Overview of Micro-grid Research and Development Activities in Japan

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Role of NEDO

NEDO’s R&D Promotion Scheme

Prime Minister

Council for Science and Technology Policy
  - Development of National-Level Strategy
  - Coordination

Ministry of Education, Culture, Sports, Science and Technology

Ministry of Economy, Trade and Industry

Other Ministries

Budget

Grants

Universities

Subsidies

Private Companies

R&D Management

Universities

Industry

Public Research Laboratories
NEDO’s Activities

Industrial Technology Sector

New Energy and Energy Conservation Sector

International Cooperation

Other NEDO Activities

- Grid-Connected Power System
- Micro-Grid Battery Storage System Protection
- …
Difference between Commercial Local Grid and Demonstrative Micro-Grid

Typical recently introduced commercial self-supporting local Grid in Japan

Local EMS
Large Industry with Mass Heat Demand

Electricity
Commercial and public Electric Demand

Demonstrative Micro-Grid Projects added several values (NEDO Supporting)

Local Grid

Maintaining Power Quality
Managing Supply and Demand
Promoting New Energy
NEDO’s Micro-Grid Projects

New Energy Technology Dept.
Grid-Connected Power Systems Group

Promoting and managing projects


* Large Scale PV Power Station Project, New Battery Technology for Renewable Energy will start from FY2006.
NEDO’s Micro-Grid Related Projects

- Hachinohe Project
- Sendai Project
- Aichi Project
- Tokyo
- Kyoto Project (without Local Grid)
- Akagi Project (Distribution Power System Control Equipment Development)

*Demonstration Sites for “Demonstrative Project on New Power Network Systems Project” and “Demonstrative Project of Regional Power Grids with Various New Energies“*
Demonstrative Project of Regional Power Grids with Various New Energies (Aichi Project)

**Project Participants**
- Chubu Electric Power,
- Toyota Motor Corporation,
- NTT facilities,
- Japanese NGK Insulators,
- Mitsubishi Heavy Industries,
- Kyocera,
- Association of Exhibition, Aichi Pref.,
- Japanese Environment Systems
Demonstrative Project of Regional Power Grids with Various New Energies (Aichi Project)

Operating from Dec. 2004 to Sep. 2005

* These Facilities are being moved to near Chubu International Area *
Demonstrative Project of Regional Power Grids with Various New Energies (Hachinohe Project)

Project Participants
Mitsubishi research institute, Mitsubishi Electric, Hachinohe City
Demonstrative Project of Regional Power Grids with Various New Energies (Hachinohe Project)

Operating from Oct. 2005

- Wooden Waste
- Burned Boiler
- Digestion
- Gas Tank
- Gas Engine
- Battery Energy Storage
Demonstrative Project on Power Supply Systems by Service Level (New Power Network Systems: Sendai)

- **Utility System**
- **Series Compensator**
  - Standard Quality Load: 910kW
  - High Quality B3: 130kW
- **DC/DC Converter**
  - DC Load: 20kW
- **Integrated Power Quality Backup System**
  - High Quality Av Load: 180kW
  - High Quality B1 Load: 18kW
  - High Quality B2 Load: 440kW
- **Compensating Voltage drop longer than 15msec**
- **Uninterrupted DC Loads No-interrupted**
- **Utility System Quality Level**
  - Compensating Voltage drop longer than 15msec

**Project Participants**
- NTT Facilities, Sendai City, Tohoku Fukushi Univ., NTT-BTI
Demonstrative Project on Power Supply Systems by Service Level (New Power Network Systems: Sendai)

High Quality Power Supply Facility

Series Compensator (200kVA)

Series Compensator (600kVA)

MCFC

PVs

Gas Engine

Under Constructing. This system will start operation from June 2007.