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Contact: Jennifer Gangi, Director of Communications  
and Outreach – [jgangi@fchea.org](mailto:jgangi@fchea.org)/202.261.1339

## Large-Scale Fuel Cell Use in Korea Boosts North American Manufacturing

### *Korea's Commitment Creates Long Term Export Opportunities for U.S. & Canada*

(Washington D.C.) – November 10, 2015 – Korea is embracing large-scale fuel cells for energy production in a way that few other countries can match. According to [Bloomberg](#), Korea's proactive government incentives and the absence of domestic energy assets are the impetus for the dynamic fuel cell growth. This atmosphere is creating exciting manufacturing and export opportunities by North American-based fuel cell businesses through partnerships with Korean firms, direct investment and acquisition.

Fuel cells today are well-established technologies, with some installations in the United States operating for more than a decade. Countries such as Germany and Japan have supported demonstrations and deployments for years, with sales of residential fuel cells reaching more than 120,000 in Japan and climbing.

Korea is moving quickly to leapfrog everyone in the global race, putting favorable policies and incentive structures in place and quietly installing more than 150 megawatts (MW) of large-scale stationary fuel cells.

Korea has set a goal to [derive approximately 11 percent of its energy](#) from new and renewable energy sources by 2035, and fuel cells are one of the technologies chosen to achieve this goal. Seoul, the country's capital, is going even further, seeking to reach 50 percent of its renewable electricity generation from fuel cells by 2030. Markets targeted include small stationary for homes and small business, large-scale stationary, and vehicles.

Korea's supportive fuel cell policies include a [renewable portfolio standard](#) (RPS) that stipulates power utilities that generate more than 5000 MW must generate at least two percent of electricity from renewables starting in 2012, increasing to 10 percent in 2022.

In the past couple of years, Korean companies have acquired fuel cell companies and established a manufacturing presence in the U.S., or have partnered with North American companies to export and manufacture systems to install in Korea, helping to drive fuel cell production, job growth and technology on both sides of the Pacific.

In 2014, South Korean company Doosan acquired ClearEdge Power, a fuel cell manufacturer based in South Windsor, Connecticut, forming Doosan Fuel Cell America. In a little over a year, the company has entered into several deals with Korean utilities for more than 40 MW of fuel

cell systems in 2015. These fuel cells are manufactured in Connecticut and shipped to Korea. This includes several major deals in recent months:

- [On November 5](#), Doosan Fuel Cell America finalized a partnership with Korea Western Power and Serveone, an LG affiliated company, to manufacture 11 fuel cells (5 MW) at its Connecticut facility. The fuel cells will be installed at Korea Western Power's new plant in the port city of Incheon. The fuel cells' footprint will be barely one-quarter acre, compared to solar panels requiring 38 acres to generate the same amount of electricity, and is anticipated to be operational by April 2016.
- [On October 23](#), Doosan Fuel Cell America announced it was partnering with Samsung C&T Corporation and Korea Hydro & Nuclear Power (KHNP), Korea's largest utility, on the "Busan Green Energy Project" which includes 70 Doosan PureCell® Model 400 fuel cell power plants totaling 30.8 MW. These fuel cells will provide electricity to a new residential complex in Busan and will generate enough power for 71,500 Korean homes. Doosan will begin shipping this year and deliver all 70 units by August 2016. The fuel cells are expected to be online by February 2017.
- [On June 11](#), Doosan Fuel Cell America announced that it was selected by Korea South East Power Co. Ltd. (KOSEP) to provide 13 Doosan PureCell Model 400 units, totaling 5.6 MW, to the utility's plant in Bundang. The new installation will incorporate the first of its kind, state-of-the-art construction design, with multiple 400 kW fuel cells installed on each floor of a two-story structure.
- [On June 3](#), Doosan Fuel Cell America announced its first major supply deal, worth \$25 million, with an additional \$36 million long-term service agreement, with KOSEP to deliver a combined cycle power plant to be constructed in Bundang.
- [In May 2015](#), Six Doosan fuel cells, totaling 2.6 MW, began operating at a KOSEP facility in Ansan, a suburb of Seoul, providing energy and heat to the local electric grid and KOSEP customers.

KOSEP previously worked with ClearEdge in 2013 to install seven fuel cells at a plant in Bundang. Other sites in Korea with Doosan fuel cells include 12 systems at GS Power, a Korean independent power producer (IPP) and two sites owned by Samsung Everland, including the Lotte World Tower and Busan Financial Center. Once the recent orders are fulfilled, Doosan will have 129 fuel cells totaling 50 MW operating in Korea.

Another Connecticut fuel cell manufacturer, FuelCell Energy, based in Danbury, has been working with Korean company POSCO Energy, for several years. Currently, the companies have installed more than [140 MW of fuel cells in Korea](#), consisting of 18 fuel cell parks in 13 different South Korean cities. This includes the world's largest at 58.8 MW, installed in Hwasung City, which powers 70,000 homes. FuelCell Energy manufactures the fuel cell kits in Connecticut and ships them to POSCO for assembly.

On [November 1](#), FuelCell Energy announced a new sale of six fuel cell modules totaling 8.4 MW to POSCO Energy. Other recent news in the companies' collaboration include:

- Groundbreaking of a 20 MW Korea Hydro & Nuclear Power fuel cell park in Seoul City.
- A fuel cell power plant located at a KOGAS-owned liquefied natural gas (LNG) terminal in South Korea began operation. The fuel cell plant is using boil-off gas from the LNG process to generate ultra-clean power, rather than letting the gas escape or incurring the cost to re-liquefy the gas.
- Meiya Power Corporation expanded its fuel cell fleet, adding a 5.6-MW system and boosting its total capacity to 16 MW.

Several other North American fuel cell companies are expanding their presence in Korea:

- Hydrogenics, a fuel cell manufacturer based in Ontario, Canada, entered into a joint venture partnership with Korean company Kolon Water & Energy in 2014, creating Kolon Hydrogenics to identify the potential for renewable power generation projects in South Korea. On [November 3](#), the venture began commercial operations of a 1 MW fuel cell power system installed at Hanwha-Total's oil refinery site in Daesan, The fuel cell uses surplus hydrogen generated as part of other refinery processes at the site.
- In 2014, Latham, New York, fuel cell manufacturer [Plug Power](#) signed a non-binding Memorandum of Understanding with Korean steel company Hyundai Hysco Co. Ltd. to create a five-year joint venture partnership to develop and sell hydrogen fuel cells in countries throughout Asia.
- In 2012, Korean electronics conglomerate [LG Corporation](#) bought a 51 percent stake in Rolls-Royce Fuel Cell Systems for \$45 million, and is now developing a large-scale solid oxide fuel cell system at its manufacturing facility in North Canton, Ohio, as [LG Fuel Cell Systems](#).

Korea's commitment to fuel cells, through these partnerships and investments with North American-based companies, show no signs of abating, which bodes well for all parties involved.

For more information about any of these news items, or about fuel cell and hydrogen technologies in general, please visit us online at [www.fchea.org](http://www.fchea.org). In addition to the website, Fuel Cell and Hydrogen Energy Association staff and industry experts are available for interviews and background information.

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*The Fuel Cell and Hydrogen Energy Association (FCHEA) is the trade association for the fuel cell and hydrogen energy industry, representing fuel cell manufacturers, automobile companies, hydrogen and fuel distributors, components and systems manufacturers, government laboratories, and trade associations. Visit us online at [www.fchea.org](http://www.fchea.org).*