MITSUBISHI ELECTRIC
Changes for the Better

for a greener tomorrow

三菱电机株式会社

Mitsubishi Electric Corporation

HG2018　@SINAP
June 7, 2018

MITSUBISHI ELECTRIC CORPORATION

Contents

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)**

Yataro Iwasaki, Mitsubishi Founder (1835-1885)

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

(Spin-off)

Mitsubishi Shipbuilding Company

(Spin-off)

Mitsubishi Electric Corporation (1921)

100 year anniversary In 2021

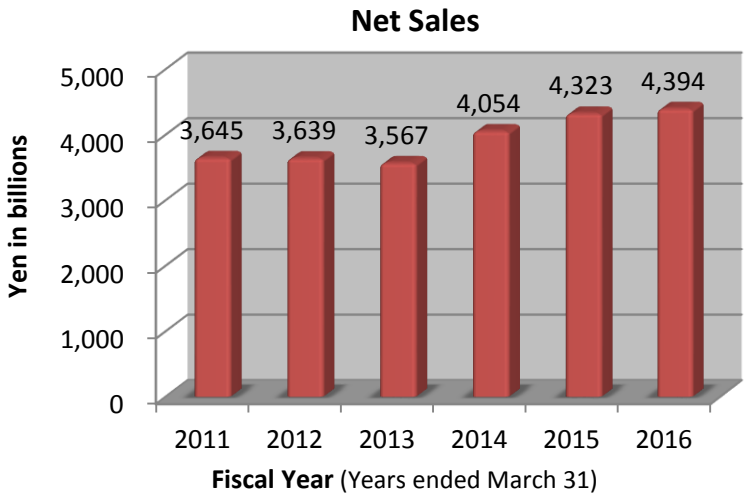
Corporate Overview

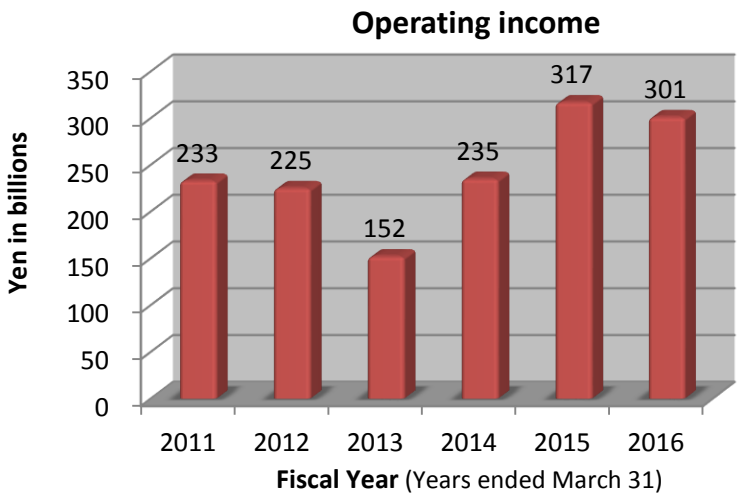
Corporate Data

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)

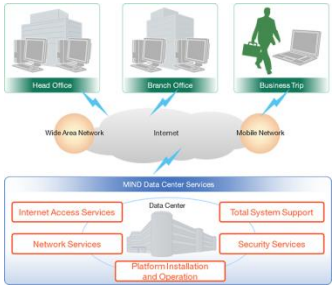




Corporate Overview

10 Operation Groups

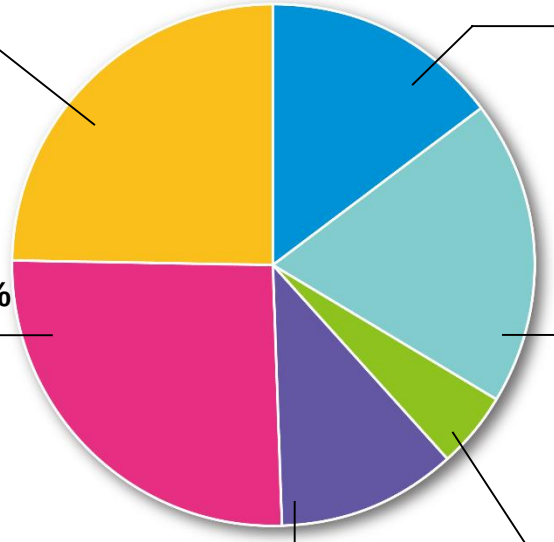
- ***Energy & Industrial Systems***
- Public Utility Systems Integration
- Building Systems
- Electronics Systems
- Communication
- Living Environment
- Factory Automation
- Automotive Equipment
- ***Information Systems***
- Semiconductor



MITSUBISHI ELECTRIC CORPORATION

Corporate Data

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)

Others 14.0%

Net sales ¥707,746 million
(US$6,263,239 thousand)

Home Appliances 19.5%

Net sales ¥982,064 million
(US$8,690,832 thousand)

Electronic Devices 4.2%

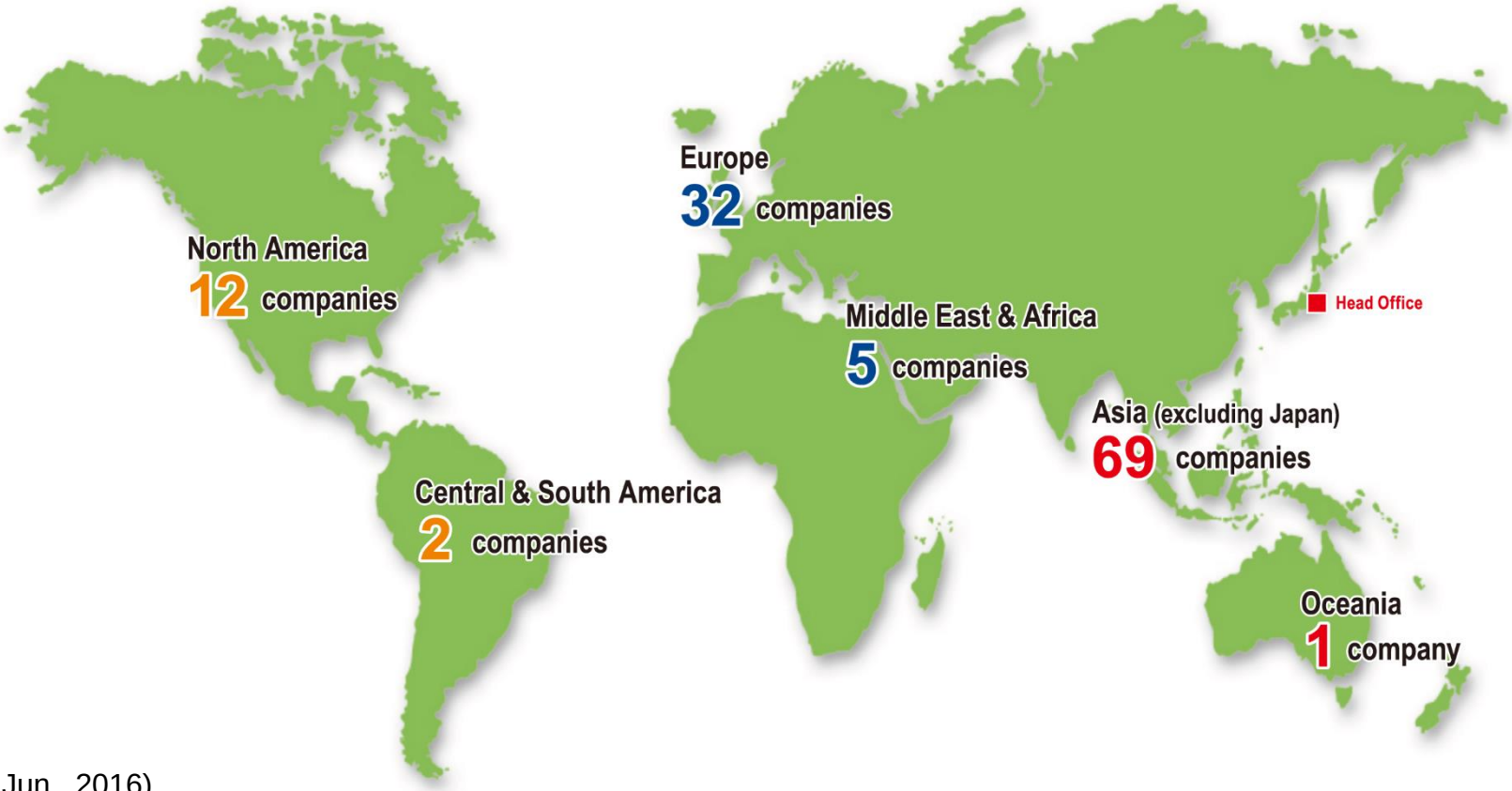
Net sales ¥211,580 million
(US$1,872,389 thousand)

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

Corporate Overview

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)

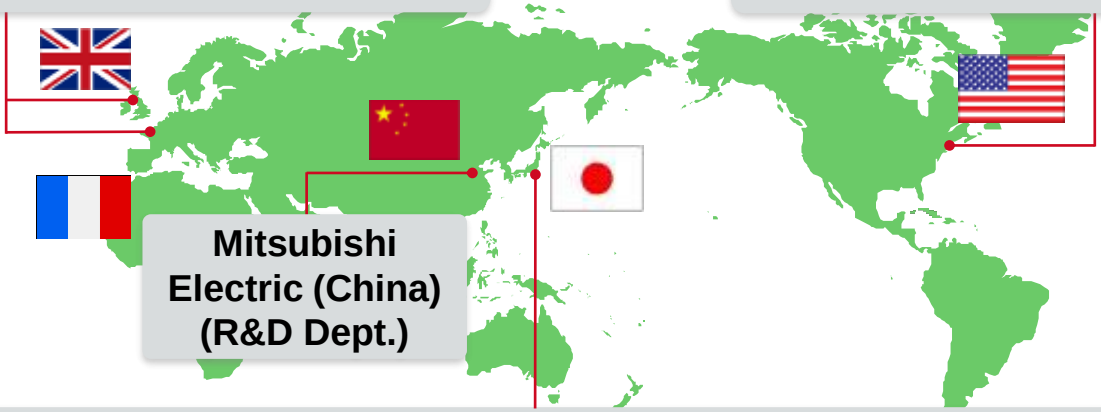
Global R&D Network

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)



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

Business Activities in China

(1) Outline

Sales: about RMB29.2 billion
Employee: about 16,079 persons
Company: 32
(up until Mar,2017)

(2) Main business in China

MEPIC

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

Elevator
Escalator

Image Equipment
DLP
Multi-Media projector
Diamond Vision
LED Displayer

Railway electrical parts

FA
Control equipment
Converter
Industry robot

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

Infrastructure
Water treatment
UPS

Air condition

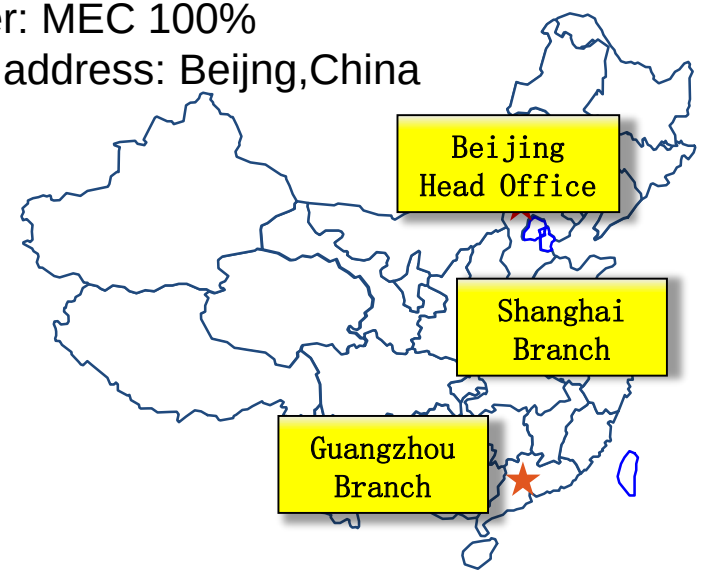
Semiconductor・electronic component

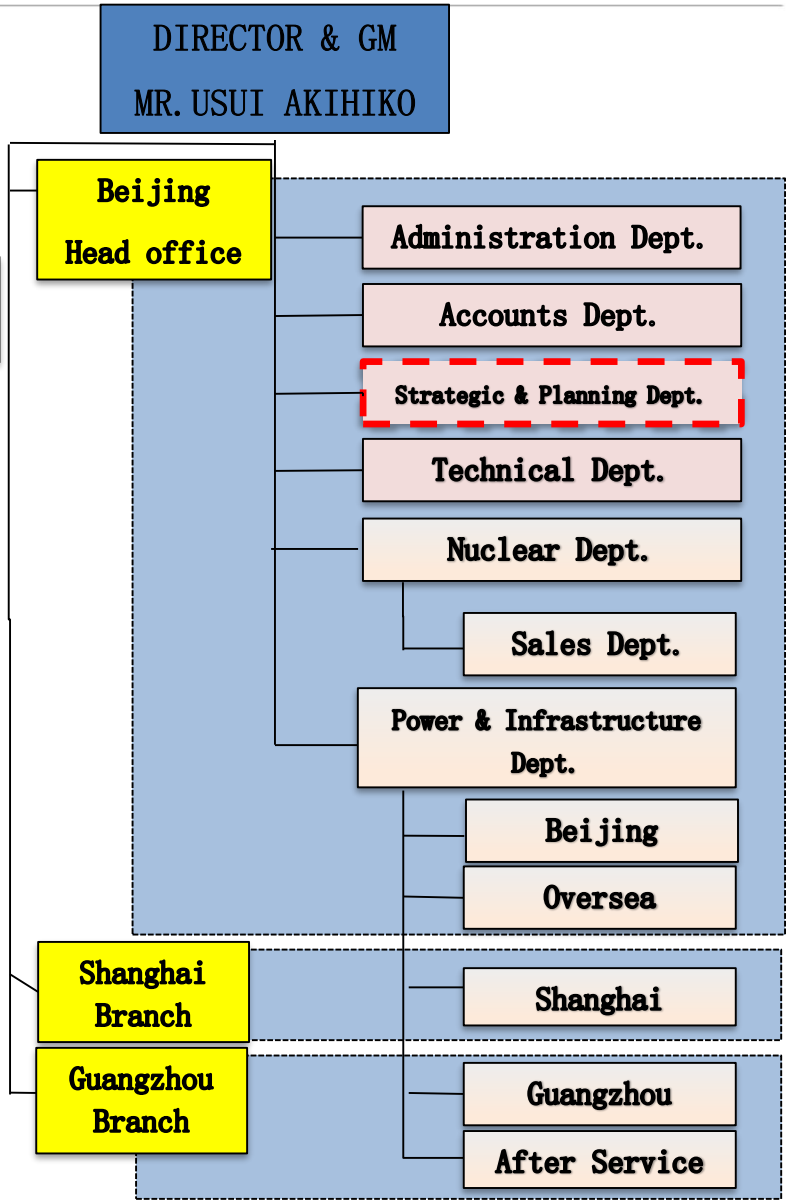
MEPIC Profile

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: Beijng,China





Mitsubishi Electric Klystron

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

Product Features

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.

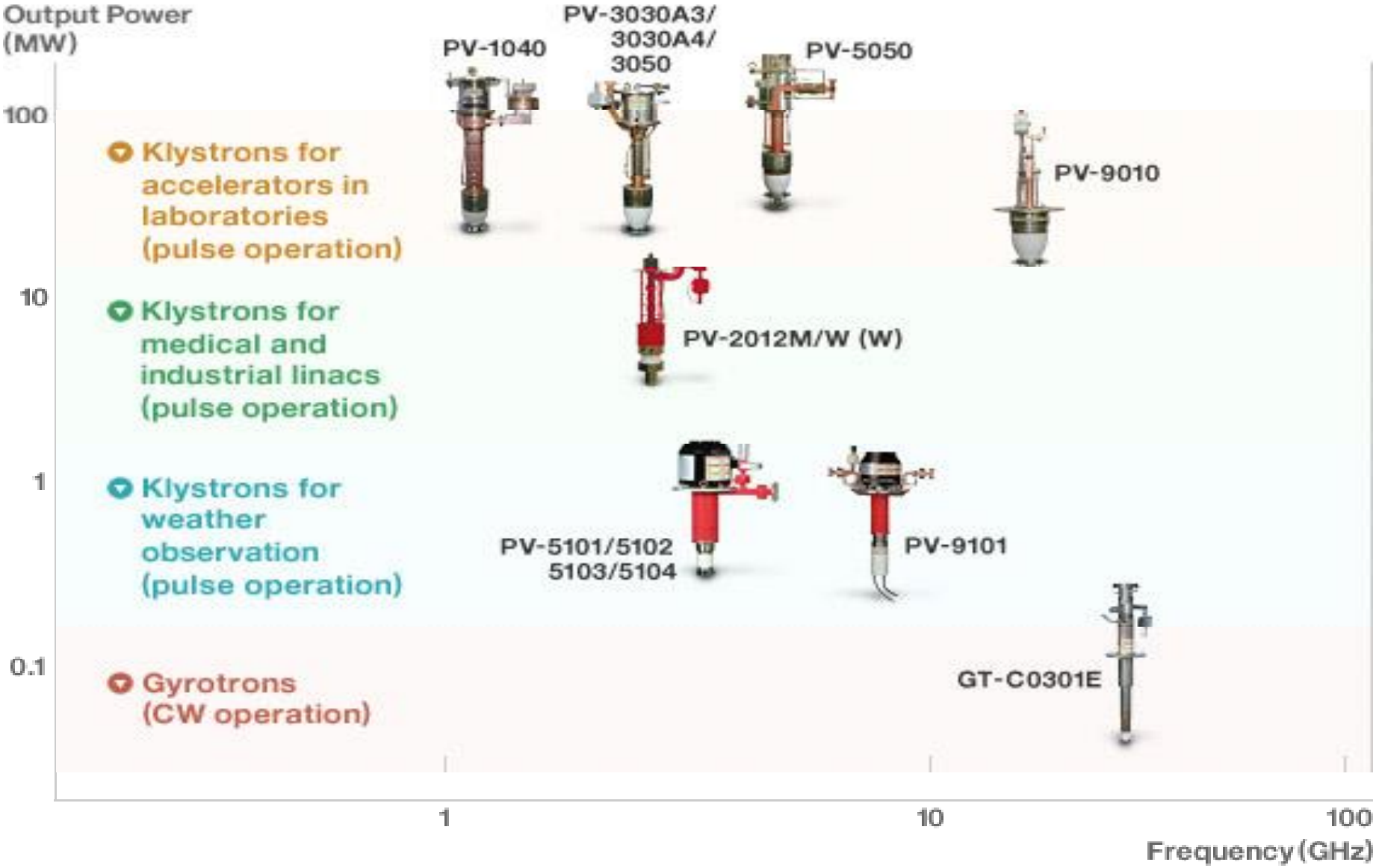
2. HIGH RELIABILITY

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



Delivery records

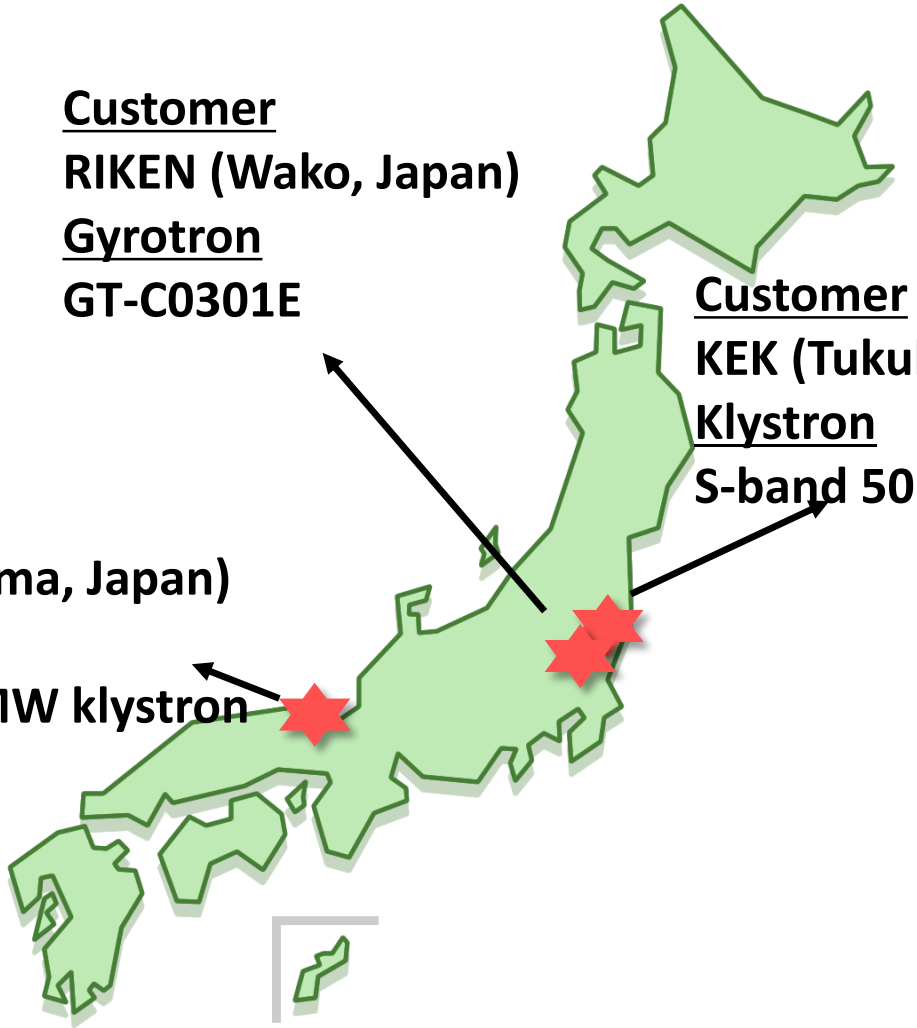
Freq Band	Type Name	Peak Output	Usage	Users	1970	1980	1990	2000	2010	Quantity
L-band	・PV-1040	40MW	High Energy Accelerators	KEK					Since 2010	1
S-band	・PV-3030A /A1/A2/A3	15-40MW	High Energy Accelerators	KEK, Osaka Univ. Cornell Univ.		Since 1979				More than 250
	・PV-3030A4 ・PV-3050 ・PV-3050I	50MW or 40MW	High Energy Accelerators	KEK IHEP			Since 1993			More than 50
	PV-2012 M/W(W)	8MW	Medical and Industrial Accelerators	Medical, Industrial	Since 1970					More than 600
C-band	・PV-5040 ・PV-5050K ・PV-5050	50MW or 40MW	High Energy Accelerators	KEK, RIKEN, SINAP				Since 2005		13
X-band	・PV-9010	10MW	High Energy Accelerators	KEK					Since 2012	1

More than 900 units been supplied since 1970!

Recent works in JAPAN

Customer
RIKEN (Wako, Japan)
Gyrotron
GT-C0301E

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



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

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)

http://accelconf.web.cern.ch/accelconf/ipac2016/talks/tuza01_talk.pdf

C-band 50MW klystron (PV-5050)

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

Recent works in CHINA

Customer

Institute of High Energy Physics

Klystron

S-band 50MW klystron (PV-3050I)

Vertical output window（PV-3050I)

S-band 50MW klystron (PV-3050)

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！