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Corporate Overview

Mitsubishi Companies

- Over 40 Mitsubishi Group companies which share a common heritage
- Each Mitsubishi company now operates independently

Mitsubishi Electric Corporation: Electric & Electronics

Mitsubishi Heavy Industries, Ltd.: Ship, Aircraft, Steel Structures, Power Generation

Mitsubishi Motors Corporation: Automobiles

Mitsubishi Corporation: Trading

The Bank of Tokyo-Mitsubishi UFJ, Ltd.: Banking

Nikon Corporation: Cameras, Optical Equipment

Tokio Marine & Nichido Fire Insurance Co., Ltd.: Insurance

Mitsubishi Electric’s Origin

Tsukumo Shokai (1870)
Mitsukawa Shokai (1872)
Mitsubishi Shokai (1873)
Mitsubishi Goshi Kaisha (1894)

- There are over 40 Mitsubishi Group Companies.
- The origin is same.
- But now each company operates independently.

Yataro Iwasaki, Mitsubishi Founder (1835-1885)

Mitsubishi Electric Corporation (1921)

100 year anniversary
In 2021

(Spin-off)
Corporate Overview

Corporate Data

Mitsubishi Electric Corporation

Head Office: Tokyo Building, 2-7-3 Marunouchi, Chiyoda-ku, Tokyo 100-8310, Japan
President & CEO: Takeshi Sugiyama
Established: January 15, 1921
Consolidated Net Sales: ¥4,394,353 million (US$40 billion)
Paid-in Capital: ¥175,820 million (US$1,556 million)
Shares Issued: 2,147,201,551 shares
Consolidated Total Assets: ¥4,059,941 million (US$35,929 million)
Employees: 135,160

(As of March 31, 2016. US dollar amounts are converted from yen at the rate of ¥113=US $1)

Net Sales

Fiscal Year (Years ended March 31)

Operating income

Fiscal Year (Years ended March 31)
10 Operation Groups

- Energy & Industrial Systems
- Public Utility Systems Integration
- Building Systems
- Electronics Systems
- Communication
- Living Environment
- Factory Automation
- Automotive Equipment
- Information Systems
- Semiconductor

MITSUBISHI ELECTRIC CORPORATION
Net sales breakdown by business segment

- **Energy and Electric Systems** 25.0%
  - Net sales ¥1,264,604 million
  - (US$11,191,186 thousand)

- **Industrial Automation Systems** 26.2%
  - Net sales ¥1,321,937 million
  - (US$11,698,558 thousand)

- **Information and Communication Systems** 11.1%
  - Net sales ¥561,119 million
  - (US$4,965,655 thousand)

- **Home Appliances** 19.5%
  - Net sales ¥982,064 million
  - (US$8,690,832 thousand)

- **Electronic Devices** 4.2%
  - Net sales ¥211,580 million
  - (US$1,872,389 thousand)

- **Others** 14.0%
  - Net sales ¥707,746 million
  - (US$6,263,239 thousand)

Note: Inter-segment sales are included in the amounts of the diagram above.
Global Network

Growing international network of R&D, production, sales, associated companies, and other operations throughout the world (includes only consolidated subsidiaries)

(as of Jun., 2016)
Global R&D Network

**Mitsubishi Electric R&D Centre Europe** (MERCE)
Energy & Environment Technology
Communication Technology
(Rennes, France and Livingston, UK)

**Mitsubishi Electric Research Laboratories** (MERL)
Mechatronics
Information & Communication
(Massachusetts, USA)

**Mitsubishi Electric (China) (R&D Dept.)**

**R&D in Japan (2 locations)**

**Advanced Technology R&D Center (ATC)**
- Power Electronics Technology
- Electrical Technology
- Environmental, Energy and Materials Technology
- Device Technology
- System Technology
- Imaging Technology
(Hyogo Prefecture)

**Information Technology R&D Center (ITC)**
- Information Technology
- Communications Technology
- Multi-Media Technology
- Optical and Electrical Wave Technology
(1) Outline

Sales: about RMB29.2 billion
Employee: about 16,079 persons
Company: 32

(up until Mar, 2017)

(2) Main business in China

Power & Energy
Transformer
Transformer cooling equipment switch
Power generation, Klystron

Elevator
Escalator

Image Equipment
DLP
Multi-Media projector
Diamond Vision
LED Display

Vehicle electrical parts
Generator
ECU
Engine
EPS-ECU
Multiple-media products

Semiconductor - electronic component

Railway electrical parts

FA
Control equipment
Converter
Industry robot

Infrastructure
Water treatment
UPS

Air condition
MEPIC Profile

三菱电机电力机电装备（北京）有限公司（MEPIC）
MITSUBISHI ELECTRIC POWER & ELECTRICAL INFRASTRUCTURE SYSTEMS (BEIJING) CO., LTD.

Mitsubishi Electric Power & Energy Business
general representative in China

- Scope: Sales & EPC support & service of Power & Energy (Power・T&D) Equipment, Control system, Smart grid, Klystron, MRI, etc.
- Start: 2nd Dec, 2013
- Registered capital: US$3,000,000-
- Shareholder: MEC 100%
- Registered address: Beijing, China
Mitsubishi Electric
Klystron

High Power and Long Life
High Reliability
Worldwide Delivery History

Microwave Tubes:
Klystrons and Gyrotrons
Communication Systems Center at Amagasaki (Hyogo)

Products based on high-tech communication technology, radar technology, monitoring technology and electronic equipment:

1. **Space Observation Systems**: telescope systems, monitor and control systems
2. **Satellite Communication Systems**
3. **Monitoring Systems**: air traffic control systems, environmental and meteorological observation systems, monitor communication systems
4. **Devices**: image input devices, **microwave devices**
1. HIGH POWER AND LONG LIFE
Mitsubishi's klystrons and gyrotrons produce up to 50MW output power at frequencies ranging from the L, S, C, X, to Ka bands. They provide long life operation by incorporating a Ba-impregnated tungsten cathode that emits electrons at low temperature.

2. HIGH RELIABILITY
Mitsubishi's state-of-the-art microwave technology ensures highly reliable design quality.

3. WORLDWIDE DELIVERY HISTORY
For over 40 years, Mitsubishi's klystrons and gyrotrons have been applied to various accelerators, industrial linacs, radar systems not only in the Japanese market, but also in worldwide markets.
Product Lineup

Output Power (MW)

100

Klystrons for accelerators in laboratories (pulse operation)

PV-1040 PV-3030A3/3030A4/3050 PV-5050 PV-9010

10

Klystrons for medical and industrial linacs (pulse operation)

PV-2012M/W (W)

1

Klystrons for weather observation (pulse operation)

PV-5101/5102 5103/5104 PV-9101

0.1

Gyrotrons (CW operation)

GT-C0301E

Frequency (GHz)
## Delivery records

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<tbody>
<tr>
<td>L-band</td>
<td>PV-1040</td>
<td>40MW</td>
<td>High Energy Accelerators</td>
<td>KEK</td>
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<td>PV-3030A</td>
<td>15–40MW</td>
<td>High Energy Accelerators</td>
<td>KEK, Osaka Univ. Cornell Univ.</td>
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<tr>
<td></td>
<td>PV-3030A4</td>
<td>50MW or 40MW</td>
<td>High Energy Accelerators</td>
<td>KEK IHEP</td>
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<td>PV-3050I</td>
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<td>Medical and Industrial Accelerators</td>
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<td>50MW or 40MW</td>
<td>High Energy Accelerators</td>
<td>KEK, RIKEN, SINAP</td>
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More than 900 units been supplied since 1970!
Recent works in JAPAN

Customer
RIKEN (Wako, Japan)
Gyrotron
GT-C0301E

Customer
KEK (Tukuba, Japan)
Klystron
S-band 50MW klystron (PV-3050)

Customer
RIKEN (harima, Japan)
Klystron
C-band 50MW klystron (PV-5050)
Recent works in CHINA

Customer
Shanghai Institute of Applied Physics Academy of Sciences

Klystron
C-band 50MW klystron (PV–5050)
S-band 50MW klystron (PV–3050S)

Our klystron’s high gain (54dB) minimized the cost of RF system.

Source: For SXFEL
Recent works in CHINA

Customer
Institute of High Energy Physics
Klystron
S-band 50MW klystron (PV-3050I)

Vertical output window (PV-3050I)

We customized the klystron and met customer’s request. Output window direction is customized to vertical.
Our reliable klystrons are adopted to many customers.

We could be good partner of your accelerating system.
Thank you!

謝謝！

どうもありがとうございます！