

Tokyo Gas's Fuel Cell CHP Business for Residential Use



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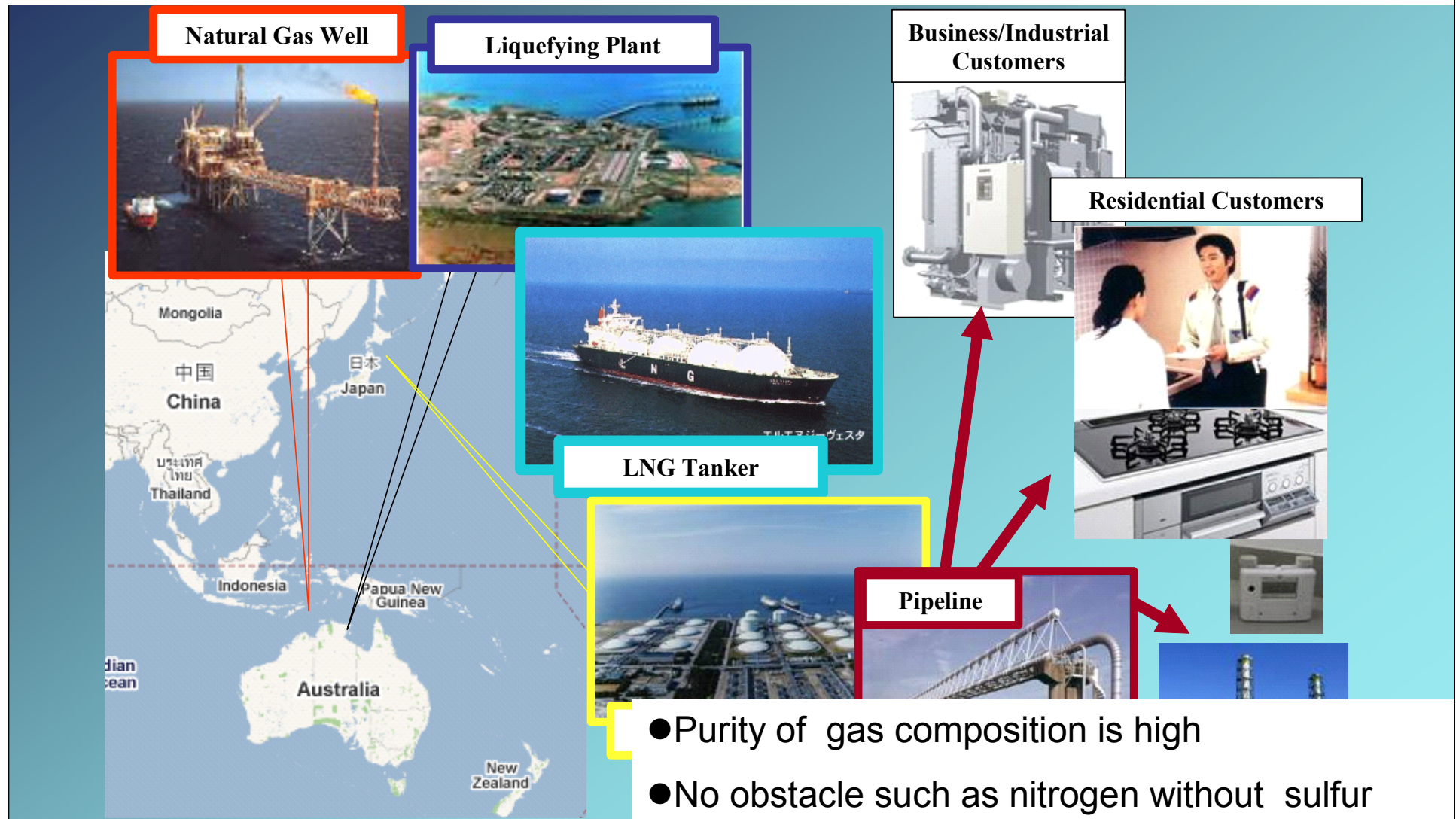


Outline of My Presentation

1. Japanese Gas Industry and Tokyo Gas
2. Our motivation to focus on development of PEFC CHP
3. Our approach until PEFC CHP, “ENE-FARM” was commercialized
4. Present position of “ENE-FARM” from the point of view of one merchandise
5. Future plan

The Outline of Japanese Gas Industry

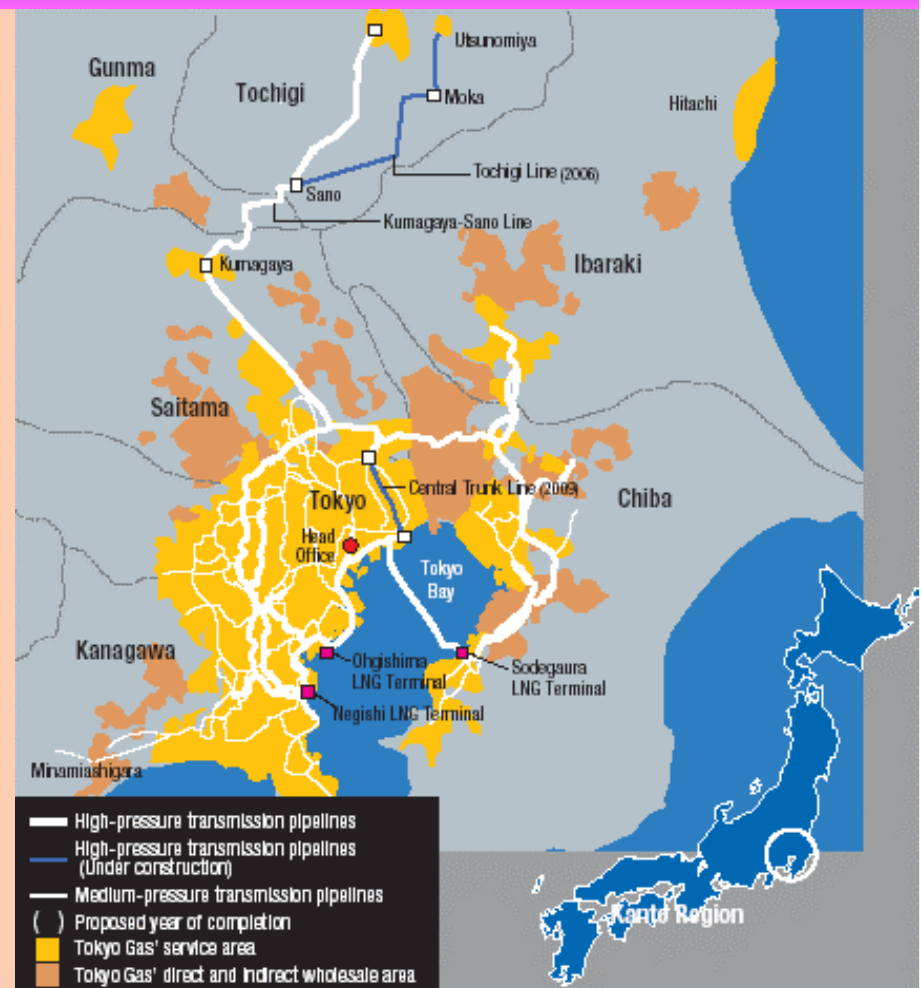
- Japanese gas industry still keeps conventional vertically integrated value chain.
- Most of the gas utility companies deal with only gas distribution service.



Tokyo Gas Fact

- Tokyo gas is the largest gas utility company in Japan.
- The geographical business area is Tokyo metropolitan area and its surroundings.

Founded	October 1, 1885
Capital	\$ 1.4 Billion
Net sales	\$ 14.5 Billion
# of Employees	7,579
P/L network	57,158 km (Consolidated)
Gas sales volume	14 billion m³
# of customers	10 million
(as of March 31, 2009. Non-consolidated)	
(1\$=\100)	



High Efficiency CHP Appliance for Residential Use

PEFC (ENE-FARM)

- Commercialization started in 2009



Generation Efficiency :37%
Energy Savings :32%
CO2 Reduction :45%

The most practical appliance

SOFC (Higher Efficiency)

- Demonstration Research Project is ongoing under government subsidy.



High performance,
but

Generation Efficiency

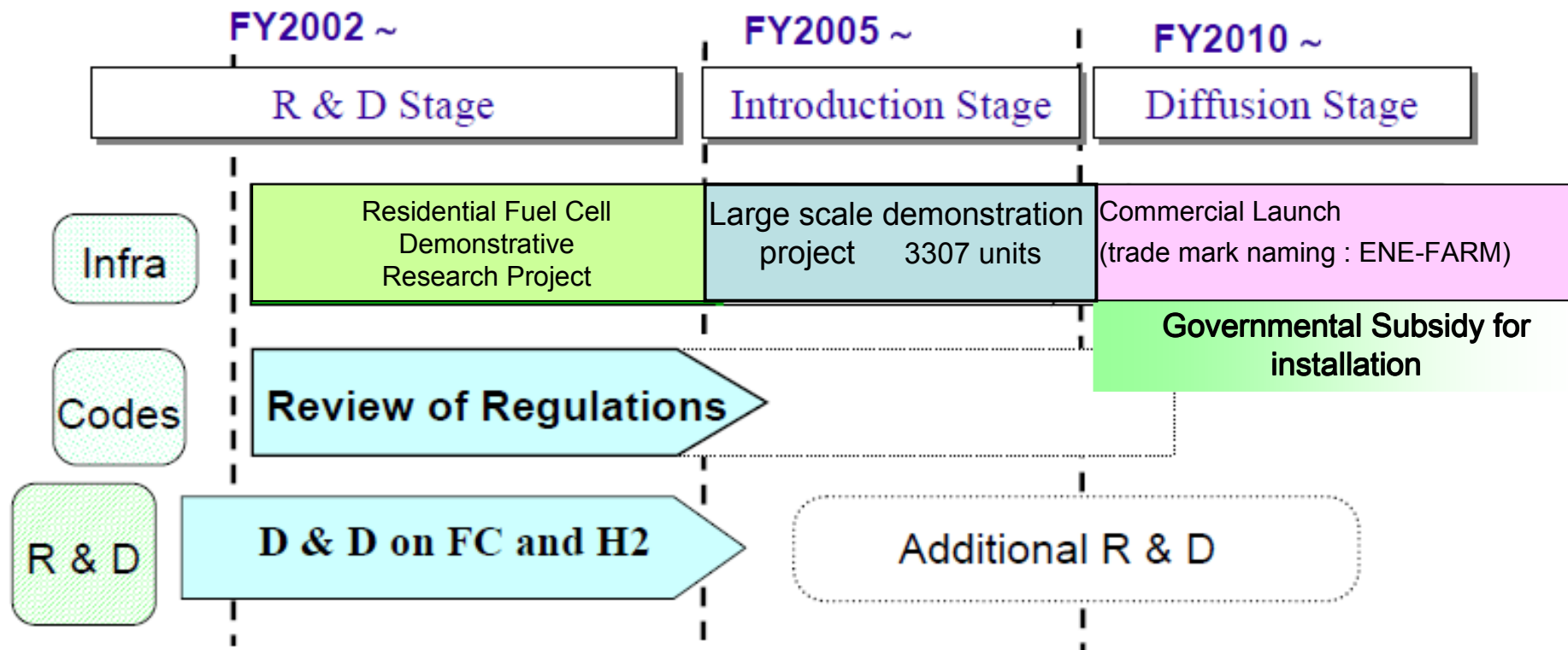
Residential (achieved) :45%
Industrial (target) : 67%
(combined with GT)

Reciprocating Engine (Commercialized in 2006)



Generation Efficiency :22%
Energy Savings :21%
CO2 Reduction :32%

The Road Map of PEFC CHP Development



-Strong initiative by METI, manufactures and energy companies was needed to achieve present stage .

-Collaboration between them is needed in future, too.

Joint Declaration Ceremony in Jan, 2009



Panasonic and Tokyo Gas Commercialized “ENE-FARM” on May 1st ,2009

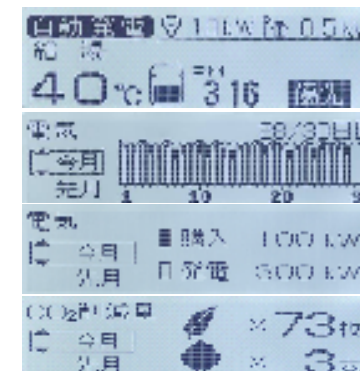
Panasonic
ideas for life

TOKYO GAS

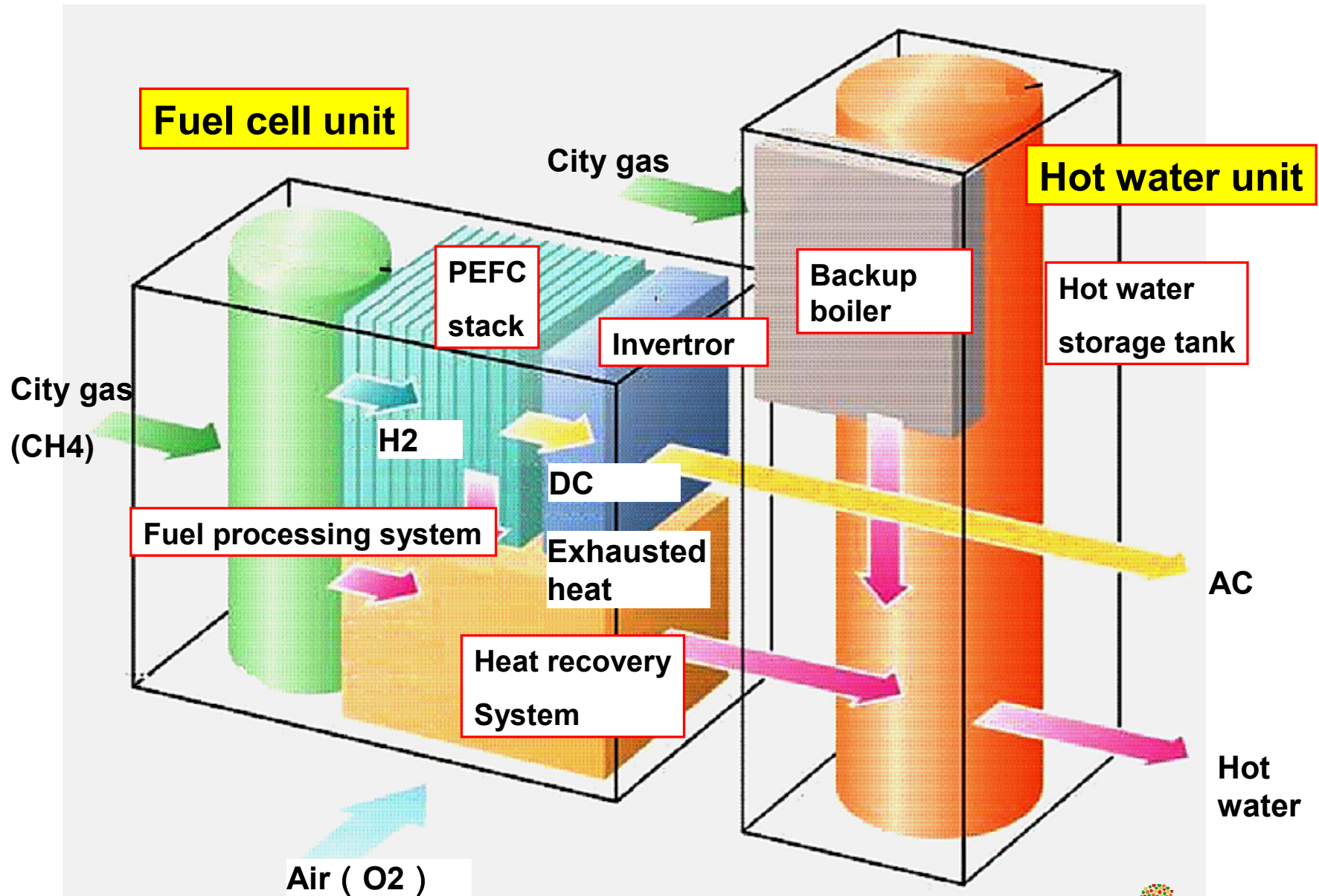


Electrical Out put	300W ~ 1kW
Electrical Efficiency	33%HHV 37%LHV
Thermal Efficiency	47%HHV 52%LHV
Capacity of Hot water tank	200 litter (60°C)

✓ **Durability: 40,000hs / 4000 SS-cycles / 10 years**

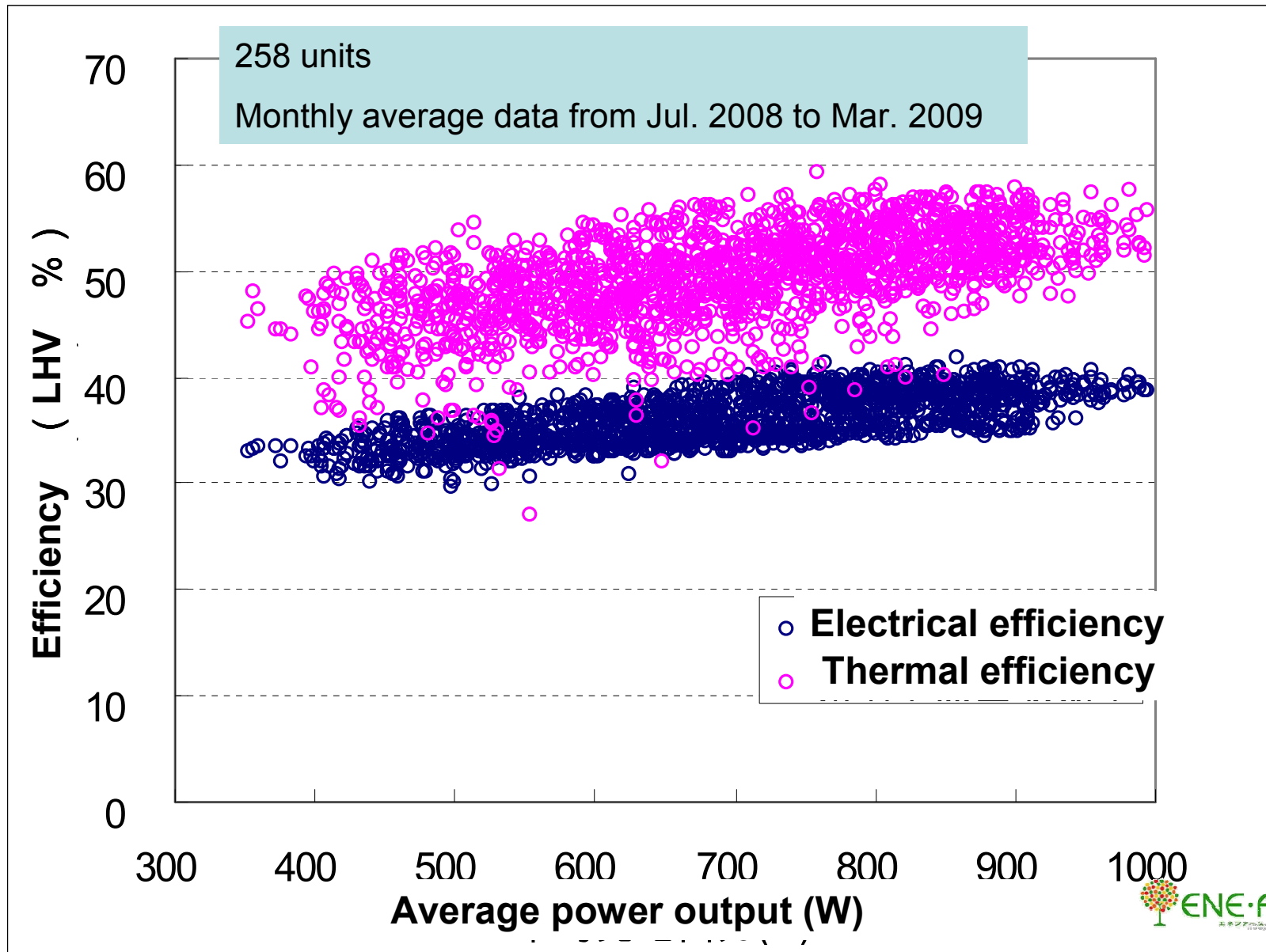


System Components of ENE-FARM



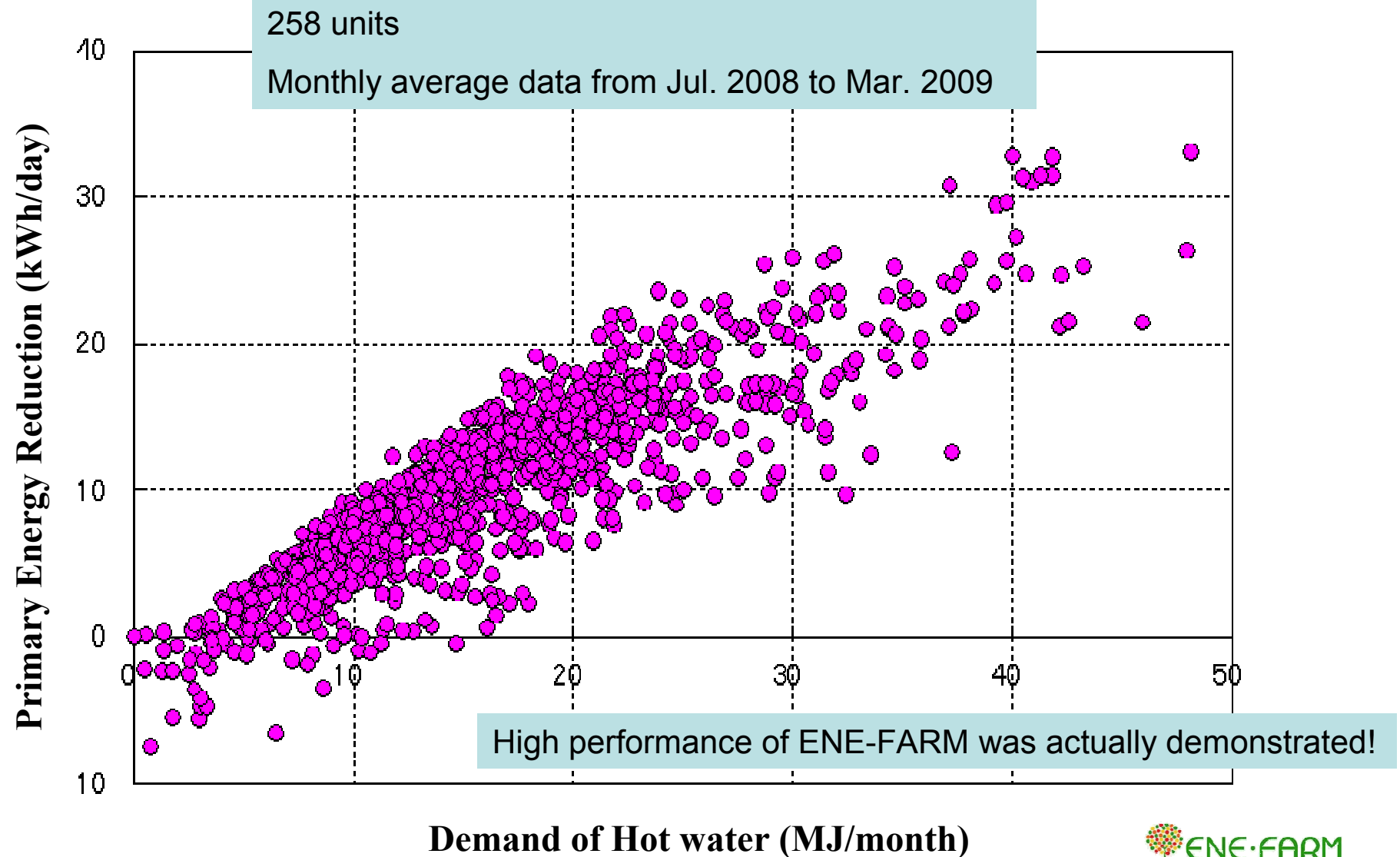
Performance of ENE-FARM (1)

Result of Large-Scale Stationary Fuel Cell Demonstration

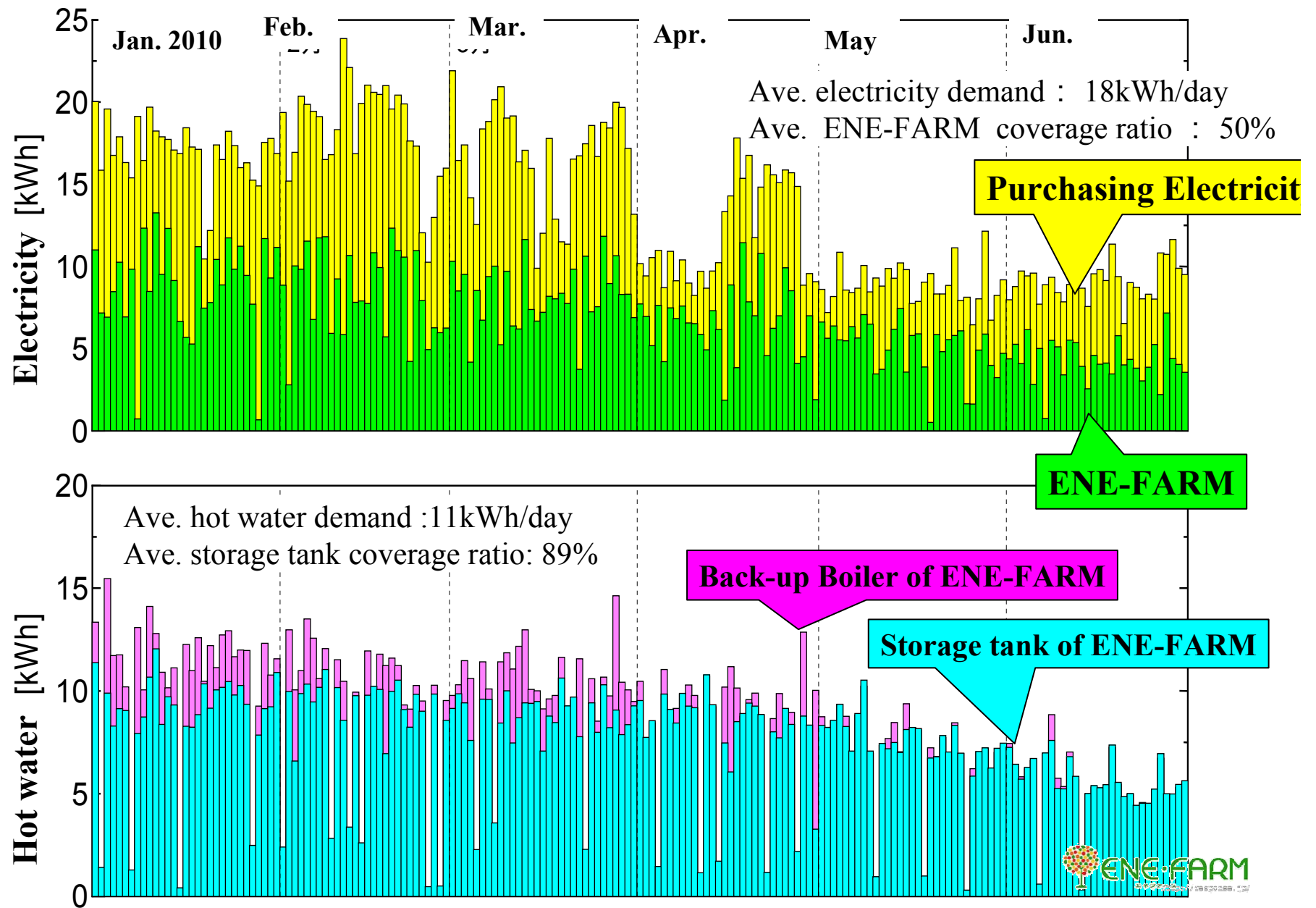


Performance of ENE-FARM (2)

Result of Large-Scale Stationary Fuel Cell Demonstration



Operation Data of "ENE-FARM"

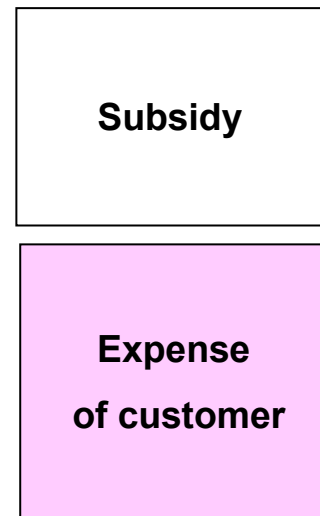
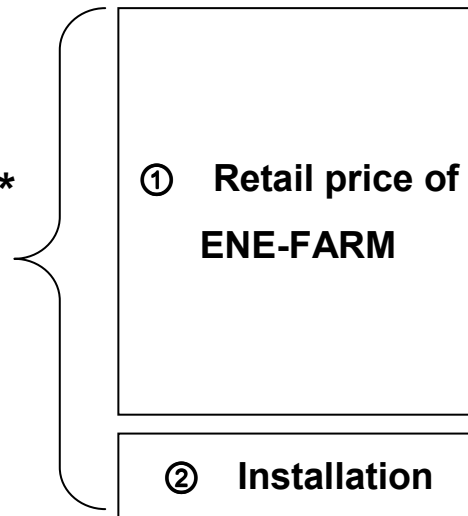


Price of “ENE·FARM”

FY2009

3,100 K JPY*

*Model case



The scheme of subsidy

$$[(\textcircled{1} - 230 \text{ KJPY}^{**}) + \textcircled{2}] \times \frac{1}{2}$$

or **MAX. 1,400 K JPY**

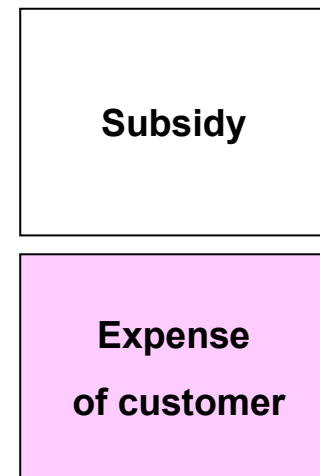
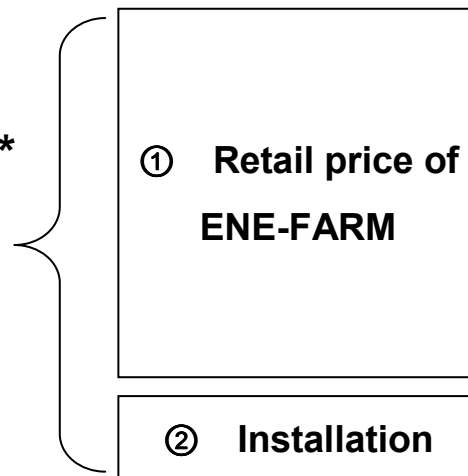
* **The price of conventional boiler

1,700 K JPY

FY2010

2,830 K JPY*

*Model case



The scheme of subsidy

$$[(\textcircled{1} - 230 \text{ KJPY}^{**}) + \textcircled{2}] \times \frac{1}{2}$$

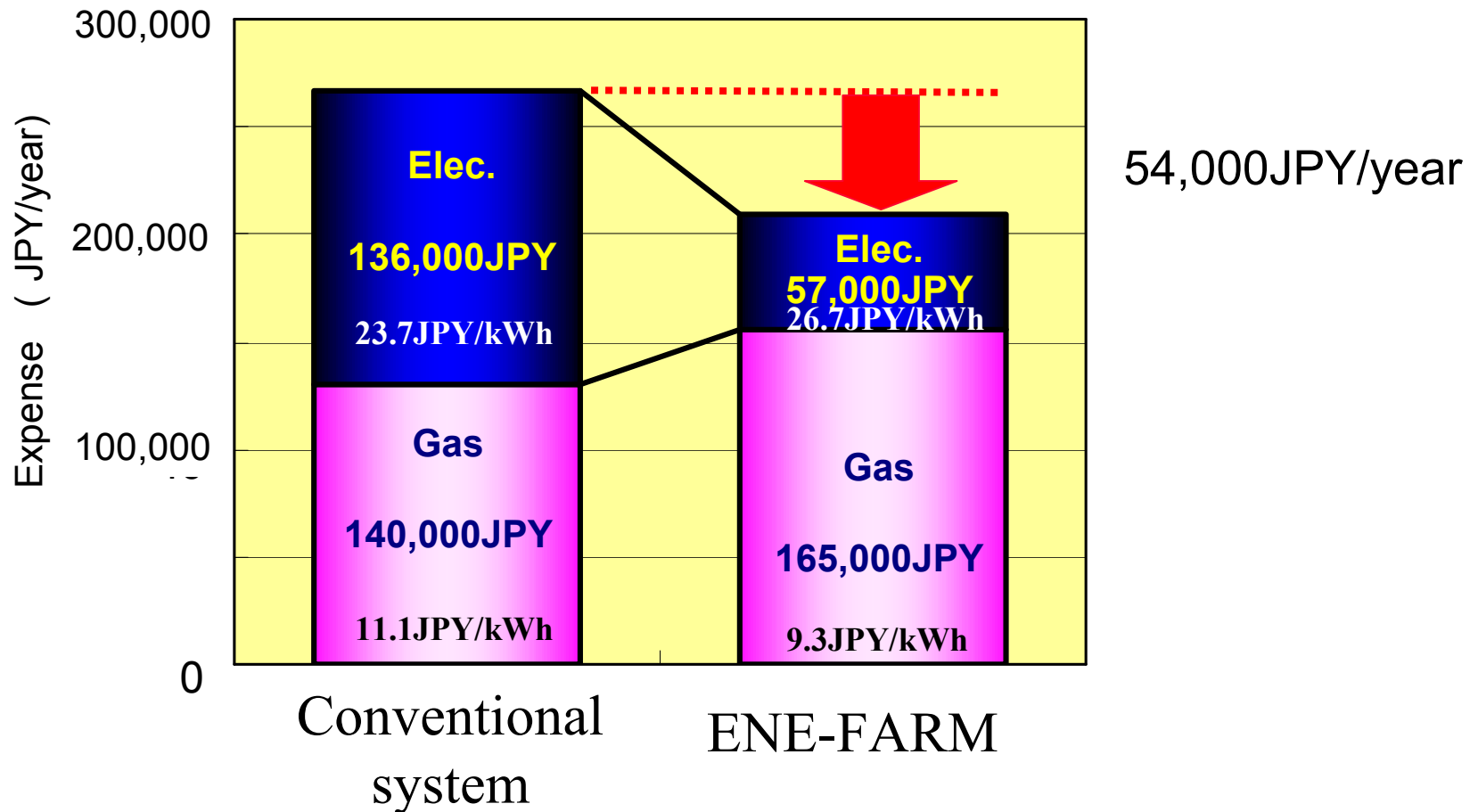
or **MAX. 1,300 K JPY**

* **The price of conventional boiler

1,530 K JPY



Running Cost Merit of “ENE·FARM”



- Recovery of initial cost by 10 years' operation is impossible at present.
- The customer of ENE-FARM is the people concerning environmental issues.

Sales Results of “ENE-FARM”

FY2009

➤ Tokyo Gas : 1,500 units

Newly built house : 850 units

Collaboration with house builders

Existing house : 650units

Marketing to the wealthy customer through existing s



FY2010

➤ Tokyo Gas : 2,500 units

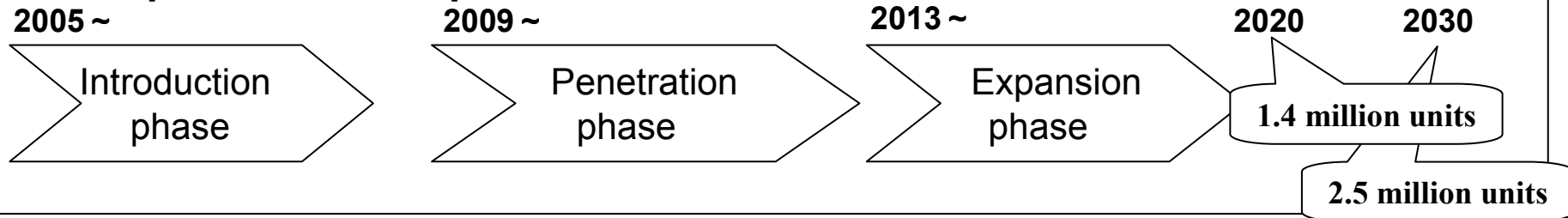
Newly built house : 1,500 units

Existing house : 1,000units

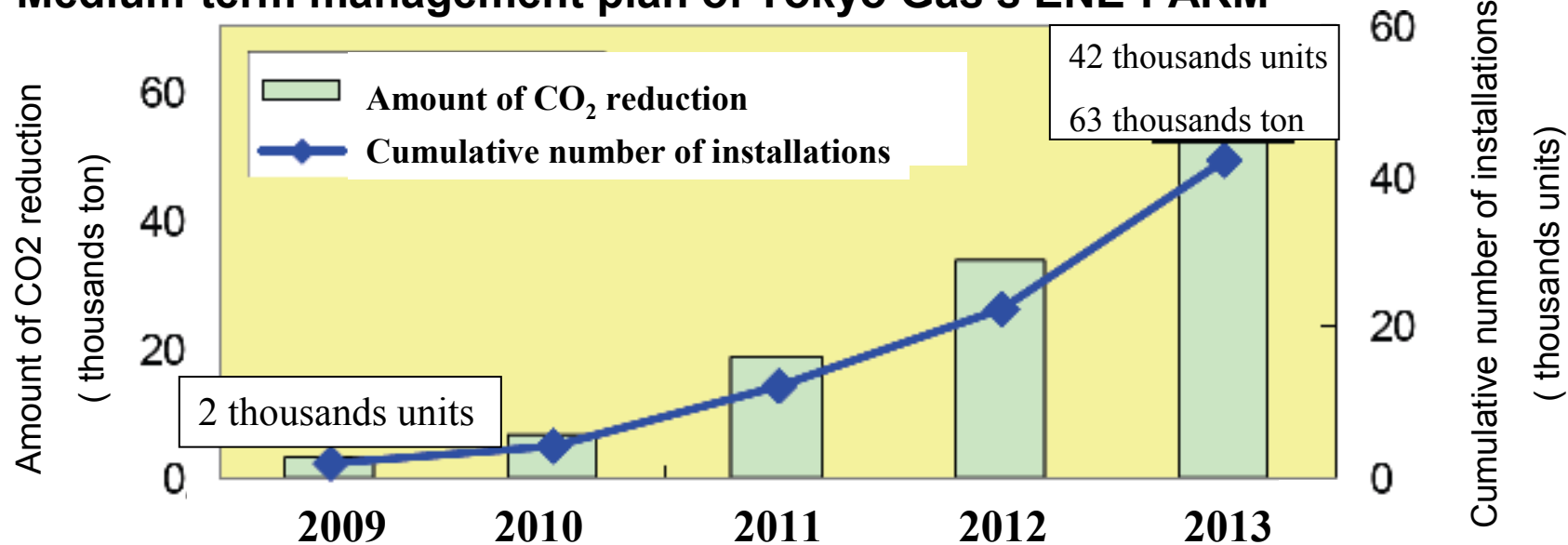


Prospect of Stationary PEFC CHP

➤ Road Map of PEFC in Japan



➤ Medium-term management plan of Tokyo Gas's ENE-FARM



➤ Panasonic launched action plan “Green Plan 2018” (Oct 6, 2010)

“Acquire global top share in fuel cell cogeneration systems”



Our Tasks for Expansion Phase

➤ Cost reduction

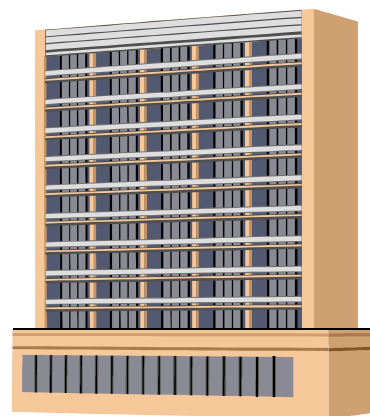
-Target system cost

2-2.5M JPY in 2010

0.5-0.7M JPY in 2015

0.4-0.5M JPY in 2020

*Quoted from NEDO road map



➤ Size compact

-Apply to apartment house, narrow space

➤ Expansion of Market

-Apply to national-NG area, Global market

-Combination with PV

-Back up power

-Smart energy network, Local hydrogen network



ENE-FARM
エネルギーファーム



Thank you for your attention ! !