Mitsubishi Electric Key Growth Businesses
< Air Conditioning and Refrigeration Systems >

November 11, 2021
Mitsubishi Electric Corporation
Executive Summary

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).
1. Home Appliances Business Overview
   1-1. Positioning of Home Appliances Business
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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
Home Appliances Business Overview
### Positioning of Home Appliances and Air-Conditioning Refrigeration Business

<table>
<thead>
<tr>
<th>Segment</th>
<th>Sub-segment</th>
<th>Key Growth Businesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy &amp; Electric Systems</td>
<td>Social Infrastructure</td>
<td>Building Systems</td>
</tr>
<tr>
<td>Industrial Automation Systems</td>
<td>Building Systems</td>
<td>FA Control Systems (PLC, Servo, and CNC)</td>
</tr>
<tr>
<td>Information &amp; Communication Systems</td>
<td>Factory Automation (FA) Systems</td>
<td>xEV/ADAS</td>
</tr>
<tr>
<td>Electronic Devices</td>
<td>Information Systems &amp; Service</td>
<td>ADAS: Advanced Driver Assistance System</td>
</tr>
<tr>
<td>Home Appliances</td>
<td>Electronic Devices</td>
<td>Power Semiconductor Devices</td>
</tr>
<tr>
<td></td>
<td>Home Appliances</td>
<td>Air Conditioning &amp; Refrigeration Systems</td>
</tr>
</tbody>
</table>

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%
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.
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

GWP: Global Warming Potential
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.

**Global Total Demand**

<table>
<thead>
<tr>
<th>Year</th>
<th>Demand (trillion yen)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020</td>
<td>11.5</td>
</tr>
<tr>
<td>2025</td>
<td>15.4</td>
</tr>
</tbody>
</table>

**CAGR:** 6%

**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)**

<table>
<thead>
<tr>
<th>Year</th>
<th>2021</th>
<th>2022</th>
<th>2023</th>
<th>2024</th>
<th>2025</th>
<th>2026</th>
</tr>
</thead>
<tbody>
<tr>
<td>Japan</td>
<td>APF Regulations</td>
<td>the Act on the Rational Use of Energy (Energy Conservation Act) Revision</td>
<td>Expected</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Europe</td>
<td>SEER/SCOP Regulations</td>
<td>ErP lot 10 Revision</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>North America</td>
<td>SEER/HSPF Regulation</td>
<td>New Energy STAR</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>China</td>
<td>APF Regulations</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Asia (Thailand)</td>
<td>CSPF/EER Regulations</td>
<td>New MEPS SEER/EER</td>
<td></td>
<td></td>
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</tbody>
</table>
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.

**Growth Targets for the Air Conditioning and Refrigeration Systems Business**

<table>
<thead>
<tr>
<th></th>
<th>FY2020 Actual</th>
<th>FY2025 Growth target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net sales</td>
<td>810 billion yen</td>
<td>1,260 billion yen (CAGR: 9%)</td>
</tr>
<tr>
<td>Operating margin</td>
<td>9.1%</td>
<td>12% or more</td>
</tr>
</tbody>
</table>
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.

**Advance & Innovation 2025 (AI 25)**

Sales Target for FY2025
1,260 billion yen

Period of development

**Scenario for Growth**

- Growth Strategy Vision for FY2025 -

**AI 20**
Toward FY2020
Growth Strategy Vision

**AI 25**
Toward FY2025
Growth Strategy Vision

**FY2015**
Sales Performance
700 billion yen

**FY2020**
Sales Performance
810 billion yen

**FY2025**

Innovation
New Business
Advance
Existing Business
Next Business Vision
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.

Changes Toward Achieving Growth Targets

- **Existing Business**
  - Direct Expansion Air Conditioning

- **New Business**
  - Heating and Hot Water Supply (ATW)
  - Applied Business
  - Ventilation and Air Purification
  - Life cycle solutions

- **Advance**
  - 810 billion yen

- **Innovation**
  - 190 billion yen

- **FY2020**
  - 1,000 billion yen

- **FY2025**
  - 1,260 billion yen

ATW: Air to Water
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.

**AI20 Results**

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

**Key Achievements of AI 20**

1. Through the acquisition of Delclima, we entered the applied business overseas
## Scenario for Growth

### 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.

<table>
<thead>
<tr>
<th>Existing Business</th>
<th>New Business</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Advance</strong></td>
<td><strong>Innovation</strong></td>
</tr>
<tr>
<td><strong>AI 20</strong></td>
<td><strong>AI 25</strong></td>
</tr>
<tr>
<td>Reinforcement of local needs</td>
<td>Accelerate the introduction of new products and services that meet the needs of each region</td>
</tr>
<tr>
<td>① Regional value chain establishment</td>
<td>Further enhancement of energy saving and environmentally friendly equipment</td>
</tr>
<tr>
<td>② Promotion of local production for local consumption</td>
<td>Promoting life cycle solutions as a comprehensive electronics manufacturer</td>
</tr>
<tr>
<td>Incorporation of applied business for comprehensive air conditioning</td>
<td>Strengthen proposals for safe, secure, and decarbonized solutions</td>
</tr>
<tr>
<td>① Expansion of product lineup (direct expansion + water system) and enhancement of control system</td>
<td></td>
</tr>
<tr>
<td>② Development of circular type of businesses</td>
<td></td>
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</table>

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.

Core Components
- High-efficiency air-conditioning and refrigeration products equipped with advanced devices
- High-efficiency compressor
- Next-generation compressor
- Next-generation refrigerant-saving heat exchanger
- New airfoil fan
- High-efficiency inverter
- Motor for new elements and materials

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

Advanced Digital Technology
- IoT, AI technology
- AI technology
- Predictive failure detection by digital twin technologies
- Heterogeneous data linkage of devices and systems

Maisart: Mitsubishi's AI technology
<table>
<thead>
<tr>
<th>Core Strategy 1</th>
<th>Core Strategy 2</th>
<th>Core Strategy 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advance</td>
<td>Advance</td>
<td>Innovation</td>
</tr>
</tbody>
</table>

### Core Strategy 1
Further improvement of energy saving and environmentally friendly technologies (refrigerant-saving and new refrigerants) to contribute to a decarbonized society

### Core Strategy 2
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
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.)
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)

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.
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.

- **Cumulative development investment from FY2021 to FY2025**
  - Approximately 200 billion yen, 4% of net sales
- **Increase in resource input (compared with FY2016 to FY2020)**
  - About 150%

### Regional R&D Center

- **Europe**
  - Hot water central heating
  - Cooling under high temperature and high humidity conditions, and requirement of high airflow
  - Further Expansion

- **China**
  - Ducted central home air conditioning
  - Consolidation and development of technology (energy conservation, solutions and next-generation refrigerants)
  - Discovering local needs, consolidating and sharing knowledge

- **Asia**
  - A wide range of climate zones and high-end residential use multi air conditioners

- **United States**
  - Japanese Head of R&D
Core Strategy 2

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.

Europe
FY 2020 to FY 2025

China
FY 2020 to FY 2025

United States
FY 2020 to FY 2025

Asia
FY 2020 to FY 2025

- Cumulative capital investment from FY2021 to FY2025 approximately 180 billion yen, 3% of net sales
- Increase in resource input (compared with FY2016 to FY2020) about 150%

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• 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.

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**Build and Implement Life Cycle Solutions**

**New Customer Values**

- Energy consumption analysis
- Review of the operation plan

**Existing Business Areas**

- Equipment Sales
- Planning Design
- Integrated management of model selection and maintenance through BIM

**New Proposal**

- Acquiring Missing Parts (Cooperation/ M&A)

**Innovation**

- Acquition of Maintenance Partners (Cooperation/ M&A)

**After-Sales Service and Maintenance**

- Predictive failure detection

**Operation**

- Automatic adjustment of air conditioning and ventilation, and energy saving operation linked with equipment through the coordination of different types of data.
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.

Core Strategy 3

Innovation

Smart City

Smart energy
Smart mobility
Infrastructure
Maintenance and Management

Smart Building

Air conditioning
(including home appliances)

Prediction, inference, and optimization

Data linkage

Application

Other Platform

App collaboration

Design guidelines

Platform collaboration

ClariSense

Mobility
Railway
Monitoring cameras
Electric power facilities
Electric power lineages

Elevator
Robot
Sensor
Lighting
Air conditioning

Own company equipment
Other companies equipment
Own company equipment
Other companies equipment
Other companies equipment

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

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2-6 Integrated Solutions

Total Solutions for Smart Buildings

- Maintenance coordination of elevators and air conditioners
- One-Stop service delivery
- Safety and security
- Energy saving
- Efficiency
- Visualization, monitoring and control
- Linkage of access control system with air conditioning and lighting
- Provides a comfortable and efficient environment
- Robotic mobility support and other services expansion
- Utelise device connection platform
- Efficiency
- Energy saving
- Comfort
- 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: Buildings with net or negative annual primary energy consumption due to energy conservation, energy creation and energy storage effects

Linova

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Safety, Security and Decarbonization Solutions for Housing

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.

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

Energy saving

Linova

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

- 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.

Innovation
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.

**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**

**Safety and security**

**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)
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.

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.

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.

We will 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.
Initiatives on Social Challenges

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
  - Respect for all people
  - Strengthen corporate governance and compliance on a sustainable basis
  - Create a sustainability-oriented corporate culture

### Social Challenges

- **Mobility**
  - Zero traffic accidents
  - Comfortable transport
  - Eliminate traffic congestion
  - Reduce air pollution
  - Improve QOL of mobility impaired people

- **Life**
  - Enrich life quality
  - Comfortable living
  - Control medical costs
  - Prevent diseases
  - Improve QOL of elderly citizens
  - Create a healthy society

- **Infrastructure**
  - Strengthen infrastructure
  - Protect community
  - Address labor shortage
  - Avoid water shortage
  - Prevent global warming
  - Prepare for natural disasters
  - Prepare for infectious diseases
  - Protect the ecosystem
  - Address food shortage

- **Industry**
  - Industry and technological innovation
  - Equal opportunity for education and training
  - Build communities
  - Prepare for managerial disaster
  - Improve the operational reliability of data centers
  - Create a sustainability-oriented corporate culture

(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.
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