

Mitsubishi Electric Key Growth Businesses

< Air Conditioning and Refrigeration Systems >

November 11, 2021

Mitsubishi Electric Corporation

1

The medium-term management plan (Advance & Innovation 2025) for FY2025 is 1.26 trillion yen in sales and an operating profit margin of 12% (p. 11).

2

We will expand existing and new businesses by accelerating the development of products that meet the needs of each region and providing life cycle solutions as a comprehensive electronics manufacturer (p. 15).

3

We will make strategic investments in development (approx. 200 billion yen) and in production (approx. 180 billion yen) by FY2025 to realize our growth strategy (p. 19 -20).

4

We will provide comprehensive life cycle solutions globally and strengthening proposals that contribute to solving social challenges such as decarbonization, safety and security (p. 21 -25).

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Note

FY2018 : April 1, 2018 -March 31, 2019

FY2019 : April 1, 2019 -March 31, 2020

FY2020 : April 1, 2020 -March 31, 2021

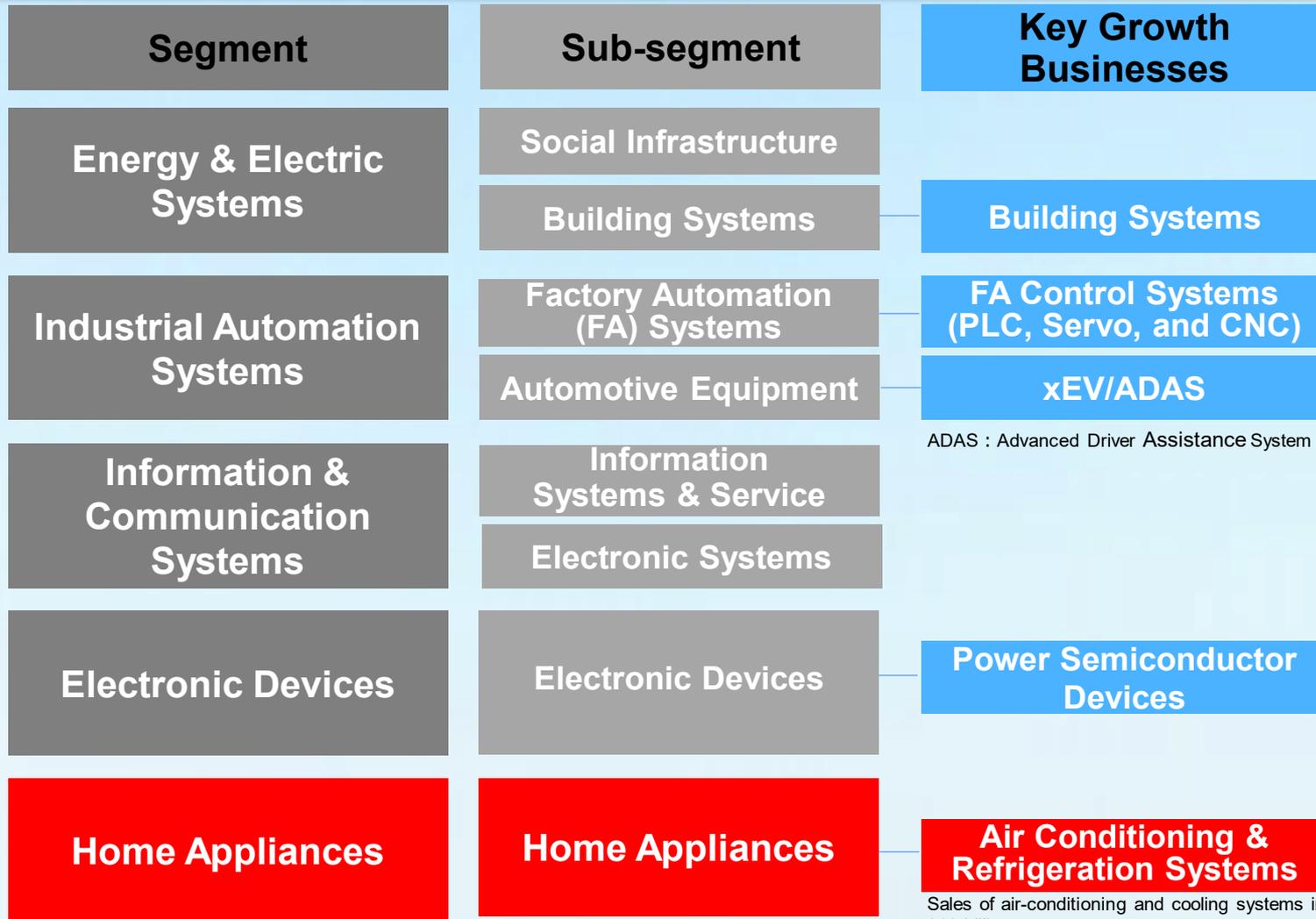
FY2021 : April 1, 2021 -March 31, 2022

FY2025 : April 1, 2025 -March 31, 2026

1

Home Appliances Business Overview

Positioning of Home Appliances and Air-Conditioning Refrigeration Business



ADAS : Advanced Driver Assistance System

Sales of home appliances in FY2020 1038.3 billion yen (24.7% of total sales)

Sales of air-conditioning and cooling systems in FY2020 810 billion yen (Home Appliances segment sales ratio: 78%)

Home Appliances Business Structure

Air Conditioning & Refrigeration Systems Business

- Room Air Conditioners
- Package Air Conditioners
- Variable Refrigerant Flow
- Ventilators for Commercial
- Industrial Cold Equipment
- Chillers, etc.



Domestic and Overseas sales (FY2020)
Domestic: 36%/ Overseas: 64%

Lighting, Ventilation, Home Equipment Business

- Residential Ventilators
- Water Heater
- IH Cooking Heater
- LED Lighting, etc.



Domestic and Overseas sales (FY2020)
Japan: 100%

Home Appliances & Digital Media Equipment Business

- Refrigerators
- Vacuum Cleaners
- Rice Cookers, etc.



Domestic and Overseas sales (FY2020)
Domestic: 70%/ Overseas: 30%

Home Appliances Future Vision

We will contribute to the realization of a safe, secure, and comfortable society and a decarbonized society by providing "life solutions that allow everyone, at work and at home, to live 100 years in their own way," with a focus on life, from the home to society, infrastructure, and industry.



2

Medium-term Management Plan of Key Growth Businesses

Changes in the Market Environment

< Diversified Social challenges >

Accelerating Our Efforts for Decarbonization

- With frequent disasters and extreme weather events, reducing CO2 emissions to prevent global warming is an urgent international issue.
- In order to achieve zero energy consumption in houses and buildings, it is necessary to increase the efficiency of buildings, switch to low GWP and “green” refrigerants, and accelerate the shift to a fossil fuel-free society.

Increasing Awareness of Health, Safety and Security

- It has become increasingly more critical than ever to cope with the risks of diseases such as COVID-19 and to maintain a healthy and high-quality life both physically and mentally with the advent of a super-aging society.
- There is a growing need for anti-viral, anti-bacterial, and other hygiene products, as well as for family and employee security and protection.

Acceleration of Digitalization

- The development of technologies such as AI, the development of IoT, and the adoption of 5G, as well as the “new normals,” such as working from home, are having an impact on the lives of people and are significantly transforming society.
- It is necessary to respond to increased data processing and communication volume growth, and to decarbonize the energy used for data processing.

- ▶ **Realization of a safe, secure and comfortable society**
- ▶ **Realization of a decarbonized society**

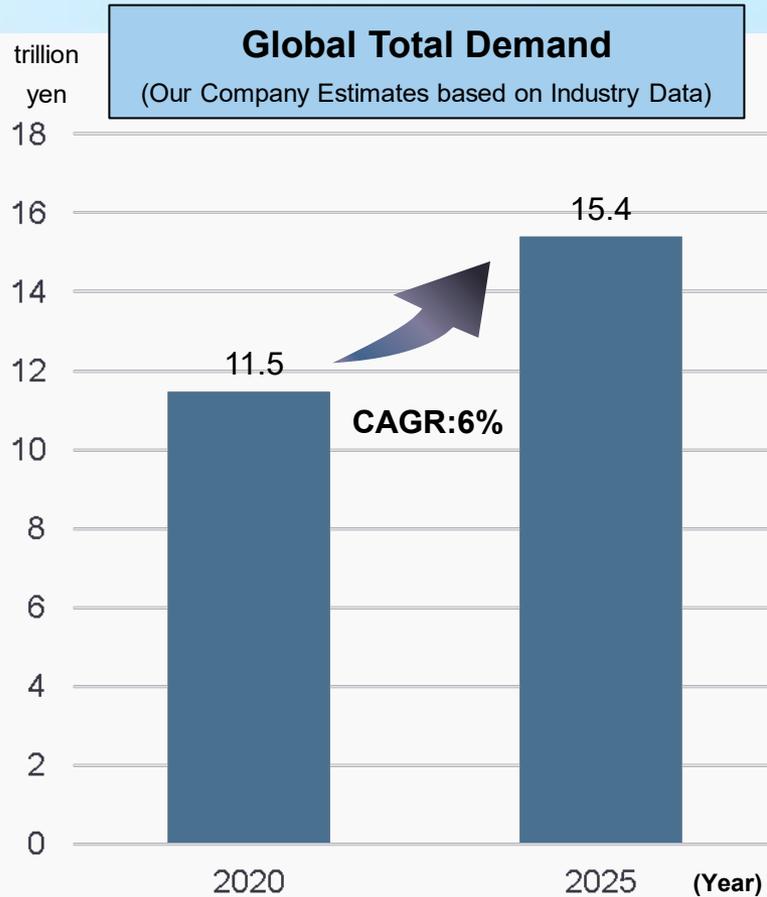
Pursuit of Sustainability

Our SDGs Contributing
to Achievement



Global Demand Trends for Air Conditioning and Environmental Regulations

Due to the effects of global warming and the growth of global economics, demand for air conditioners are expected to continue growing. To combat further global warming, regulations calling for the use of low GWP refrigerants and standards for energy conservation are increasingly becoming stricter in each region of the world.



Environmental (Refrigerant) Regulations

- **Global:** Montreal Protocol, Kigali Amendment ('18)
Reduction of CFC with high global warming potential and conversion to green refrigerants
- **Japan:** CFC Emission Control Law, GWP regulations for each model
GWP 750 or less (Room air conditioners '18 / Package air conditioners '20)
GWP 1500 or less (Freezer '25)
- **Europe:** Start of reduction from '16 by the F gas regulation
Room air conditioners (3 kg or less) need GWP < 750 from '25.
- **Emerging Countries :** Suspend HFC in '24 and start reduction in '29

Energy Conservation Regulations (e.g., Room air conditioners)

	2021	2022	2023	2024	2025	2026
Japan	APF Regulations					Regulation value UP
Europe	SEER/SCOP Regulations					Regulation value UP
North America	SEER/HSPF Regulation					Regulation value UP
China	APF Regulations					
Asia (Thailand)	CSPF/EER Regulations					Regulation value UP

CFC: Chloro Fluoro Carbon, APF: Annual Performance Factor
SEER: Seasonal Energy Efficiency Ratio, SCOP: Seasonal Coefficient of Performance
HSPF: Heating Seasonal Performance Factor, CSPF: Cooling Seasonal Performance Factor

Growth Targets for the Air Conditioning and Refrigeration Systems Business

Contribute to the realization of a safe, secure and comfortable society and a decarbonized society as a global comprehensive air conditioning and refrigeration manufacturer that provides superior air conditioning, ventilation technologies and life cycle solutions.

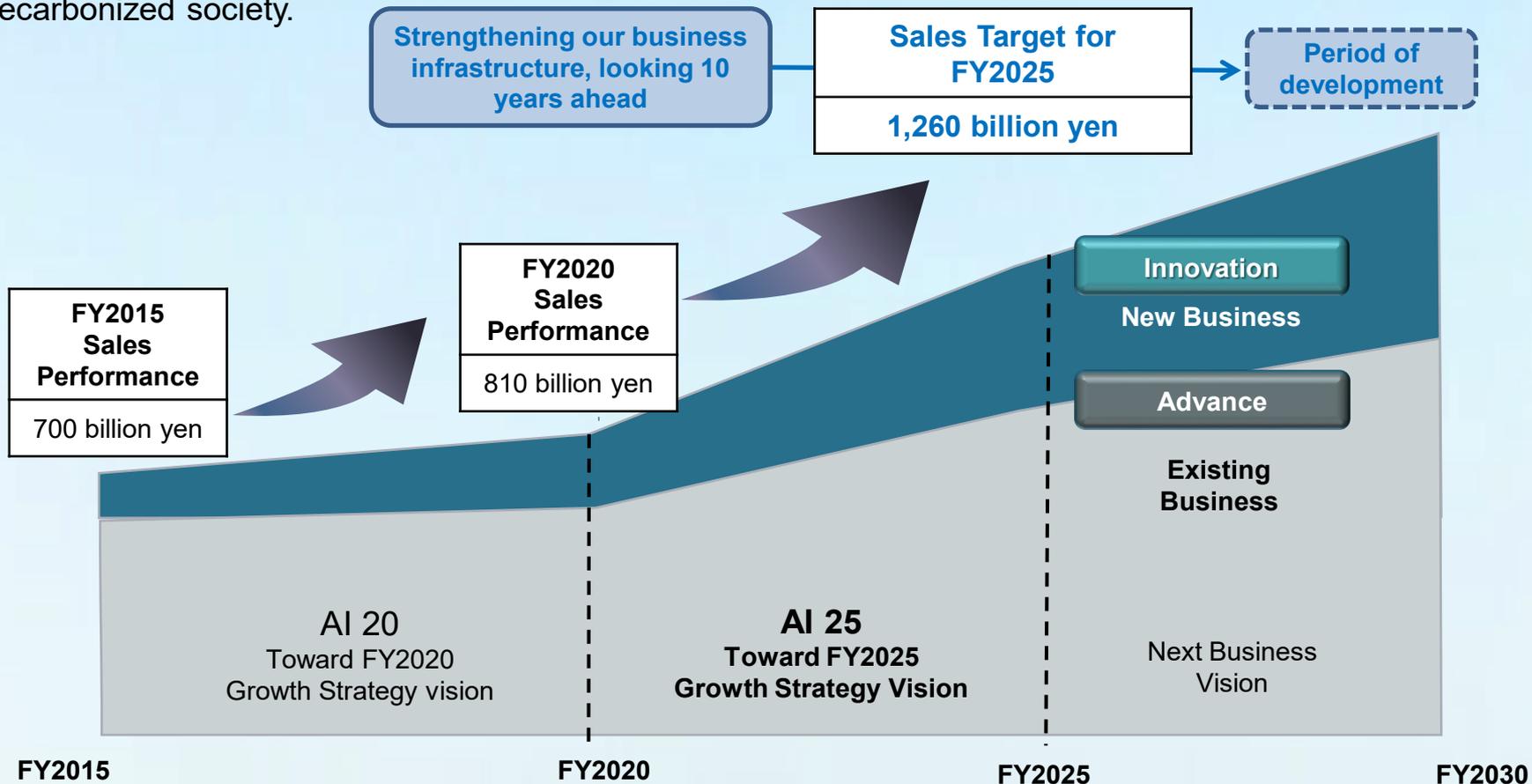
FY2025 Growth Targets

	FY2020 Actual	FY2025 Growth target
Net sales	810 billion yen	1,260 billion yen (CAGR: 9%)
Operating margin	9.1%	12% or more

- Growth Strategy Vision for FY2025 -

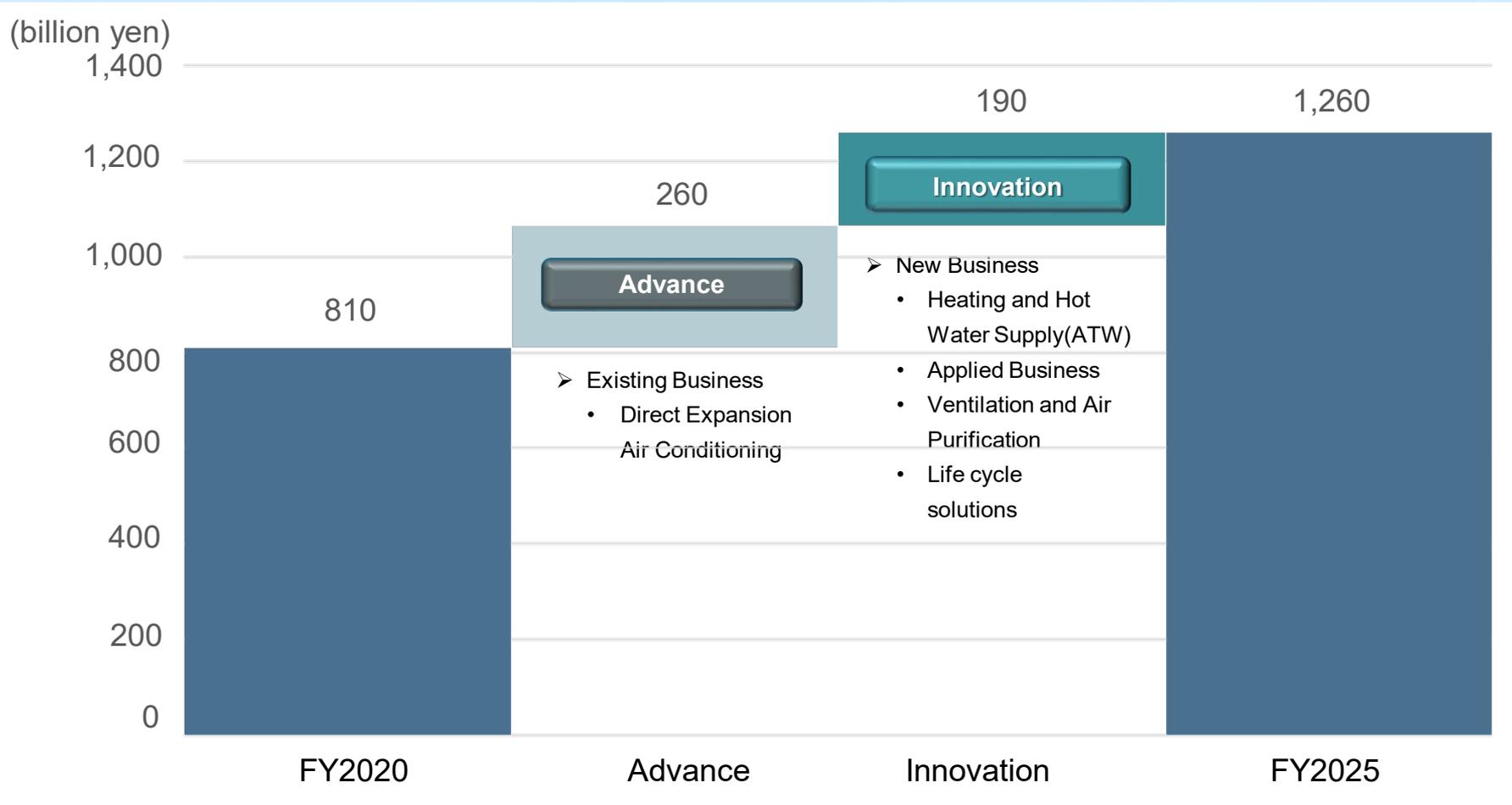
Advance & Innovation 2025 (AI 25)

Through the "Advance Strategy" to strengthen and expand existing businesses and the "Innovation Strategy" to create and strengthen new businesses, we will develop life cycle solutions as a comprehensive air conditioning manufacturer and contribute to the realization of a safe, secure and comfortable society and a decarbonized society.



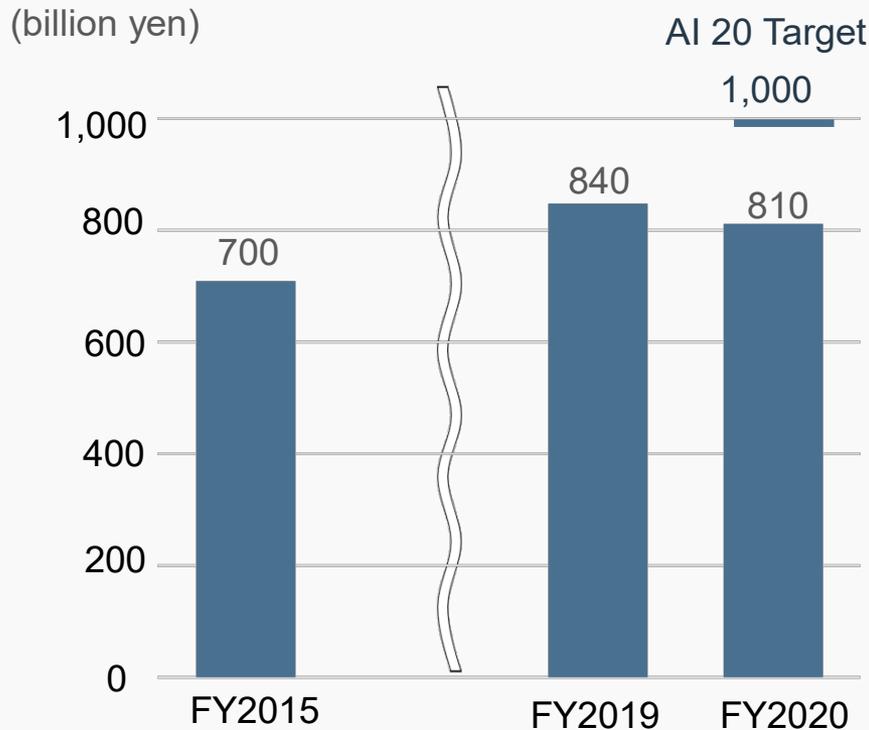
Changes Toward Achieving Growth Targets

We aim to achieve our targets by expanding existing and new businesses, centered on heat pump-type heating and hot water supply systems (ATW), and life cycle solutions.



AI20 Results

- We have been working on the promotion of local production for local consumption and the advancement of solutions as our highest priority and have been developing regional production facilities (Turkey and Mexico) and acquiring missing parts through acquisitions (Delclima).
- Sales expanded to 840 billion yen in FY2019, but due to the effects of COVID-19 and unfavorable exchange rates, sales did not reach the FY2020 target.



Key Achievements of AI 20

Advance

- ① Strengthen sales channels by establishing regional sales companies
- ② Start of collaboration with Ingersoll Rand (TRANE) in United States and establishment of sales joint venture
- ③ Expanding production and supply systems at Thai plant
- ④ Establishment of a plant for room air conditioners in Turkey



Turkish Plant



Thailand Plant

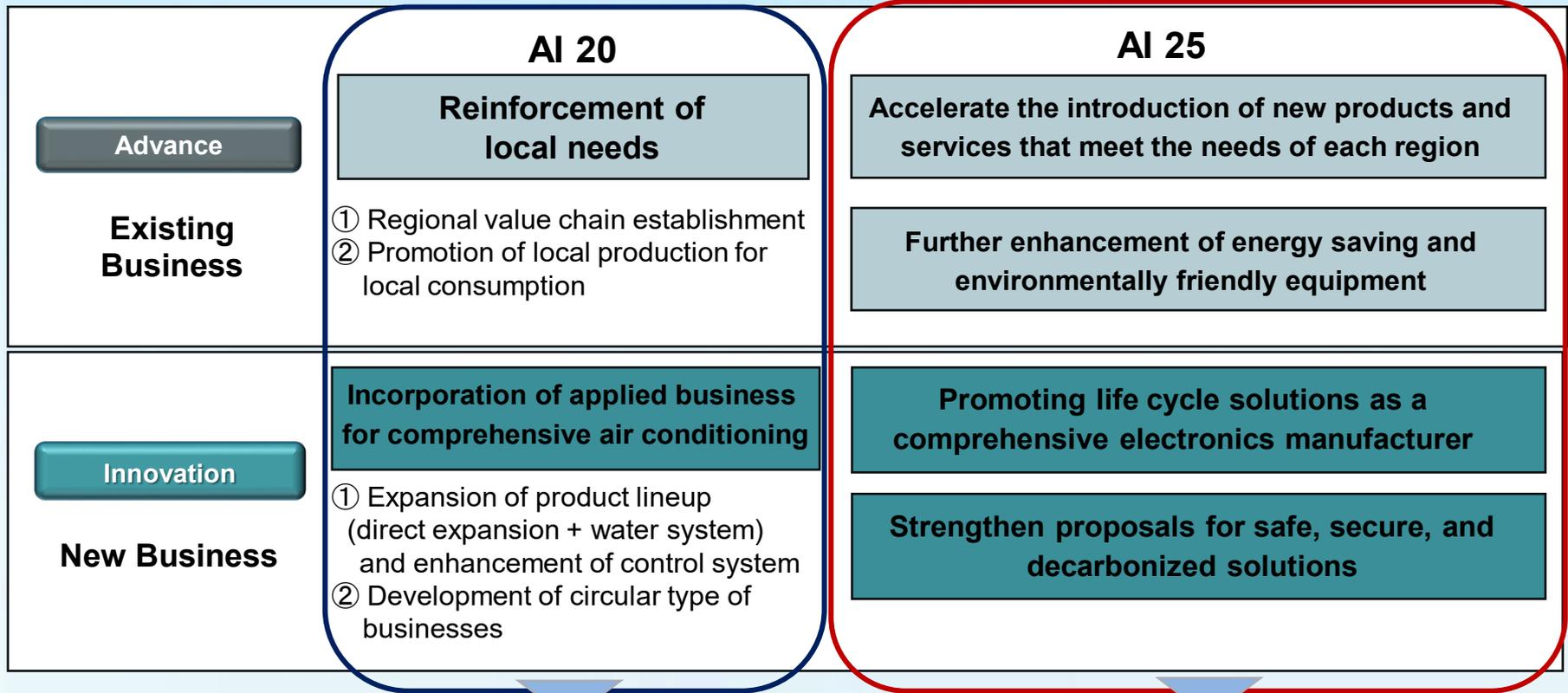
Innovation

- ① Through the acquisition of Delclima, we entered the applied business overseas



Advance & Innovation 2020 to 2025

In AI 25, we will further advance the business results of the strategies promoted in AI 20 and accelerate the introduction of new products and services tailored to the needs of each region.



Strengthen our ability to respond to individual customer needs and offer greater proposals

Contribute to the realization of a safe, secure, and comfortable society and a decarbonized society

Strengths of the Air Conditioning & Refrigeration Business in Life Cycle Solutions

We offer integrated solutions (Life Cycle Solutions) that only we can provide by combining our extensive lineup of high performance and energy efficient air conditioning and refrigeration equipment with our extensive building management know-how, centered on elevators and air conditioning equipment, and advanced digital technology.



- High-efficiency compressor
- Next-generation compressor
- Next-generation refrigerant-saving heat exchanger
- New airfoil fan
- High-efficiency inverter
- Motor for new elements and materials

- Extensive technical knowledge of the equipment
- Energy conservation operation and maintenance services
- Maintenance networks
- Air conditioning management systems
- Building management systems

- AI technology  Maisart
- Predictive failure detection by digital twin technologies
- Heterogeneous data linkage of devices and systems

Core Strategies for Achieving AI 25 Growth Strategy

Core Strategy 1

Advance

Further improvement of energy saving and environmentally friendly technologies (refrigerant-saving and new refrigerants) to contribute to a decarbonized society

Core Strategy 2

Advance

Innovation

Strengthen global development capabilities and local production for local consumption to enhance our ability to respond to market needs that differ from region to region

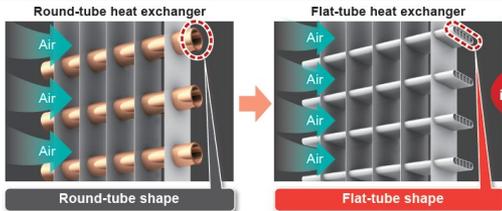
Core Strategy 3

Innovation

Efforts to build and promote life cycle solutions
(Strengthening collaboration among inter-businesses as a comprehensive electronics manufacturer. In addition, consider strategic investments, collaborations, and acquisitions to improve business infrastructure.)

Advance Further Improvement of Energy saving and Environment-friendly Technologies (Refrigerant Conservation and New Refrigerant)

Energy Saving and Refrigerant Saving High-Efficiency Heat Exchanger



Improved performance of air-side heat exchangers with flat tubes (approximately 30% more efficient than conventional heat exchangers) and reduced refrigerant volume with next-generation heat exchangers (20 ~ 30% less than conventional heat exchangers)

Energy Saving and Low GWP Refrigerant High-efficiency and High-Performance Compressor



A large variety of compressors from rotary to screw, covering a wide range of capacity and refrigerants

Energy Conservation High-efficiency Fan Motor



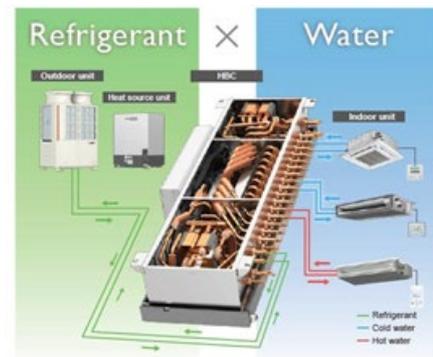
Our patented proprietary technology "poki poki motor" contributes to miniaturization and higher efficiency

Refrigerant Saving (Chiller Systems)



Increasing competitiveness and lineup of chiller systems

Refrigerant Saving (Hybrid VRF)



Awards and Achievements



Combine the advantages of zone-control of direct expansion air conditioning and refrigerant saving of water-based air conditioning with a unique branch controller. (43% less refrigerant * 1 than conventional systems)

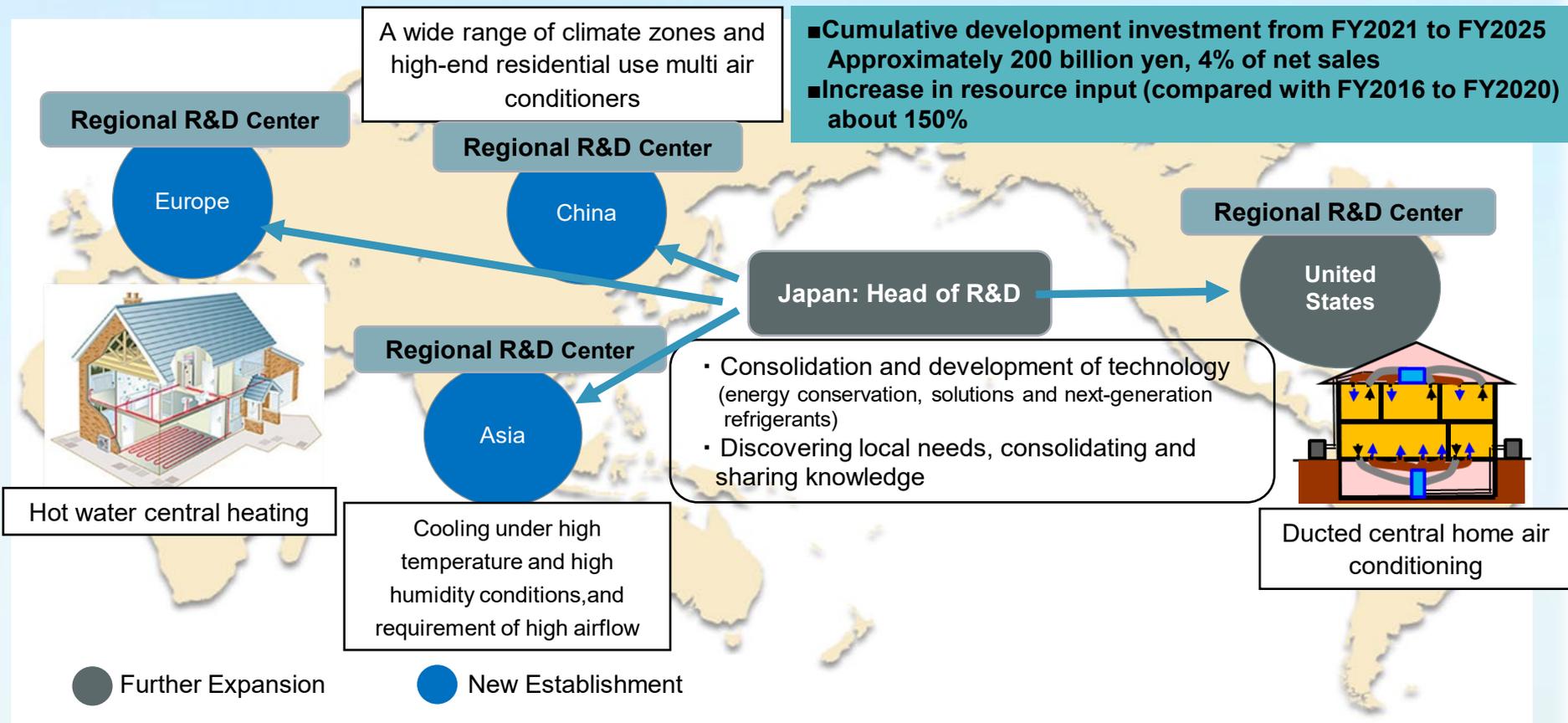
*1: our company R 410 A refrigerant, 12 horsepower, 20 indoor units.

Advance

Innovation

Strengthen Global Development Capabilities

To launch products that meet individual market needs in a timely manner, we have strengthened our global development capabilities by establishing and reinforcing local R&D centers in Europe, the Americas, China, and Asia. They are responsible for local marketing, understanding standards and regulatory trends, identifying necessary technological trends, and searching for partners that can complement our business.

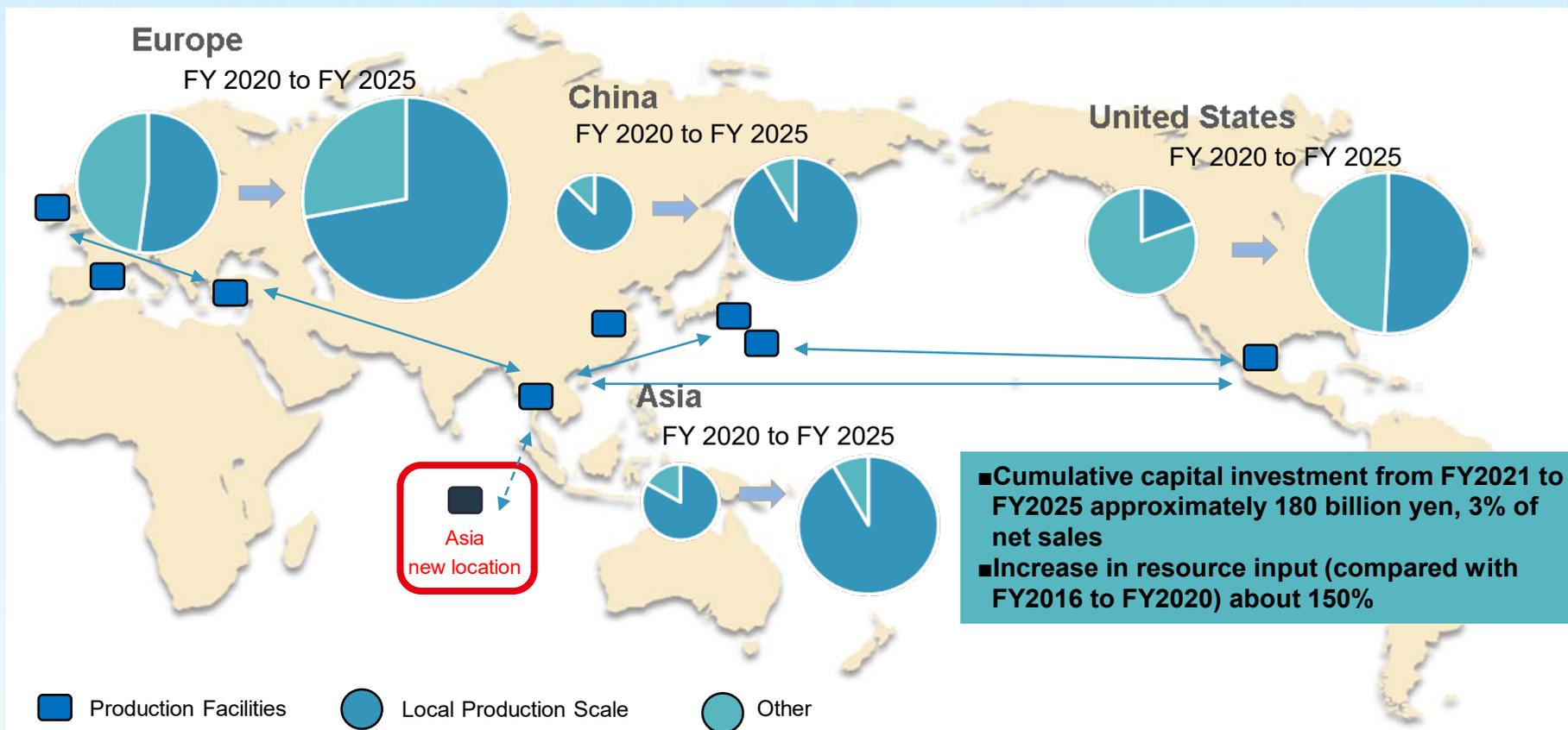


Advance

Innovation

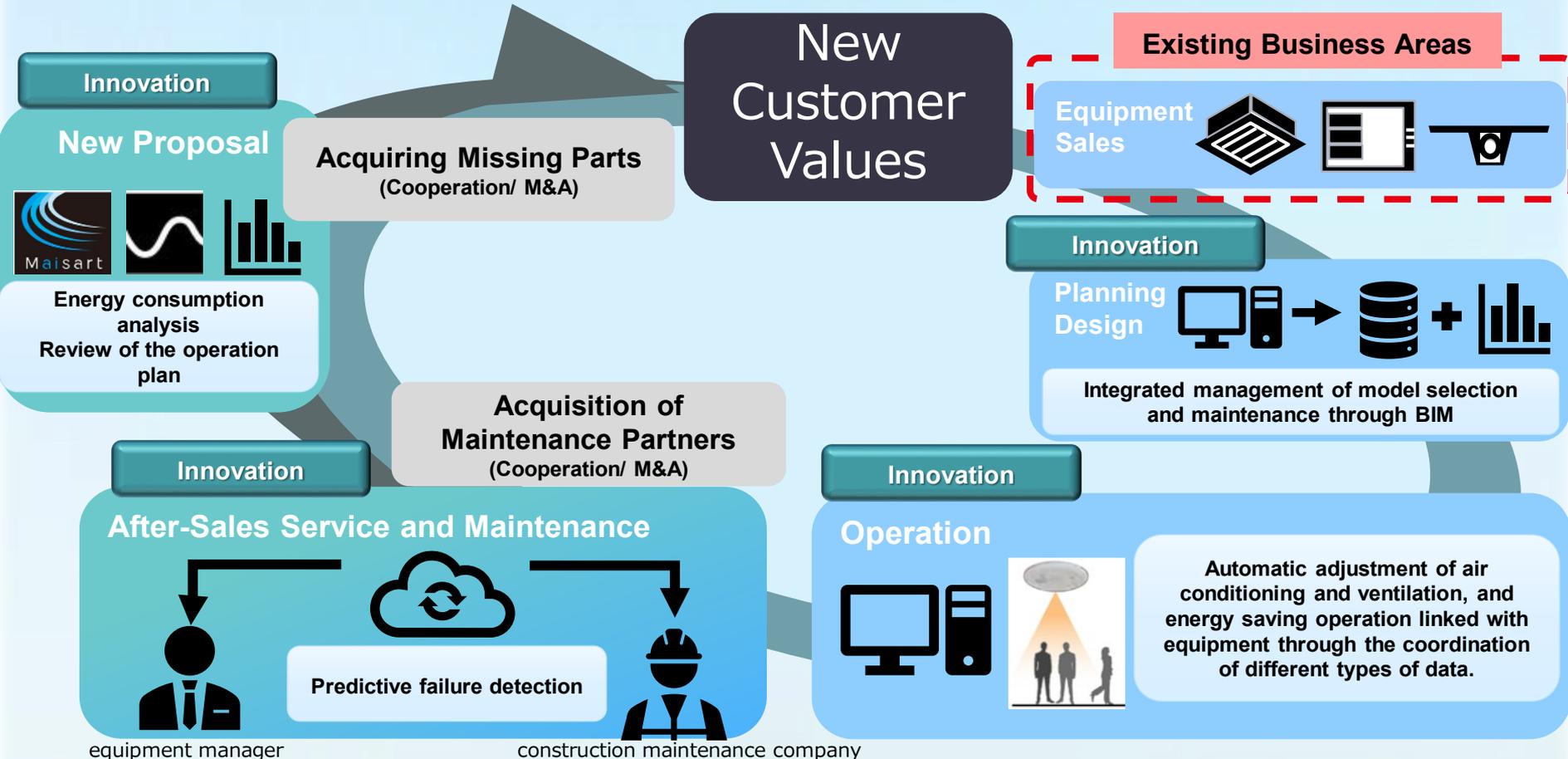
Improving Market Responsiveness through Production in Consumption Areas

- Establish mutually complementary production facilities that can respond to rapid demand and environmental changes.
- Production capacity of room air conditioners will increase at our Turkey factory and ATW production will begin in Turkey in addition to our UK factory.
- Expanding production capacity in our Mexican factory to serve the North American market.
- In Asia, we are considering establishing a new factory in addition to the current one.



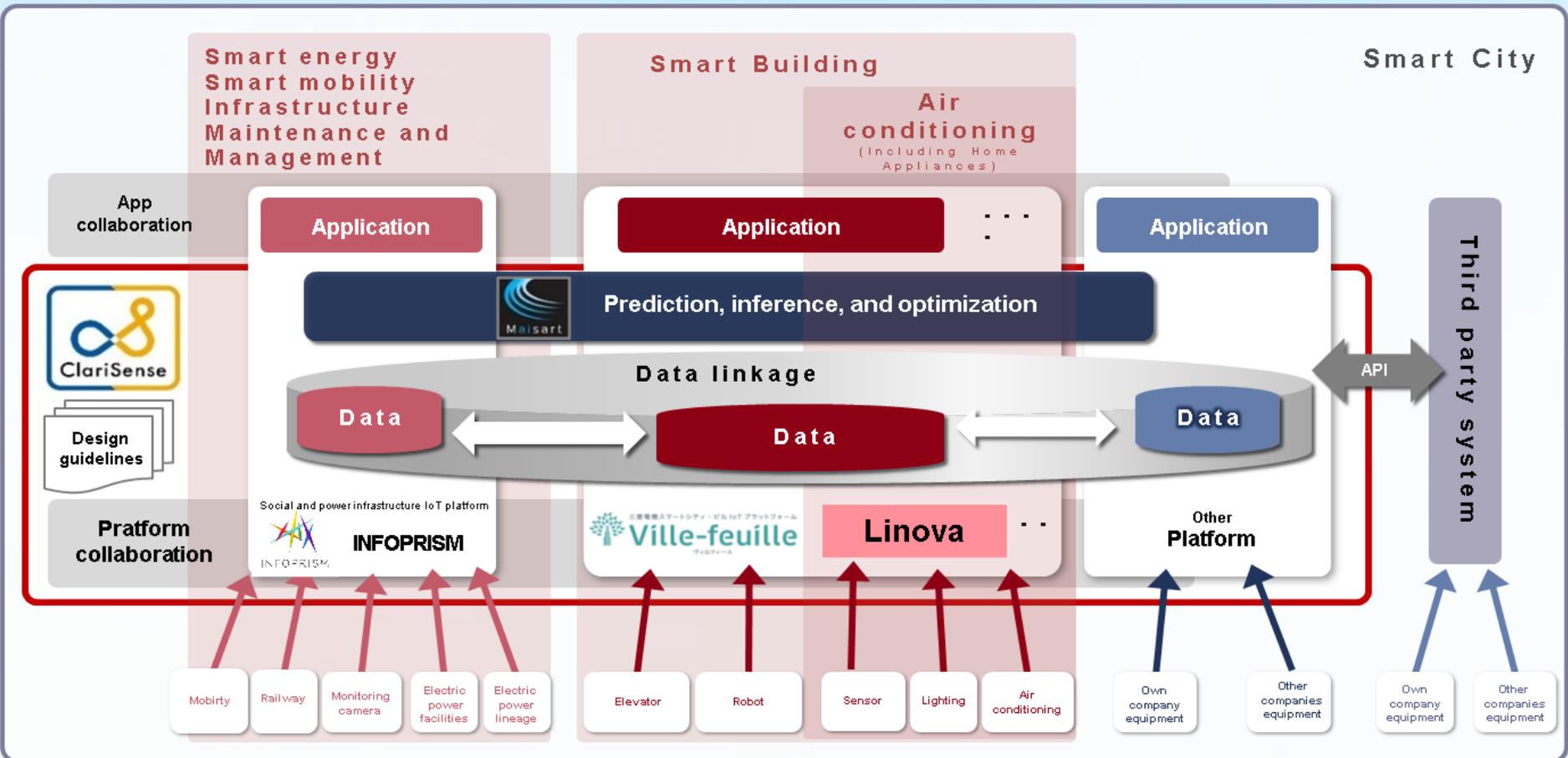
Innovation **Build and Implement Life Cycle Solutions**

- Expanding from the existing equipment sales business, we will provide comprehensive solutions globally throughout the product life cycle for a wide range of environments, from residential to commercial use, and provide new customer values in comfort and energy.
- New measures such as partner cooperation and M&A will be implemented to expand the scope of business.



Innovation Creating Customer Value through IoT, Cloud and AI Technologies

- Accelerate global products development, application development, and service development by utilizing an integrated IoT common platform with a data integration and analysis platform to create a variety of customer values in life cycle solutions.
- Contribute to realize Smart Buildings and Smart Cities through collaboration with our building systems business.



INFOPRISM: IoT Platform for Social and Power Infrastructure/Ville-feuille: IoT Platform for Smart City Buildings/Linova: IoT Platform for Home Appliances and Equipment

Innovation **Total Solutions for Smart Buildings**

3 **ENHANCE HEALTH AND WELL-BEING** 

7 **ACHIEVE NET ZERO ENERGY** 

13 **IMPROVE ACTION** 

Maintenance coordination of elevators and air conditioners
One-Stop service delivery

Linkage of access control system with air conditioning and lighting
Provides a comfortable and efficient environment



Safety and security

Energy saving

Efficiency



Efficiency

Energy saving

Comfort

Robotic mobility support and other services expansion
Utilise device connection platform



ゼロエネルギーのその先へ。三菱電機
ZEB+
ゼロプラス
net Zero Energy Building



Enhancement of ZEB
From highly efficient building operations to added value in comfort with ZEB+

Visualization, monitoring and control



Building Life Cycle Solutions (Operational ZEB/Maintenance)

ZEB + (Comfortable Space/Wellness)

- Hot water central heating, which is the mainstream in Europe, is shifting from boilers to heat pump systems as promoted by fossil fuel-free policies.
- Accelerate investment in high priority businesses (Establish local R&D such as the Ecodan Heating Lab. and increase production capacity)
- Propose safe and secure ventilation and air purifying solutions as countermeasures against global pandemics.

Contribution to a decarbonized society

Heat pump type heating and hot water supply system (ATW)
CO2 emission reduction effect is assumed to be about 50% of boiler.

Energy saving

Providing safe and secure comfortable spaces

Propose room air conditioners equipped with Plasma Quad® technology, an anti-virus technology, and Losnny for residential use to provide a safe and secure comfortable space with both ventilation and energy saving

Safety and security

Safety and Health
Plasma Quad®
technology



Plasma Quad® technology creates an electric field and discharge space to inhibit viruses, bacteria and pollen.



Innovation

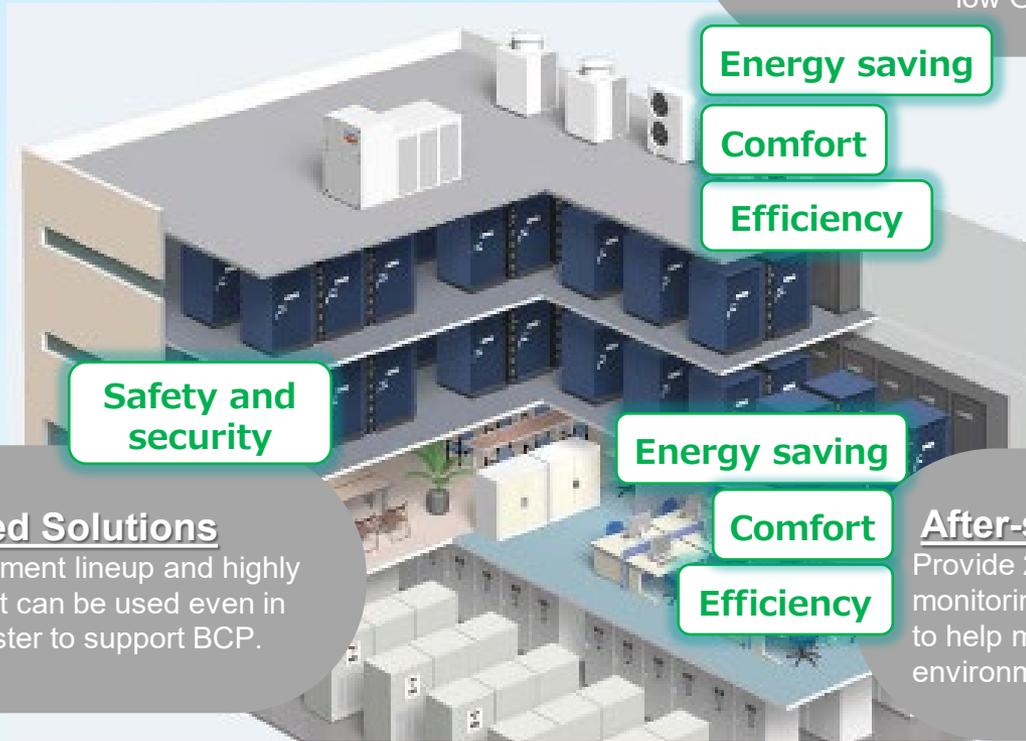
Total Solutions for the Data Center



Promote integrated solutions through collaboration between business units to enhance the operational reliability of data centers while contributing to the realization of energy conservation and decarbonization.

Energy saving and cooling solutions

A wide range of air conditioning lineups from small server rooms to large data centers. Support the realization of low PUE with energy saving & use of low GWP refrigerants.



Safety and security

BCP-enabled Solutions

A wide range of equipment lineup and highly reliable functions that can be used even in the event of a disaster to support BCP.

Energy saving

Comfort

Efficiency

After-sales and maintenance

Provide 24-hour online remote monitoring of air conditioning equipment to help maintain the operating environment of the data center

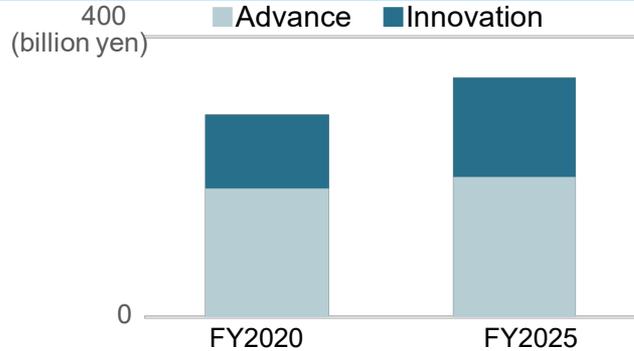


Emergency generator
server room power (UPS)



Japan

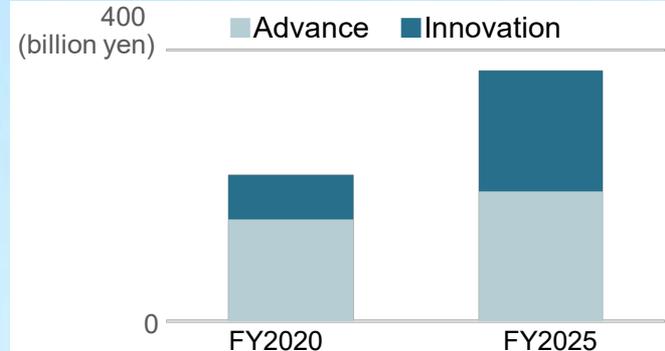
Continuing business expansion as a comprehensive air conditioning and refrigeration system manufacturer



In addition to responding to new needs for safety, health, hygiene, and monitoring, we will improve profitability through life cycle solutions, and utilizing the maintenance network of the facility business, which is one of our strengths.

Europe

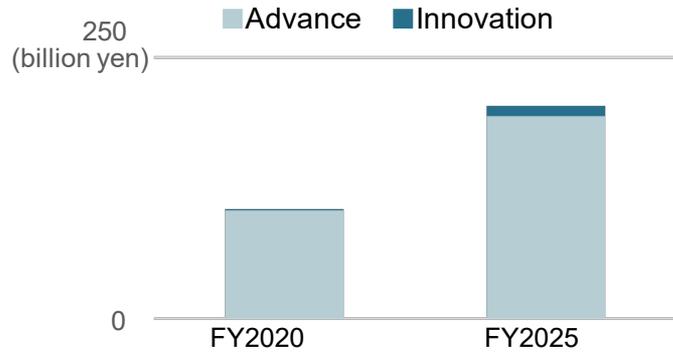
Business expansion through life cycle solutions



We will enhance the local development and production capacity of ATW as a contribution to decarbonization. Strategic investments will also be made to develop the maintenance and turn-key business and build life cycle solutions.

United States

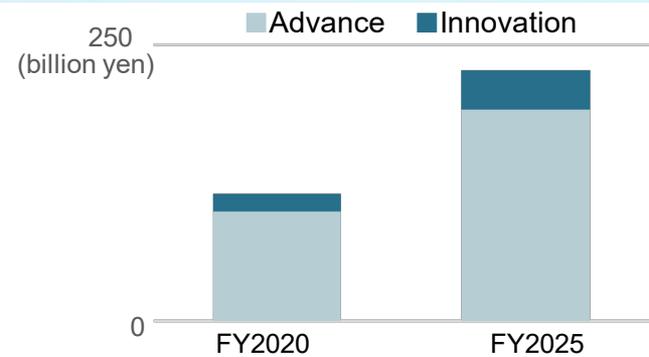
Expansion of business domain as a leading ductless manufacturer



We will continue to develop the US ducted central air conditioning market by our ductless products. We will also strengthen our response to the wide range of North American climates and expand our heat pump business domain.

China and Asia

Profitable growth through value-added improvements



Strengthen price competitiveness and consider the expansion of supply capacity including new factories for business expansion and strengthen initiatives for profitable value-added products such as residential multi-model products.

Contributing to a Safe, Secure and Comfortable Society and a Decarbonized Society

We will work to solve social challenges by strengthening the air conditioning business related to three social challenges: (1) decarbonization, (2) countermeasures against infectious diseases, and (3) digital transformation.

Materiality to realize sustainability

Provide solutions to social challenges through our business	Realize a sustainable global environment
	Realize a safe, secure, and comfortable society
Strengthen our business foundation to enable our sustainable growth	Respect for all people
	Strengthen corporate governance and compliance on a sustainable basis
	Create a sustainability-oriented corporate culture

Provide solutions to social challenges through our business

Realize a sustainable global environment

Realize a safe, secure, and comfortable society

Mobility

Life

Infrastructure

Industry

Highly relevant SDGs



3 GOOD HEALTH AND WELL-BEING



7 AFFORDABLE AND CLEAN ENERGY



13 CLIMATE ACTION

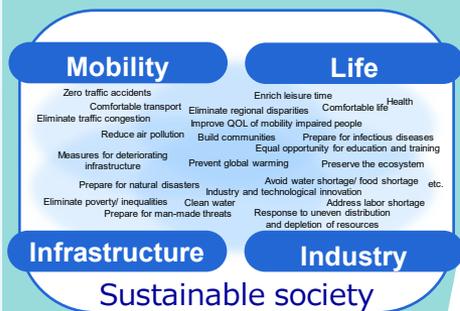
(1) To contribute to a decarbonized society, we will promote the shift from boilers to heat pump systems (ATW).

We will accelerate investments such as establishing a local R&D center (establish Ecodan Heating Lab.) and increasing capacity at production plants.

(2) As a countermeasure against infectious diseases, the demand for high-efficiency ventilation and hygienic solutions is increasing due to COVID-19, and this can be achieved through energy conservation and visualization of the indoor environment through air conditioning and ventilation using air-purifying function technology, IoT, and AI technology.

(3) In response to the increasing demand for data center cooling due to the progress of DX, we will promote integrated solutions through collaboration among business units, and contribute to the realization of energy conservation and decarbonization while improving the operational reliability of data centers.

Social Challenges



Cautionary Statement

While the statements herein including the forecast of the Mitsubishi Electric Group are based on assumptions the Group considers to be reasonable under the circumstances on the date of announcement, actual results may differ significantly from forecasts.

Such factors materially affecting the expectations expressed herein shall include but are not limited to the following:

1. Any change in worldwide economic and social conditions, as well as laws, regulations, taxation and other legislation
2. Changes in foreign currency exchange rates, especially JPY/dollar rates
3. Changes in stock markets, especially in Japan
4. Changes in balance of supply and demand of products that may affect prices and volume, as well as material procurement conditions
5. Changes in the ability to fund raising, especially in Japan
6. Uncertainties relating to patents, licenses and other intellectual property, including disputes involving patent infringement
7. New environmental regulations or the arising of environmental issues
8. Defects in products or services
9. Litigation and legal proceedings brought and contemplated against the Company or its subsidiaries and affiliates that may adversely affect operations or finances
10. Technological change, the development of products using new technology, manufacturing and time-to-market
11. Business restructuring
12. Incidents related to information security
13. Large-scale disasters including earthquakes, typhoons, tsunami, fires and others
14. Social or political upheaval caused by terrorism, war, pandemics, or other factors
15. Important matters related to the directors and executive officers, major shareholders and affiliated companies of Mitsubishi Electric Corporation

