

Moving Product with Fuel Cells

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Hydrogen + Fuel Cells

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Today's Fuel Cells for proven, reliable power.

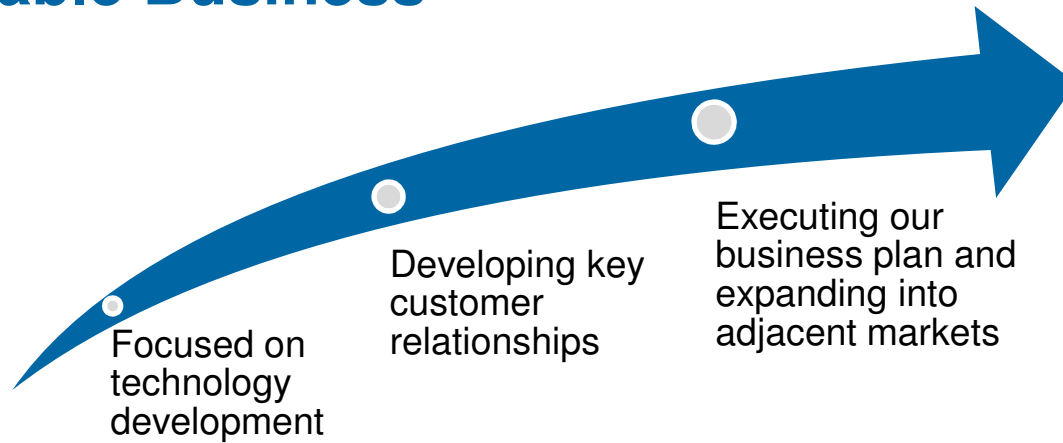
We Are Plug Power

Leader in development and production of clean, commercial energy solutions for the material handling industry.

- Headquarters in Latham, New York
- with over 150 employees
- Founded in June 1997
- World class manufacturing facility in NY
- 152 issued patents
- Over 4,000 units in the field with more than 10 million hours of runtime



Transforming Plug Power into a Sustainable Business



	2008	2013
Product	1 beta fuel cell	Portfolio of 3 product families
Customers	Focus across multiple industries	Large distribution centers in the material handling industry
Sales	Several sales teams in multiple industries	An engaged nationwide team, with HyPulsion partnership in Europe
Area of focus	Cutting costs and developing new products	Adding new and growing existing customers while expanding into adjacent markets

Spot Light: BMW Operates Largest Hydrogen Fleet in North America

- Largest hydrogen fuel cell fleet in North America
- 4 million square-foot production facility
- 2010: Installation of on-site hydrogen storage and distribution
- Initial Fleet: ~100 GenDrive fuel cells
- Today's Fleet: ~275 GenDrive fuel cells



BMW Value Proposition

- BMW commitment to social responsibility and desire to use efficient, sustainable energy
- GenDrive offers operational benefits over lead-acid batteries:
 - Increased productivity by up to 15%
 - Lower operations costs by up to 30%
 - Increased vehicle efficiencies: fast re-fuel time (minutes vs. hours), longer vehicle run-time, consistent vehicle speed
 - More Operational Space: no battery storage, charging, maintenance areas required
 - No lead or sulfuric acid contamination
 - Elimination of battery recycling & disposal fees
 - Significant reduction in peak power demand
 - Reduced site emissions by up to 80%



Customer Base Continues to Grow

- 3 major market segments:
 - Food distribution
 - Retail
 - Manufacturing
- 44 total site deployments with 24 different customers
- 29 brownfield & 15 greenfield sites
- More than 4,000 units shipped
- ~8,000 fills per day by customer
- More than 4,600 kg of H₂ dispensed per day



Associated Wholesale Grocers



Kroger Success Story – Food Distribution

- First deployment in Compton, CA
- 174 GenDrive units
- Kroger operates ~30 distribution centers nationwide
- Distribution center conditions include freezer environments reaching -25° F
- New sites being considered – estimated that additional deployment would reduce Kroger's fork trucks carbon footprint by 31%, on average



Walmart Success Story – Retail

- Deployed in Ohio, Alberta and Ontario
- 509 GenDrive units installed to-date
- Walmart operates 100+ distribution centers with close to 20,000 forklift trucks and approximately 15,000 units in stores
- Plug Power designed and built hydrogen piping and dispensing system to generate revenue from H₂
- Expected greenhouse gas reduction (WCH facility) up to 72% compared to batteries charged from grid



New GenDrive 1900

– Plug Power's Highest Capacity Fuel Cell

- Extension of GenDrive Series 1000 product family, doubles power capacity and output
- Designed to bring increased productivity and reduced emissions to six-ton forklift trucks
- First to feature an optional second hydrogen tank for double hydrogen capacity, providing:
 - Storage up to 3.4 kg of hydrogen
 - Energy capacity of 50 kilowatt-hours
- Targeting sit-down counterbalanced trucks used in high-volume, high-throughput mfg, warehousing & distribution operations
- Will enable Plug Power to provide a complete product line spanning all class-one forklift trucks
- Customer trials set to begin in Q3 2013

Importance of Hydrogen in Expanding the Market

- The Car Problem
 - How to build hydrogen cars & where to fuel them
 - The challenge is hydrogen filling stations
 - Car companies & government faced with this perplexing problem
- Plug Power initially focused on large distribution centers allowing us to deploy fuel cells at sites where amount of hydrogen used is equivalent to amount of fuel at a hydrogen filling station
- For medium sites – on-site reformation helps expand the market
- For smaller sites – still looking for a simple solution that evolves from providing industrial solutions
- Essentially we are expanding as we come up with more solutions

Lowering the Cost of Hydrogen Infrastructure ...

Large On-site
Liquid Storage



On-site
Generation



Small Retail Solutions



... is crucial to expand the Material Handling Market

Expanding the Opportunity in the \$20B Material Handling Industry

North American shipments have been isolated to 40% of the total fork truck population

	Segment	Experience	Hydrogen Solutions	Market Size QTY*	Market Size USD**
North America	Large	6 Years (1 Year onsite generation)	<ul style="list-style-type: none"> • Delivery with on-site liquefied storage • Large on-site generation w/ gaseous storage 	15% (~180 K)	\$ 4.2 Billion
	Medium	6 Years (1 Year onsite generation)	<ul style="list-style-type: none"> • Delivery with on-site liquefied or gaseous storage • Small on-site generation w/ gaseous storage 	25% (~300 K)	
	Small	1-3 Years	<ul style="list-style-type: none"> • Delivery with gaseous storage • Small on-site generation w/gaseous storage 	20% (~240 K)	
	Retail	Under development	<ul style="list-style-type: none"> • Under development 	40% (~480 K)	
Europe	All	1 Year	<ul style="list-style-type: none"> • AL advanced hydrogen fueling stations 	~1,700 K	\$5.7 Billion
Japan & China	All	N/A	<ul style="list-style-type: none"> • Under review 	N / A	\$7.8 Billion
ROW	All	N/A	<ul style="list-style-type: none"> • Under review 	N / A	\$2.1 Billion

Low-cost Hydrogen Infrastructure is Crucial to Expansion

* & ** Sources: Analysis of Industrial Truck Association data, JVIA, and ongoing management discussions with OEM's

Future Market Expansion

- Targeting adjacent markets that have the same dynamics as materials handling
 - Ground Support Equipment (GSE)
 - 26,000 units deployed in North America
 - Big Rigs: Transportation Refrigeration Units (TRU)
 - 290,000-units deployed in North America
 - Range extenders for heavy-duty electric vehicles
 - President Obama target: 1M electric vehicles by 2015
- Development funds provided by external agencies
 - DOE: grant for Bridge Terminal Transport tuggers (BTT)
 - \$2.5 Million
 - New York SERDA: for TRUs
 - DOE RFP: planned application for range extenders



Charlotte BTT



Transportation Refrigeration Unit



Heavy Duty Electric Car

Summary

- Plug Power's strategy to become the premier provider of fuel cells for commercial forklift use is on target
- First mover advantage – 90% market share
- Compelling customer experience with Fortune 500 client list
- Over 4,000 units with 24 different customers already deployed
- European expansion with Air Liquide – HyPulsion joint venture underway
- Decreased infrastructure costs and committed development funds will increase expansion opportunities



POWER AHEAD



 **plug power**[®]

The logo for Plug Power, featuring the word "plug" in a blue, lowercase, sans-serif font with a cluster of blue dots to its left. The word "power" is in a blue, lowercase, italicized sans-serif font with a white starburst graphic behind the letter "o".

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