2013 Korea Update

e-mail: shulyg@yonsei.ac.kr

연세대학교
YONSEI UNIVERSITY

Seoul begins to develop ‘Fuel Cell’ for eco-friendly power supply

Fuel cell installation location and a bird's eye view

Location

A bird's eye view of Fuel-Cell Power Plant

Seoul begins to develop ‘Fuel Cell’ for eco-friendly power supply

Seoul, Management state of Fuel-Cell Facilities

Total	**Power Plant** (Attract private capital)	**For home use** (Green-Home Supply Business)	Seoul Project	**Notes**
186Places, Capacity 5,201kW	2 Places Capacity 4,800kW	181Places Capacity 181kW	3 Places Capacity 220kW	LOTTE SUPER TOWER 800kW *(Installation of Fuel-Cells is Complete. 2013.12)

Case of Installation : Fuel-Cell Power Plant (Seoul)

2.4MW
Fuel-Cell Power Plant

Seoul begins to develop ‘Fuel Cell’ for eco-friendly power supply

Fuel-Cells supply status :A total of 19 places, capacity 60MW

No.	Date of Operation (yy.mm)	Installed Place	Capacity
1	'06.11, '13.04	KOSEP(Korea South East Power CO.) / Gyeonggi	5MW
2	'08.09	POSCO POWER /Pohang	2.4MW
3	'08.09	KS Holdings / Jeonju	2.4MW
4	'08.09	Natura Power / Gunsan	2.4MW
5	'08.09	KOMIPO(Korea Midland Power CO.) / Boryeong	300KW
6	'09.05	SH Corporation / Seoul	2.4MW
7	'09.10	MPC Youl Chon Power / Yeosu	4.8MW
8	'09.10	GS EPS / Dangjin	2.4MW
9	'09.10	KOSEP(Korea South East Power CO.) / Il-san	2.4MW
10	'09.11	POSCO POWER / Inchoen	2.4MW
11	'10.05	Byuck San Engineering & Construction / Pusan	1.2MW
12	'10.08	GS Power /An-yang	4.8MW
13	'10.09	SH Corporation / Seoul	2.4MW
14	'11.06	TCS1 / Deagu	11.2MW
15	'11.06	KOSEP(Korea South East Power CO.) / Il-san	2.8MW
16	'11.10	The Cobalt sky / Pusan	5.6MW
17	'12.02	MPC Youl Chon Power /Yeosu	5.6MW
18	'12.02	Seoul (For building, Hospital)	100kW
19	'12.02	Seoul (For building, Seoul Children’s Grand Park)	100kW

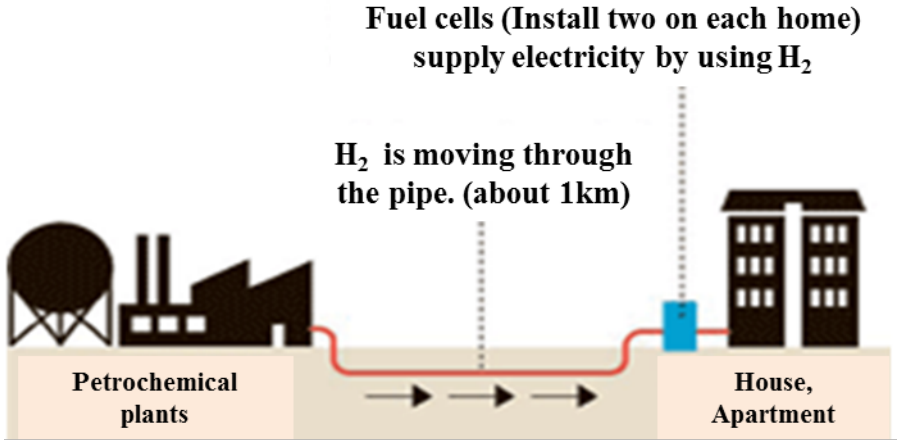
Green Hydrogen Town Demonstration in Ulsan city

- Period : 2012.9 ~ 2018.5 (68 month)
  Construction period : 2012.9.10 ~ 2013.5.9 (8 month)
  Operating period : 2013.5.10 ~ 2018.5.9 (60 month)

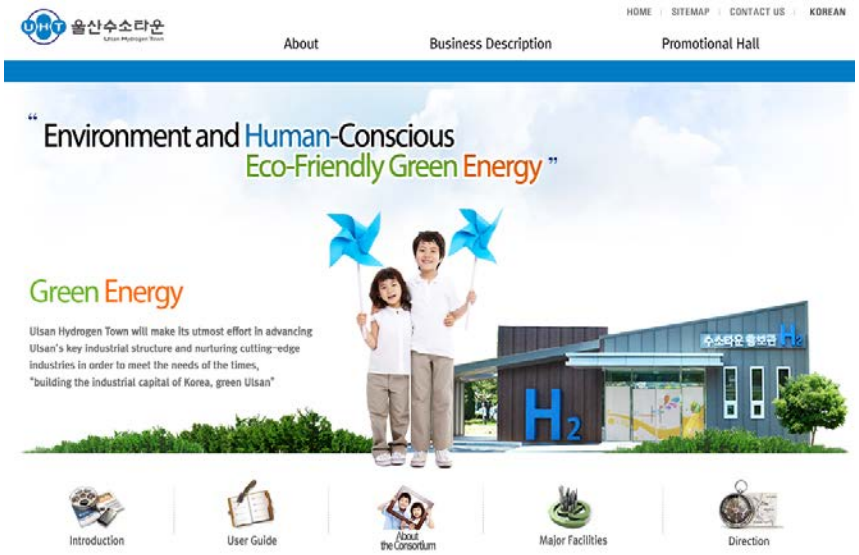
- Burget : 87.7 billion won
  (Government : 52, Local-government ; 18.5, Private : 17.2)

- Consortium : Ulsan city, Ulsan Technopark
  - Hydrogen production : Petrochemistry complex business
  - Hydrogen supply/management : SPG CO., LTD.
  - Manufacture of fuel cell : Fuel Cell Power Inc., GS Caltex CO., LTD., Hyosung CO., LTD., Hyundai HYSCO CO., LTD.

[Concept of Hydrogen Town in Ulsan]



[Ref.]Korea Energy Management Corporation



Home page → http://h2town.utp.or.kr/

Geographical information

- Location : National Industrial Complex in Ulsan city in 3km radius
- Place : Company housing of LS-Nikko Copper Inc. and an accessary builidng
  (Company housing : 140 family among 296 family)
  Onsan-eup office of Onsan-eup site
- Address : Duksin-ri, Onsan-eup, Ulju-gun, Ulsan

Main gate

Company housing view

Set up place of fuel cell

Source		Target area	Distance
Piping of Onsan-eup	Piping of Isu chemical CO., LTD.	Company housing of LS-Nikko Copper Inc.	Within 1 km
National Industrial Complex in Onsan	S-Oil Co., LTD.		Within 3 km
National Industrial complex in Ulsan	Samsung BP Co., LTD.		Within 7 km

World's Largest Hydrogen Station to be Built in Sejong City(2013~)

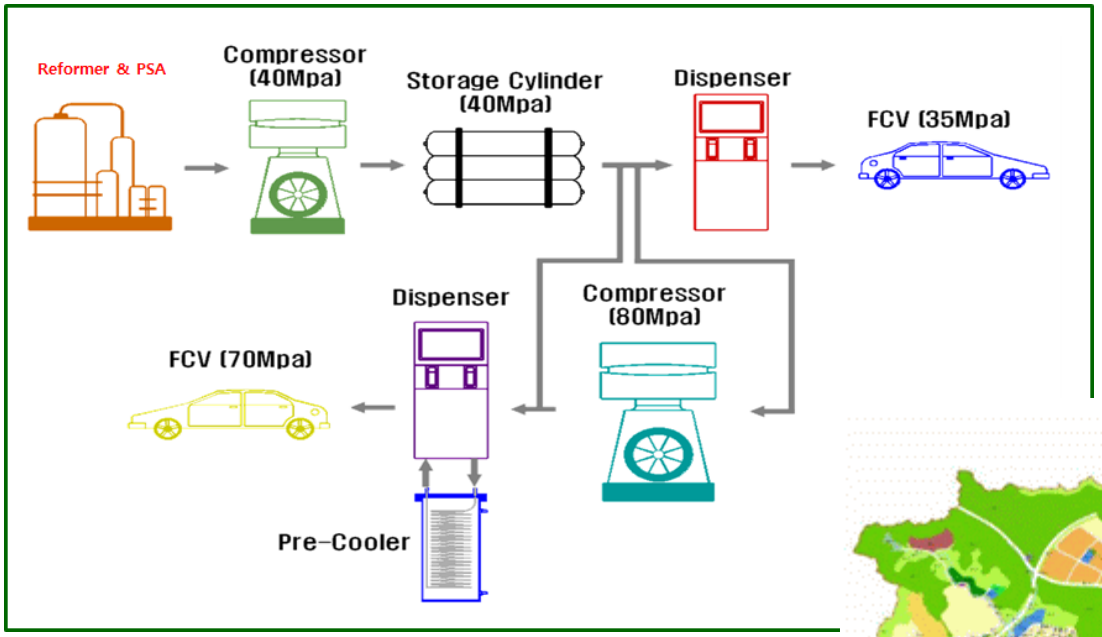


Diagram of the H_2-Station

Sejong City, H_2-Station

World's Largest Hydrogen Station to be Built in Sejong City

Project Title

The development of the 300 Nm3 /h grade of natural gas reforming hydrogen station for the Hydrogen town.

Development Objective

Performance Indicator		The current level of the technology				Development Objective		
		Domestic(KOREA)		Other countries				
Index name	Unit	The domestic level	TRL	Advanced technology, the highest level (national, corporate / Org)	TRL	Target	TRL	Advanced technology, the highest level (forecast)
Hydrogen Production Capacity	Nm^3/h	**30**	4	268 (H2Gen/USA)	4	**300**	8	670
high-purity hydrogen production Thermal efficiency, (HHV)	%	**65**	4	75 (H2Gen/USA)	4	**75**	8	75
Hydrogen purity	%	**99.99**	4	99.99 (H2Gen/USA)	6	**99.999**	8	99.99
Sulfur content	ppb	**50**	4	50 (H2Gen/USA)	6	**50**	8	50
CO content	ppm	**1**	4	1 (H2Gen/USA)	6	**1**	8	1

Main Contents

- High efficiency hydrogen production system with natural gas reforming .
- Localization development of high-efficiency PSA system.
- Development of integrated thermal and system engineering simulation and design for high-performance hydrogen production.
- Building and demonstration of hydrogen station, 300Nm3/h - class (Hydrogen town in Sejong city)