsumoto Dental University Hospital.



### By introducing the Smart CP Unit (Air barrier booth + Programmable closed circuit cell culture system)

**Greatly downsize your contamination control area with cleanroom technology**

**90% Saving**

**Because the equipment can be used without complicated remodeling**

**Space**

**75% Saving**

**Construction Period**

**80% Saving**

**Cost**

**90% Saving**

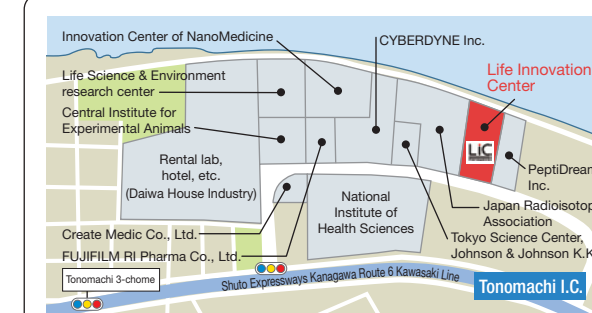
\* Numerical values are based on the model case.

**Cleanroom technology**

**Programmable closed circuit cell culture system**

**Culture and process cells in less space!**

Novel proposal for cell processing facilities  
**SmartCPUnit**  
Smart Cell Processing Unit



〈Regenerative Medicine Div., DAI-DAN CO., LTD.〉

Address: 3-25-22, Life Innovation Center R407, Tonomachi, Kawasaki-ku, Kawasaki City, Kanagawa, 210-0821 JAPAN

Phone: 044-276-5010 Fax: 044-280-0036





## What Dai-Dan Is Doing with ZEB

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

### Previous efforts to support and promote ZEB<sup>1</sup>

To support and promote ZEB, we have applied our technical expertise that we have cultivated as a building services engineering and installation provider, to developing energy-saving and installation technologies.

This effort includes building a new wing at our Technical Research Laboratory for verifying and assessing energy conservation, generation and storage, and retrofitting the remaining labs with state-of-the-art “smart” technologies for similar performance assessments. And, as a third initiative, we built enefice Kyushu, Smart Energy Lab at our Kyushu Branch.

#### Verification and assessment by energy conservation, generation and storage

##### New wing at our Technical Research Laboratory

- ▶ Built a new wing for presenting and showcasing technologies developed by Dai-Dan.
- ▶ Introduced the latest technologies for conserving, generating and storing energy, e.g., solar heating.
- ▶ Established a proving ground for technologies intended to effectively utilize energy resources and achieve energy independence and stability.

Facility overview

Location: Saitama Prefecture  
Total floor space: 1,945 m<sup>2</sup>  
Showcased technologies: Micro co-generation system, waste heat driven absorption chiller-heater, medium-temperature water thermal storage tank, cool pit/warm pit, solar power generation, LED lighting



2013

#### Verification and assessment of retrofitted “smart” technologies

##### Retrofitting with state-of-the-art “smart” technologies

- ▶ Retrofitted research labs with energy-saving technologies.
- ▶ Introduced technologies to enable heat interchange among buildings.
- ▶ Built next-generation office that is both energy-saving and comfortable.

Facility overview

Location: Saitama Prefecture  
Total floor space: 1,578 m<sup>2</sup>  
Showcased technologies: Renewable energy loop, heat interchange system, LED and task/ambient lighting, solar power generation with energy storage by lithium ion batteries



2015

#### Creation of a next-generation building

##### “enefice® Kyushu” — Smart Energy Lab at our Kyushu Branch

- ▶ Office building where mankind peacefully coexists with the planet
- ▶ Jointly operated/assessed by industry and academia

“enefice Kyushu” has been awarded a 5-star rating (highest possible) and ZEB Ready designation<sup>2</sup> by BELS<sup>3</sup>, the first to be certified as complying with Fukuoka City’s energy conservation standards, and an S ranking (highest possible) by CASBEE<sup>4</sup>.

Facility overview

Location: Fukuoka Prefecture  
Total floor space: 1,383 m<sup>2</sup>  
Showcased technologies: Geothermal heat-capture system, Ceiling Free (integrated equipment unit), structural thermal storage, radiant paneling, ion-DROP (dust infiltration prevention system), direct current feed system



2016

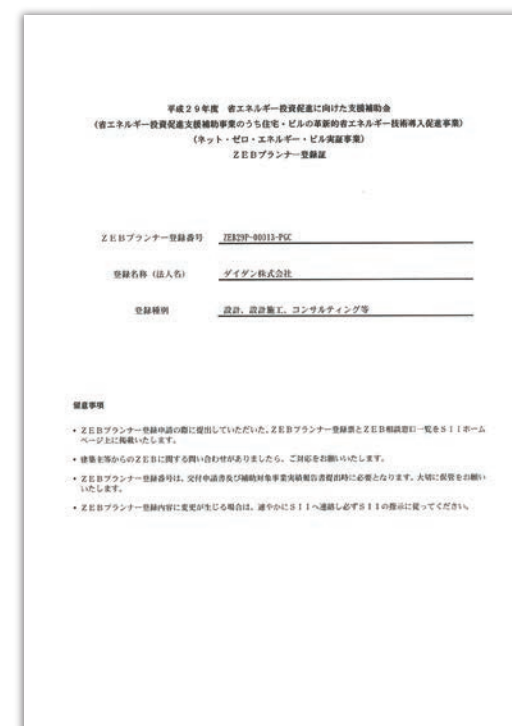
### ZEB Promotion Office created within the Advanced Technical Construction Division

One of the strategies we advocate in our Mid-Term Management Plan is to “introduce our Net Zero Energy Building (ZEB) and smart energy initiatives derived from our building facilities.” This falls in line with our Management Principle of “taking on the challenge of creating value for our customers while contributing to the development of a better environment and stronger communities as a building services engineering and installation provider.”

In April 2017, we created a ZEB Promotion Office for overseeing all of our ZEB operations. Through this office, we will apply what we have learned about ZEB via enefice Kyushu and our other efforts as a ZEB Planner, to making proactive proposals and diffusing ZEB concepts.

### Registered as a “ZEB Planner”

After applying to the ZEB Planner registration system<sup>5</sup> that the Ministry of Economy, Trade and Industry created to promote ZEB construction, we were registered as a “ZEB Planner.” With that title, we can help to spread the ZEB initiative and, by virtue thereof, contribute to society’s evolution towards smaller carbon footprints, by providing customers support in planning ZEB projects and applying for public grants<sup>6</sup>.



ZEB Planner Certificate of Registration

### Registered as a “ZEB Leading Owner”

We also applied for and were registered as a “ZEB Leading Owner” under the ZEB Leading Owner registration system<sup>7</sup> launched by the Sustainable Open Innovation Initiative to recognize businesses that are proactive about low energy buildings. This recognition gives us a platform for announcing ZEB projects and our mid- and long-term plans and targets for introducing ZEB.

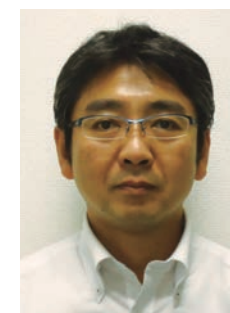
#### VOICE Comment of the Manager of our ZEB Promotion Office

I am fortunate to serve as the manager of the ZEB Promotion Office that was launched by the Advanced Technical Construction Division in April 2017, as it gives me the opportunity to apply my experience as the general director of enefice Kyushu, which was completed in 2016.

Japan’s Basic Energy Plan sets 2020 for new public facilities and 2030 for average new buildings of any nature as the target year for realizing ZEB. Dai-Dan is far ahead of other companies in terms of ZEB R&D and verification testing. We are looking to solidify that position through our activities both as a registered ZEB Planner and registered ZEB Leading Owner.

Satoshi Sugiura

Manager of ZEB Promotion Office  
Advanced Technical Construction Division



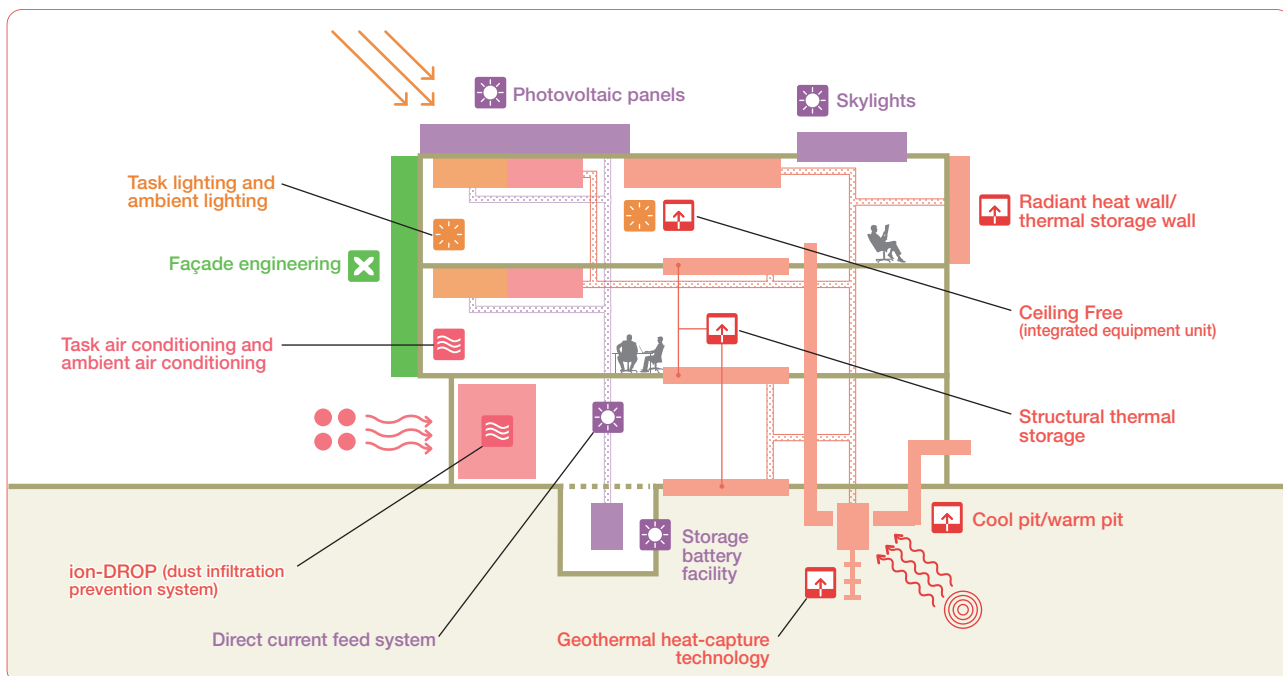
- 1 ZEB (Zero Energy Building):  
A building that achieves a zero energy balance in operation and use by way of energy-saving measures and use of renewable energy.
- 2 ZEB Ready:  
Buildings that lower their primary energy consumption by 50% or more below the set standard. This rating does not apply to renewable energies.
- 3 BELS:  
Building/Housing Energy-efficiency Labeling System
- 4 CASBEE:  
Comprehensive Assessment System for Built Environment Efficiency

- 5 ZEB Planner registration system:  
Widely publicized system for registering design, installation and consulting companies as “ZEB Planners” who proactively promote ZEB concepts to building owners.
- 6 Public grant application:  
Involvement of a registered ZEB Planner may be required to apply for and obtain public grants from the 2017 ZEB Funding Program administered by the Sustainable Open Innovation Initiative.
- 7 ZEB Leading Owner registration system:  
Widely publicized program for registering businesses that are proactive about low energy buildings as “ZEB Leading Owners.”



## Energy-saving performance and comfort of enefice® Kyushu

### Technology Map



We audited the energy-saving performance and comfort of enefice Kyushu over a period of one year (July 2016–June 2017).

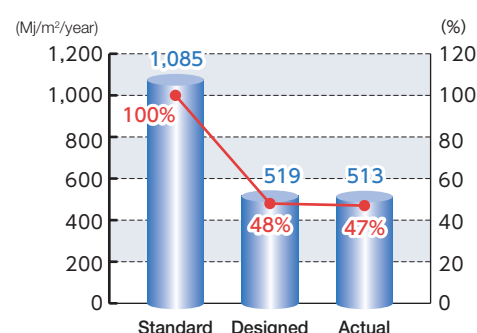
Graph 1 below shows the standard, designed and actual building performance (primary energy consumption). The actual performance for the year was practically the same as the designed performance.

Graph 2 represents the building's comfort against the old office. Data was collected via a survey of the temperature and lighting done amongst employees who actually use the facility. In terms of temperature, the comfort level improved, but the lighting environment met with greater dissatisfaction, so it cannot be claimed that comfort was better across the board.

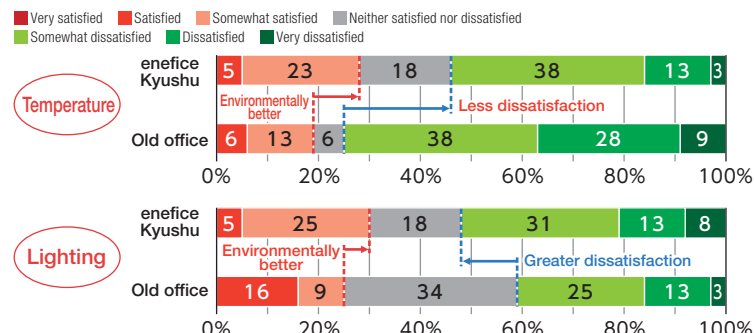
One reason for the dissatisfaction with the lighting was the narrow illumination range of task lighting, so fixtures were replaced with models offering a wider angle of light distribution.

We will use these results to assist customers in building the environments that balance energy-savings and comfort to the degree they need and want.

■ Graph 1: Building performance



■ Graph 2: Building comfort (based on survey results)



"enefice Kyushu" has been awarded a 5-star rating (highest possible) and ZEB Ready designation<sup>1</sup> by BELS<sup>2</sup>, the first to be certified as complying with Fukuoka City's energy conservation standards, and an S ranking (highest possible) by CASBEE<sup>3</sup>.

- <sup>1</sup> ZEB Ready: Buildings that lower their primary energy consumption by 50% or more below the set standard. This rating does not apply to renewable energies.
- <sup>2</sup> BELS: Building-Housing Energy-efficiency Labeling System
- <sup>3</sup> CASBEE: Comprehensive Assessment System for Built Environment Efficiency

### Awards



## Feature 3

## IoT Applications in Building Systems

IoT and collaboration in automatic building control innovation

### What is IoT?

Short for the "Internet of Things," IoT is a concept for creating innovative services and added-value by connecting all sorts of appliances to the internet. One example of a practical application of this genre of an information/communication technology would be a health monitoring service in which people wear a fitness band (sensor) for recording their pulse or the number of steps taken, then that data for the day is uploaded and saved on a server and later, at a time convenient to the wearer, analyzed in terms of activity level from a smartphone app.



Building control app for smartphone

### What Dai-Dan is doing with the IoT

With IoT rapidly penetrating the world around us, we have focused elements of our R&D operations on modeling (designing) ways to use IoT with building systems. For an internet-connected automatic control system currently under development, we are aiming at a level of convenience never seen before by way of wireless sensors and smartphone control buttons.

Moreover, we are working on optimizing operation and management of an entire building by storing sensor readings, control settings and other logged information from the building in the cloud (internet) and, at some point in the future, using AI to manage buildings.

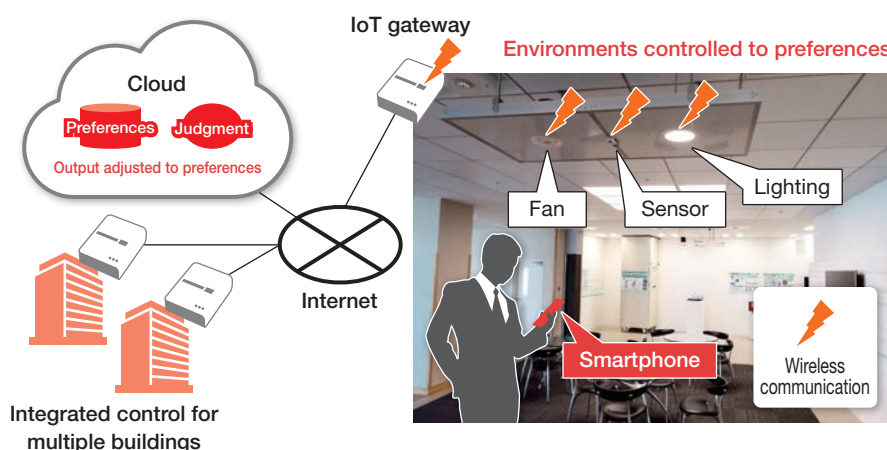
Developing this kind of control system takes more than just knowledge and experience with building systems, because it is also necessary to know how to configure systems and develop clouds. So, in our efforts to create smart building control systems on IoT, we have teamed up with a large system developer in Japan.

### Take your environment with you!

(Verification tests of a smart building control system)



In cohort with IoT and cloud application developer Information Services International-Dentsu, Ltd. (ISID), we are testing a system for storing readings from building sensors and settings made from smartphones in the cloud, and then using them to control lighting and air-conditioning.



The occupant sets his/her preferred environment (temperature and brightness) from their smartphone while under a drop ceiling mounted with an LED lighting fixture and fan. Then, when the occupant moves under another drop ceiling with his/her smartphone, his/her new location is detected and the output of the LED lighting fixture and fan in his/her new location are adjusted to the previously set preferences.



# Creating the Environments that Meet Customer Requirements with Dai-Dan's Developmental Technologies

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.

## P. 23–24 Medical Facilities Supporting advanced medical care (covered by insurance), infection prevention, and improvement of patient comfort

- **Air conditioning system for hybrid operating rooms**
- **BCC-P**: Immunocompromised patient room
- **DTB-02**: Sputum Collection Booth
- **INF Series**: Infection Control Unit
- **Chepas**: Clean Humidification Element Passing Air System

## P. 25 Pharmaceutical Manufacturing Facilities and Research Laboratories Maintaining clean spaces and preventing microbial contamination

- **Barrier Smart Series**: Comprehensive technologies for chamber pressure control
- **iRack System**: Providing the optimal environment for animal experiments

## P. 26 Data Centers Energy efficiency technology

- **Energy-efficient technology utilizing outdoor air for cooling**

## P. 26 Food-processing Plants Mold and equipment performance decline prevention

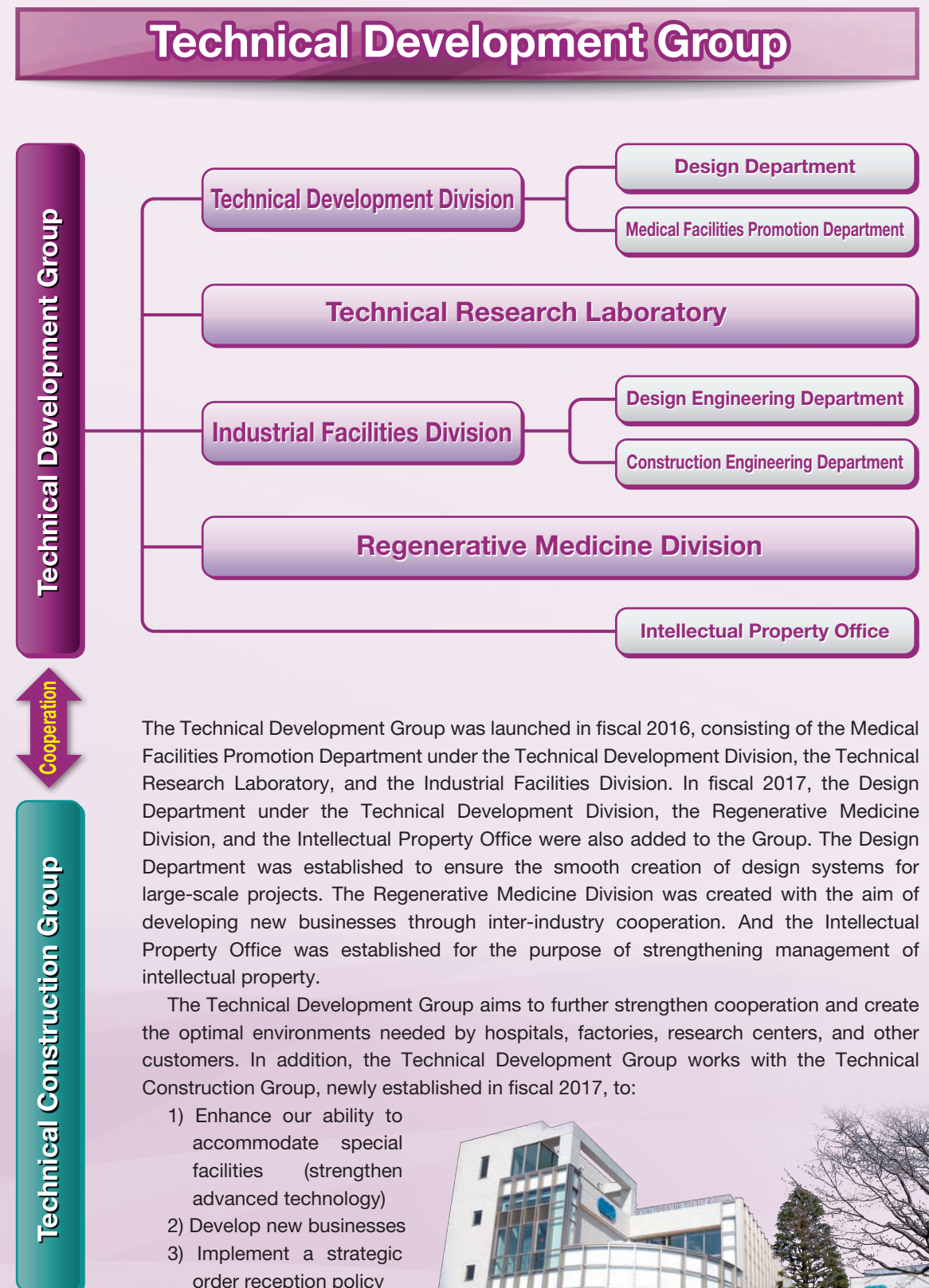
- **ARAPAC**: Automatic self-washing packaged air conditioner

## P. 27–28 Electronic and Precision Device Plants Contributing to an exceptionally clean environment and reducing operating costs through energy efficiency

- **Virtual Duct Clean Room (VD-CR) System**: Contributing to ductless clean rooms
- **Development of energy-efficient dehumidification system** for rechargeable battery manufacturing plants
- **ion-Drop**: Technology using the power of ions to prevent particle adhesion
- **Air filter refurbishment technology** incorporating supercritical CO<sub>2</sub>

## P. 29–30 General Facilities Improving comfort and energy efficiency

- **Ceiling Free**: Integrated lighting and air conditioning unit
- **Lighting Research**: Creating comfortable indoor spaces
- **Direct Current Feed Research**: Effective use of renewable energy
- **Flow Smart**: Flow control system for pumps in refrigeration units
- **Open Degasifier**: Anticorrosion system for copper hot water supply pipes





## Medical Facilities

Supporting advanced medical care (covered by insurance), infection prevention, and improvement of patient comfort

### Air conditioning system for hybrid operating rooms

In recent years, hospital facilities have introduced hybrid operating rooms integrating both operating room functions as well as cardioangiography functions in order to provide a safer and more appropriate treatment environment.

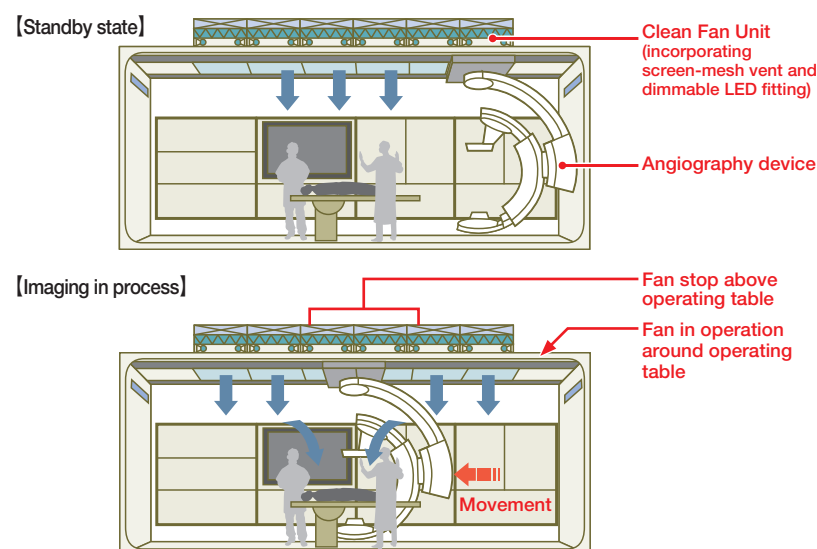
In a typical hybrid operating room, a positioning rail for the angiography device is mounted over the operating table, complicating the installation of air conditioning vents. Even if vents are installed on the inner side of the rail, the angiography device may greatly obstruct and disrupt the airflow.

By developing a Clean Fan Unit incorporating a HEPA filter\* and a dimmable LED fitting, we have made it possible to install air conditioning vents over the operating table (inside the rail), creating a system that automatically starts and stops ventilation from vents covered by the angiography device.

#### Screen-mesh vent



#### Air conditioning system for hybrid operating room



#### Features

- Vertical laminar flow is provided through the Clean Fan Unit incorporating a screen-mesh vent and a dimmable LED fitting.
- This system provides an improved environment around the operating table in a hybrid operating room used for general surgery.
- A switch that senses the position of the angiography device controls the on/off operation of the blower.

\* High-efficiency particulate air filter; can capture over 99.97% of minute 0.3 μm particles.

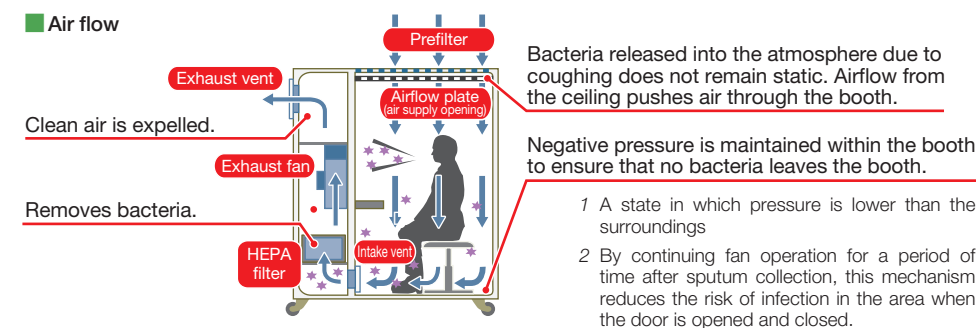
### Sputum Collection Booth DTB-02

The booth is designed to collect sputum from patients suspected of being infected with airborne infectious agents such as tuberculosis without compromising the surrounding environment.

#### Sputum Collection Booth DTB-02



#### Air flow



#### Features

- The HEPA filters on the exhaust side completely remove the bacteria contained in the exhaust, ensuring purified air is discharged.
- A negative pressure<sup>1</sup> is maintained relative to neighboring rooms to prevent any bacteria from escaping.
- The After-Clean Mechanism<sup>2</sup> need only be switched on to enable fully automatic operation during entry into the room, sputum collection, and exit from the room.

### Infection Control Unit INF Series

The unit is able to simultaneously complete both air purification and negative pressurization to prevent airborne infection. The unit is suitable for simplified infection control in infection wards, waiting rooms and consultation rooms.

#### Infection Control Unit



INF-101 Freestanding Model

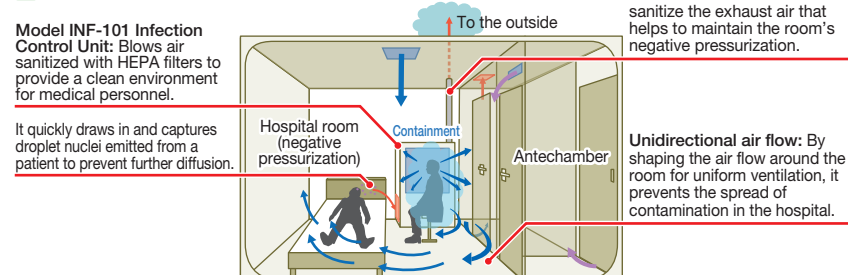


INF-201 Built-in Model

#### Features

- An existing sickroom can be provided with the benefits of air cleaning and negative pressurization without a major retrofit.
- The HEPA filters sanitize both circulating and exhaust air.
- A room can be provided with negative pressurization through easy duct installation. (With Model INF-201, negative pressurization can be achieved simply with installation of the apparatus alone.)

#### Air flow



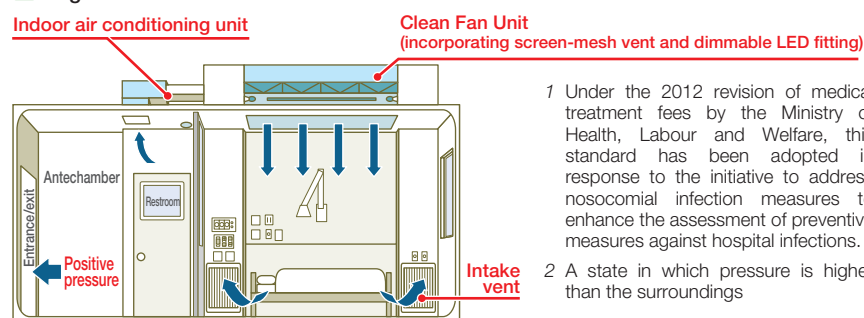
### Immunocompromised patient room BCC-P

These rooms have been designed to protect patients with weakened immune systems due to, for example, hematopoietic stem cell transplant (bone-marrow transplant) or acute leukaemia, from pathogens. We have successfully created sterile environments in rooms that appear almost identical to typical patient rooms. The rooms have been designed with consideration given to comfort for patients and accessibility for healthcare practitioners.

#### Immunocompromised patient room



#### Diagram of Vertical Laminar Flow



#### Features

- These rooms are Sterile Room Administration Fee<sup>1</sup> facilities according to the government's revised fee schedule for medical services issued in 2012.
- Vertical laminar flow system with Clean Fan Unit incorporating screen-mesh vent and dimmable LED fitting
- Positive pressure<sup>2</sup> relative to neighboring rooms prevents the entry of external pathogens.

- 1 Under the 2012 revision of medical treatment fees by the Ministry of Health, Labour and Welfare, this standard has been adopted in response to the initiative to address nosocomial infection measures to enhance the assessment of preventive measures against hospital infections.
- 2 A state in which pressure is higher than the surroundings

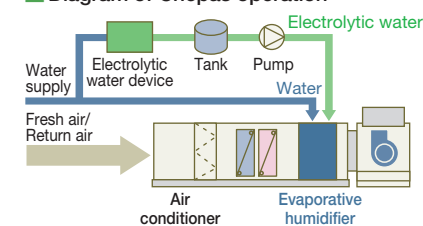
### Clean Humidification Element Passing Air System Chepas

In recent years, the evaporative humidification method has been widely adopted in air conditioning systems. However, if these systems are not properly maintained, bacteria can propagate and odors can be generated. In order to solve issues of hygiene related to evaporative humidifiers, Dai-Dan has developed the Chepas system, which uses slightly acidic electrolyzed water<sup>1</sup>.

#### Front view of unit<sup>2</sup>



#### Diagram of Chepas operation



- 1 With an available chlorine density of 10–80 ppm and a slightly acidic pH of 5.0 to 6.5, electrolytic water is safe for food sterilization and for hand-washing in hospitals.

#### Features

- By regularly supplying slightly acidic electrolyzed water to the elements of an evaporative humidifier, this system kills bacteria propagating in the element and in the lower drain pan.
- It supplies clean air while suppressing the growth of bacteria and the generation of odors.
- It is ideal for medical facilities, food processing facilities, libraries, museums, and other facilities where mold and bacteria must be minimized.
- Slightly acidic electrolyzed water is used for food sterilization and for hand-washing in hospitals and is harmless to humans.

- 2 Includes an electrolytic water device, tank, pump, and panel in a single unit.



## Pharmaceutical Manufacturing Facilities and Research Laboratories

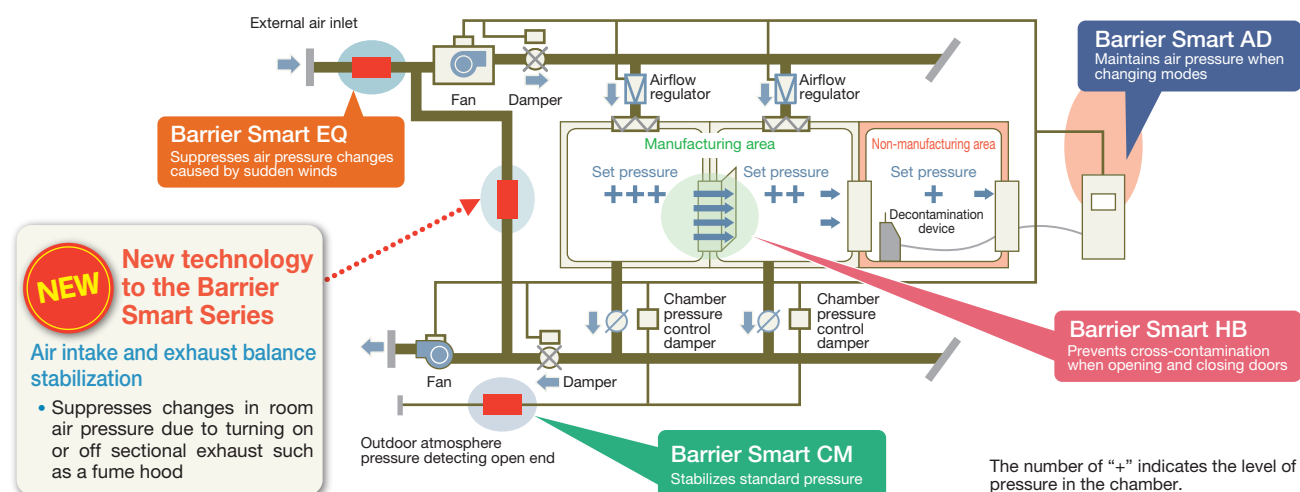
Maintaining clean spaces and preventing microbial contamination

### Chamber pressure control technology Barrier Smart Series

Room pressure control technology capable of maintaining room air pressure is essential to ensure a clean room remains clean. Biological clean rooms such as those found in pharmaceutical manufacturing facilities in particular 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.

#### Diagram of Barrier Smart Series



### Providing the optimum environment for animal experiments 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<sup>1</sup>, in addition carrying a risk of microbial contamination. Controlling animal room environments has long been a challenge.

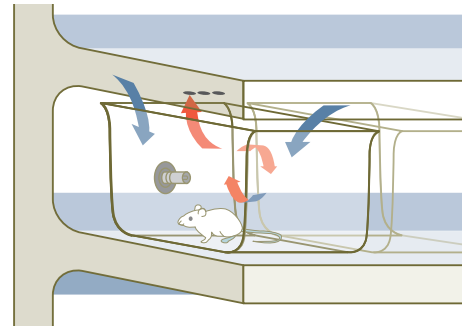
Over many years, Dai-Dan has developed a number of different animal housing options in an effort to improve animal housing environments, reduce energy consumption, and

accommodate animal welfare standards.

The iRack System 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 function and ease of use, creating a more desirable environment for both laboratory animals and handlers.

#### iRack System

#### Diagram of animal cage



#### Features

- Utilizes **cage-specific ventilation systems**
- Creates **advanced one-way airflow**
- Coverless design makes **cage removal and insertion easy**
- Contributes to **greater control of temperature and humidity** in the cage
- Reduced frequency of bedding<sup>2</sup> replacement**
- Easy maintenance**

<sup>1</sup> Substances that cause allergies

<sup>2</sup> Shredded paper or wood chips are used to line the bottom of the cage.

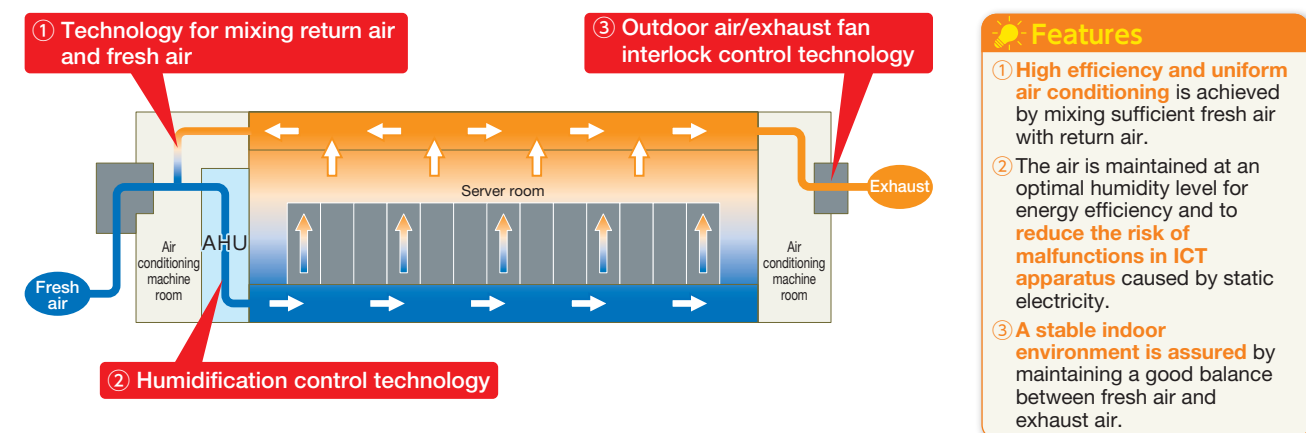
## Data Centers

Energy efficiency technology

### Energy-efficient technology utilizing outdoor air for cooling

New data centers are increasingly adopting outdoor air for their air conditioning systems as an energy-efficiency innovation. These systems are designed to reduce the energy required to cool ICT equipment by directly drawing fresh air into computer rooms for ventilation during the winter season and shoulder seasons.

We are conducting research and development into air-conditioning that utilizes outdoor-air with the goal of offering a server room environment of even greater stability and energy efficiency.



## Food-processing Plants

Mold and equipment performance decline prevention

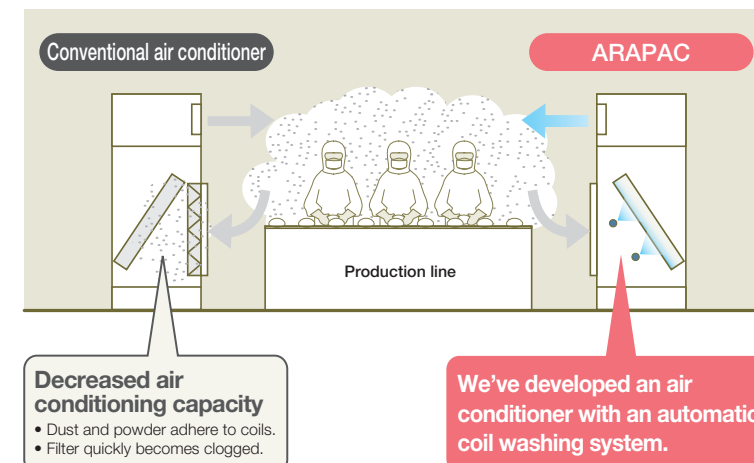
### Automatic self-washing packaged air conditioner ARAPAC

The manufacturing processes at bread factories, snack factories, flour mills, and other food-processing plants result in large amounts of powders becoming scattered and dispersed in the air, which then end up adhering to the inside of air conditioning equipment. Powder adhering to heat exchange coils, in particular, can cause such problems as reduced air conditioning function, early equipment wear, and mold. Accordingly, it is necessary to clean these coils frequently,

requiring extra time and work from customers.

We developed ARAPAC, a packaged air conditioner able to clean its own heat exchange coils automatically, reducing customer burden and extending equipment life. ARAPAC has already been installed in numerous factories, particularly food-processing plants, and these factories are experiencing the benefits ARAPAC has to offer.

#### ARAPAC vs. Conventional air conditioners



#### Features

- Maintains efficiency of heat exchangers** by automatically cleaning coils before dust and powders adhere.
- Requires little installation space.**





# Electronic and Precision Device Plants

Contributing to an exceptionally clean environment and reducing operating costs through energy efficiency

## Contributing to ductless clean rooms Virtual Duct Clean Room (VD-CR) System

Clean rooms at sites such as electronic device factories require many ventilation outlets and HEPA filters\* in order to ensure a high degree of cleanliness and maintain environments with highly accurate temperature and humidity.

Dai-Dan has developed the Virtual Duct Clean Room System, an air conditioning system that maintains a high level of cleanliness and achieves good temperature distribution even in facilities that lack air conditioning ducts.

### Example of a VD-CR installation



### Features

- This system incorporates specially shaped and fitted vents that provide extended airflow **in a ductless configuration**.
- It provides a **high level of cleanliness and good temperature distribution at low cost** and **can be installed easily**.
- Reduced amount of material used for ductwork results in **reduced environmental impact**.
- Suitable for clean rooms of ISO Class 6<sup>2</sup> (Class 1,000) to ISO Class 8 (Class 10,000).

### Ventilation airflow diagram



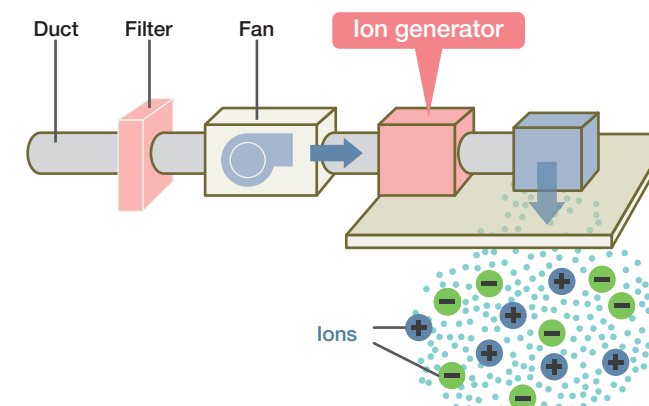
Air vents for ventilation are designed to extend the range of the airflow.

- 1 High-efficiency particulate air filter; can capture over 99.97% of minute 0.3 μm particles.
- 2 An international cleanliness standard

## Technology using the power of ions to prevent particle adhesion ion-Drop

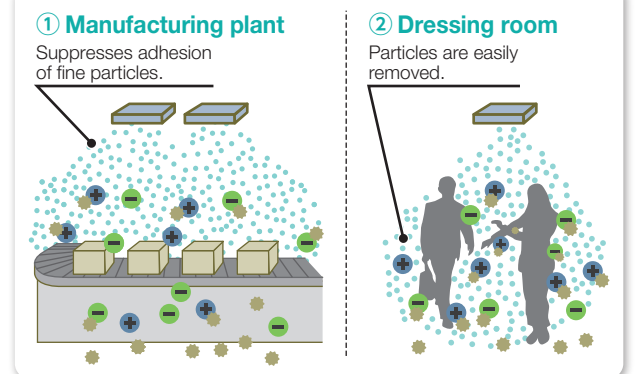
Dust and other particulate matter that clings to surfaces because of static electricity can degrade manufacturing environments, which can in turn impact product quality and cause any number of other problems. To counter these problems, we developed technology that uses ionic forces to prevent particle adhesion. 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



### Features

- Semiconductor fabs and factories involved in film processing, electronic component manufacturing, and food processing  
By using ionization to **suppress static charges** that contribute to adhesion of dust particles, this system **contributes to improved yield**.
- Dressing rooms and clean room lobbies  
**Controls the carrying in of dust particles** by reducing dust adhesion to clothing.



\* Through ionization, a high voltage is applied to the air to create positive or negative ions. This ionized air can eliminate static electricity.

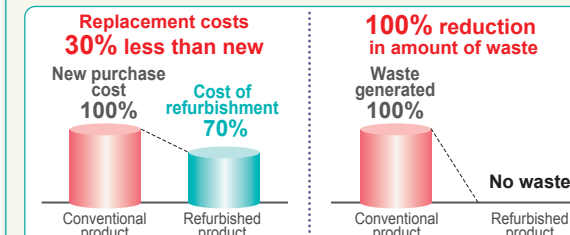
## Air filter refurbishment technology utilizing supercritical CO<sub>2</sub>

Plants typically dispose of large quantities of used air filters. Dai-Dan has developed and successfully implemented a refurbishment technology intended to reduce this environmental load.

We have developed a recycling business that uses supercritical CO<sub>2</sub> to wash and refurbish these air filters before returning them to customers.

### Features

- This innovation represents **industry's first** practical application of air filter refurbishment technology employing **supercritical CO<sub>2</sub>**.
- It is suitable for use with air filters **designed to remove organic gases<sup>2</sup>** at electronic device plants, printing plants, and chemical plants.
- Because air filters are refurbished through washing and are no longer discarded, **the environment can be protected with no initial investment**.
- **Both air filter replacement costs and waste are reduced.**



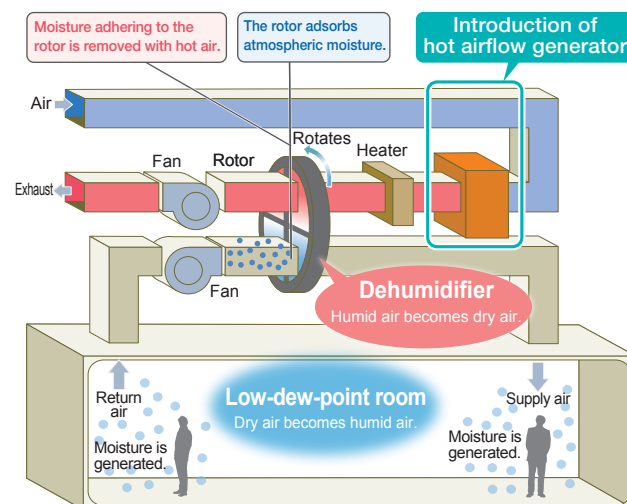
- 1 CO<sub>2</sub> at a temperature (31.1°C) and pressure (7.4 MPa) above the critical points that behaves as a fluid exhibiting both the diffusibility of gas and solubility of a liquid.
- 2 Includes toluene and other volatile organic compounds (VOCs) that contribute to air pollution and odor-causing ingredients included in kitchen exhaust.

## Rechargeable battery plants Energy-efficient dehumidification system

Plants that manufacture rechargeable batteries require rooms with an extremely dry atmosphere, otherwise known as "low-dew-point"\* environments. The dehumidifiers used to create these environments consume a great deal of energy, so minimizing energy consumption has proven to be a major challenge in this field.

We are making progress toward the development of an energy-efficient dehumidification system.

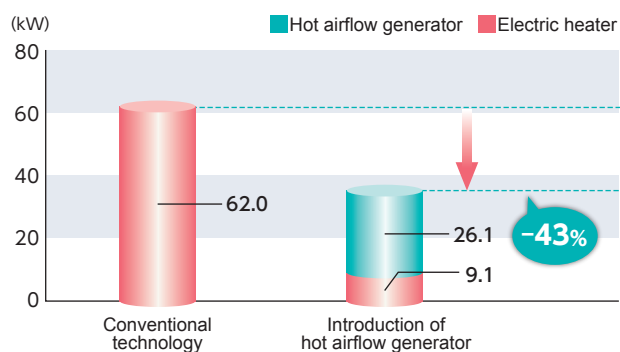
### Energy-efficient dehumidification system



### Features

- Energy-efficient dehumidification system  
We introduced a hot airflow generator with a **CO<sub>2</sub> heat pump** incorporating the design expertise we have gained through our verification testing.
- We developed a **waste-free circulation system for heat and air**.
- Localized technology for low-dew-point rooms  
We reduce the quantity of dry air supplied in order to achieve only the **low-dew-point level** required for a particular location.
- Proposals for energy-efficient improvements  
We thoroughly investigate dehumidification systems and **suggest various improvements appropriate to operation length and condition**.

### Improved energy efficiency



\* A low-dew-point room, which is required for the production of rechargeable lithium-ion batteries, contains a very dry environment with a relative humidity of around 0.1%.

### Air Filter Cleaning and Refurbishing Project

#### Customer plants & buildings

- Electronic device plants
- Printing plants
- Chemical plants and others



### Supercritical CO<sub>2</sub> cleaning and refurbishment apparatus





## General Facilities

Improving comfort and energy efficiency

### Integrated Lighting and Air Conditioning Unit Ceiling Free

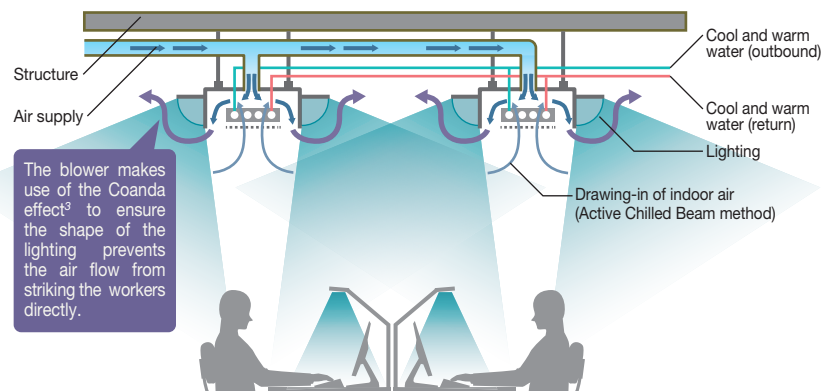
Ceiling Free provides lighting and air conditioning functions in a single integrated unit, which makes it ideal for installation in office buildings. The lighting design and air conditioning system balances comfort and energy efficiency by taking into account the perceived brightness<sup>1</sup> and by providing an active chilled beam<sup>2</sup>.

#### Features

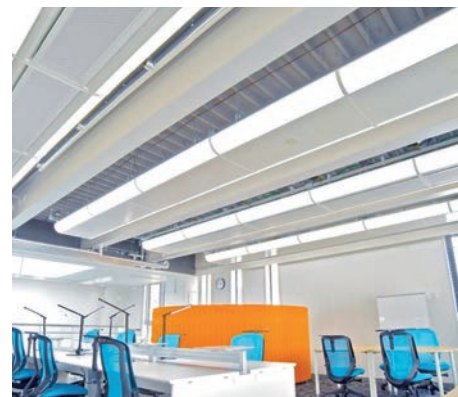
- This illumination design approach takes into account the human perception of brightness in order to create a **comfortable yet energy-efficient illuminated environment**.
- The Active Chilled Beam method utilizes **available renewable energy** to create an air conditioned environment that is both comfortable and energy efficient.

- 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 The air conditioner incorporates cool and warm water coils. It induces room air flow by introducing air supplied by the outdoor air conditioner and venting the air from a nozzle at high speed. It cools/heats the induced air with coils of the air conditioner.
- 3 A phenomenon in which a fluid in the form of a gas or liquid flowing along the convex surface of an object tends to continue adhering to that surface

#### Ceiling Free operation



#### Typical installation



### Creating comfortable indoor spaces Lighting Research

Conventionally, lighting design has only been planned according to the amount of physical light that will illuminate areas such as desktops. People, however, do not perceive the brightness of a room only based on the light hitting the desks in it; it is also necessary to take into consideration the overall brightness of an indoor space.

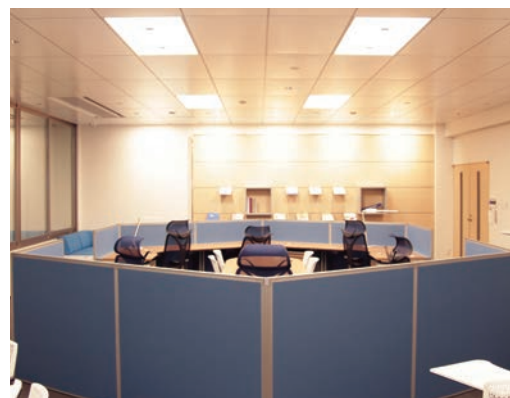
By researching lighting that takes into account not just lighting intensity but also the perceived brightness<sup>\*</sup>, we aim to create comfortable indoor spaces.

#### Features

- Lighting design and evaluation that takes into account not just desktops but also **overall room lighting**
- Research into not just light intensity but also perceived brightness to create **bright, comfortable, and energy-efficient indoor spaces**

<sup>\*</sup>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.

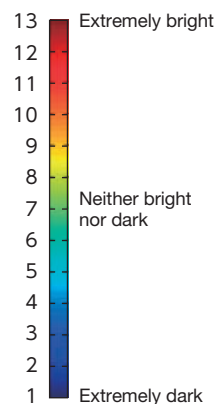
#### An indoor space being evaluated for perceived brightness



#### Perceived brightness evaluation image



NB

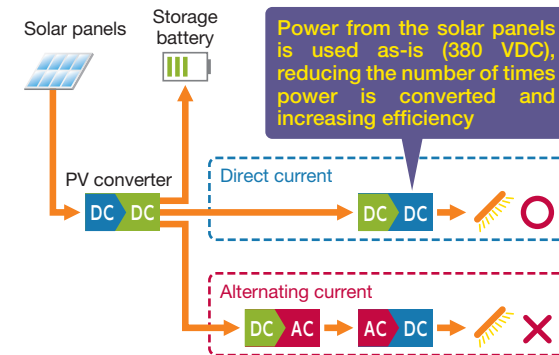


### Effective use of renewable energy Direct Current Feed Research

Most of the devices we use in our daily lives run on a type of electricity called alternating current. Conversely, solar power and other forms of renewable energy are produced as a type called direct current. Accordingly, devices such as power conditioners are necessary to convert direct current to alternating current, and when power is converted like this, some of the energy is lost and wasted.

We create and evaluate direct current feed systems that use the direct current from solar power as-is with the aim of effectively utilizing renewable energy.

#### Diagram of direct current and alternating current



Direct current is converted less than alternating current would be, reducing power loss and wastage due to conversion.

#### Features

- Makes **direct use** of direct current from solar panels
- Reduces the number of power conversions, **effectively utilizing renewable energy**

#### Direct current feed system



### Flow control system for pumps in refrigeration units Flow Smart

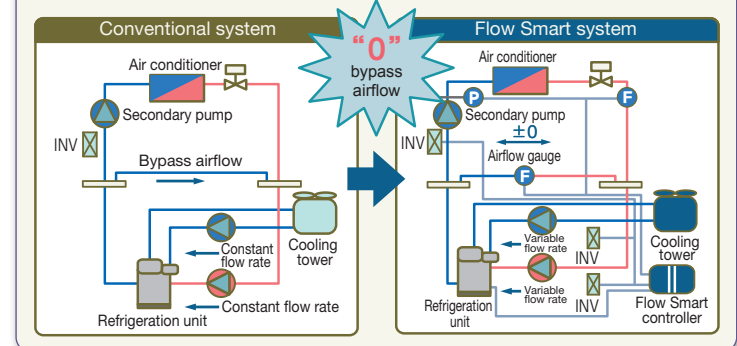
We developed Flow Smart (a pump flow control system for use with refrigeration units) as an energy-efficiency technology to reduce the energy consumed by the pumps in the air conditioning units used by many types of facilities.

The Flow Smart system reduces the running cost of equipment by providing inverter control of the pumps for refrigeration units, which conventionally have been operated at a constant speed. Flow Smart regulates the air flow to prevent any air flow through the bypass unless it is required to run the air conditioning system.

The introduction of Flow Smart enables a 60% reduction in the energy required to run the pump in refrigeration units.

#### Features

- Bypass airflow control technology developed by Dai-Dan
- Reduces energy consumption of water and coolant pumps in refrigeration units
- Highly energy-efficient as demonstrated by strong demand



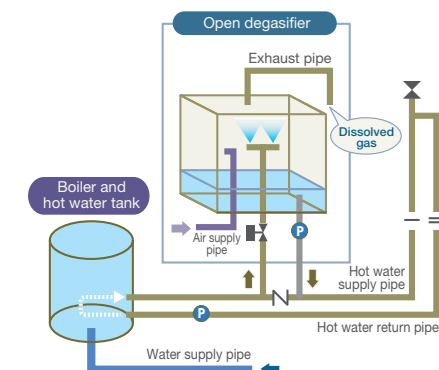
### Anticorrosion system for copper hot water supply pipes Open Degasifier

This open degasifier<sup>1</sup> was developed to reduce the corrosion of copper hot water supply pipes used in centralized hot water supply systems<sup>2</sup>.

The device, which is connected to copper hot water supply piping, atomizes the hot water internally in order to extract and remove any residual chlorine, dissolved oxygen, free carbonates, and other corrosive elements that might be present. Atomizing the hot water increases the surface area of the water that is in contact with air, increasing the efficiency of extraction.

<sup>1</sup> Jointly developed with UACJ Corporation (formerly Sumitomo Light Metal Industries, Ltd.).

#### Diagram of open degasifier

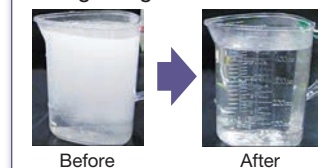


<sup>2</sup> Hot water supply system with a hot water return pipe and a hot water supply circulation pump is known as a centralized hot water supply system. The return pipe is made of copper.

#### Features

- Reduces residual chlorine, dissolved oxygen and free carbonates.
- Enables ample hot water pressure and volume.
- Easy installation
- Daily maintenance is not required.

#### Hot water before and after degassing





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



GINZA SIX



Research Building No. 9  
The Nippon Dental University  
(Niigata)



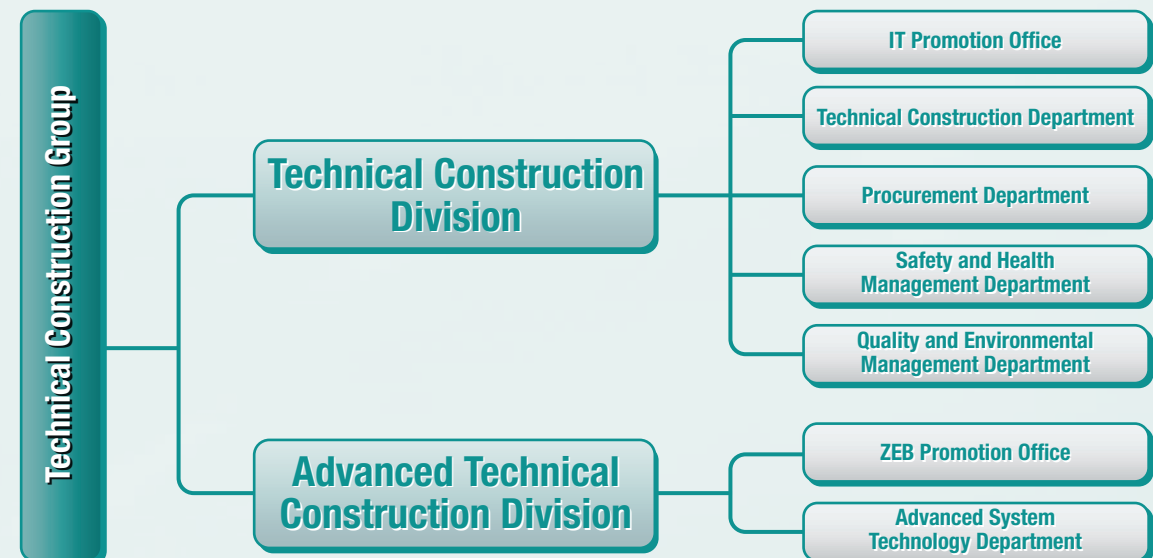
Yamagata Factory  
Cell Science &  
Technology Institute, Inc.

Enhancing Our Installation Expertise and Ability to Provide Design Solutions

Ongoing Improvement of Site Management Methods

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

## Technical Construction Group



The Technical Construction Group was launched in April 2017. Centering around the Technical Construction Division and the Advanced Technical Construction Division, the Group provides technical support and guidance based on a comprehensive and stage-oriented approach with the aim of realizing equipment environments that will grow in sophistication. The Group also educates engineers in advanced system and ZEB technologies so that they and we can flexibly meet the diversifying needs of our customers as well as nimbly respond to market trends.

In addition, the Group strives to create a company-wide on-site support system to eliminate engineer deficiencies as they manifest while also actively engaging in proposing ideas for increasing work efficiency and improving work environments.

The Group works with the Technical Development Group, launched just last year, to contribute to the improvement of our technical and practical competence by:

- 1) Enhancing practical competence and technical abilities
- 2) Supporting and enhancing management of engineering departments, including in the field
- 3) Enhancing engineering capabilities in advanced system technologies







## Large Mixed-Use Facility

## New Installation at GINZA SIX (Ginza 6-chome District 10 Category 1 Urban Redevelopment Project)

Installation Project  
1

GINZA SIX is an urban redevelopment project combining two sites, including the former location of the Matsuzaka Ginza Department Store, into a single 1.4 hectare plot. Planning for the project began in 2003.

The two sites were combined by eliminating and replacing a municipal road extending between them to create a new, larger plot some 9,000 m<sup>2</sup>. Adding a bus station for tour busses, which had been a problem in the Ginza area, also helped make the site a destination for domestic and international tourists. In order to maintain the functionality of the demolished municipal road, a new, safer street separating pedestrian and vehicle traffic called Azuma-dori was built passing through the GINZA SIX facility, providing a safe and comfortable transportation network for pedestrian and vehicle traffic travelling from the north, south, east, or west.

GINZA SIX is a new landmark in the Ginza area. Although limited to a height no greater than 56 meters (due to the “Ginza Rules”), it is one of the largest commercial facilities in Ginza, boasting 241 establishments. The Kanze Noh Theater, a center for the dissemination of traditional Japanese culture seating 480, is located on GINZA SIX floor B3, while one of the largest office building spaces in Tokyo (standard floor area of 6,140 m<sup>2</sup>/floor) is situated on portions of floors 7 through 13. In addition, the 4,000 m<sup>2</sup> GINZA SIX Garden, located on the facility roof, is also one of the largest of its kind in the Ginza area.

We were involved in the installation of electrical equipment of this vast urban renewal project, working on portions of floors B2 through 6 in the commercial area (including 47,000 m<sup>2</sup> of shared passageways).

## Building outline

Location	6-10-1 Ginza, Chuo-ku, Tokyo
Gross floor area	148,697.5 m <sup>2</sup>
Scale	6 floors belowground, 13 floors aboveground, 2-story rooftop structure
Primary uses	<ul style="list-style-type: none"> <li>● Retail stores, restaurants, offices</li> <li>● Parking lot, district heating and cooling facility</li> <li>● Cultural and exchange facility (Kanze Noh Theater)</li> </ul>
Owner	Ginza 6-chome District 10 Urban Redevelopment Partnership
Construction company	Kajima Corporation

## Installation outline

Scope of work	Mains past tenant main line branch boards, outlets, and secondary tenant construction for floors B2 to 6
Construction period	May 2014 – April 2017

## Electrical equipment outline

Characteristics of the electrical equipment (overall facility)	<ul style="list-style-type: none"> <li>● Three 22 kV spot network power-receiving lines</li> <li>● Transformer capacity: Three 4,000 kVA units</li> <li>● 6.6 kV high-voltage substations in three locations</li> <li>● Contract power: 10,000 kW</li> <li>● Backup power supply: 3,000 kVA and 4,000 kVA dual fuel gas turbine generators</li> <li>● District heating and cooling facility (floor B6)</li> </ul>
Characteristics of commercial facility	<ul style="list-style-type: none"> <li>● Number of tenant main line branch boards: 32</li> <li>● Number of retail light and power distribution boards: 428</li> <li>● Common area lighting equipment <ul style="list-style-type: none"> <li>Number of LED downlights: 6,862</li> <li>Number of concealed LED lights: 10,225</li> </ul> </li> <li>● Lightning control units, dimmers, etc.</li> </ul>



Elevator hall indirect lighting



Atrium lighting in the commercial area

Comment from the project manager

## Emphasizing teamwork and working as one, the facility was able to open on time in spite of the tight schedule

The installation area for this project, which was an entirely new installation, was very large — approximately 47,000 m<sup>2</sup> in the commercial area alone.

There were many changes to the construction and design, and tenant contractors also began moving into the commercial area when construction was in the final stage. I had never seen so many workers engaged in the same construction area before. Despite of a lot of work overlap, we managed to complete the installation on time and without any accidents. We believe it would not have been possible without the leadership demonstrated by the owner side and the efforts put forth by our team together with our vendors.

Shunichi Okuhisa Project Master of Engineering Section 3, Engineering Department 1, Tokyo Head Office







Laboratory Animal Housing Facility

## Research Building No. 9, The Nippon Dental University (Niigata)

The Nippon Dental University operates a housing facility for laboratory animals in order to advance medical technology. Laboratory animals such as mice and rats are kept here and used in research to develop new medical treatments.

We were involved in electrical, air conditioning, and plumbing installations when the Nippon Dental University decided to extend their existing single-story animal housing facility. Here is presented our efforts regarding the air conditioning equipment and facilities.

### Characteristics of animal housing facility

#### 1. A comfortable and hygienic environment for animals and caretakers

- Maintenance of temperature, humidity, airflow, and cleanliness
- Prevention of the spread of foul odors and allergens produced by animals

#### 2. Environmental preservation of neighboring facilities

- Prevention of foul odors, noises, and other disturbances from affecting neighboring facilities

#### 3. 24 hour per day, 365 day per year air-conditioning operation a necessity

- Saving energy in air-conditioning operation a must

After gaining a full understanding of the needs and requirements for the animal housing facility, we planned out the building system that we be needed, then proposed and implemented our own in-house developed system.

Comment from the project manager

The facility owner noted, “You can sense Dai-Dan’s technical prowess”

We worked extremely hard on this project to meet the unique needs of a laboratory animal housing facility in a short timeframe. Despite the difficult conditions, thanks to everyone’s support, we were able to complete installation on time and without a single complaint regarding the quality of our work or equipment. We were able to meet the needs of the facility, and the facility owner told us that he could sense the extreme technical prowess of Dai-Dan, which is not visible with a simple surface glance.



Shigeharu Uchiyama  
In charge of Manager of Engineering Section 1  
Engineering Department, Niigata Branch

### Building outline

Location	Niigata City, Niigata Prefecture
Gross floor area	Approx. 689 m <sup>2</sup>
Scale	2 floors aboveground
Details	<ul style="list-style-type: none"> <li>● 1st floor: Animal housing area</li> <li>● 2nd floor: SPF* area (bio-clean room, class 10,000)</li> </ul>
Structure	Reinforced concrete, steel
Usage	Animal housing facility

\* Specific pathogen free; normally, animals carry a variety of indigenous bacteria in their intestines and mouths, but an SPF clean room ensures that animals kept inside will not harbor varieties of bacteria that could obstruct experiments.

### Installation of iRack Systems for animal housing

We installed iRack Systems in this facility as part of mouse and rat housing.

#### Main characteristics of the iRack System

##### (1) Unidirectional airflow

An exhaust chamber is situated behind the rack system that is connected directly to the air conditioning system exhaust duct, directly exhausting sources of contamination from the rack. This ensures that foul odors and allergens from animals do not get diffused in the room.

##### (2) Individual cage ventilation

Each cage is individually ventilated, keeping the risk of contamination spreading from one cage to another adjoining one to a minimum. In addition, airflow from the rack as a whole is low, enabling energy savings in air conditioning (40-60% of the airflow compared with a conventional unidirectional airflow rack system).

Refer to page 25 for information on the iRack System.



Cages installed with the iRack System

### Air conditioning outline

Installation of our in-house developed system	<ul style="list-style-type: none"> <li>● 2 iRack Systems (1 for mice, 1 for rats)</li> <li>● Barrier Smart CM (stabilizes standard pressure in 2nd floor SPF area)</li> </ul>
Air conditioning/ventilation facilities 1F: animal housing area	<ul style="list-style-type: none"> <li>● Temperature: 18-28°C</li> <li>● Humidity: Not controlled (at least 30% relative humidity)</li> <li>● Air-cooled packaged air conditioner</li> <li>● Air-cooled heat pump air handling units</li> <li>● Exhaust fans</li> </ul>
Air conditioning/ventilation facilities 2F: SPF area	<ul style="list-style-type: none"> <li>● Temperature: 22 ±2°C</li> <li>● Humidity: 50 ±10%</li> <li>● Cleanliness: Class 10,000</li> <li>● Room pressure control: PCD</li> <li>● Pre-cooled air handling unit, exhaust fans</li> </ul>

### Installation of a Barrier Smart CM

#### Stabilization of standard pressure\*

The SPF area on the second floor required the stabilization of room pressure and airflow direction. Standard pressure had been maintained via a pressure control damper in a second floor hallway, but the hallway was connected directly to the first floor entrance. This would result in the standard pressure changing due to disturbances such as sudden gusts of wind when the entrance door was opened, disrupting the control of room pressure in the various rooms. In order to stabilize these disturbances, we installed our own “Barrier Smart CM” to stabilize standard pressure.



Barrier Smart CM

\*The pressure that will serve as a standard when measuring room pressure

Refer to page 25 for information on the Barrier Smart Series.





## Culture Fluid Development and Manufacturing Plant

# Yamagata Factory, Cell Science & Technology Institute, Inc.

As the markets for regenerative medicine and bio-pharmaceuticals expand, demand for culture fluids used to develop and manufacture products in these fields is grown rapidly. In order to meet that demand while also meeting the demand for high quality, Cell Science & Technology Institute, Inc. built a new plant with the aim of building a manufacturing base and enhancing its research and development capabilities.

Under the direction of Shimizu Corporation, we were involved in the installation of the new plant's air conditioning, sanitary, and freezing and refrigeration facilities.

## Characteristics of installation

### (1) Indoor environmental control that maintains appropriate cleanliness, room pressure, in-room airflow, humidity, and temperature

We constructed clean rooms (grades B and C) necessary for the manufacture of cell culture fluid. We optimized room pressure control dampers and variable airflow units to ensure that cross-contamination did not occur between clean rooms even when switching airflow modes during operation. It was also necessary to meet GMP guidelines and thus we also had the air conditioning units validated.



A room pressure control damper

### (2) Ensuring quality and optimizing installation

- In order to improve on-site work and minimize variation in installation quality due to differences in worker skill, we actively utilized prefabricated machined pipe produced by a dedicated manufacturer. We also made use of light weight, corrosion- and earthquake-resistant flexible plastic pipe and dedicated one touch couplings to further ensure uniform installation quality. We gave every consideration to suppressing as much as possible contaminants such as oil, welding fumes, and cutting and grinding scraps produced during installation work.
- The use of clean panels (42 mm insulation panels) for clean room ceilings made them strong enough to support people walking on top of them if necessary. This makes it possible for maintenance to be performed on the dampers, valves, and reheaters necessary for air conditioning from on top of the ceiling, eliminating the need to enter the clean room to perform this work.
- We installed the ceiling panels first, and installation of air conditioning and sanitation equipment as well as electrical installation work was performed above these panels, while interior wall and floor work was done under the panels, increasing installation efficiency and ensuring a safe working environment.



Prefabricated machined pipes



Maintenance access route above the ceiling clean panels

### ● Building outline

Location	Tendo City, Yamagata Prefecture
Gross floor area	Approx. 2,900 m <sup>2</sup>
Scale	2 floors aboveground
Business	Development, manufacture, and sale of culture fluids
Structure	Steel

### ● Air conditioning outline

Cooling source	Air-cooled module chiller
Heating source	Steam boiler, plate heat exchanger
Clean room system	<ul style="list-style-type: none"> <li>● Cleanliness Grade B (class 100 ISO 5) Grade C (class 100 ISO 7)</li> <li>● Pre-cooled air handling unit and air circulation air handling unit Installation of indirect steam generator to ensure extreme cleanliness</li> <li>● Room pressure control via VAV and PCD</li> </ul>

#### Comment from the project manager

### We actively proposed technologies for ensuring quality and shortening construction time

Amidst a construction period of eight months, the actual time we had for installation work was just five months, and in that time we had to complete the validation process and handover. There were also many improvements and changes made during installation, and I believe that our repeated discussions together with and the cooperation we received from the facility owner and designers, the construction company, and the equipment and electrical installers to ensure efficient installation helped us to meet our deadline.

In addition, in order to ensure quality and that installation was performed on time, we proposed the use of labor-saving equipment, materials, and installation methods. We were able to complete installation on schedule and without incident, and it was an extremely good experience.

Akinori Tomitaka Technical Master of Engineering Section 3, Engineering Department, Tohoku Branch





## 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 to share expertise and integrity throughout Dai-Dan

In November 2016 we held our 9th Case Study Presentation.

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. This year we also used a web conferencing system to broadcast the presentation live to employees.

We received 171 presentation applications from employees nationwide, including case studies concerning improvements to conventional installation methods, optimizations to installation work utilizing new methods and equipment, an energy-efficient and environmentally friendly design, improvements made in the face of failures, cost reductions, and improvements in methods for managing safety and quality.

Of these submissions, one was chosen for the Chairman's Award, two for the President's Award, two for the Head of Technical Construction Division Award, five for the Outstanding Performance Award, 10 for the Good Effort Award, and three for the Encouragement Award, totaling 23 awards in all (15 group awards, eight individual). The winners were recognized in

a ceremony and presented their case studies at the presentation. The Chairman's Award, the presentation's highest honor, was given to the Osaka Head Office for their "Method for Regulating the Circulation Flow Rate of a Central Hot Water Supply and Method for Evaluating the Same."

By taking lessons and ideas presented through the case studies at the presentations and bringing these remarkable achievements into our offices and work sites 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



We are very honored to have received the Chairman's Award at the 9th Case Study Presentation from among the many design and installation ideas and improvements submitted from around the country.

Our case study concerned the planning and evaluation of a "Method for Regulating the Circulation Flow Rate of a Central Hot Water Supply and Method for Evaluating the Same." Hot water supply equipment experiences frequent if small problems, and methods of regulating them is a challenge. We worked to expose the issues with current technology, examine efficient methods of regulation, and improve the quality of hot water supply equipment. The achievements of our work were well-received, resulting in us winning the Chairman's Award.

As Dai-Dan engineers, we will continue to devote ourselves to flexibly and diligently meeting the diverse needs of customers and resolving technical challenges.

Yoshiyuki Tamada  
Deputy Manager of Design Section 2, Design Department, Osaka 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 111th edition was published in September 2017. Copies of these publications are donated to the National Diet Library.



#### Technical Reports

Our technology is supported by the results of a combination of ingenuity, hardship, failures and successes in the field. These results are shared via our Case Study Presentations to be employed companywide.

Through text and figures, Dai-Dan shares particularly outstanding achievements; case studies related to medical and industrial facilities (pharmaceuticals, devices, IDC, and research centers), which are points of focus in the "Developing advanced technology for high-technology facilities" section of the Mid-Term Management Plan; and the experiences of individual engineers gained through design and installation projects nationwide. In turn, individual experiences become the company's experiences and technologies.

These examples of expertise and ingenuity are incorporated into the Technical Reports, which are made available to all engineers.



#### New Information Hour

The New Information Hour is held as a part of the workshops primarily for engineering employees with the aim of giving them fundamental knowledge in the fields of medical care, devices, energy efficiency and electricity where our advanced technologies play a significant role.

Seven years have passed since the Hour was first started, with 178 sessions being held and a total of 14,201 people participating. Theme selection and instruction is provided by the Technical Development Group.

Sessions are recorded and distributed to those who are unable to attend the sessions due to work-related reasons, in order to provide greater opportunities for self-directed learning.

#### Major topics of sessions held throughout the previous year

##### Medical care

- Immunocompromised patient rooms
- Air conditioning systems for hybrid operating rooms

##### Devices

- Clean rooms and device manufacturing plants
- Fundamental knowledge on constant temperature and humidity rooms

##### Energy efficiency

- An introduction of our ZEB/smart energy derived from our building systems

##### Electricity

- Trends in electrical equipment (enefice Kyushu's electrical equipment)

#### Training engineers and passing on skills applicable to work in the field

#### An innovative human resource system for appropriate appraisal of field specialist engineers

We launched a new human resource system in April 2014 intended to support appropriate evaluation and job promotion of engineers engaged in installation in the field.

In our previous system, only employees in the management division could be promoted to the position of section manager or department manager. Therefore, for engineers specializing in on-site work, we established the positions of Grand Project Master (GPM) and Project Master (PM), which are equivalent to the positions of department manager and section manager in the management division, respectively.

Engineers can choose either the management pathway or field specialist pathway. If they choose the latter, they can be promoted to the position of GPM or PM.

Also, in April 2015, we established the Technical Master (TM) position for field specialist engineers below the rank of section manager. By August 2017, we had appointed

seven GPMs, 54 PMs, and 25 TMs.

Installation experience is evaluated according to its application to medical, industrial or other types of facilities, and a special allowance is paid to GPMs, PMs and TMs in recognition of their achievements. A special promotion may be awarded depending on the number of special allowances paid.

As a design and installation company, Dai-Dan needs to develop outstanding engineers capable of performing installations in the field and willing to pass on their skills. We are taking steps to enhance their technical skills by accurately evaluating skilled engineers capable of working on-site and increasing their motivation.

With this new human resource system, we are helping to ensure that the skills of outstanding engineers in charge of installation will be passed on.



## Creating value by providing solutions with a flexible approach

Dai-Dan is involved in providing electrical, air conditioning and plumbing installations, and our engineers are diverse in terms of their specialization as well as their gender. This diversity generates value created by “out of the box” thinking fused with a flexible approach.

Currently, many female employees are active on our front lines in the field. Under our new mid-term management plan, we advocate the strategy of “promoting a diversified approach to work,” and we are engaged in improving the work environment so that female employees can continue to advance.

### VOICE Skills of our female employees in the field

#### Thankful for the opportunity to meet so many people

Looking back on my 26 years with Dai-Dan so far, I believe the reason I was able to continue working on-site is because of the many people I met and the many people who helped me. I first worked in the field for an urban redevelopment project for the area in front of a train station, and since that time I’ve been involved in working on-site in office buildings, commercial facilities, and many other jobs. Looking back, however, even when I think about the troubles and difficulties when a lack of skill on my part caused others problems or when things didn’t go according to plan, amazingly, I can’t really ever recall feeling sad or overburdened.

Right now I’m in charge of overall maintenance and repair work at a school I once worked on close to 20 years ago, and when I heard people I had worked with before telling me “welcome back,” I was reminded once again how I am not working alone and that I am being supported by so many other people.

I intend to continue working hard to be useful to everyone from the standpoint and perspective of a woman.



Chiharu Kato  
Engineering Section 3  
Engineering Department 2  
Tokyo Head Office

#### Valuable experience in the field

I was hired to do office work and until now had always done clerical work in an office, so when I learned that I would be transferred to an on-site role, I was worried that a technical novice like myself would not be able to be of use. When I actually started working in the field, however, I found that there was a mountain of small jobs to be done, like cleaning the on-site office, replacing and refilling items, preparing safety manuals and other documents, and binding diagrams. I saw up close and personal how useful and important my handling of paperwork and other jobs was to making on-site projects run smoothly. I realized that even if I couldn’t provide support in a technical aspect, I could contribute to on-site projects, and I have never felt so proud about my own work. In addition, through my interactions with site workers, I realized how much fun it is to build something together, and now I want to continue helping out on on-site projects. I am confident that valuable experiences like this working in the field will serve me well in the work I do going forward.



Ayako Igawa  
Deputy Chief of  
Engineering Department 1  
Tokyo Head Office

#### An environment that enables engineers to enjoy a long career

When I first joined Dai-Dan, I had little expertise relating to construction, and I was filled with doubts. However, my fears were slowly eliminated as I learned about the fundamentals of construction and equipment through new employee training sessions. The environment at Dai-Dan, which makes it easy to ask for help and to ask questions, also helped. Now I’ve been with Dai-Dan for 13 years. Last year I gave birth to my first child and, after a one year childcare leave, came back to work in April 2017. Right now I’m making use of Dai-Dan’s reduced work hour system. The amount of work I can do is less than before, and I am truly thankful at the understanding and cooperation I have received from my coworkers. Being able to balance childcare and work is extremely important, especially to women, to being able to enjoy a long career, and Dai-Dan listens sincerely to my needs and works to improve the working environment. I feel that Dai-Dan makes it possible for women as well as men to be able to have a long career as an engineer through the accumulation of experience and expertise. I hope my experiences will help show the options available to people who are like I was and are interested in Dai-Dan but worried about whether they can work here.



Haruka Inoue  
Deputy Manager of  
Engineering Section 1  
Engineering Department 4  
Tokyo Head Office

## Ongoing Improvement of Site Management Methods

### Continuously improving health and safety initiatives with the goal of eradicating industrial accidents

#### Workplace health and safety management system

Under the leadership of our executive management, Dai-Dan places the highest priority on the health and safety of our employees and implements health and safety initiatives involving offices, worksites, and subcontractors.

Based on our annually formulated Company-wide Health and Safety Management Plan, we continuously endeavor to remove hazards and reduce the risk of workplace accidents as we strive to maintain and enhance health; promote the creation

of more comfortable work environments; and ultimately improve health and safety standards.

Ensuring health and safety is one of our social obligations to society, and we aim to create a company that always upholds the public trust. We will continue to strive to attain continuous improvement in addition to improving our health and safety initiatives utilizing our workplace health and safety management system.

### Our Policies for Health and Safety

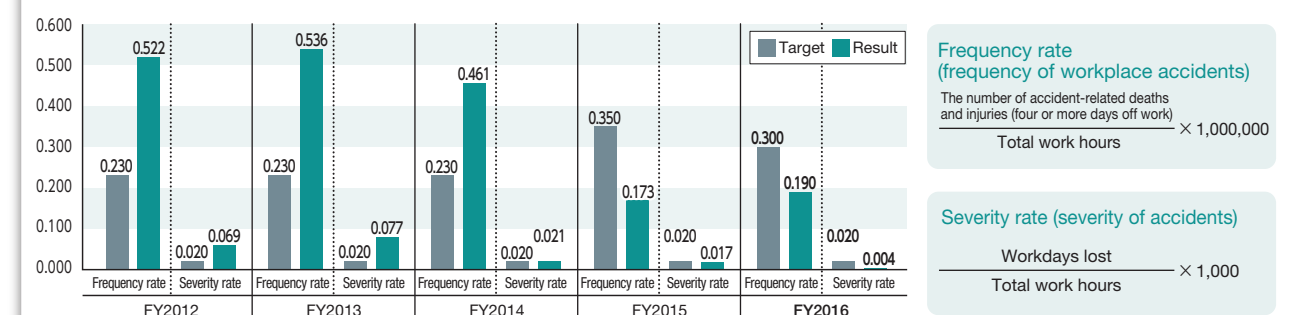
#### Health and Safety Philosophy

“Ensuring Health and Safety” is our obligation to all the employees of our companies, their families and the society. In DAI-DAN, we give top priority to “Safety” and “Health.” We strive to be the corporation which the society trusts, with DAI-DAN’s top management and employees working together to enhance the safety and comfortable working environment.

#### Action Statements

- 1 We utilize “Health and Safety Management Systems” to eradicate all industrial accidents. We endeavor to eliminate risk and hazards in all work activities, and continuously improve and enhance the health and safety of our workplace.
- 2 We promote cooperation among offices, worksites, subcontractors, with good communication, and promote voluntary revitalization of health & safety activities by defining each role.
- 3 We observe workplace safety and health-related laws including our company’s internal health & safety management systems regulations for the enhancement of health and safety standard of our employees and staff, preserving and improving their health.
- 4 We educate all people working for DAI-DAN in our policies for health and safety and also disclose them to the public.

### Safety performance



#### Health and safety audits and patrols

In addition to inspections by top management, our offices and headquarters regularly conduct health and safety audits and patrols as well as investigate and evaluate the enforcement of Health and Safety Management Plans in order to maintain and anchor our workplace health and safety management system. We also strive to enhance health and safety awareness and improve health and safety standards by implementing activities to revise and improve this system.



A safety patrol underway



## Initiatives for fiscal 2016

We improved safety results overall, with the number of accidents declining from 29 to 23 (of which 18 occurred at worksites). As regards target values, we achieved our targets for both frequency rate and severity rate. We believe this is the result of appropriate implementation of activities to prevent accidents involving falls, which was positioned as a priority item.

Conversely, accidents during commutes and in branch and other offices showed a rising trend, and it is necessary to implement periodic health and safety education for indoor and office workers going forward.

As regards health matters, we implemented stress checks for all employees in line with revisions to the Industrial Safety and Health Act. The rate of persons experiencing high stress slightly exceeded the expected values of the Ministry of Health, Labour and Welfare and initiatives aimed at reviewing work content, revising long working hours, and efforts to promote the use of annual paid vacation are issues.

### Target

Elimination of accidents involving falls

### Target values

Frequency rate: No more than 0.300 (0.190)  
Severity rate: No more than 0.020 (0.004)

Note: Figures in parentheses are actual numbers

### Priority items

- Compliance with basic actions and rules when working at height
- Thorough implementation of fall-prevention actions on portable platform
- Implementation of tool box meetings as well as the practice of "finger-pointing and calling" for each worker

## Industrial Injury Prevention Rally

We held Industrial Injury Prevention Rallies at 11 locations across Japan in line with National Health and Safety Week in order to raise awareness of health and safety.

In fiscal 2017, the chairman, president, and other top executives participated in various rallies, promoting the elimination of work-related injuries and the improvement of health and safety awareness. Some 2,600 people participated in the rallies, including our employees and the employees of our subcontractors. Certificates were presented to individuals and groups who promoted outstanding health and safety initiatives during the previous year.

At each venue, they delivered safety lectures, presented case studies on safety initiatives at their worksites, and renewed their commitment to safe operations.



Fiscal 2017  
Industrial Injury  
Prevention Rally  
Kyushu

## Using IT to increase efficiency of fieldwork and improve installation quality

### Introducing cloud services and business initiatives making use of BIM

The utilization of information and communications technology (ICT) is important and indispensable in improving productivity and increasing work efficiency.

As a new theme we are focusing on in the reformation of business making use of cloud services, we are engaged in the creation of a new business model that will also connect with reforming the way people work, such as measures to reduce long working hours.

As regards the operation of cloud services, their use as tools for real-time information sharing, as well as means to reduce the distance between head offices and project sites, and between bosses and persons in charge, has already taken hold. In addition, live streaming using an online meeting system is contributing to the sharing and permeation of technical information, such as increasing the number of viewers of our Case Study Presentations.

Our business initiatives utilizing building information modeling (BIM)\* are working to apply this technique not just towards design but also the entire lifecycle of a building, including construction, maintenance, and management. Examples include making maximum use of CAD blueprints that contain wide-ranging building data, technical calculations, confirmation of materials and equipment specifications as well as quantity, verifying installation quality via visualization, and presentations for customers.

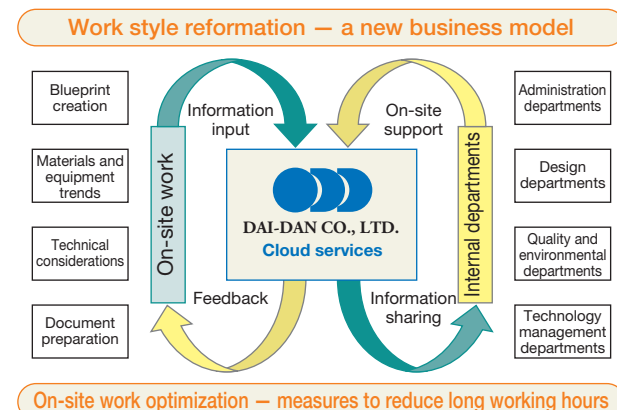
For instance, BIM helps to drastically reduce the number of

processes required to create blueprints during repair work when none exist by making use of 3D scan data, a technique that has been well-received by our customers.

We will continue working to increase the efficiency of our on-site operations and improve installation quality through the effective use of ICT.

\* A computer system for comprehensive construction management, including not just building design and structural calculations but also construction material selection, construction planning, and costs.

### Diagram of Dai-Dan's cloud services



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

### Maintaining quality assurance through strong partnerships with our subcontractors

#### Dai-Dan Meister System

##### Revision of the system

We began implementing the Dai-Dan Meister System in 2011 with the objective of securing excellent foremen for our subcontractors to support our ultimate goals of improving work quality and ensuring safe and efficient field operations.

In October 2012, we revised the regulations in order to train more Excellent Foremen and High-level Foremen under our Meister System.

One of the revisions entails providing subsidies for acquisition of higher certifications such as the registered essential technician's certificate. In addition, we decided to pay cash rewards for Meisters and Excellent Foremen for their fieldwork.

In July 2017, awards were presented to 91 certified foremen from 50 companies and cash rewards were presented to 103 Meisters and Excellent Foremen.

##### Meister Award Ceremony

The 6th Meister Award Ceremony was held in December 2016. 804 foremen serving at Dai-Dan sites were designated High-level Foremen, 31 of whom were named Excellent Foremen. Furthermore, the four best foremen were certified as Meisters.

A total of 30 Meisters have been certified to date, with eight electrical workers, 11 plumbers, six duct installers, one refrigerant piper, and four insulation workers by trade.



Meister Award Ceremony

#### VOICE Comment from a Meister

I was certified as a Dai-Dan Meister in December of last year. I felt extremely honored by the title and also the weight of my responsibilities as a registered essential technician.

My motto in the field is to reach completion of a project with no accidents and no incidents. Accidents can have a variety of causes, from young workers as yet inexperienced to seasoned veterans. Heatstroke, an issue frequently heard about in recent years, affects everyone the same, regardless of experience. Accordingly, my perspective on creating an environment for a project is to aim for a site that enables communication.

As a site foreman, I am able to hear many different opinions and suggestions by sharing the information I have gained with my workers, and this in turn enables me to make the best choices.

I also strive to make sure every worker approaches and talks with younger workers who may find it difficult to share their opinions. I believe these efforts become reflected not only in safety aspects but also in improved quality and productivity. Going forward, I would like to engage in communication with my site workers and people in other industries, actively participate in process management and other on-site management operations, and work to ensure that each day all of my workers are able to go home with a smile on their faces. In addition, I personally intend to devote myself to improving my knowledge of safety, quality, and installation optimization so that I do not shame the title of Dai-Dan Meister.

Mitsuo Kawasaki  
Yuki Electric Facilities Co., Ltd.



#### Dai-Dan's network of subcontractors

In the business environment surrounding the building installation service industry, large regional differences exist in the availability of personnel, and the situation can be considered unstable.

Under these circumstances, we have established a nationwide network of subcontractors that extends beyond the scope of individual offices. Through this network, we can send

workers from around the country to offices where worker shortages are expected. We will effectively utilize this network to establish a stable installation system at each site; at the same time, we will increase opportunities to improve the skills of our subcontractors.






















We will continue to provide our customers with safe and high-quality building installation services.



# FY2016 CSR Performance and FY2017 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 FY2016 performance and the FY2017 targets are summarized according to the seven core themes of ISO 26000\*.

Self evaluation  Target achieved  Target not achieved 

Theme	Items	Target/Task	FY2016 performance	Self evaluation	FY2017 targets	Core subjects of ISO 26000							Page
						Organizational governance	Human rights	Labor practices	The environment	Fair operating practices	Consumer issues	Community involvement and development	
Fair and Transparent Business Practices	Corporate governance	Build and maintain a system to ensure ethical execution of operations	<ul style="list-style-type: none"> <li>Management conducted reasonably and efficiently based on Dai-Dan's Corporate Governance Guidelines</li> <li>Corporate law internal control system functioned appropriately</li> </ul>		Strengthen corporate governance to meet changes in social trends	✓							47
	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"> <li>Group training sessions, briefings, and seminars were held to familiarize attendees with the importance of compliance with laws and regulations</li> <li>Published issues Nos. 17 and 18 of Compliance News to raise awareness</li> </ul>		Perform ongoing awareness-raising activities regarding compliance and ensure our business activities comply with the Antimonopoly Act and other relevant laws and regulations	✓	✓			✓			49
	Risk management	Periodically review and revise the business continuity plan (BCP)	<ul style="list-style-type: none"> <li>Emergency drills were conducted</li> <li>Safety check system extended to include subcontractors at one office (Osaka Head Office)</li> </ul>		<ul style="list-style-type: none"> <li>Conduct emergency drills</li> <li>Consider extending the safety check system to include subcontractors in the office</li> </ul>	✓				✓			51
	Disclosure (Proactive and timely disclosure of information)	Disclose information appropriately and in a timely manner	Complied with laws and regulations and swiftly disclosed information		Proactively disclose information						✓		52
Environmental Contribution	Environmental conservation initiatives	Achieve environmental management system plan targets  * Refer to page 53 for FY2016 environmental targets and results.	Customer proposals Planning Designing	Number of solutions that leverage Dai-Dan technology adopted CO <sub>2</sub> emission reduction through design solutions CO <sub>2</sub> emission reduction through adopted solutions									53
			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									
Meeting Customer Expectations	Quality improvement initiatives	Achieve quality management system plan targets	<ul style="list-style-type: none"> <li>Improved customer satisfaction</li> <li>Reduced quality issues</li> </ul>		Achieve quality management system plan targets						✓		56
	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						✓		58
Valuing Our Employees	People are our greatest asset	Check and review the effectiveness of the Dai-Dan Mentor System	Monitored individual circumstances through additional interviews with each mentor.		Confirm and review the effectiveness of the Dai-Dan Mentor System			✓					59
		Strengthen technical expertise	<ul style="list-style-type: none"> <li>Improved technical capabilities through major reviews of training session plans</li> <li>Continued skill development through the CPD system</li> </ul>		Continue to strengthen technical expertise			✓					
	Respect for human rights and individuality	Continue initiatives to raise awareness of human rights	Raised awareness through new employee training session		Continue initiatives to raise awareness of human rights		✓						62
	Work/life balance and the work environment	Work style reformation initiatives	<ul style="list-style-type: none"> <li>Conducted mental health seminars</li> <li>Reviewed childcare leave and reduced work hour systems</li> <li>Conducted stress checks for all employees</li> </ul>		Continue the activities of the previous fiscal year			✓					
		Follow up on employees working long hours	Increased the percentage of employees working long hours to 0.35%		Achieve a 100% doctor consultation rate for employees working long hours			✓					
			Decreased the percentage of employees working long hours engaging in face-to-face consultations with a doctor to 75.7%		Decrease the percentage of employees working long hours to below 0.3%			✓					
Meeting Local Expectations	Dissemination of technical information to external parties	Contribution to the construction industry	<ul style="list-style-type: none"> <li>Delivered four lectures at the nationwide meeting of the Institute of Electrical Installation Engineers of Japan</li> <li>Delivered six lectures at meetings of the Society of Heating, Air-Conditioning and Sanitary Engineers of Japan</li> </ul>		Continue the activities of the previous fiscal year							✓	64
	Social contribution activities	Targeted number of activities: more than 440	Dai-Dan's offices across Japan voluntarily conducted 491 activities		Continue the activities of the previous fiscal year							✓	65
Dai-Dan's Practical Competence	Sharing of technical information	Share information obtained at workshops	Held the Case Study Presentation		Continue the activities of the previous fiscal year						✓		39
			Presented activity outcomes via teleconference		Continue the activities of the previous fiscal year						✓		40
	Workplace health and safety management system	Achieve workplace health and safety management system plan targets	<ul style="list-style-type: none"> <li>Work-related accidents decreased relative to the previous fiscal year</li> <li>Safety results (frequency and severity rates)</li> </ul>		Achieve workplace health and safety management system plan targets			✓					42
	Partnerships with subcontractors	Ensure the Dai-Dan Meister System is implemented	Held the 6th annual Dai-Dan Meister Award Ceremony		Improve and entrench the Dai-Dan Meister System						✓		44

\* 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. In addition, our executive officers and other employees uphold the highest ethical standards when conducting business.



## Corporate Governance

### Our approach to corporate governance

As a building services engineering and installation provider, Dai-Dan is 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 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.

In June 2015, we elected two external directors known for their varied experiences and wide-ranging viewpoints in order to add a broader perspective to the discussions of the Board of Directors while also strengthening our management's monitoring functions. Both external directors contribute their own perspectives in providing valuable advice on our sustainable growth and improvement of corporate value. They are fulfilling their role by providing invaluable judgment.

Our internal and external auditors help to ensure monitoring of management by conducting audits and site visits and by submitting their own objective questions and presenting their viewpoints to the Board of Directors. External directors and auditors exchange information and opinions regularly and hold meetings of the independent officers' committee comprising independent officers. They discuss the administration of the Board of Directors and take steps to contribute to effective corporate governance. It is our opinion that our current oversight system for our auditors and Board of Directors functions adequately in the interests of maintaining corporate governance.

Dai-Dan has established and implemented the Dai-Dan Corporate Governance Guidelines, a policy which systematically expressed our views concerning such matters as the protection of shareholder rights, Board of Directors management, dialogue with shareholders, and issues relating to social and environmental problems and other sustainability issues.

#### Board of Directors

The Board of Directors comprises 10 directors, two 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 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.

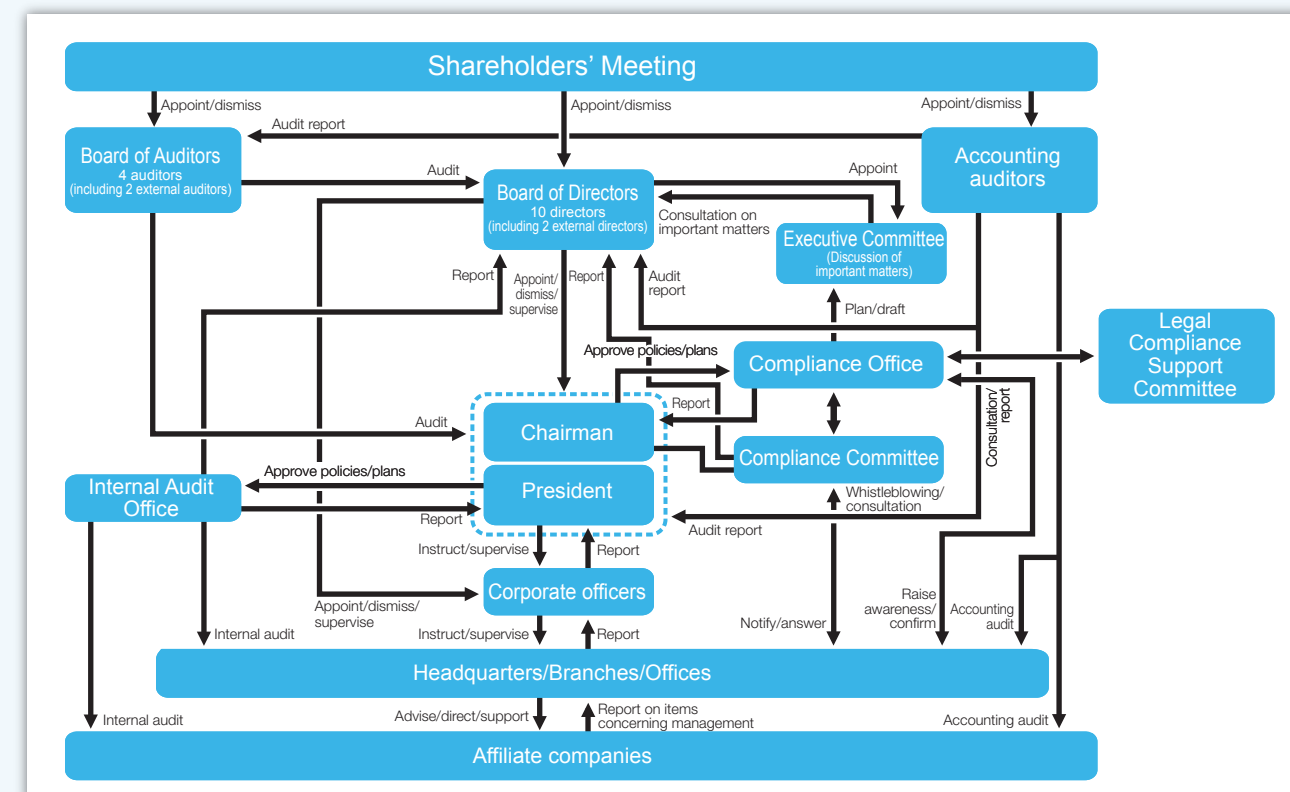
#### Corporate Officers' Committee

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.

### Corporate governance system



### Appointment of independent external directors and independent external auditors

Three people are appointed to report to Tokyo Stock Exchange, Inc. as independent officers — the two external directors and one of the two external auditors. In appointing the independent officers among our external directors, we apply our own "criteria for determining the independence of an external director" in addition to the independence criteria prescribed by Tokyo Stock Exchange, Inc.

### Internal control system

Dai-Dan has 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 2016 assessment concluded that, as of the end of fiscal 2016, our internal control system for financial reporting is effective. An independent auditor also provided a similar opinion.



# Compliance

## Corporate Code of Ethics

We have developed five Action Principles and 14 Action Standards to guide our executives' and other 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

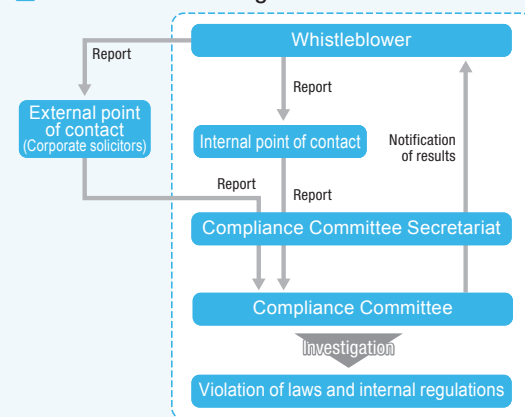
1. Maintain positive relationships with customers and users
2. Ensure safety and quality
3. Ensure fair and open competition
4. Engage in ethical business transactions
5. Fairly disclose corporate information
6. Ethically manage critical information
7. Protect and respect intellectual property rights
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 executives' and other employees' compliance awareness, receiving and investigating reports of violations, and developing preventive measures. During fiscal 2016, the committee met on three occasions.

### Promoting awareness and compliance

In each fiscal year, Dai-Dan formulates a plan and implements various initiatives in order to promote awareness and compliance.

Training in proper compliance is provided during new employee training sessions, position-specific training sessions, and as part of the training programs of each office. This approach ensures that many executives and other employees are exposed to appropriate compliance training.

### Results of Main Initiatives in FY2016

- Release of a Message from Management on the topic of Compliance Month
- Submission of written oaths according to the terms of our Corporate Code of Ethics
- Presentation of group training sessions on corporate ethics and compliance
  - Notification to promote use of whistleblowing and consultation systems, etc.
- Presentation of seminars by lawyers on compliance with the Antimonopoly Act (for management-level and general employees)
- Presentation of study sessions on compliance with the Antimonopoly Act
- Publication of Compliance News
- Confirmation of "office compliance action status" at all offices
- Voluntary study of compliance through "e-learning"

### Main Action Plan for FY2017

- Release of a Message from Management on the topic of Compliance Month
- Submission of written oaths according to the terms of our Corporate Code of Ethics
- Presentation of group training sessions on corporate ethics and compliance
  - Notification to promote use of whistleblowing and consultation systems, etc.
- Holding of compliance seminars
- Presentation of study sessions on compliance with the Antimonopoly Act
- Publication of Compliance News
- Confirmation of "office compliance action status" at all offices
- Voluntary study of compliance through "e-learning" (Corporate Code of Ethics, business and work procedures, Antimonopoly Act, etc.)

## Strengthening the 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

In April 2014, Dai-Dan established the Compliance Office and placed it 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

In April 2014, we established the Legal Compliance Support Committee, a professional organization supporting the Compliance Office. This Committee comprises 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.

## Prevention of insider trading

Strict rules have been imposed on share transactions as per our Insider Trading Control Ordinances in order to prevent unjust share trading by corporate insiders, protect shareholders and contribute to a stable and fair securities market.

Additionally, the Introduction on Insider Trading Ordinance for Executive Officers and Employees of Listed Companies created by the Tokyo Stock Exchange has been made available on our corporate intranet in order to establish an environment in which executives and employees have a good understanding of insider trading.

### Registration with J-IRISS

Dai-Dan's executive officers are registered with the Japan-Insider Registration & Identification Support System (J-IRISS), which is operated by the Japan Securities Dealers Association. Through these initiatives we have in place a system to prevent insider trading, including unintended insider trading.

## Protection and respect for intellectual property

Dai-Dan believes that intellectual property can be developed both in the lab and the field. Therefore we proactively apply for patents on inventions and designs by both our Technical Research Laboratory and our on-site workers. In fiscal 2016, we were granted a total of eight patents, including one for a sterilization system for humidifying units installed in air conditioners. In addition, we have been implementing risk management initiatives to ensure we do not infringe upon the intellectual property of others.

### Establishment of the Intellectual Property Office

In April 2017, we established the Intellectual Property Office under the Technical Development Group with the purpose of strengthening our reception, maintenance, and management of rights to intellectual property; to strategically create and protect intellectual property; and to flexibly make use of intellectual property.

The Intellectual Property Office protects against risks to intellectual property such as intellectual property rights infringement and takes necessary measures to prevent such risks before they occur.

## Initiatives to counter antisocial forces

Dai-Dan is firmly opposed to antisocial forces and is committed to avoiding any relationship with such entities. Our Corporate Code of Ethics clearly sets forth this principle, and our training ensures thorough compliance. In addition, the contracts we enter into with subcontractors clearly state that the contract will be terminated if the subcontractor is found to be substantively involved with antisocial forces. This is intended to effectively exclude antisocial forces from our business dealings from the outset.



## Risk Management

### Risk Management Regulations

Dai-Dan introduced Risk Management Regulations in April 2001 to prepare for potential risks such as natural disasters, the leaking of confidential information that could damage the company, and to keep damages to a minimum.

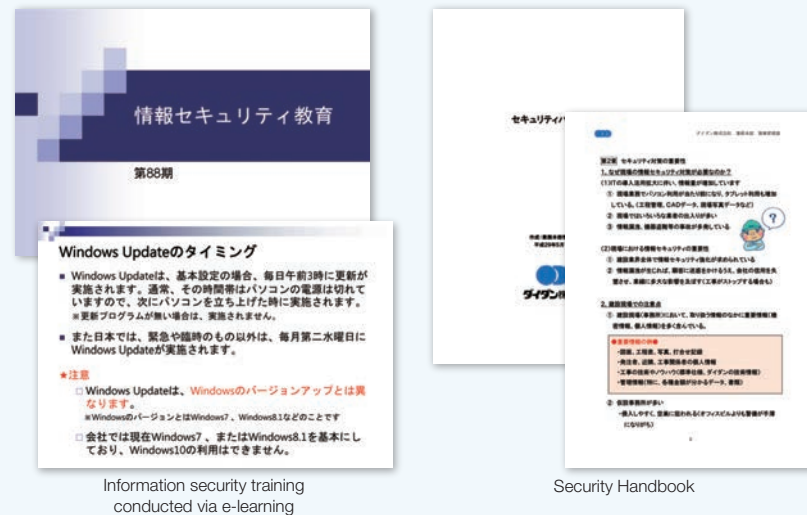
In the event that an identified risk becomes reality, a “countermeasures headquarters” is established to allow all employees to work as one to identify problems and share information.

### Initiatives to strengthen information security

The Information System User’s Guidelines are made available for viewing by executives and other employees on the corporate intranet, disseminating knowledge regarding everyday points of note concerning the use of electronic equipment.

Information security training is conducted once a year via e-learning to increase information security awareness and prevent the occurrence of accidents such as information leaks before they happen.

In addition, in order to enhance information security in the field, we issue our Security Handbook not only to our employees but also to our subcontractors’ staff as well.



### Initiatives to protect personal information

We recognize that the leakage of personal information is a risk that has potential to cause a loss of trust. As such, we have strengthened our internal systems in order to protect personal information, and have posted the Personal Information Protection Policy on our corporate website. Furthermore, we have created a manual based on our Personal Information Protection Regulations and distributed the manual to all executives and employees in order to ensure the protection of personal information.

In January 2016, the Japanese government’s “My Number

System” was introduced. Accordingly, we have posted the Basic Policy on Proper Handling of Specific Personal Information, Etc.” on our corporate website. Also, in line with the “Guidelines for proper handling of Specific Personal Information,” we are taking necessary and appropriate safety management measures to prevent leakage, loss, and unauthorized use of an individual’s number and personally identifying information. We remain committed to ensuring appropriate handling of each individual’s number and other personal data.

## Disclosure (Proactive and Timely Disclosure of Information)

### Shareholder meeting

The 88th annual meeting of shareholders was held at our Osaka Head Office on June 29, 2017. We feel that this annual meeting is an important space for communication with all of our shareholders. Business reports are displayed on a large screen and accompanied by a narrative to give our shareholders a clearer understanding. Additionally, we send out our shareholder meeting notifications early in order to provide sufficient time for shareholders to consider the reports and matters related to resolutions. Prior to the meeting, we screened a video of our new Cell Processing Facility & Open Lab (Cellab Tonomachi), which had opened in April 2017, introducing the highlights of this facility.

### Briefing session on financial results and analyst tour

Dai-Dan holds briefing sessions on its financial results twice a year. Our previous consolidated briefing sessions were held on December 7, 2016 and June 7, 2017 to present our second-quarter financial results and full-year financial results, respectively. The sessions present an overview of financial results, the business environment, and performance prospects as well as the state of progress of our Mid-Term Management Plan. Furthermore, we respond appropriately to individual interviews from analysts and institutional investors.

On July 19, 2017, we held an analyst tour at our Cellab Tonomachi, which opened in April as a base for open innovation in the field of regenerative medicine. During the tour, we presented our initiatives aimed at creating businesses that support the regenerative medicine.

### Emergency drills under our business continuity plan



Osaka Head Office



Tokyo Head Office



Niigata Branch



Tohoku Branch

In September 2017, Dai-Dan completed an emergency drill in keeping with our business continuity plan (BCP) at all our workplaces throughout Japan. By following the action manual (specifying initial response) for each office, which outlines the delegation of roles, we completed an earthquake drill that included first aid, evacuation, safety check, posting of emergency stockpiles, and verification of our satellite-phone-based communications system. At the same time, we incorporated the lessons learned in previous years’ drills.

We will continue to conduct drills and improve the chain of command required in a disaster during normal times. This is intended to support two priorities: ensuring the safety of executives, employees, and their families; and providing customer support in an earthquake or other large-scale disaster. We continue to promote employee awareness by providing training and drills and improve the effectiveness of our BCP.

### IR tools

The investor information page on our corporate website allows investors to view earnings summaries, securities report and other important items. The page also provides information such as business reports, medium-term business reports and notifications of shareholder meetings. This information is provided in the form of IR news available on the main page of the website and is updated as necessary.



### DAI-DAN REPORT

Dai-Dan began publishing an annual CSR report with our fiscal 2008 issue. In 2014, we introduced the “DAI-DAN REPORT” as an integrated corporate report in order to provide stakeholders with a broader array of public information. All the reports are available on our corporate website. For our international stakeholders, we have an English edition of the DAI-DAN REPORT that is available on our global website as shown below.

Japanese edition

<https://www.daidan.co.jp/csr/report.html>

English edition

<https://www.daidan.co.jp/english/eco21/index.html>



# 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

Our company can best contribute to the emergence of a society committed to global environmental sustainability by providing building services with low environmental impact; therefore, we promote the adoption of these facilities by recommending them to our customers. Moreover, it is paramount that we continue to reduce the environmental impact associated with our company's business operations and that we raise the environmental awareness of our employees as well as others with whom we work. We continue to take steps to further advance our energy-efficiency and resource-conservation initiatives at our offices as well as throughout our installation work.

Equally important is the need to conduct conclusive leak-prevention and suitable waste management beginning with fluorocarbons, which can contribute to global warming, as well as toxic substances. This applies to both facilities under construction and our company's own facilities. Consequently, we remain committed to stringent observance of all environmental laws and regulations.

### Our Environmental Management System: FY2016 environmental targets and results/FY2017 environmental targets

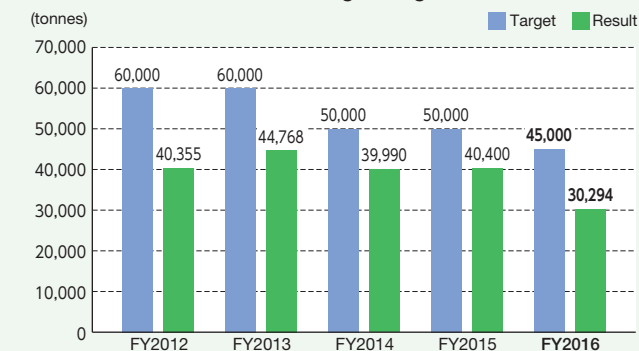
○: Target achieved △: In progress

Activities and responsible departments		Main target or item to be monitored	FY2016 target	FY2016 result	Assessment	FY2017 target
Proposal, planning, designing	Sales department	Number of solutions that leverage Dai-Dan technology adopted	More than 70	66	△	More than 70
	Design department	CO <sub>2</sub> emission reduction through design solutions	More than 45,000 tonnes	30,294 tonnes	△	More than 40,000 tonnes
		CO <sub>2</sub> emission reduction through adopted solutions	More than 20,000 tonnes	14,757 tonnes	△	More than 20,000 tonnes
Installation	Installation department	Energy consumption converted to CO <sub>2</sub> emissions	—	976 tonnes	—	—
		Promotion of sustainable procurement	More than 40%	43.4%	○	More than 45%
	Procurement department	Promotion of sorting of industrial waste Quantity sorted in the field	More than 3.5/workplace	3.3/workplace	△	More than 3.5/workplace
		Promotion of recycling Recycling sales proceeds	More than 60 million yen	60.154 million yen	○	More than 60 million yen
		Reduction of thermal insulation used for drainpipes	More than 95,000 m	77,329 m	△	More than 95,000 m
Office activities	All employees	Energy consumption converted to CO <sub>2</sub> emissions	Less than 1,600 tonnes	1,732 tonnes	△	Less than 1,600 tonnes
		Water consumption	—	13,944 m <sup>3</sup>	—	—
		Copy paper usage	Less than 58 tonnes	59.6 tonnes	△	Less than 58 tonnes
		Increasing adoption of hybrid vehicles and other next-generation vehicles	60%	67%	○	70%
		Improvement of sorting rate of general waste	—	58.4%	—	—

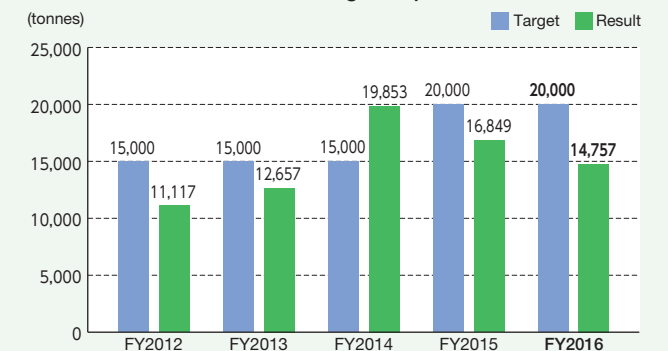
### Initiatives to provide energy saving solutions

During the design phase, we proactively provide customers with energy-efficient solutions, which are predominately based on technologies developed by Dai-Dan to contribute to reduced CO<sub>2</sub> emissions. Throughout fiscal 2016, we offered solutions that would have reduced CO<sub>2</sub> emissions by 30,294 tonnes, with customers adopting energy-efficiency options that saw a total reduction of 14,757 tonnes of CO<sub>2</sub>.

#### CO<sub>2</sub> emission reduction through design solutions



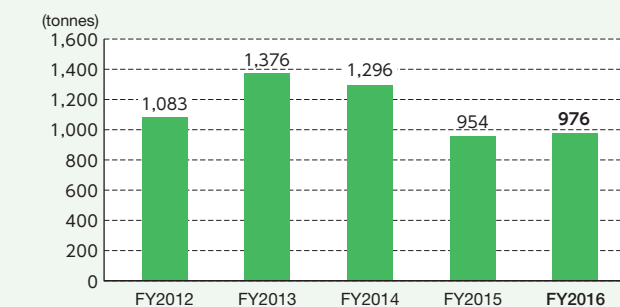
#### CO<sub>2</sub> emission reduction through adopted solutions



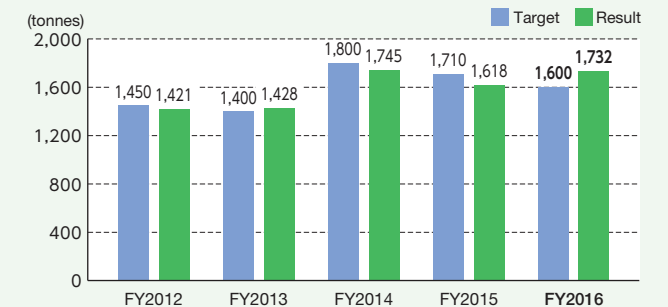
### Initiatives to reduce energy consumption

We are committed to reducing energy consumption, such as electricity and gas, and reducing use of photocopy paper at installation sites and offices. In fiscal 2016, our energy consumption converted to CO<sub>2</sub> emissions totaled 976 tonnes and 1,732 tonnes at installation sites and offices, respectively.

#### CO<sub>2</sub> emissions at installation sites



#### CO<sub>2</sub> emissions at offices

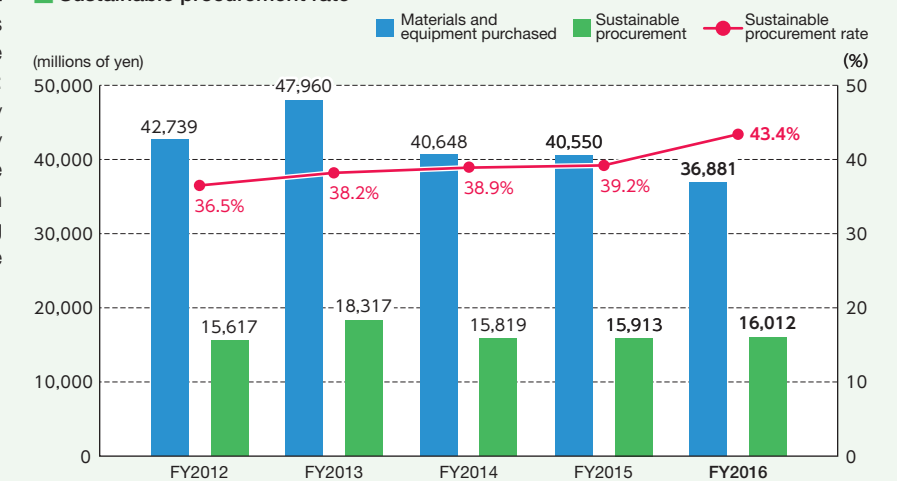


Note: The CO<sub>2</sub> conversion value was revised in FY2014.

### 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 2016 was 43.4%.

#### Sustainable procurement rate



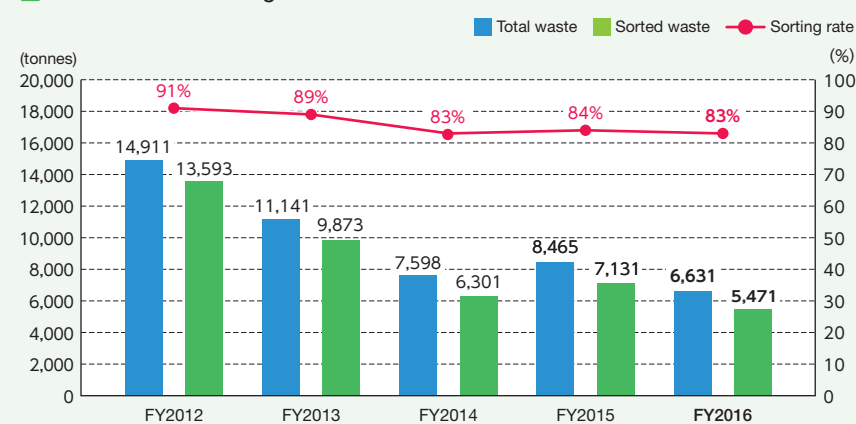


## Initiatives to sort industrial waste

At Dai-Dan, we promote the sorting of waste at all our installation sites. Throughout fiscal 2016, we produced 6,631 tonnes of industrial waste, of which 83% was sorted.

Furthermore, we promote awareness of reducing industrial waste at our offices and encourage sorting. In fiscal 2016, our offices produced 103 tonnes of general waste, of which 58% was sorted.

### Industrial waste sorting rate



## Increasing adoption of hybrid vehicles and other next-generation vehicles

Since fiscal 2012, we have been promoting a shift to hybrid vehicles as we seek to further improve our energy efficiencies and resource conservation. In fiscal 2016 we started adopting the use of hybrid and next-generation vehicles (including PHV, EV, and clean diesel vehicles), and by the end of the fiscal year we had achieved a 67% adoption rate. For fiscal 2017 we are targeting a rate of 70%.

## Contribution made by research on reducing environmental impact

### Reduction of waste using supercritical CO<sub>2</sub>

Under our significant initiative to reduce waste, we have developed and put to practical use a technology that uses supercritical CO<sub>2</sub> in a process for refurbishing air filters used in factories.

Initially adopted by the Research Institute for Quality Living Co., Ltd. (an inspection organization of the Aeon Group), this system has been employed in a variety of industries including electronic devices and food processing. As a technology for reducing environmental impacts, it has earned high praise from customers and associated institutes.

See p. 28 for more information on our technology for cleaning and refurbishing air filters with supercritical CO<sub>2</sub>.



Japan's largest supercritical CO<sub>2</sub> cleaning and refurbishment equipment

### Conserving resources through duct size optimization and the use of laminate ducts

By verifying the quantity of air moving in the ducts following their installation and optimizing the size of those identified as wasteful, we are conserving resources.

We also promote resource conservation by introducing laminate ducts made with specially reinforced steel sheet that is 10% to 30% thinner than conventional duct materials.

Before laminate ducts are installed, they are subjected to leakage tests\* and tests to ensure durability and resistance to vibration at the Technical Research Laboratory.

\* Tests to ensure that no air leaks from the joints



Performance evaluation testing of laminate ducts

## 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

At Dai-Dan, we believe it is our corporate mission to contribute to the creation of the environments that our customers require. Therefore, we consider it important to respond swiftly to customer demands and to make recommendations to our customers.

Moreover, in order to ensure our customers are further satisfied, we aim to provide high-quality products that can be used safely and with full confidence. In addition, we are working to meet our obligations prior to installation, including responding to risks regarding installation services and to promote improvements through our employees as well as our subcontractors.

### Customer evaluations

We conduct customer satisfaction surveys after we have completed installations to get customers' reactions to our work and support. Based on these survey responses, we hold internal project evaluation meetings with everyone who was involved to confirm the areas we need to improve on and what things to keep in mind when providing follow-up service.

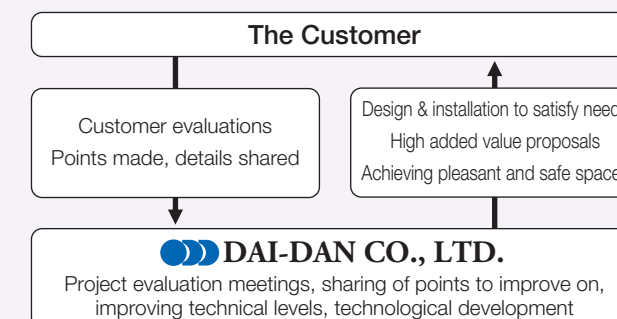
Over the entire lifecycle of a building, even though the people may change who represent both the customer and

Dai-Dan, we use information systems to pass on information properly so that we can maintain facilities and provide follow-up service that will satisfy the customer over the long term.

**Customer satisfaction survey results** (Perfect score = 4)

Item	FY2014	FY2015	FY2016
Installer capacity	3.50	3.47	3.50
Installation management	3.46	3.44	3.49
Creativity and solution proposals	3.44	3.42	3.46
Backup capacity	3.42	3.42	3.43
Overall evaluation	3.51	3.48	3.53

Number of surveys completed: FY2014; 577/FY2015; 622/FY2016; 736



### VOICE Dai-Dan's goal is to earn the customer's trust

The function of a salesperson is to listen to customers' wishes from the planning stages, have their wishes reflected in the design and installation, and deliver high quality to them. Toward that end, the evaluations we receive from customers following completion of the project are valuable materials for us to evaluate what things went well and what didn't. We could not improve customer satisfaction if we did not review this feedback with related departments and make use of the experience. Sometimes the feedback we receive can be harsh, but I believe that listening to the honest opinions of customers is the way that Dai-Dan can earn their trust, and that what we can continue to do as salespeople.

Takuya Kishimoto Deputy Manager of Sales Department 3, Tokyo Head Office





## Customer Consultation Office

At the completion of a project, Dai-Dan conducts a status review of major equipment and provides ongoing advice to improve performance. This work is carried out by the project manager, who can offer insights into the building services even after the handover. Dai-Dan opened its Customer Consultation Office in November 2012. Customers are welcome to contact us for information on building maintenance and to submit cost estimate requests. Our effective customer support system is prepared to meet a wide range of customer needs without delay.

## Works Review Meetings

Throughout our long history we have provided building 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 facilities, 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 facilities 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.

## Quality and Environmental Management System

A year and a half has passed since we started working with the 2015 revision of the ISO 9001 standard, and in that time we have expanded and improved our risk-based thinking, and have been applying it much more effectively in actual business practices.

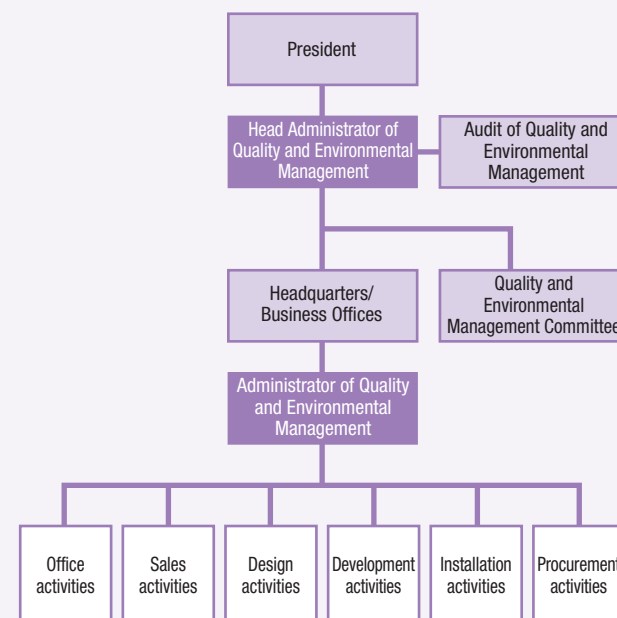
- We identify risks related to our installation services, especially when the possibility exists that a customer's production operations or business activities could be significantly impacted. We are strengthening the backup capabilities of our offices and headquarters to provide assistance in the field for such cases.
- The reduction of the environmental impact of building systems is the key environmental issue we have identified. We are therefore promoting energy- and resource-saving ideas to our customers.
- Any quality or environmental issues that negatively impact our customers are input into our internal information system. By creating a database of such issues, we are able to share preventive measures that have been taken, thereby reducing recurrence and improving the technical level of our services.
- We conduct internal audits of quality and environmental management to improve the reliability and efficiency of installation, both by revealing uncertainties and by actively implementing the positive examples horizontally across the organization.

### 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.

1. 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.
2. While strengthening our expertise in advanced technologies, we strive to improve the skills of our employees and establish strong partnerships with our subcontractors to provide assured quality.
3. We are dedicated to developing and providing energy-saving, environmentally friendly technologies. We assess the environmental impact of building systems and offer proposals for impact reduction and energy efficiency.
4. We, as a good corporate citizen, carry out social contribution activities and positive information disclosure, to enhance communications with society.
5. 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



## Initiatives with Subcontractors

### Activities with subcontractors

So that our company can provide safe, high-quality, on-time installation of building systems we work with many skilled professionals who perform installations. We need to combine their skills with our technical capability to plan and manage those installations. Toward that end, we rely on our subcontractors as our vital partners.

We have long-standing relationships with the subcontractor organizations Dai-Gen Kai and the Safety & Health Association whom we trust to hold sectional committee meetings and activities for different professions at our office locations. These initiatives address a variety of topics, notably increasing installation efficiency and adopting labor-saving methods to cope with the aging of skilled workers and fewer young workers entering the workforce, factors that are causing a shortage of

labor, which has become an important issue also in terms of cost.

We have built a network of subcontractors that links regional contracting organizations across the country. The network provides human resources to mitigate labor shortages, and in the event of a large-scale disaster it buttresses our business continuity plan, which includes customer recovery response. In this way we are meeting our social responsibilities as a company.

Dai-Dan will continue to make improvements in safety, quality, and cost through our technical capacities. We remain committed to meeting requests and exceeding expectations in tandem with our subcontractors, focusing on craftsmanship.

### Sectional committee activities (details of initiatives)

#### Fiscal 2016 initiatives of the sectional committees of the Osaka Safety & Health Association

Sectional committee	Topics and principal activities	Sectional committee	Topics and principal activities
Electrical Sectional Committee	<ul style="list-style-type: none"> <li>• Passing on of skills</li> <li>• Cost reduction measures</li> </ul>	Duct Sectional Committee	<ul style="list-style-type: none"> <li>• Discussion of test details of ECO spiral duct strengthening and testing at plant</li> </ul>
Piping Sectional Committee	<ul style="list-style-type: none"> <li>• Review of methods for developing activity records</li> <li>• Review of additional items regarding individual quality KY (hazard prediction)</li> </ul>	Thermal Insulation & Paint Sectional Committee	<ul style="list-style-type: none"> <li>• Comparison of MLIT and Japan Institute of Architects specifications</li> <li>• Sample manufacturing and adjustment in order to standardize technical capabilities</li> <li>• Introduction of materials being distributed in the Kanto area</li> </ul>
Refrigerant Piping Sectional Committee	<ul style="list-style-type: none"> <li>• Policy for reducing the number of person-hours</li> </ul>	Equipment Sectional Committee	<ul style="list-style-type: none"> <li>• Review of major equipment manufacturers' list</li> <li>• Review of materials comparison</li> </ul>
Various Installations Sectional Committee	<ul style="list-style-type: none"> <li>• Creation of "List of Don'ts" in installation and other types of construction</li> <li>• Creation of a simplified version of the installation plan</li> <li>• Introduction of examples of special installation</li> </ul>	Intercommunication Workshop	<ul style="list-style-type: none"> <li>• Proposal for saving labor in construction</li> </ul>

### VOICE Comments from Subcontractors

#### Osaka Dai-Gen Kai

Osaka Dai-Gen Kai was launched in April 2016 with 73 companies after being spun off from the Osaka Dai-Gen Safety & Health Association. We are now in our second fiscal year of activities. Our main objective is to support business continuity planning and the continuation of business activities in the event of a major disaster such as an earthquake or flooding. We are building a system to provide support in a disaster that involves emergency care and evacuation efforts, plus facilitating the gathering of information to be used to confirm the whereabouts of individuals via email. We will also review such activities on an annual basis and work more closely with DAI-DAN CO., LTD. to build a system that functions with even greater precision.



Hiroshi Funada  
Chairman of Osaka Dai-Gen Kai  
Representative Director of  
Miyoshi Sheet Metal Work Co., Ltd.

#### Osaka Safety & Health Association

The Osaka Safety & Health Association was launched in April 2016 after being spun off from the Osaka Dai-Gen Safety & Health Association. In addition to pursuing safety and health issues and sectional committee activities, the primary function of the 156 companies in the association is to assist with business continuity plans. In the area of safety and health, we are putting into practice efforts that will encourage on-site foremen to develop the habit of tool box meetings and using individual KY (hazard prediction) pointing and calling, and by so doing establish a cheerful work climate, which leads to accident prevention. These efforts have been successful, partly accounting for the achievement of zero lost workdays due to occupational accidents. In our sectional committee activities, this fiscal year we will be reorganizing initiatives into three areas — environment, quality, and productivity — to achieve further improvements.



Takaharu Kominami  
Chairman of Osaka Safety & Health Association  
Chairman of Koyo Industry Co., Ltd.



# Valuing Our Employees

Dai-Dan respects each of our employees and encourages them to take on the challenge of creating greater value, and also promotes positive work-life balance.



## People are Our Greatest Asset

At Dai-Dan we consider people to be our greatest asset, and it follows naturally that personnel training takes top priority. We thus offer plenty of education and training opportunities. Today, “work style reform” is a commonly heard phrase in Japan. Our own efforts are focused on restructuring our training system and taking measures to improve the workplace environment. The end goal is to bring out the full capabilities of each and every employee and make working at Dai-Dan a positive daily experience.

### Employee training

#### The training of new employees

Technical training for new employees is the initial training we provide. The program consists of introductory and fundamental technical training, two aspects that together allow new employees to acquire all of the basic knowledge that is necessary and put that knowledge into practice.

The group training is conducted over a period of six months, during which time we incorporate into the curriculum facets that go beyond the typical boundaries of individual job descriptions. The training includes lectures, but also provides many “observe, touch, and do” learning experiences. Such training is good at enabling the fast acquisition of knowledge and technical skills. It also equips new employees with the ability to immediately contribute to the company.

This six-month training period allows new employees to acquire specialized knowledge and technical skills. Importantly, it also allows them to develop a strong bond with the others in their “class” with whom they will work into the future, spurring each other on to develop to their full potential.



Practical training course



Tour of pipe plant



Tour of duct plant



Tour of parts warehouse

#### Acquiring engineering skills in advanced building systems

In engineering, we help employees to improve their technical capabilities through our engineering training program. By having them acquire a high level of skill in advanced building systems, we also strengthen our expertise in advanced technologies and practical competence in the field.

For our younger engineers, we have a seven-year program known as the new “Dai-Dan Standard” through which employees improve their technical skills by compiling experience and undergoing follow-up training in stages.

For our middle-ranking engineers and higher, we provide technical training in advanced building systems to enable them to utilize those skills in tandem with their development engineering skills.

#### Sales and clerical work training

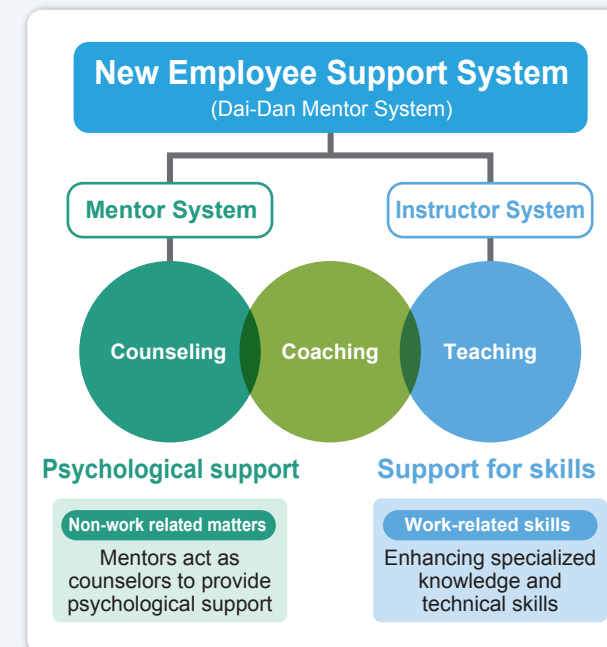
In sales, for young employees we provide both on-site training and training in design cost estimation. With an understanding of the basics of the technical aspects, we provide novice-level and intermediate-level on-the-job training to boost skill levels.

In clerical work, we use the individual's outlined career goals as a basis and hold seminars for young employees so that they may acquire both basic and applied knowledge related to business. Practical cross-divisional training is provided at both novice and intermediate levels to help them develop a broader range of work abilities, and gain flexibility and a wider perspective.

### New Employee Support System (Dai-Dan Mentor System)

The Dai-Dan Mentor System consists of two systems: the Instructor System, which supports the enhancement of specialist knowledge and technical skills, and the Mentor System, which provides psychological support and assists career development. These two types of mentors (instructors and mentors) provide comprehensive support to new employees.

This chain of personnel development reflects our human resource development belief that people grow as they assist in the development of others.



### Official qualification acquisition scheme

Official qualifications can be the foundation for individuals as they go about their work, and they also significantly influence the credibility and authority of knowledge.

They are especially important for engineers as whether or not an engineer have a qualification is closely related to on-site work. Therefore, the acquisition of official qualification is indispensable.

In order to support our employees' commitment to enhance their technical skills and in order to secure qualified engineers and improve the overall technical level of the company, Dai-Dan encourages and provides support for the acquisition of official qualifications.

For those who acquire official qualifications recognized as necessary by Dai-Dan, we subsidize course fees and also offer incentives and official qualification acquisition benefits.

#### Number of employees who have major qualifications

Qualification	Number	Qualification	Number
Doctorate	6	First grade instrumentation engineer	313
Professional engineer	31	Energy manager	59
First-class architect (Facility design first-class architect)	20 (13)	First-type electrical work engineer	243
First-class electrical work operation and management engineer	225	Building service engineer (air conditioning)	518
First-class plumbing work operation and management engineer	838	Building service engineer (plumbing)	493
Building services architect	131	First grade construction industry accountant	16

Notes:

- Figures pertaining to the number of people who have acquired the above qualifications are current as of the end of March 2016.
- The number of qualified individuals includes duplicated qualifications due to the multiple fields covered by each qualification.

### CPD scheme for technical improvement

There are no limits to the specialization and improvement of technical skills. In order to support our employees' on-going commitment to skills improvement, we maintain a database on employee educational and training record using the Dai-Dan CPD\* scheme and utilize it for human resource development.

The educational and training record of each employee is reported to the Society of Heating, Air-Conditioning and Sanitary Engineers of Japan (SHASE). It is then assessed and verified for the appropriateness of our education and human resource development.

\* Abbreviation for Continuing Professional Development, which refers to the continued development of skills and knowledge throughout an individual's professional career.

## Respect for Human Rights and Individuality

### Human rights issues

Dai-Dan's Corporate Code of Ethics clearly states the importance of respect for human rights and individuality. We value personal dignity and make efforts to improve work environments. During our new employee training sessions, we raise awareness for respecting basic human rights.

#### – Respect for human rights and individuality – Excerpt from the Action Standards of the Corporate Code of Ethics

- All executives and employees must respect all human rights and individuality, and create work environments that do not tolerate actions that may harm human dignity.
- All executives and employees must strive to improve work environments and systems to create a workplace that allows our diverse human resources to exploit their skills to the fullest extent.



## Work-Life Balance and the Work Environment

### Initiatives to reform work styles

As part of an initiative aimed at work style reform, we have a policy in place to redress excessive working hours. We recommend that employees add one extra day of their annual paid leave to the consecutive days off they take during Golden Week in late April/early May, summer holidays, and the year-end/New Year holidays. We also have a “refresh leave” system (seven consecutive days annually) to supplement the legally designated annual paid leave. We changed the system in fiscal 2016 to have employees set their anticipated leave days at the beginning of the fiscal year, which boosted the

usage rate to 87%.

As an initiative to encourage more women to work for us, in fiscal 2016 we set up a special team to study specific measures to put in place that would facilitate this. In fiscal 2017, what we have started doing to reduce the rate of female turnover is to extend childcare leave beyond the legal requirement to up to two years from a child’s birth. We also revised our system of reduced working hours for childcare to enable women to work more flexible hours.

### “Eruboshi” company certification

As of April 28, 2017, Dai-Dan received a Class 1 “Eruboshi” certification from the Minister of Health, Labour and Welfare in recognition of its effort 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.



### 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

### Childcare leave take-up rate

	FY2014	FY2015	FY2016
Number of female employees who gave birth	4	6	7
Number of female employees who took childcare leave	4	6	7
Number of female employees on reduced schedules for childcare	3	5	TBD
Percentage of female employees who took childcare leave	100%	100%	100%
Percentage of female employees on reduced schedules for childcare	75%	83%	TBD
Number of male employees who took childcare leave	0	0	0

Note:  
For seven people on childcare leave in FY2016, the application of the childcare reduced working hours system has not been determined.

### VOICE How I utilized Dai-Dan’s childcare support system

I gave birth to a son in January 2016 and took maternity and childcare leave. The area where I live has so many young children that there was a waiting list for preschool day care centers everywhere and none had accepted my child. I was getting worried because already more than a year had passed on my long-term childcare leave from the company. I was able to keep in regular contact with my superiors, though, and got support from other women who were in my position earlier and who returned to their jobs. Thanks to them I was able to make a smooth return to work. As of now I am utilizing the company’s reduced working hours system, which allows me plenty of time to spend with my boy. Because I can only work certain hours, I have become much more aware than before of communicating properly with others and working efficiently.

Sometimes I am forced to take off from work suddenly because of my child, which can cause problems for other people, but everyone I work with is supportive; they help me to work and raise my child in a way that creates a balanced lifestyle.

I am deeply grateful to my superiors and peers who graciously welcomed me back.



Risa Kuriyama  
Deputy Chief of Administration Department  
Kyushu Branch

### Leave system

Dai-Dan has established various leave systems to allow our employees to make the most of their holidays and refresh themselves.

Employees are encouraged to take at least three consecutive days off for summer holidays, and combine that with additional days off from their paid annual leave or to take “refresh leave,” because a longer time completely away from work allows the body and mind to become fully refreshed.

#### Major leave systems (excluding statutory paid annual leave)

Type of holiday	Details
Summer holiday	Three consecutive days in summer
Refresh leave	Seven 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
FY2014	39.7%
FY2015	32.7%
FY2016	86.6%*

\* As of the end of August

### Initiatives to address mental health issues

Maintaining a healthy body and mind helps keep you highly motivated for work and vitalizes the company.

In order to ensure the mental health of employees and establish an employee-friendly workplace, Dai-Dan offers mental health education.

New employee training teaches the basics of mental health to equip staff with the knowledge to allow them to identify and cope with their own stresses.

Furthermore, as part of our efforts to fulfill our company’s duty of considering employee safety, during new deputy manager and managerial staff training sessions, participants have the chance to develop a better understanding of mental health from a legal perspective, and the means to identify potential stressors for staff and address the issues.

Since fiscal 2013, our company has been offering stress checks for all employees. Once our employees have been able to understand their particular stress situation themselves, they can grasp their state of mental health. This gives some insight into early detection of mental health disorders. Since fiscal 2016, we have been implementing a stress check based on the amended Industrial Safety and Health Act. We are encouraging those who experience a high degree of stress to undergo a medical examination with interview instructions from a doctor.

Dai-Dan provides an environment where each employee is able to work with a healthy body and mind to ultimately build an energetic company.

### Continued employment scheme

Dai-Dan has introduced a continued employment scheme as part of our initiatives to meet the needs of Japan’s aging and declining population. Under this scheme, we extend the employment of staff who reach retirement age but desire to keep working. Through this we are leveraging skills and expertise acquired over many years, and enabling those skills to be passed on to the next generation of workers.

In fiscal 2013, we employed all staff who desired to continue working until the age specified by the transitional measures following the amendment of the Act on Stabilization of Employment of Elderly Persons.

#### Continued employment rate for persons of retirement age

	FY2014	FY2015	FY2016
Persons of retirement age	25	22	22
Persons continuing employment	24	21	20
Continued employment rate	96.0%	95.5%	90.9%

### Following up on employees working long hours

Dai-Dan is working to reduce overtime work through such measures as: maintaining sufficient engineering staff and assigning sufficient personnel to each project; ensuring that employees take a long leave upon completion of a project; and promoting extended time off in conjunction with summer holidays and the year-end/New Year holidays.

We also require employees to consult with a medical doctor

once a month if their hours exceed the legally defined monthly work hour limit — defined as more than 100 hours of overtime in one month (by the Industrial Safety and Health Act) or more than 80 hours overtime per month in three consecutive months. We are keeping an eye on the health of our employees in this way and adopting employment measures in line with advice from doctors.



## Labor union activities

The Dai-Dan Labor Union was established in 1973 and marked its 44th anniversary in August 2017. The union negotiates with the company and pursues union activities even though it is often difficult to reconcile the diverse views expressed by personnel from each and every branch office both in and outside of Japan.

We believe the union leadership should attend gatherings at each workplace across the country in order to better appreciate the opinions of each member. The union regularly organizes recreation activities to deepen camaraderie among members, and we are pooling efforts to achieve better working conditions and work environments.

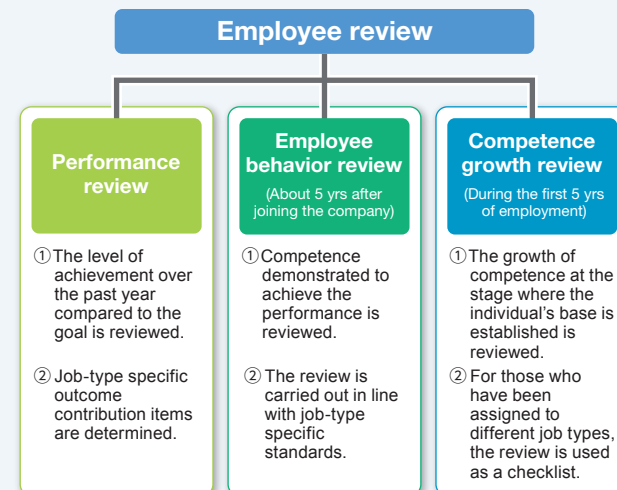


Nagoya-area labor union recreation activity

## Employee review system

The outline of our employee review system is as shown below and is utilized depending on the objectives of implementation.

Through communication between supervisors and subordinates (interviews, etc.), and regular provision of feedback on evaluation results, we attempt to enhance target achievement levels, determine skills put into practice, and develop staff through guidance.



## Meeting Local Expectations

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 August 2017)

Organization	Position
The Society of Heating, Air-Conditioning and Sanitary Engineers of Japan	General Director
Institute of Electrical Installation Engineers of Japan	General Director
Air-conditioning & Plumbing Contractors Associations of Japan	General Director
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
Osaka Electrical Construction Association	General Director
Aichi Electrical Construction Association	General Director
Tokyo Electrical Construction 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
Tokyo Electrical Construction Association	Lecturer
School of Tokyo Electrical Construction Association	Lecturer
Osaka Piping Higher Training School	Lecturer

## Dai-Dan Alumni Association

The Dai-Dan Alumni Association features annual luncheons hosted by the company's directors and executives, who share with alumni their assessment of how the company is faring and engage in a frank exchange of opinions. The luncheons are also an opportunity for alumni to catch up on each other's lives and reminisce about the past.

Three luncheons were held in 2016 — in Tokyo for East Japan (on April 7), in Nagoya for Central Japan (October 17), and in Osaka for West Japan (November 11), with a total attendance of 209.

In recent years, the number of alumni association members has risen as people born in the baby boom generation (of 1947-1949) begin to retire. Nonetheless, the real reason there is such strong participation in these events every year is the "one big family" atmosphere that the company has cultivated over the years. Since retiring, some people have turned to gardening or playing sports, while others are working or just taking it easy at home. Everyone seemed to be enjoying their lives whatever they were doing.

Next year we hope to see more happy faces and enjoy good food and conversation. We hope these gatherings continue to be a source of good cheer and an energy boost to everyone each year.



Participants from the West Japan region at the Swissotel Nankai Osaka



Participants from the East Japan region at the Hotel New Otani



Participants from the Central Japan region at the Chunichi Palace

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

If a large-scale disaster strikes, we are, as a member of the construction industry, required to aid the swift recovery of electricity, water and social infrastructure, while at the same time ensuring the continuation of our business and that of our customers.

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.

### 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.

- FY2015:** Music Atelier "Echo"  
(Local community music therapy to promote personal exchanges and vitalization of community members through the power of song)
- FY2016:** Citizen singing exercise school for preventing the need for nursing care  
(Visits to nursing facilities for singing and exercising and other activities to extend the healthy life expectancy of the elderly)
- FY2017:** Hito/Mono Support Center (NPO)  
(“Learning and Interacting with Seeing-Eye Dogs” Human rights education project for elementary and junior high school children)



## 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.

Part of the sales proceeds from beverage vending machines used by Dai-Dan employees is donated to the Central Community Chest of Japan and the National Land Afforestation Promotion Organization.

We have also been donating to the areas affected by the 2011 Great East Japan Earthquake and 2016 Kumamoto earthquakes since immediately after those disasters struck.

In addition, we gave donations to 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.

### Community cleanups

Sites	Names of the projects or details
Hokkaido Branch	<ul style="list-style-type: none"><li>Cleanup in the area surrounding the Hokkaido Branch</li><li>Trash Pickup Beach Walk in Ishikarihama</li></ul>
Tohoku Branch	<ul style="list-style-type: none"><li>Sendai City Beautification Support Program</li></ul>
Niigata Branch	<ul style="list-style-type: none"><li>Cleanup in the area surrounding the Niigata Branch</li><li>Shinano River Clean Mission</li></ul>
Tokyo Head Office General Administration Division (Tokyo) Sales Division Industrial Facilities Department	<ul style="list-style-type: none"><li>Tokyo Fureai Road Program</li><li>Litter pickup competition at 2016 Sumida Environmental Fair</li></ul>
Yokohama Branch	<ul style="list-style-type: none"><li>Cleanup in the area surrounding the Yokohama Branch</li></ul>
Kanto Branch	<ul style="list-style-type: none"><li>Saitama Road Support</li></ul>
Chiba Office	<ul style="list-style-type: none"><li>Makuhari New City Cleanup Day</li></ul>
Nagoya Branch	<ul style="list-style-type: none"><li>Cleanup in the area surrounding the Nagoya Branch</li><li>Nagara riverbank cleanup</li></ul>
Toyota Branch	<ul style="list-style-type: none"><li>Cleanup in the area surrounding the Toyota Branch</li></ul>
Shizuoka Office	<ul style="list-style-type: none"><li>Mt. Fuji cleanup campaign</li></ul>
Hokuriku Branch	<ul style="list-style-type: none"><li>Volunteer Support Program</li></ul>
Toyama Office	<ul style="list-style-type: none"><li>Cleanup in the area surrounding the Toyama Office</li><li>Our Hometown Toyama Beautification Blitz</li><li>Cleanup in the area surrounding the Hamakurosaki Beach Campground</li></ul>
Fukui Office	<ul style="list-style-type: none"><li>Fukui City Beautification Partner Scheme</li><li>Participation in “Cleanup Fukui”</li></ul>
Osaka Head Office Internal Audit Office General Administration Division Industrial Facilities Department (Osaka)	<ul style="list-style-type: none"><li>Osaka City Beautification Partner Scheme</li><li>Cleanup for Osaka Marathon</li></ul>

Sites	Names of the projects or details
Okayama Branch	<ul style="list-style-type: none"><li>Cleanup in the area surrounding the Okayama Branch</li><li>Major cleanup of Okayama</li></ul>
Chugoku Branch	<ul style="list-style-type: none"><li>Cleanup in the area surrounding the Chugoku Branch</li><li>Volunteer cleanup in the area surrounding Peace Memorial Park</li><li>Peace Memorial Park intensive cleanup day</li><li>Volunteer cleanup of Miyajima Tsutsumigaura Beach</li></ul>
Shikoku Branch	<ul style="list-style-type: none"><li>Roadside cleanup around Takamatsu Central Park</li></ul>
Kyushu Branch	<ul style="list-style-type: none"><li>Ohori Park cleanup campaign</li><li>Volunteer cleanup around enefice Kyushu</li></ul>
Kumamoto Branch	<ul style="list-style-type: none"><li>Cleanup of Ninomaru Park at Kumamoto Castle</li></ul>

In addition to the above activities, we also participate in cleanups led by each site and individuals.



Niigata Branch: Shinano River Clean Mission



Yokohama Branch: Cleanup in the area surrounding the Yokohama Branch



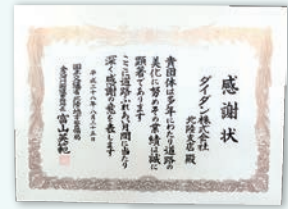
Nagoya Branch: Cleanup in the area surrounding the Nagoya Branch



Chugoku Branch: Peace Memorial Park intensive cleanup day



Shizuoka Office: Mt. Fuji cleanup campaign



Hokuriku Branch: Volunteer Support Program

### 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 Office	Town Open Garden Operation
Technical Construction Division Technical Development Division Technical Research Laboratory	<ul style="list-style-type: none"><li>Miyoshi Green Support Squad</li><li>Mixed-tree forest rejuvenation project</li><li>Project to promote a healthy sawtooth oak forest</li></ul>



Miyoshi Green Support Squad

### Company-wide activities

Activity	Details
Eco-cap Project	In fiscal 2016 we collected 233,000 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 2017, 1,585 calendars and diaries were donated from throughout Japan.
Donation of used stamps	We donated the used stamps collected by the offices to the following groups: <ul style="list-style-type: none"><li>Japan Overseas Christian Medical Cooperative Service Assists in improving the state of medical care covered by health insurance in Asia and Africa.</li><li>Tanzania Pole Pole Club Assists in afforestation activities at Mount Kilimanjaro in Tanzania, East Africa.</li></ul>

### Other activities

Activity	Details
Traffic Safety Guard Activity	We posted traffic safety guards at the North intersection of Toyota-shi Tsuchihashi Station. (Toyota Branch)
Placement of Community Chest charity vending machines	With this project, a portion of each drink purchase at the vending machines is donated, going to approximately one thousand private welfare facilities in Osaka prefecture, as well as to welfare organizations, and the social welfare councils of local governments. (General Administration Division, Osaka Head Office)
Donation of funds from charity vending machines	Vending machines are set up that sell drinks at the regular price to consumers while donating three to ten yen per drink. 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. (Technical Construction Division, Technical Development Division, Technical Research Laboratory)
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) Many employees throughout Japan have given blood through these drives.



Toyota Branch: Traffic safety patrol activities



# Financial Report

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## Financial Report

### ■ Consolidated Balance Sheets

(in million yen)		
Assets		
Accounts	Previous Consolidated Accounting Year (From April 1, 2015 to March 31, 2016)	Current Consolidated Accounting Year (From April 1, 2016 to March 31, 2017)
Current assets		
Cash and deposits	23,563	26,576
Notes receivable, accounts receivable from completed construction contracts and other	56,157	49,198
Electronically recorded monetary claims—operating	8,095	8,216
Costs on uncompleted construction contracts	385	478
Raw materials and supplies	0	0
Deferred tax assets	1,392	1,194
Other	2,117	1,857
Allowance for doubtful accounts	(7)	(6)
Total current assets	91,704	87,516
Noncurrent assets		
Property, plant and equipment		
Buildings and structures	5,392	6,229
Accumulated depreciation	(2,908)	(3,057)
Buildings and structures, net	2,484	3,172
Machinery, equipment and vehicles	164	170
Accumulated depreciation	(132)	(136)
Machinery, equipment and vehicles, net	32	33
Tools, furniture and fixtures	808	775
Accumulated depreciation	(650)	(476)
Tools, furniture and fixtures, net	158	298
Land	1,063	1,137
Construction in progress	439	51
Total property, plant and equipment	4,178	4,694
Intangible assets	594	682
Investments and other assets		
Investment securities	16,543	16,574
Deferred tax assets	1	0
Net defined benefit assets	7,866	7,560
Other	1,612	1,615
Allowance for doubtful accounts	(188)	(188)
Total investments and other assets	25,836	25,562
Total noncurrent assets	30,608	30,938
Total assets	122,312	118,454

(in million yen)		
Liabilities and Net Assets		
Accounts	Previous Consolidated Accounting Year (From April 1, 2015 to March 31, 2016)	Current Consolidated Accounting Year (From April 1, 2016 to March 31, 2017)
Liabilities		
Current liabilities		
Notes payable, accounts payable for construction contracts	42,067	20,051
Electronically recorded obligations	—	16,384
Short-term loans payable	4,519	3,880
Income taxes payable	1,622	1,143
Advances received on uncompleted construction contracts	2,794	3,028
Provision for warranties for completed construction	81	76
Provision for loss on construction contracts	628	254
Provision for environmental measures	2	—
Other	9,717	8,887
Total current liabilities	61,434	53,705
Noncurrent liabilities		
Long-term loans payable	1,401	2,054
Deferred tax liabilities	3,208	3,046
Net defined benefit liability	1,376	1,339
Provision for overseas investment loss	5	7
Long-term accounts payable	303	296
Other	0	0
Total noncurrent liabilities	6,295	6,744
Total liabilities	67,729	60,450
Net Assets		
Shareholders' equity		
Capital stock	4,479	4,479
Capital surplus	4,809	4,809
Retained earnings	39,588	43,290
Treasury stock	(674)	(678)
Total shareholders' equity	48,203	51,901
Accumulated other comprehensive income		
Valuation difference on available-for-sale securities	6,326	6,344
Foreign currency translation adjustment	20	13
Remeasurements of defined benefit plans	(169)	(441)
Total accumulated other comprehensive income	6,176	5,916
Non-controlling interests	203	186
Total net assets	54,583	58,004
Total liabilities and net assets	122,312	118,454

### ■ Consolidated Income Statements

(in million yen)		
Accounts	Previous Consolidated Accounting Year (From April 1, 2015 to March 31, 2016)	Current Consolidated Accounting Year (From April 1, 2016 to March 31, 2017)
Net sales of completed construction contracts	138,346	125,253
Cost of sales of completed construction contracts	121,632	107,465
Gross profit on completed construction contracts	16,713	17,788
Selling, general and administrative expenses	10,176	11,038
Operating income	6,537	6,750
Non-operating income		
Interest income	13	7
Dividends income	250	278
Real estate rent	34	34
Insurance fee	106	109
Other	5	4
Total non-operating income	410	434
Non-operating expenses		
Interest expenses	144	133
Guarantee commission	11	6
Foreign exchange loss	11	81
Other	9	24
Total non-operating expenses	177	245
Ordinary income	6,770	6,939
Extraordinary income		
Income on sales of noncurrent assets	2	52
Gain on sales of investment securities	4	—
Profit reversed from the allowance for the loss relating to the antimonopoly law	47	—
Total extraordinary income	54	52
Extraordinary loss		
Loss on retirement of noncurrent assets	1	4
Loss on valuation of investment securities	18	—
Loss on valuation of golf club membership	2	—
Loss on disaster	—	76
Total extraordinary loss	22	80
Income before income taxes and minority interests	6,802	6,911
Income taxes—current	2,405	2,134
Income taxes—deferred	150	147
Total income taxes	2,556	2,282
Net income	4,246	4,628
Loss attributable to non-controlling interests	(2)	(10)
Profit attributable to owners of parent	4,248	4,638

### ■ Consolidated Statements of Comprehensive Income

(in million yen)		
Accounts	Previous Consolidated Accounting Year (From April 1, 2015 to March 31, 2016)	Current Consolidated Accounting Year (From April 1, 2016 to March 31, 2017)
Net income	4,246	4,628
Other comprehensive income		
Valuation difference on available-for-sale securities	(470)	17
Foreign currency translation adjustment	(39)	(12)
Remeasurements of defined benefit plans, before tax	(1,762)	(271)
Total other comprehensive income	(2,273)	(266)
Comprehensive income	1,973	4,362
(Particulars)		
Comprehensive income attributable to owners of parent	1,995	4,378
Comprehensive income attributable to non-controlling interests	(22)	(16)



## Consolidated Statements of Changes in Net Assets

■ Previous Consolidated Accounting Year (From April 1, 2015 to March 31, 2016)

(in million yen)

	Shareholders' equity					Accumulated other comprehensive income				Non-controlling interests	Total net assets
	Capital stock	Capital surplus	Retained earnings	Treasury stock	Total shareholders' equity	Valuation difference on available-for-sale securities	Foreign currency translation adjustment	Remeasurements of defined benefit plans	Total accumulated other comprehensive income		
Balance at the beginning of current period	4,479	4,809	36,186	(669)	44,807	6,797	39	1,592	8,429	225	53,462
Changes of items during the period											
Dividends from surplus			(847)		(847)						(847)
Profit attributable to owners of parent			4,248		4,248						4,248
Purchase of treasury stock				(5)	(5)						(5)
Net changes of items other than shareholders' equity						(470)	(19)	(1,762)	(2,252)	(22)	(2,275)
Total changes of items during the period	—	—	3,401	(5)	3,395	(470)	(19)	(1,762)	(2,252)	(22)	1,120
Balance at the end of current period	4,479	4,809	39,588	(674)	48,203	6,326	20	(169)	6,176	203	54,583

■ Current Consolidated Accounting Year (From April 1, 2016 to March 31, 2017)

(in million yen)

	Shareholders' equity					Accumulated other comprehensive income				Non-controlling interests	Total net assets
	Capital stock	Capital surplus	Retained earnings	Treasury stock	Total shareholders' equity	Valuation difference on available-for-sale securities	Foreign currency translation adjustment	Remeasurements of defined benefit plans	Total accumulated other comprehensive income		
Balance at the beginning of current period	4,479	4,809	39,588	(674)	48,203	6,326	20	(169)	6,176	203	54,583
Changes of items during the period											
Dividends from surplus			(936)		(936)						(936)
Profit attributable to owners of parent			4,638		4,638						4,638
Purchase of treasury stock				(4)	(4)						(4)
Net changes of items other than shareholders' equity						17	(6)	(271)	(259)	(16)	(276)
Total changes of items during the period	—	—	3,702	(4)	3,697	17	(6)	(271)	(259)	(16)	3,421
Balance at the end of current period	4,479	4,809	43,290	(678)	51,901	6,344	13	(441)	5,916	186	58,004

## Consolidated Statements of Cash Flows

(in million yen)

Accounts	Previous Consolidated Accounting Year (From April 1, 2015 to March 31, 2016)	Current Consolidated Accounting Year (From April 1, 2016 to March 31, 2017)
<b>Net cash provided by (used in) operating activities</b>		
Current net income before tax adjustments, etc.	6,802	6,911
Depreciation and amortization	284	428
Increase (decrease) in allowance for doubtful accounts	(1)	(0)
Increase (decrease) amount of net defined benefit liability	(82)	(15)
Increase (decrease) in provision for environmental measures	(105)	(2)
Interest and dividends income	(263)	(286)
Interest expenses	144	133
Increase (decrease) in reserve for overseas investment loss	(0)	1
Loss (gain) on valuation of investment securities	18	—
Loss (gain) on sales of investment securities	(4)	—
Loss (gain) on sales of noncurrent assets	(2)	(52)
Loss on retirement of noncurrent assets	1	4
Increase (decrease) in loss reserve related to antimonopoly law	(47)	—
Decrease (increase) in notes and accounts receivable — trade	(11,450)	6,836
Decrease (increase) in costs on uncompleted construction contracts	39	(93)
Decrease (increase) in other current assets	(164)	257
Decrease (increase) in other noncurrent assets	4	10
Decrease (increase) in net defined benefit asset	(749)	(106)
Increase (decrease) in notes and accounts payable — trade	4,130	(5,631)
Increase (decrease) in advances received on uncompleted construction contracts	1,294	233
Increase (decrease) in other current liabilities	2,898	(577)
Increase (decrease) in other noncurrent liabilities	(48)	(6)
<b>Subtotal</b>	<b>2,696</b>	<b>8,043</b>
Interest and dividends income received	263	286
Interest expenses paid	(143)	(130)
Loss related to antimonopoly act paid	(342)	—
Income taxes (paid) refund	(1,862)	(2,804)
<b>Net cash provided by (used in) operating activities</b>	<b>611</b>	<b>5,395</b>
<b>Net cash provided by (used in) investing activities</b>		
Proceeds from withdrawal of time deposits	27	27
Payments into time deposits	(27)	(27)
Purchase of property, plant and equipment	(259)	(1,027)
Proceeds from sales of property, plant and equipment	2	26
Purchase of investment securities	(4)	(4)
Proceeds from sales and redemption of investment securities	13	0
Payments of loans receivable	(2)	—
Collection of loans receivable	3	1
Expenditures by acquiring of other noncurrent assets	(269)	(506)
Revenue by sales of other noncurrent assets	23	67
<b>Net cash provided by (used in) investing activities</b>	<b>(493)</b>	<b>(1,442)</b>
<b>Net cash provided by (used in) financing activities</b>		
Increase in short-term loans payable	39,010	35,060
Decrease in short-term loans payable	(38,710)	(35,860)
Proceeds from long-term loans payable	1,800	3,000
Repayment of long-term loans payable	(2,142)	(2,184)
Purchase of treasury stock	(5)	(4)
Cash dividends paid	(847)	(936)
<b>Net cash provided by (used in) financing activities</b>	<b>(894)</b>	<b>(925)</b>
<b>Effect of exchange rate change on cash and cash equivalents</b>	<b>(45)</b>	<b>(14)</b>
<b>Net increase (decrease) in cash and cash equivalents</b>	<b>(822)</b>	<b>3,012</b>
Cash and cash equivalents at beginning of period	24,358	23,536
Cash and cash equivalents at end of period	23,536	26,549



### Third Party Opinion

This opinion statement is based on the Corporate Social Responsibility (CSR) Guideline published by the Japan Federation of Bar Associations. It was prepared with the cooperation of attorneys who are members of the Kinki Branch of the Association (Hajime Yoshida, Hideshi Okura, Koichiro Murotani) and presents opinions based on interviews with department managers who were sent 42 questions in advance and on reviews of relevant materials.

The Dai-Dan Report is well constructed as a synthesis report. It has a good balance of the company's progressive efforts, record of installations, and CSR activities. With regard to CSR activities, details are presented in an easy-to-understand table that shows the correspondence to the ISO 26000 standard, along with the current fiscal year's figures and goals for the coming year. Throughout, numerical targets are given that clearly elucidate the status of the PDCA (plan-do-check-act) cycle. My only suggestion is that those points not accompanied by numerical targets but which were improved by the PDCA cycle and which the interviews shed light on somehow be represented in the report in a way that clarifies them.



**Hiroshi Tanaka**  
Attorney  
Former Deputy Chairman,  
Osaka Bar Association  
Deputy Branch Manager,  
Kinki Branch of the Japan CSR  
Promotion Association

### Initiatives related to corporate governance and legal compliance

Regarding corporate governance, the mutual sharing of information among outside officers is to be encouraged, and I recognize the fact that the actual operation of the Board of Directors has been improved and revitalized through free and open discussion introduced by outside directors. I also recognize that the dialogue with stakeholders is being properly carried out and efforts are being made to improve management in ways that reflect the opinions obtained. Based on these results, we can hope that further improvements will be made in the future.

Regarding compliance, ongoing steps are being actively taken after learning bitter lessons from the past. The strong intention of company leadership is known to all within the company; I see more intensified use of the whistleblowing system; a compliance study group has been set up; and 100% of executives and employees have gone through compliance education using an e-learning system. Of special note, I commend the whistleblowing system, which is not easy to utilize efficiently, for operating properly and functioning effectively, including feedback. On the other hand, two topics regarded as a problem in the third-party opinion of the previous year remained an issue — simplifying the content of the compliance newsletter and increasing the number of issues published. Regarding simplification, some efforts appear to have been made, but no additional issues were published, so further improvements need to be made in this area.

### Initiatives related to environmental preservation

Since earlier, the company has been emphasizing the need to help bring about sustainability in society, and it is admirable that the PDCA cycle is being followed with regard to the environmental management system, which involves goal setting, levels of achievement, evaluations, and verifications. Also, the company's stance on making continued efforts to train new employees with a focus on quality and the environment can be commended highly.

Looking ahead, it appears that the company is not only engaged in traditional energy-saving areas, but turning to new technologies, such as working toward the zero energy building (ZEB) and reducing CO<sub>2</sub> emissions, the results of which can be anticipated in the coming fiscal year and beyond.

The company has also engaged actively in many activities that contribute to society, not only in reducing environmental impact, but in the areas of restoring and regenerating the environment as well, with its mixed-tree forest rejuvenation project and project to promote a healthy sawtooth oak forest. We can expect such activities also to expand.

### Initiatives related to respect for human rights of employees, work-life balance and improving the work environment

Regarding harassment, the company has been conducting harassment training sessions for employees and managerial staff and taking appropriate measures in response to harassment cases that have come to light through whistleblowing — efforts that are to be commended.

In the area of promoting the success of female employees, the company exceeded its target of a 20% ratio of female-to-male recruits, extended its childcare leave period to two years, and revised its reduced working hours system for child rearing. Such efforts to improve work-life balance are to be highly commended. Continued improvements and reviews of the system by a dedicated team can be anticipated.

With regard to redressing excessive working hours, we were unable to get an objective understanding of actual working hours, so a system must be introduced as soon as possible that enables the amount of working hours to be determined properly. In addition, the number of employees consulting with a medical doctor once a month if they work excessive hours has not reached the target of 100%.

Regarding leave, the company's revision to its system in order to promote the use of "refresh leave" has boosted the overall rate of employees using their leave, which can be commended. However, the annual paid leave usage rate has only improved slightly from the previous year to 20.2%, and 55% of employees did not even take one day of paid leave in the course of a year.

Correcting excessive hours worked is an important pillar of the "work style reform" being promoted by the government, and I hope that company leadership will clarify a stance aimed at achieving the correction, and adjust their way of thinking, and take specific measures to change the current situation throughout the company.

### VOICE Reflecting on the Third Party Opinions

I sincerely thank Mr. Hiroshi Tanaka for offering his invaluable third-party viewpoint on the 2017 Dai-Dan Report in cooperation with Messrs. Yoshida, Okura and Murotani.

Regarding the various issues pointed out by Mr. Tanaka, we intend to establish specific policies to resolve those issues and effect improvements.

In order to contribute to the development of a better environment and stronger communities as outlined in our management principles, the entire company is committed to working together on initiatives in these areas based on the four strategies and policies outlined in our mid-term management plan.

**Takayuki Ikeda**  
Director, Executive Corporate Officer, Head of General Administration Division

### Global Network

#### Headquarters Organizations

Name	Zip Code	Address	Telephone Number	Name	Zip Code	Address	Telephone Number
General Administration Division	550-8520	1-9-25 Edobori, Nishi-ku, Osaka City	06-6447-8000	Technical Development Division	354-0044	390 Kita-Nagai, Miyoshimachi, Iruma-gun, Saitama Prefecture	049-258-1891
Sales Division	102-8175	2-15-10 Fujimi, Chiyoda-ku, Tokyo	03-3261-8231	Regenerative Medicine Division (Cellab Tonomachi)	210-0821	R407 Life Innovation Center, 3-25-22 Tonomachi, Kawasaki-ku, Kawasaki City, Kanagawa Prefecture	044-276-5010
Technical Construction Division	354-0044	390 Kita-Nagai, Miyoshimachi, Iruma-gun, Saitama Prefecture	049-258-1891	Regenerative Medicine Division (Kobe Office)	650-0047	Rm 654 Kobe International Business Center, 5-5-2 Minatojima-Minamimachi, Chuo-ku, Kobe City	078-302-9060
Advanced Technical Construction Division	354-0044	390 Kita-Nagai, Miyoshimachi, Iruma-gun, Saitama Prefecture	049-258-1891	Technical Research Laboratory	354-0044	390 Kita-Nagai, Miyoshimachi, Iruma-gun, Saitama Prefecture	049-258-5725
Internal Audit Office	550-8520	1-9-25 Edobori, Nishi-ku, Osaka City	06-6447-8065	Industrial Facilities Department	102-8175	2-15-10 Fujimi, Chiyoda-ku, Tokyo	03-5276-4710
Compliance Office	102-8175	2-15-10 Fujimi, Chiyoda-ku, Tokyo	03-3261-8231				

#### Branch/Office Organizations

Name	Zip Code	Address	Telephone Number	Name	Zip Code	Address	Telephone Number
Hokkaido Branch	001-0020	5-1-43 Nishi, Kita 20, Kita-ku, Sapporo City	011-716-9116	Osaka Head Office	550-8520	1-9-25 Edobori, Nishi-ku, Osaka City	06-6441-8231
Obihiro Office	080-0010	4F Aobatokachi Bldg., 12-20 Odoriminami Obihiro City, Hokkaido	0155-25-3559	Tenri Branch	632-0012	4-228 Toyoda-cho, Tenri City, Nara Prefecture	0743-63-1231
Hakodate Office	041-0851	4-17-40 Hondori, Hakodate City, Hokkaido	0138-55-7086	Kobe Branch	651-0088	7F Nihon Seimei Sannomiya Ekimae Bldg., 7-1-1 Onoe-dori, Chuo-ku, Kobe City	078-221-7777
Tohoku Branch	980-0811	1-15-17 Ichiban-cho, Aoba-ku, Sendai City	022-225-7901	Kyoto Branch	604-8186	2F Urbanex Olke Bldg. East Wing, 361-1 Umeya-cho, Kurumaya-cho-sagaru, Nakagyo-ku, Kyoto City	075-251-6411
Aomori Office	030-0802	4F Tanuma Bldg., 2-4-10 Hon-cho, Aomori City	017-773-1582	Wakayama Office	640-8203	6F Nankai Wakayama Bldg., 3-6 Higashikuramae-cho, Wakayama City	073-433-9431
Akita Office	010-0951	6F Sanno Piales Bldg., 2-2-17 Sanno, Akita City	018-824-6491	Shiga Office	527-0025	#11 Janty 21, 6-55 Yokaichi Higashihonmachi, Higashi-omi City, Shiga Prefecture	0748-25-5400
Morioka Office	020-0032	Hiramatsu Bldg., 2-16 Yugaose-cho, Morioka City	019-654-3023	Okayama Branch	700-0984	6-10 Kuwada-cho, Kita-ku, Okayama City	086-223-3106
Fukushima Office	960-8031	4F Fukushima Sakaemachi Bldg., 10-21 Sakaemachi, Fukushima City	024-521-4213	Chugoku Branch	730-0812	2-22 Kakomachi, Naka-ku, Hiroshima City	082-241-4171
Yamagata Office	990-0043	1F Honcho Bldg., 2-4-3 Hon-cho, Yamagata City	023-634-2620	Yamaguchi Office	754-0011	4F Sanyo Bldg. Ogori, 4-6 Ogorimiyukimachi, Yamaguchi City	083-976-0121
Niigata Branch	950-0088	2-4-3 Bandai, Chuo-ku, Niigata City	025-247-0201	San-in Office	690-0015	#103 Heights Shalom, 2-29-13 Agenogi, Matsue City	0852-27-5890
Tokyo Head Office	102-8175	2-15-10 Fujimi, Chiyoda-ku, Tokyo	03-3261-8231	Shikoku Branch	760-0028	11-20 Tenjinmae, Takamatsu City	087-811-2301
Kanto Branch	330-0854	3F GINZA YAMATO 3 Bldg., 1-10-2 Sakuragi-cho, Omiya-ku, Saitama City	048-644-8468	Matsuyama Office	790-0065	2-208-1 Miyanishi, Matsuyama City	089-922-7161
Gunma Office	371-0805	7F Daidoseimei Maebashi Bldg., 3-9-5 Minami-cho, Maebashi City, Gunma Prefecture	027-226-7720	Kochi Office	780-0088	10-16 Kitakubo, Kochi City	088-884-8231
Tochigi Office	321-0953	6F Yamaguchi Bldg., 4-1-20 Higashishukugo, Utsunomiya City	028-637-3380	Tokushima Office	770-0872	4-1-10 Kitaokinuso, Tokushima City	088-664-8121
Ibaraki Office	300-0037	7F Regal Tsuchiura Bldg., 1-16-12 Sakuramachi, Tsuchiura City, Ibaraki Prefecture	029-825-6656	Kyushu Branch	810-0023	3-1-24 Kego, Chuo-ku, Fukuoka City	092-771-4361
Chiba Office	261-0023	25F NTT Makuhari Bldg., 1-6 Nakase, Mihama-ku, Chiba City	043-211-8881	Kumamoto Branch	862-0941	1-7-6 Izumi, Chuo-ku, Kumamoto City	096-364-7134
Yokohama Branch	231-0062	24F Nisseki Yokohama Bldg., 1-1-8 Sakuragi-cho, Naka-ku, Yokohama City	045-683-1050	Miyata Office	823-0016	680-1 Shiromaru, Miyawaka City, Fukuoka Prefecture	0949-33-2602
Nagoya Branch	461-0005	16F Urbannet Nagoya Bldg., 1-1-10 Higashisakura, Higashi-ku, Nagoya City	052-973-4750	Saga Office	841-0031	#101 Sungarden Yarita, 436-1 Yaritamachi, Tosu City, Saga Prefecture	0942-84-2350
Toyota Branch	471-0835	1-20 Akebono-cho, Toyota City, Aichi Prefecture	0565-28-1841	Nagasaki Office	850-0027	#202 Grand Mansion, 31-3 Okeya-machi, Nagasaki City	095-828-0772
Mikawa Office	448-0011	5-6-4 Tsuiji-cho, Kariya City, Aichi Prefecture	0566-27-0324	Oita Office	870-0033	#402 Matsumoto Bldg., 1-3-22 Chiyomachi, Oita City	097-532-4350
Nagano Office	380-0824	5F Choeidaichi Bldg., 1282-11 Minamishido-cho, Nagano City	026-228-3820	Miyazaki Office	880-0933	#201 Inoue Bldg., 2189-2 Kusabazaki, Otsubo-cho, Miyazaki City	0985-54-6382
Matsumoto Office	390-0811	2F Orii Bldg., 1-1-2 Chuo, Matsumoto City, Nagano Prefecture	0263-33-7016	Kagoshima Office	890-0046	1F San Laqua Bldg., 2-25-12 Nishida, Kagoshima City	099-256-3662
Shizuoka Office	422-8067	17F-1704 South Pot Shizuoka Bldg., 18-1 Minami-cho, Suruga-ku, Shizuoka City	054-281-3501	Okinawa Office	900-0015	4F Arute Bldg. Naha, 3-15-9 Kumoji, Naha City	098-868-1700
Mie Office	514-0004	2F-B Kasama Bldg., 3-261 Sakaemachi, Tsu City	059-225-3840				
Gifu Office	500-8175	2F Daini-nagazumi Bldg., 1-9 Nagazumi-cho, Gifu City	058-265-8224				
Hokuriku Branch	920-0902	1-6-15 Owari-cho, Kanazawa City	076-261-6147				
Toyama Office	930-0019	1-10-20 Yayoi-cho, Toyama City	076-441-3371				
Fukui Office	910-0005	4F Fukui Hosokaikan, 3-4-1 Ote, Fukui City	0776-23-2166				

Singapore Branch	—	315 Outram Road #15-09, Tan Boon Liat Building, Singapore, 169074	010-65-62218488
Hong Kong Branch	—	21F Edinburgh Tower, The Landmark, 15 Queen's Road Central, Hong Kong	010-852-22898888
Malaysia Branch	—	No.75-3 Jalan SS 23/15, Taman SEA, 47400 Petaling Jaya, Selangor, Malaysia	010-60-3-78055443

The blue shading indicates regional headquarters.





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