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Update of Hydrogen and Fuel Cells Activities in Korea

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Policy of Hydrogen and Fuel Cell in Korea

Target : Commercialization of hydrogen and fuel cell technology for the hydrogen economy

Hydrogen

- Hydrogen Production/Storage for Commercialization
- Development and Demonstration of Hydrogen station
- Hydrogen Codes, Standards and Safety

Fuel Cell

- Development of 300kW class MCFC System for Stationary Application
- Development of 80kW(for passenger car) & 200kW(for bus) Class PEMFC Systems for Transportation
- 1-3 kW PEMFC System for Residential Power Generation
- 50W class PEMFC System, DMFC system for Portable Application
- 1-5kW SOFC system for APU/RPG Applications

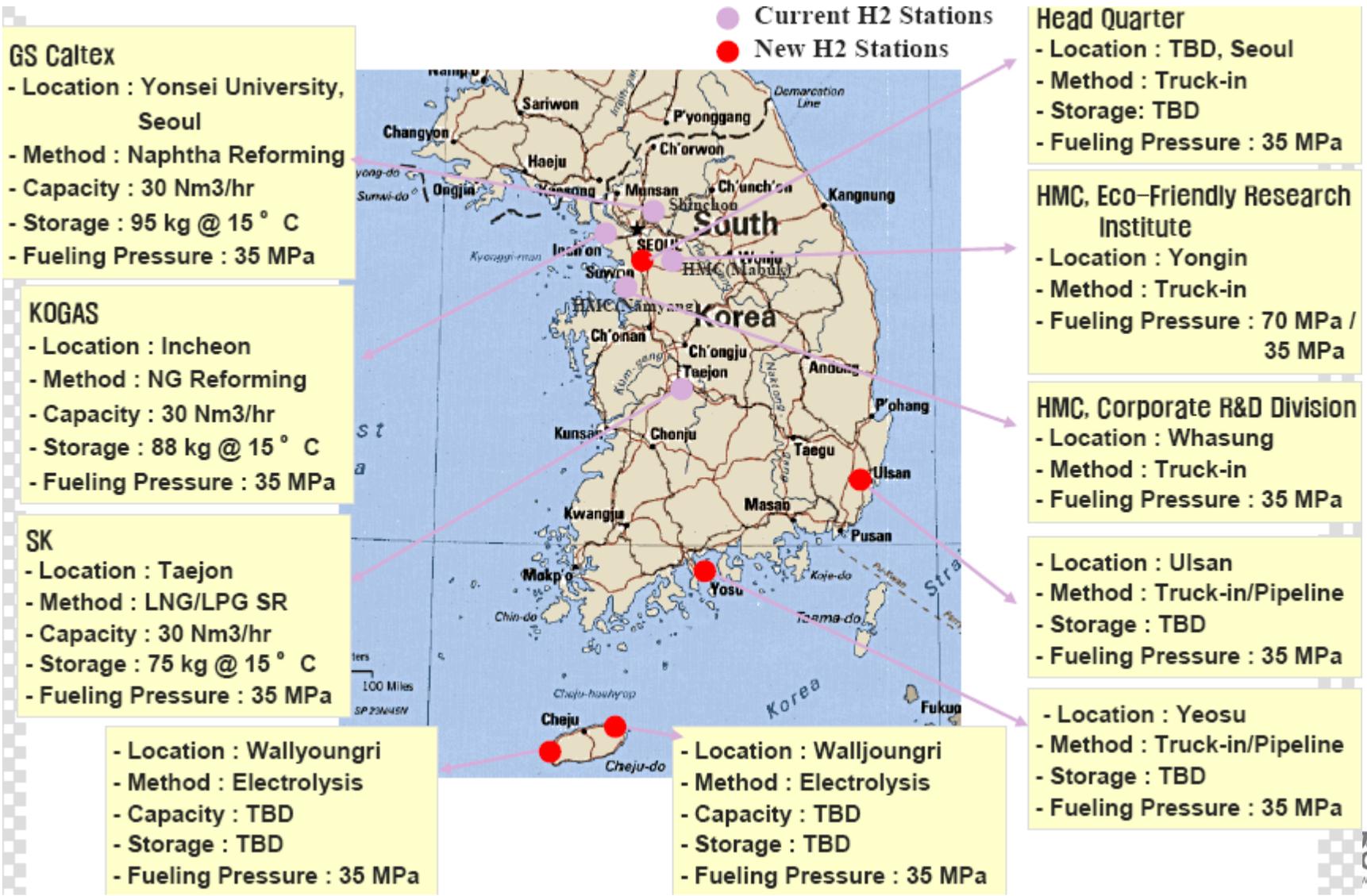
FCVs Development in Korea

<p>2000</p>	<p>Santa Fe Fuel Cell Vehicle</p> <ul style="list-style-type: none"> - System : 75 kW (by UTC) - Fuel : Compressed Hydrogen (35 MPa) 	
<p>2002</p>	<p>Santa Fe Fuel Cell Hybrid Vehicle</p> <ul style="list-style-type: none"> - System : 75 kW (by UTC) + Ni-MH Battery - Fuel : Compressed Hydrogen (35 MPa) 	
<p>2004</p>	<p>Tucson Fuel Cell Hybrid Vehicle</p> <ul style="list-style-type: none"> - System : 80 kW (by UTC) + Li-Polymer Battery - Fuel : Compressed Hydrogen (35 MPa) 	
<p>2005</p>	<p>Sportage Fuel Cell Hybrid Vehicle</p>	
<p>2006</p>	<p>Tucson Fuel Cell Hybrid Vehicle</p> <ul style="list-style-type: none"> - System : 80 kW (by HMC) + Li-Polymer Battery - Fuel : Compressed Hydrogen (35 MPa or 70 MPa) 	
<p>2006</p>	<p>HYUNDAI Fuel Cell Bus</p> <ul style="list-style-type: none"> - System : 160 kW (by HMC) + Super Capacitor - Fuel : Compressed Hydrogen (35 MPa) 	

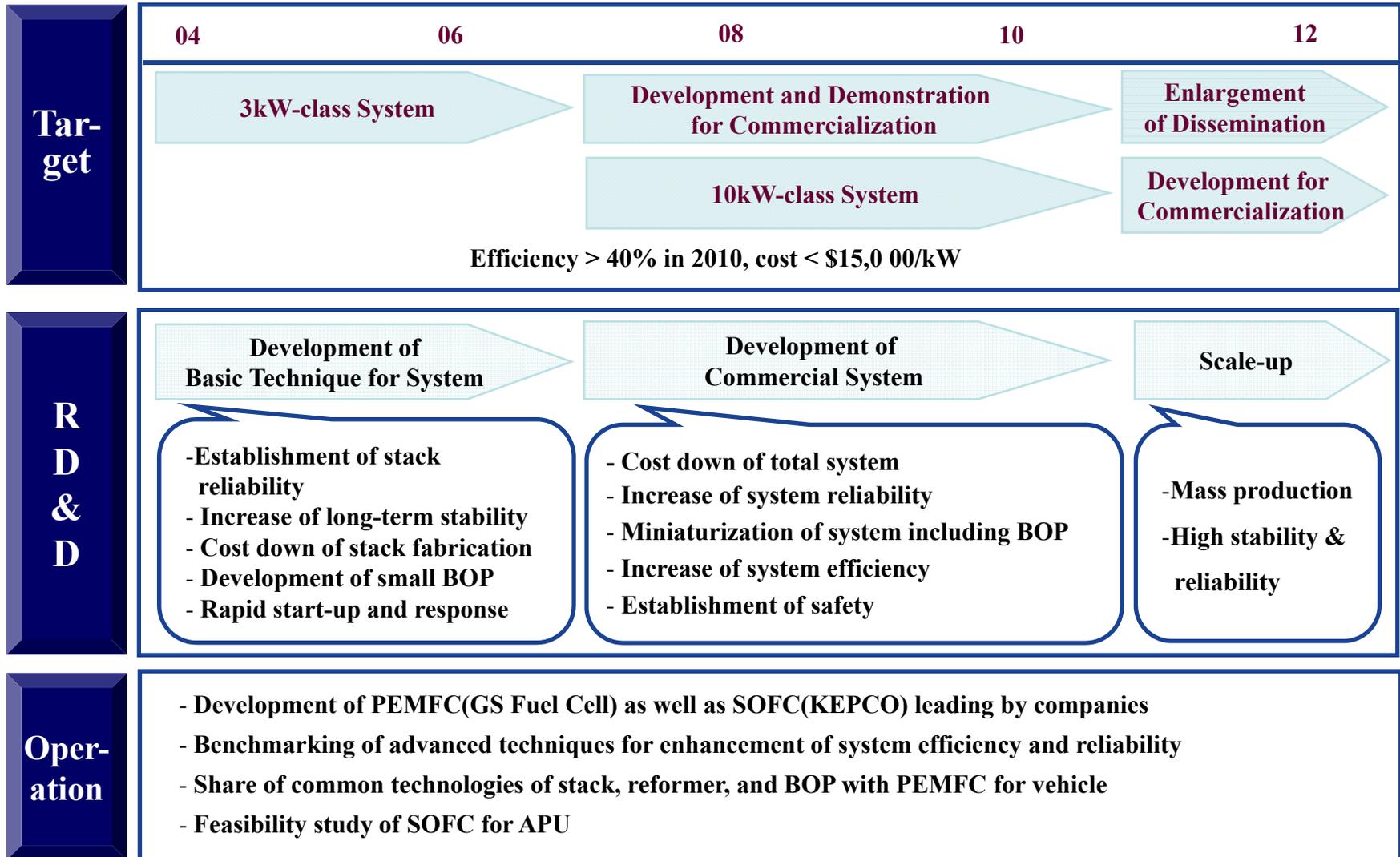
Demonstration Project for FCV

Targets:

- Number of FCV : 30 FC Passenger vehicles, 4 FC Bus (driving range target: 20,000km in 2yr: 2006.8-2009.8)



Action plan – PEMFC/SOFC for RPG



Demonstration Project for RPG

Targets:

- 2006.8 – 2009.8
- 55unit(1st year) → 70unit(2nd year) → 80unit(3rd year) = 205units(total)



③한진도시가스(상계)



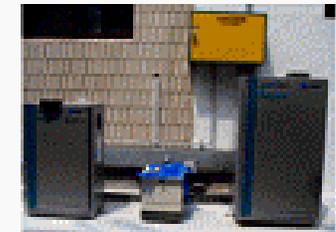
⑭가스공사(총리공관)



①대한도시가스(시청)



⑫대한도시가스(시립대)



②인천도시가스(인천)



⑥대한도시가스(서초)



⑦에스코(남산빌관)



⑩대한도시가스(암사)



⑬대한도시가스(잠실)



⑨대한도시가스(교덕)



⑩에스코(마포)



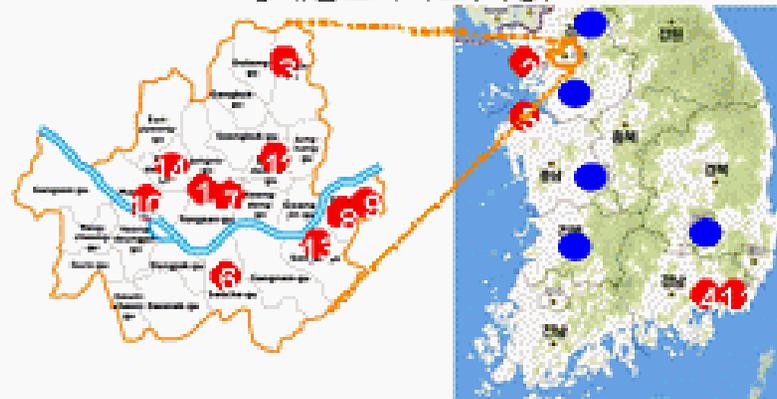
④경남에너지(창원)



⑤서해도시가스(당진)



⑪경남에너지(창원)



SEOUL

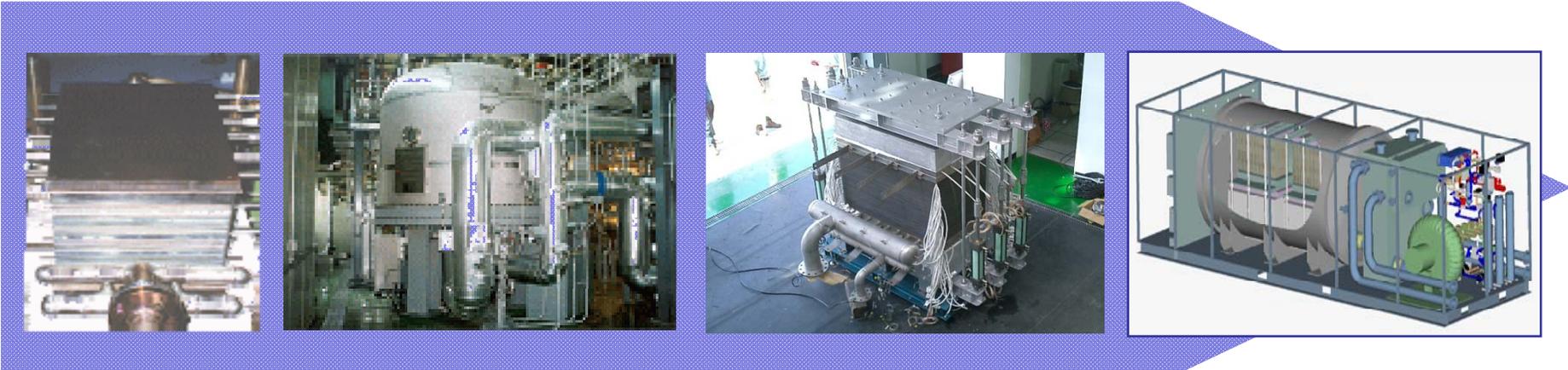
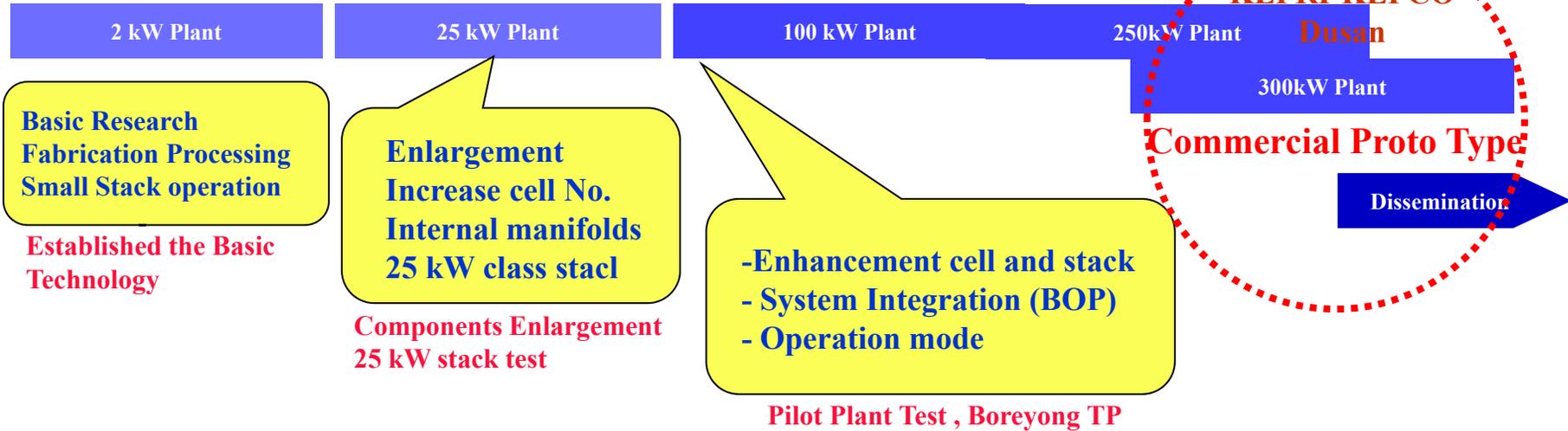
KOREA

● 설치 26기

● 예정 9기

MCFC Development for Power Generation Application

93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10
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MCFC Demonstration Projects

- **Verification of MCFC technology**
- **Development of BOP system**
- **3 DFC300 Units from FCE**
- **Period: Aug. 2004 – July 2007**
- **Participant: POSCO**

◆ **1st Unit (Pohang)**

- **Feed: LNG**
- **Operation hour: > 15,000 hrs**

◆ **2nd Unit (Seoul)**

- **Feed: ADG from Sewage Treatment**

◆ **3rd Unit (Kwangju)**

- **Feed: LNG**
- **University Dormitory**



DFC300 at Pohang

Electric efficiency: 47%
System efficiency: 85%
Availability: 92%

Recent Activities on H₂ & FC in Korea

- **Analysis of National Programs on H₂ and FC RD&D**
 - In October 2009, the government analyzed and evaluated the outputs achieved from the national programs on H₂ and FC RD&D during last 5 years(2004.9-2009.8), and published a report which includes the collected important data.
 - This report will be a fundamental guideline to establish the next 5 year national plan for the penetration of H₂ and FC markets.
- **Organization of a TFT H₂ & FC export and market formation**
 - In 2009, the government organized a TFT which establishes a strategic plan for export and market formation of H₂ and FC industries.

Recent Activities on H₂ & FC in Korea

- **Launch of the 2nd stage of FC demonstration projects**
 - The 1st stage of demonstration projects on FCV and RPG has been successfully ended in 2009.8.
 - The government considers the 2nd stage of the demonstration projects which will be launched in 2010.
- **Extension of H₂ and FC education program**
 - Two universities (Chonbuk National University & Yonsei University) have already offered H₂ and FC education program in their graduate programs for MS and Ph Degrees since 2006.
 - This year(2009), the government assigned another university for the H₂ and FC education and started a financial support for the program.

The above actions of the government indicates that Korea has already started her H₂ and FC policy to **move the H₂ & FC technologies from laboratory to the market, which the IPHE pursues in the **SPs**.**

Thank you

**The Creation
of the
New Industry**

