

FEALAC ECO Business Promotion Conference

Geothermal Power Generation Japanese Public and Private Business Alliance

**Tadashi Kaneda
Assit General Manager
Fuji Electric Co., Ltd.
Head of Geothermal WG**

November 13, 2012



CONTENTS

1. INTRODUCTION OF WG

2. INDONESIAN Sub WG

3. LATIN AMERICAN Sub WG

4. OTHER ACTIVITY

1. INTRODUCTION OF WG

2. INDONESIAN Sub WG

3. LATIN AMERICAN Sub WG

4. OTHER ACTIVITY

Japanese Business
Alliance for
Smart
Energy
- Worldwide



Chairman of JASE-World:

Mr. H. Yonekura

Member: 72 companies
20 associations

Observer: 12 governmental
organizations

Objectives of JASE-World

Promote
Japanese Smart Energy Products & Technologies
to the World on Business Basis



Contribute to Solve:
Global Warming & Energy
Security Issues

Major Activities

- Publication of “Japanese Smart Energy Products & Technologies”
- Discussion & Practice of Project Finding by 4 Working Groups
(Energy saving solution, Heat pump & Inverter, Solar power generation, Geothermal power generation)
- Arrangement of Business matching Meeting Abroad
- Introduction of JASE-World activities at International Exhibitions and other occasions



Working Group for Geothermal Power Generation

- The objective of the WG is to study any and all possibilities for implementing overseas geothermal power projects.
- The Indonesia SWG and Latin American SWG were organized to review and analyze the business opportunities among members under cooperation with METI, JICA, JBIC and JETRO.
- WG also set up the workshop with other countries (such as New Zealand and Iceland) to talk about bilateral collaboration for development of geothermal power plant in the world.

Corporate members:

Fuji Electric Co., Ltd. (Leader), Mizuho Corporate Bank Ltd, Itochu Corporation, Kyushu Electric Power Co., Inc., JFE Engineering Corp., JFE Steel Corp., Nippon Steel & Sumikin Engineering Co., Ltd., Sumitomo Corp., Sojitsu Corp., Electric Power Development Co., Ltd., Toshiba Corp., Toyo Engineering Corp., Toyota Tsusho Corp., JGC Corp., Nippon Koei Co., Ltd., Hitachi Zosen Corp., Marubeni Corp., Mitsui Sumitomo Corporate Bank, Mitsui and Co. Ltd, Mitsubishi Heavy Industries, Ltd., Mitsubishi Corp., Tokyo Mitsubishi UFJ Corp Bank, Mitsubishi UFJ lease & Finance, Yokogawa Electric Co., Ltd. (24 companies)

Association members:

Japan Geothermal Developers' Council

Observers:

- Ministry of Economy, Trade and Industry (METI)
- Japan International Cooperation Agency (JICA)
- Japan Bank for International Cooperation (JBIC)
- The Institute of Energy Economics, Japan (IEEJ)
- Japan External Trade Organization (JETRO)

Many of Expertise by Japanese Alliance

Steam Turbine / EPC

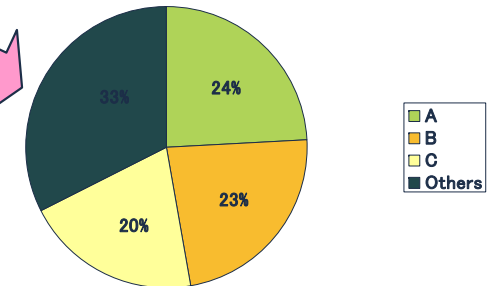
Project Coordination

Engineering & Consultation

Operation and Maintenance

Finance (with support of JICA/JBIC)

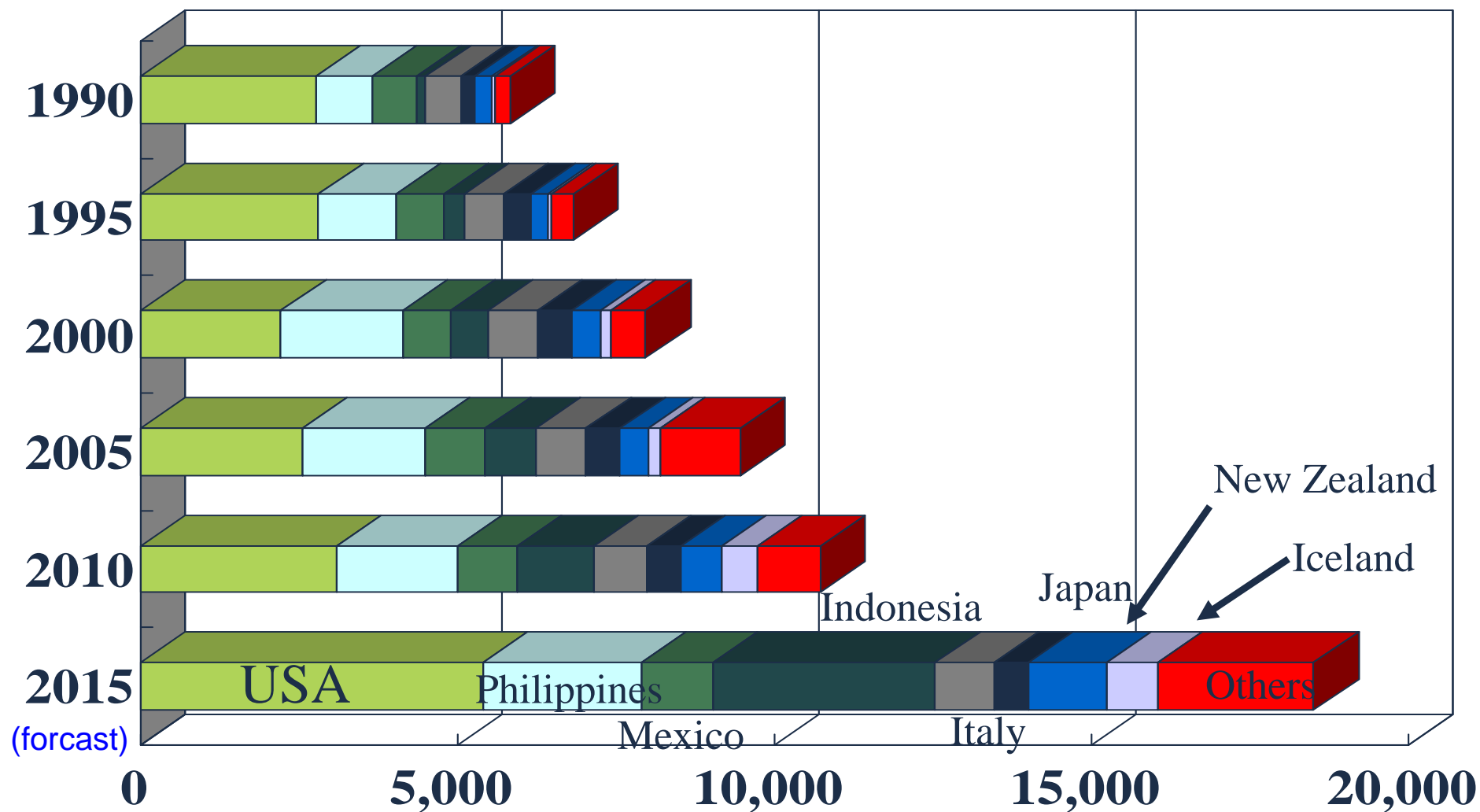
Japanese EPC contractor accumulated its knowhow of project management with many experience in overseas.



Japanese Turbine Manufacturer (A+B+C) Almost 70% of share

Many of geothermal project has been successfully constructed with JICA ODA loan

Installed Capacity of Geothermal Power Plants in the World



Subjects of Geothermal Development

Items	Subjects	Solution
Resource Risk	Initial stages for drilling to ensure the capability	Technical R & D Financial solution (insurance, fund etc)
Incentive	\$/KWH is relatively high compared with other non-RE type power source	FIT, tax incentive and other support
Local community	Coordination with local community or environmental certification	Legal framework or business development model etc

1. INTRODUCTION OF WG

2. INDONESIAN Sub WG

3. LATIN AMERICAN Sub WG

4. OTHER ACTIVITY

Indonesia SWG

SWG Leader:



SWG Sub Leader:

NIPPON KOEI

SWG Members:



ITOCHU



Observer: METI, JICA, JETRO

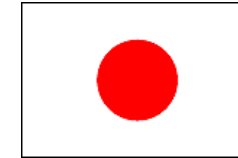
STRONG PARTNERSHIP OF INDONESIA AND JAPAN

Indonesia



Potential of Geothermal in Indonesia is the largest in the world, 40% of world reserve, amounting about 29,000MW. Indonesian Government is keen in development of geothermal and established the road map targeting 9,500MW by 2025.

Japan



Japanese private sectors are in high level of its technology and experience in steam turbine, engineering, resource management, project coordination and investment. We are much interested in the emerging market of Indonesia and ready to support of the program of development in Indonesia



COLLABORATION OF MUTUAL BENEFIT

*Example : Project Constructed by Consortium of Japanese Company
Ulubelu (Indonesia) – JICA Loan*

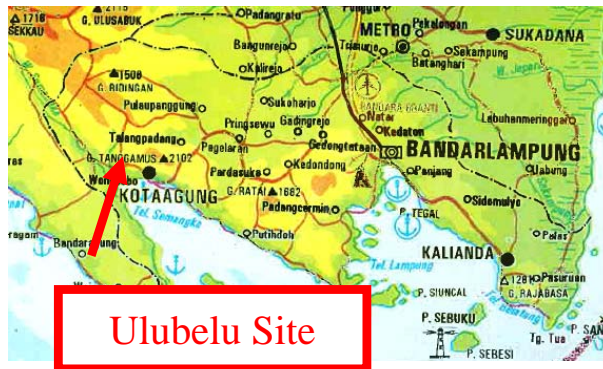
Location: South Sumatra,
Indonesia

Rated Output:

Unit 1: 55MW

Unit 2: 55MW

(Scheduled Completion Year 2012)



Owner: PT PLN (PERSERO)

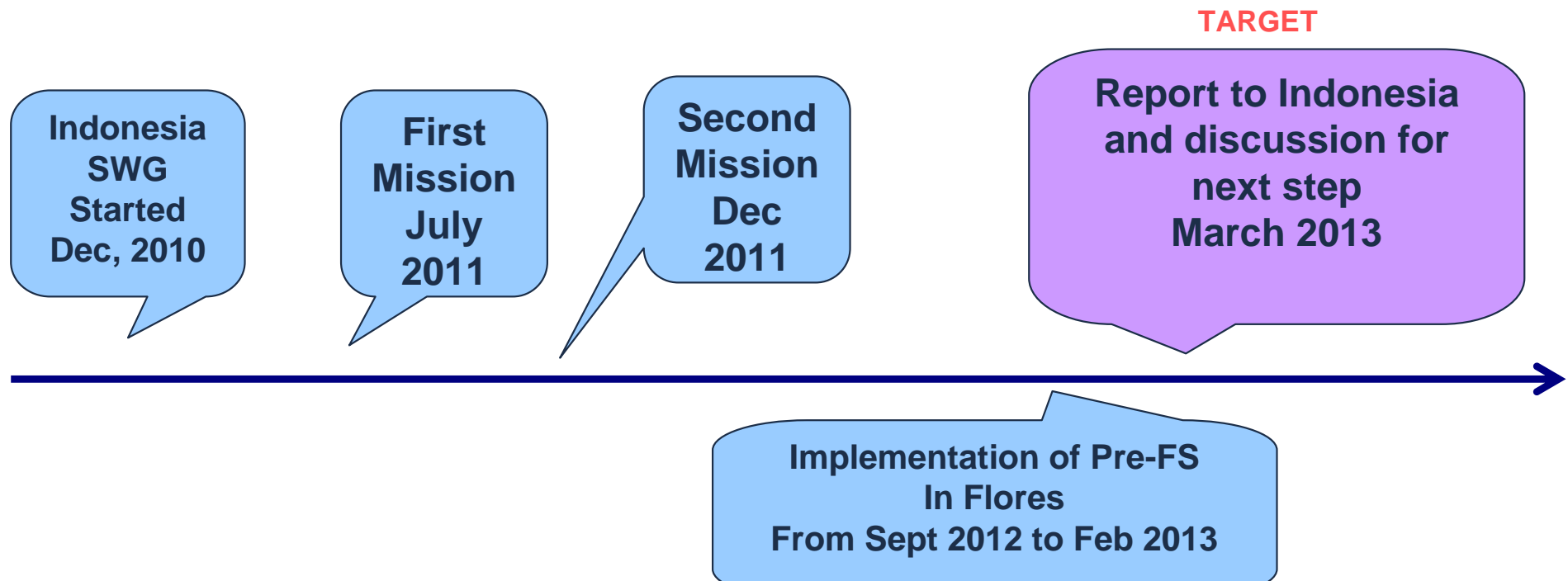
Steam Turbine Type:

Single Cylinder, Reaction,
Condensing

Scope:

EPC

Schedule of Project Finding



Aim of SWG

1. SWG sent a pre-mission in July and a public-private joint mission in December 2011 to Indonesia for finding a suitable project for pre-FS through discussion with MEMR, PLN and Local Government
2. SWG has selected a suitable potential site at Ulumbu in Flores and started a pre-FS in 2012. Closer coordination and discussion is being made by and between both parties during the pre-FS.
3. SWG will report a result of the pre-FS to MEMR and other key organizations in Indonesia and discuss for a further progress. SWG will prepare and submit several options of scenario for development for discussion.

Indonesia Mission (2nd mission in Dec 2011)

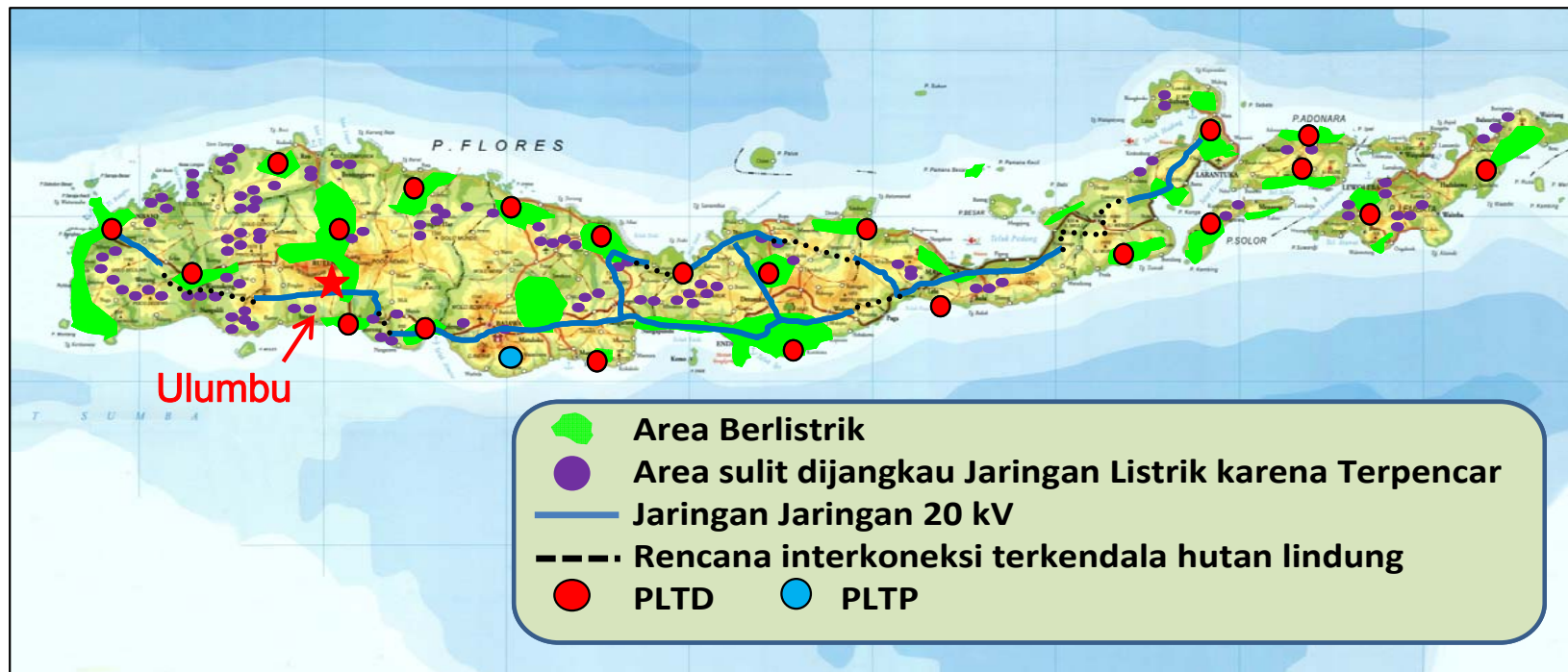
Member: METI, Fuji Electric, Nippon Koei, MHI,
Itochu Corp, Nippon Steel Engineering
Place to Visit: MEMR, PLN, Dinas ESDM,
EOJ, JICA etc
Purpose: 1) Discussion and exchange of opinion
2) Finding of potential geothermal sites
3) Preparation for scheme of pre-FS



Period: Dec 12 – 22 , 2011
Schedule: Dec 12: Arrival to JKT
Dec 13: Meeting with MEMR, JICA
Dec 15: Meeting with PLN/Retung
Site Visit to Ulumbu
Dec 16: PLN Kupang, Pemda Propinsi NTT,
Dinas Pertambangan dan Energi,
Propinsi NTT
Dec 18: Site Visit to Oka Ile Ange
Dec 20: Meeting with Dinas ESDM Jambi
Dec 21: Leaving from JKT

Pre-FS of potential geothermal site in NTT area for mutual cooperation

Ulumbu in Flores (Indonesia)



Site Location: Ulumbu (Not existing WKP of PLN, but extended area as free zone)

Capacity: 1 x 20MW or 2 x 10MW

Pre-FS period: from September 2012 to February 2013

Project Scheme: Private project utilizing public private partnership (PPP) under JICA or other type of support (several options of scenario)

1. INTRODUCTION OF WG

2. INDONESIAN Sub WG

3. LATIN AMERICAN Sub WG

4. OTHER ACTIVITY

Latin American SWG

SWG Leader:



SWG Sub Leader:



SWG Members:



Observer: METI, JICA, JETRO

TARGET COUNTRIES

COLOMBIA

PERU

GUATEMARA and
other potential countries



Objective of this Mission

This mission is to collect the necessary information, site investigation and establishment of network with host country's organization to make necessary preparation for Feasibility Study by Japanese Government Support Program in 2013.

SWG Started
Feb, 2012

Pre
Mission
Sept 2012

Main
Mission
Feb 2013

Proposal
to Host
Country

YEAR 2012

YEAR 2013

Collection of Information
Site investigation and
Network Establishment

Feasibility Study
Under Japanese Governmental
Support

Latin American Mission (1st mission in Sept 2012)

Member: Nippon Koei, Itochu Corp, Toshiba etc

Place to Visit: Guatemala, Colombia and Peru

EOJ, JICA, JETRO etc

Purpose:

- 1) Discussion and exchange of opinion
- 2) Finding of potential geothermal sites
- 3) Preparation for scheme of pre-FS



Period: Sept 5 – 14 , 2012

Schedule: Sept 6 – 8 Guatemala

MEM, SEGEPLAN, INDE

Sept 9 – 12 Colombia

APC, MME, IPSE, UPME, INGEOMINAS

CREG, ISAGEN, EPM

Sept 13 - 14 Peru

MEF, SERNANP, INGEMMET, OSINERGMIN

MEM

1. INTRODUCTION OF WG

2. INDONESIAN Sub WG

3. LATIN AMERICAN Sub WG

4. OTHER ACTIVITY

1. Presentation inviting guest presenter from New Zealand, Iceland etc for geothermal development and exchange opinion at WG



New Zealand : Sept 30, 2011

Presenter Mighty River Power

Feb 27, 2012

Presenter Auckland University



Iceland : Dec 5, 2011

Presenter Iceland Embassy

Takanawa Partners

2. Investigation and Study of overseas countries of geothermal development

WG set up the special SWG for this purpose to investigate and study update information of the geothermal in fifteen (15) countries for power plant reference, geothermal resource, government incentive, future project schedule, etc.

Conculusion

WG and Japanese private sectors would like to continue to develop geothermal projects world wide with strong support by Japanese government agencies.

We will be pleased to render our services of providing a state-of the-art technology for steam turbine, geothermal resources & plant engineering, financing support and other expertise by Japan which have been successfully applied in many countries.



THANK YOU

**Japanese Business Alliance for Smart Energy Worldwide
(JASE-World)**

**Address : c/o Energy Conservation Center, Japan
Geo Hatchobori Bldg.,3-19-9,
Hatchobori, Chuo-ku, Tokyo 104-0032, Japan**

Tel : +81-3-5543-3024 Fax +81-5543-3032

E-mail : jase-w@eccj.or.jp

URL : <http://www.jase-w.eccj.or.jp>