


Activities to Realize Low-Carbon Society at AIST in Tsukuba Science City

A large array of solar panels is installed on a flat roof, viewed from an elevated perspective. The panels are arranged in neat rows and are surrounded by a metal railing. In the background, there are modern buildings and trees under a clear sky.

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Advanced Industrial Science and Technology

R&D Items



“New Sunshine” Project Completed

2004
2000

**Road Map
PV2030**

Thin Film Silicon Solar Cells (140 JPY/W)

<Hybrid TF-Si Solar Cells >

Low Cost SOG-Si Production Process

<BIPV module>

1997

<CIS solar Cells>

Low Cost mc-Silicon Solar Cells Production Technology (Efficiency = 17.2%, 189 JPY/W)

<TF-Si Solar Cells >

<III-V high eff. Solar cells>

“New Sunshine” Project initiated

1993

Technology for a-Si Solar Cells Production

<PV System Demonstration >

Residential PV System Technology

<1MW Demonstrate PV plant>

1MW PV Power Plant

<Grid Connected PV System>

500 KW Pilot Production- Line for mc-Si Solar Cells

<Amorphous Silicon Solar Cells>

1980

Establishment of NEDO

<II-VI compound Solar cells>

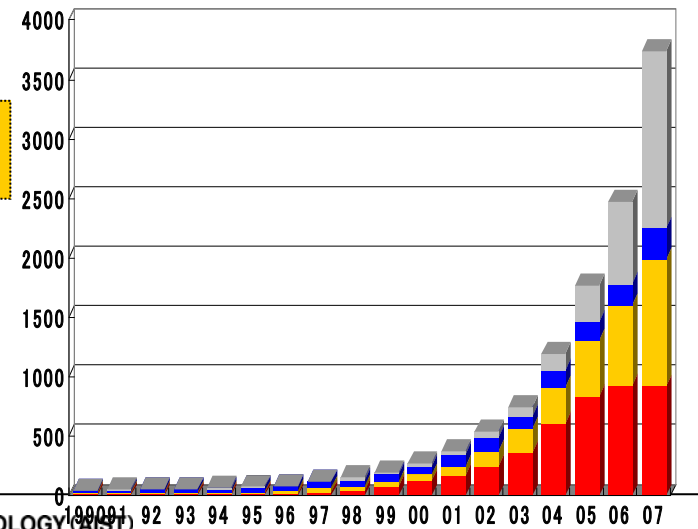
Basic Technology for Silicon Solar Cells (wafer, cell-process)

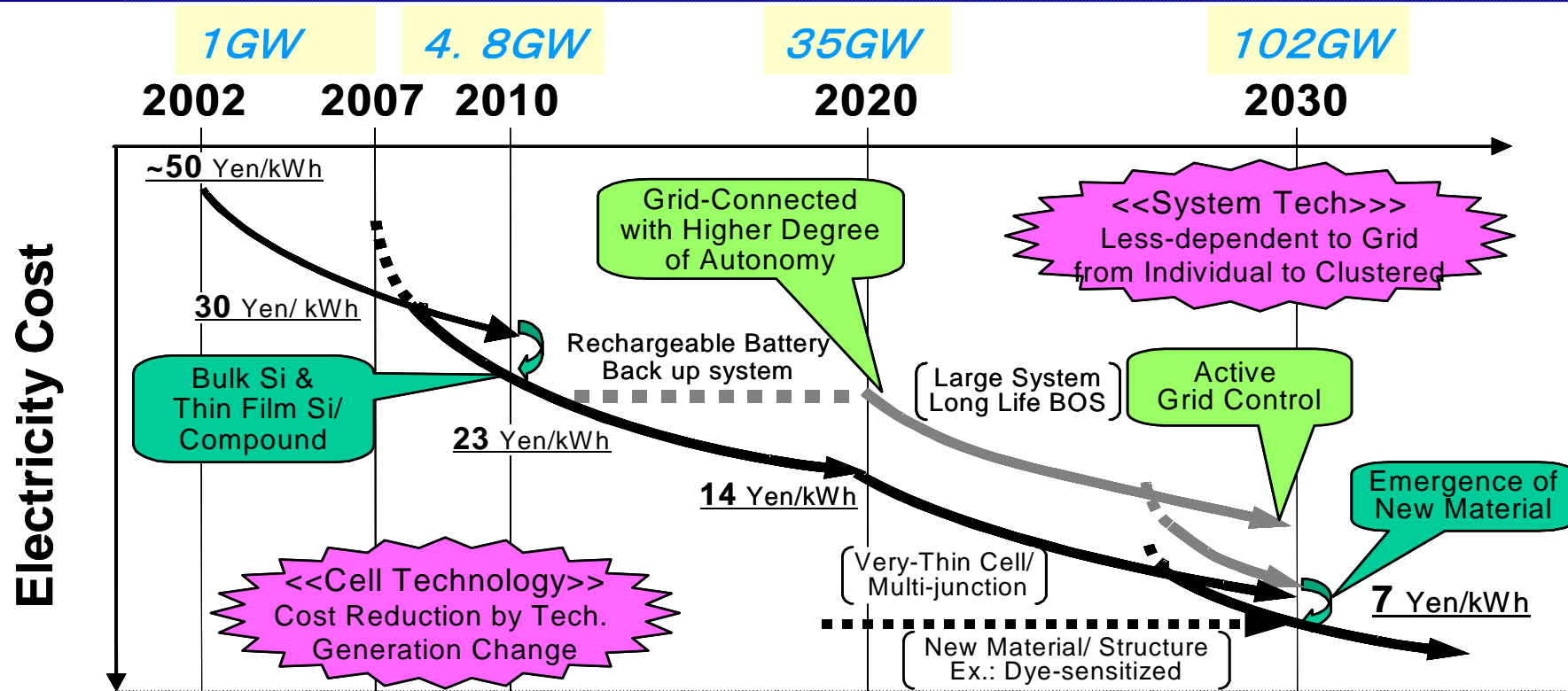
<Crystalline Silicon Solar Cells>

1974

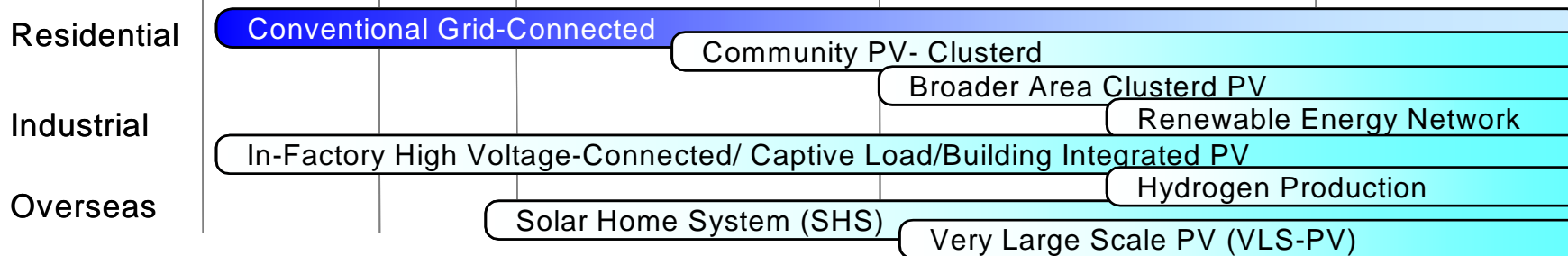
“Sunshine” Project initiated

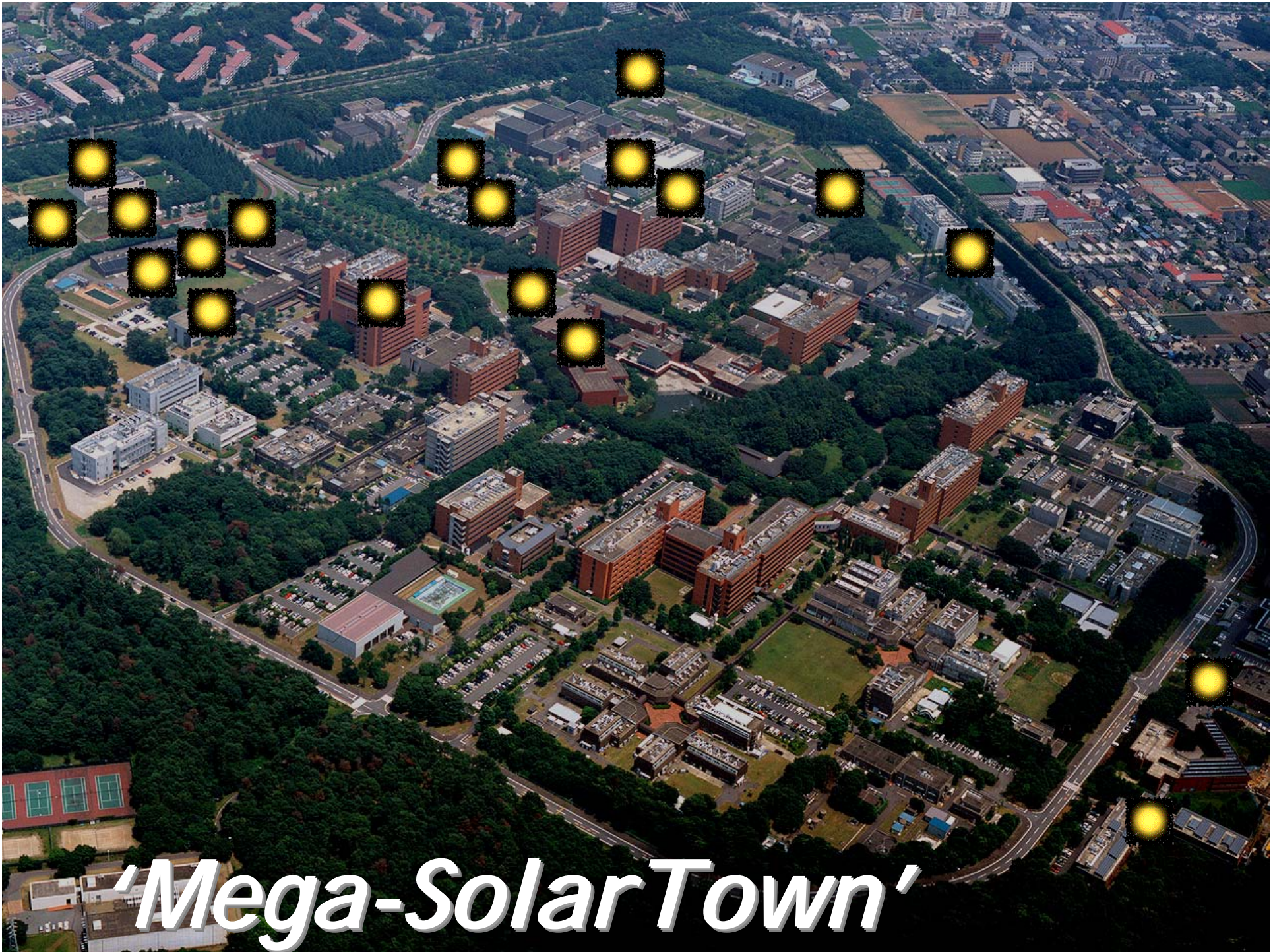
R&D Results





[PV System Deployment Images] (Examples)





'Mega-Solar Town'

Mega-SolarTown: Overview

✿ Start operation: April 2004

✿ Total capacity

- DC: 869kWp (approx. 5,600 PV modules)
- AC: 844kW (211 units of 4kW power conditioner)

First MW-scale PV in Japan (including existing 150kW PV systems)

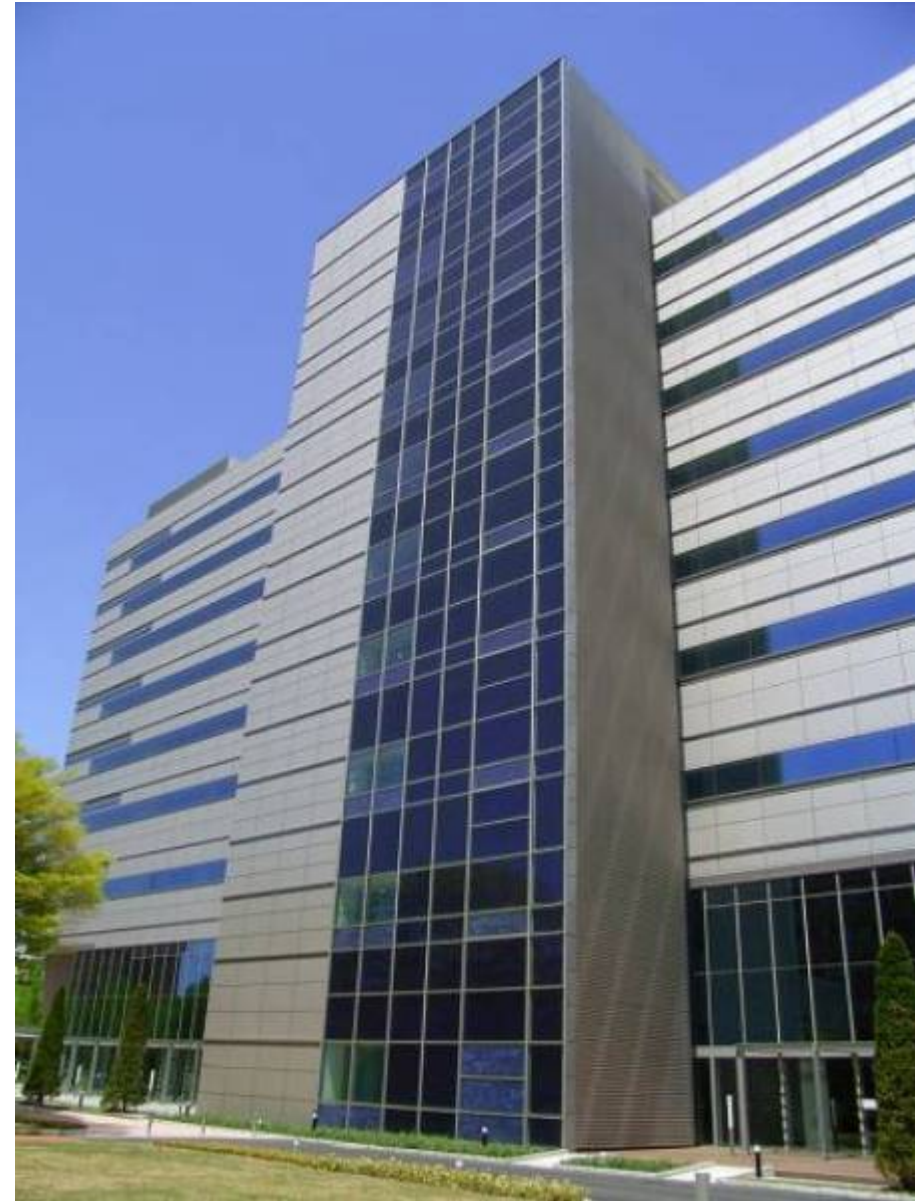
✿ Commercial PV modules / systems showcase

- Mono-crystalline Si, poly-crystalline Si, amorphous Si and hetero junction Si modules
- Aggregation of 4kW residential PV systems

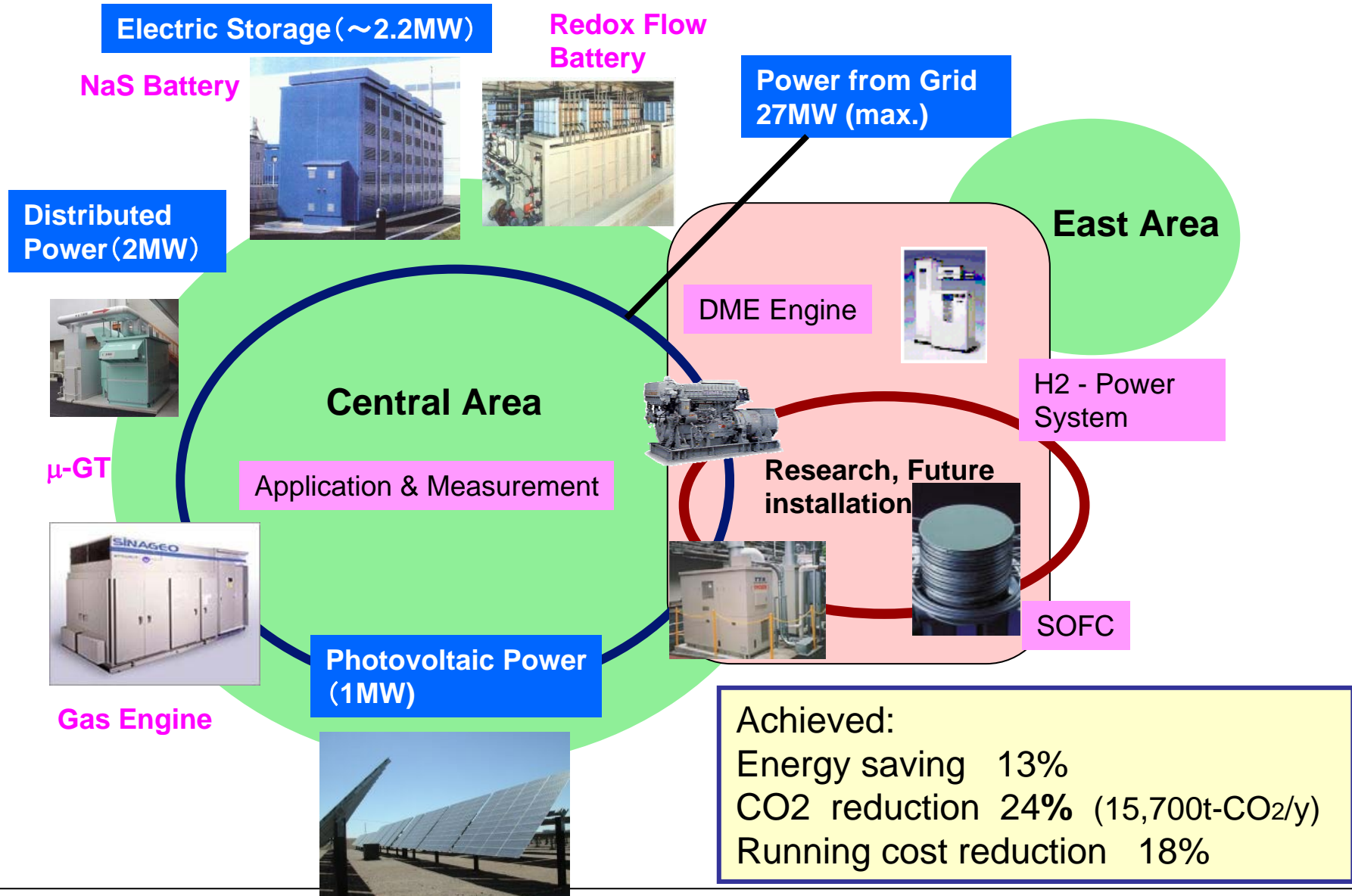
✿ Power generation:

10^6 kWh / year = 0.8% of total demand in the area
= 300 tons of CO₂ reduction / year





Distributed Energy Network in AIST Tsukuba



Tsukuba Science City

- Planning initiated in 1960's, relocation completed in 1980
- 310 organizations (35 governmental, 32 public, 243 private)
- 21,000 researchers including 5,000 from 154 countries

TSUKUBA SCIENCE CITY



Tsukuba 3E Forum



- Solve “trilemma” of **E**nvironment, **E**nergy and **E**conomy
- **50 % reduction of CO2 emission by 2030** in Tsukuba city
- Propose eco-city concept as “Tsukuba Model” to realize “low carbon society”
- Collaboration among municipalities, universities, institutes, companies and citizens
- **1st Forum held on Dec. 15-16, 2007**
- **2nd Forum held on May 31- June 1, 2008**
- **3rd Forum held on Aug. 8, 2009**



Chair: Prof. Inoue
(Univ. of Tsukuba)

<http://www.sakura.cc.tsukuba.ac.jp/~eeeforum/>