



Fuel Cell Deployment and the Current Industry Trend in Korea

Nov. 2016

Prof. Yong Gun SHUL
Yonsei University



Fuel Cell Deployment and the Current Industry Trend

Government Support Program : Household/Building

(Household) Deployment scheme with a focus on PEMFC (2010~)

	2010	2011	2012	2013	2014	2015	Total
the number of household	957	292	245	232	207	316	2,249
Deployment capacity (kW)	209	292	245	232	207	313	1,498
Unit installation price(KRW/kW)	60,000	54,000	51,100	51,100	41,820	37,400	-

(Building) ‘Obligation in Public Institutions*’, ‘Municipal government deployment scheme**’

* Obligation of Fuel cell installation scheme (No. of Case/Capacity) : 5 cases/89kW (2014) → 13 cases/168kW (2015)

** To increase the share of NRE in newly built buildings in Seoul Metropolitan areas (2012~2013) : Strengthened the standard of Environment Influence Assessment - increased by 10% per 100 thousand m² , increased by up to 5% per 500m² as for Green Building



New Policy Initiatives on Hydrogen and Fuel Cell

Present supporting program

- The Renewable Portfolio Standard is a system that places an obligation on power suppliers with a capacity of more than 500 MW to produce a certain amount of power (3.5%, 2016) from New & Renewable source. Korea included fuel-cell in the targeted energy sources.
- Provide incentives for installation of FC facilities in residential areas and buildings
- As for transportation, incentives are offered on the purchase of hydrogenpowered car and the installation of refuelling station.



Power Generation

- **Big company participation stimulated with the implementation of RPS**
- **Installation cost diminished with technology development**

Installation unit cost(KRW) of 1MW; 62 billion (2011) to 56 billion (2014) and to 46 billion (2015)

	2012	2013	2014	2015	Total
# of installations	3	14	5	4	26? 27?
Capacity(MW)	11	104	35	14	163

H ₂ Refueling Stations	Target Number	Current Status	Partnerships, Strategic Approach	Policy Support
70 MPa On-Site Production	80 by 2020 (including 35 Mpa)	As of [2016] 13	<ul style="list-style-type: none"> • Amendment of law relevant to installation of refuelling station • Cost reduction on fuel station installation - Developing core technologies - Modularization of compression, storage, refuelling facilities 	Incentive for installation, operation, capacity enhancement



Power Generation

- **Big company participation stimulated with the implementation of RPS**
- **Installation cost diminished with technology development**

Installation unit cost(KRW) of 1MW; 62 billion (2011) to 56 billion (2014) and to 46 billion (2015)

	2012	2013	2014	2015	Total
# of installations	3	14	5	4	26? 27?
Capacity(MW)	11	104	35	14	163

Transportation

- **Hyundai underwent feasibility demonstration on FCV in 2012, and embarked on FCV mass-production (Hyundai ix35) first in the world. (2013.02)**

* Planned to deploy 42 vehicles in Korea(2013~2015), **Started putting on sale in the U.S. (2014)**,
Chosen 'best engines 10' in 2015 by Wardsauto, Sold about 270 vehicles (2015)

Transportation	Target Number	Current Status	Partnerships, Strategic Approach	Policy Support
Fuel Cell Vehicles	9,000 by 2020	As of [16] 200	<ul style="list-style-type: none"> • Planning on lowering factory price to KRW 50 million/ USD 42 thousand (2020) • Negotiating with relevant authorities on tax benefits 	



Industry trend

- **With the acquisition of ‘Fuel Cell Power’, ‘Clear Edge Power’, Doosan nurtured FC as its one of the major businesses (2014~)**
 - * Doosan established production line that is capable of producing 6 thousand vehicles annually
- **LG established ‘LG Fuel Cell Systems’ with the acquisition of ‘Rolls-Royce Fuel Cell Systems’ in 2012.** LG is about to roll out SOFC for power generation in 2017
- In 2015, **Industrialization Roadmap released in the pursuit of revitalizing SOFC industry**



Hydrogen Alliance

Goal

- Establish the foundation of H2 Energy Society & FCEV expansion through the H2 Alliance (with Cooperation of government and private sector)

Constitution

- Gov. (MIET, MOTIE, MOE, MOLIT), Local Government
- Manufacturer (FCEV, Parts, H2 Infra), H2 Gas Distributors, City Gas, LPG
- Kogas, KHNES

Roles

- FCEV Dissemination Expansion, Making a roadmap for H2 Society
- Making a Roadmap for FCEV and H2 Station dissemination
- Establishing and managing the SPC for H2 station installation & operation
- Boosting the H2 related industry, Study on the expansion of H2 based knowledge, Global cooperation and Public Relations