NASDAQ: BLOP | TSX: BLD

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The Fuel Cell Clean Energy Alternative



October 15, 2015

BALLARD POWER SYSTEMS

PUTTING FUEL CELLS TO WORK

The Power of Fuel Cells, Simply Delivered

WWW.BALLARD.COM

Presentation Topics





The Need for Clean Energy

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Clean Energy Need Fuel Cell Technology

Ballard Pov

Applications

Fuel Cell Industry

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Clean Energy Alternatives

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Clean Energy Need Fuel Cell Technology

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Applications

Fuel Cell Industry



Ballard Power Systems Profile



- 30+ years of experience in PEM fuel cells
- Power Products and Technology Solutions
- 2014 revenue of ~\$69M
- ~450 including global sales team and 22 PhDs
- ~200 patents & patent applications; access to
 ~1,500 additional patents & patent applications
- Vancouver, Bend OR, Southborough MA, Denmark & Mexico
- Nasdaq BLDP; TSX BLD
- United Technologies Corporation, Anglo American Platinum

Ballard Fuel Cell Product Portfolio Complete Range of Power Products

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Telecom Backup Power: Market Drivers



Unreliable Electricity Grids

- Regular even daily outages
- Includes geographies such as Asia, Africa, Latin America
- Grid outages can interrupt wireless telecom service ... batteries & diesel generators not always able to provide necessary run time
- ElectraGen[™] systems are reliable and deliver extended duration run time

BALLARD[®]



Crisis Situations

- Concern over potential grid outages over extended periods
- Includes geographies that can experience extreme weather, floods, earthquakes, potential security breaches
- Benefits of ElectraGen[™] are being demonstrated in the Caribbean and in Japan with NSN

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Power Products: Telecom Backup Power

- >2,900 systems (~12.6 MW's) shipped to date
- Market driven by 2 distinct needs:
 - Unreliable electricity grids; and
 - o Crisis situations
- Compelling lifecycle cost vs. traditional diesel generator or lead-acid battery solutions
- Ballard ElectraGen[™]-ME methanol system is the first fuel cell product to receive conditional approval in NYC
 - Ballard working now with the carrier to meet all conditions specified by NYFD



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Ballard ElectraGen[™]-ME fuel cell system rooftop installation in the Philippines



ElectraGen™-ME fuel cell system installation in the Caribbean

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Power Products: Material Handling

- >6,000 fuel cell stacks shipped to date ... with 20M hours of runtime
- Increases productivity vs. lead-acid battery forklifts
- LTSA with Plug Power



- o BMW
- Walmart (U.S. & Canada)
- Proctor & Gamble
- o Mercedes Benz
- o Kroger
- o Stihl
- United Natural Foods
- o Volkswagen



Ballard FCvelocity[®]-9SSL Liquid-Cooled Fuel Cell Stack

Ballard Ecoop[®] 10204

Ballard FCgen[®]-1020ACS Air-Cooled Fuel Cell Stack



Plug Power GenDrive[®] systems – powered by Ballard fuel cell stacks in a Central Grocers facility





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- Today end-users buy forklift batteries from a battery supplier not from the forklift OEM
 - Fuel cell systems are designed to replace battery packs
- Forklift OEMs could 'change the game' by designing purposebuilt fuel cell forklift trucks
 - This would eliminate end-users' need to buy batteries <u>and</u> allow
 OEMs to capture more of the value chain & margin
- Hyster-Yale's operating company, acquired Nuvera Fuel Cells in Dec 2014
 - Plans to invest \$40-50M in commercialization over next 2-3 years

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Why Fuel Cell Buses?

• Completely eliminates tailpipe emissions

 \circ Nox, Sox, PM

- Noise reduction and comfortable ride
- Improved fuel efficiency
 - 1.5-2.5x improvement over conventional diesel buses on an energy equivalent basis
- Reduced Greenhouse Gas Emissions
 - $\,\circ\,$ Demonstrated on a well to wheel basis

Greenhouse Gas Emissions



SOURCE: Prototype evaluation data (BC Transit, 2008)

BC Transit has calculated* a WTW reduction in CO_2 emissions of 62% for the Whistler buses

Power Products: Heavy Duty Motive

- Ballard enjoys dominant global share of fuel cell bus market
 - Agreement signed to power 33 fuel cell buses in China
 - Landmark contract executed to deliver 300 HD fuel cell bus modules in China for 2016
 - Contract signed with CRRC to develop & deliver 10 HD7-200kW fuel cell modules for tram applications in China
 - FTA announced funding for 10 fuel cell buses under LoNo Vehicle Deployment Program
 - AQIP funding announced for 35 fuel cell buses to be launched in California
 - Van Hool awarded JTI funding for 21 buses



Ballard FCvelocity®-HD7 Fuel Cell Module



One of the Ballard-powered Van Hool buses now deployed in Aberdeen, Scotland fuel cell bus fleet



Other Potential Product Catalysts (Cont'd)

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Progress toward auto commercialization –

- Technology improvements
 - Including MEA and power density
 - Improved density of high pressure H2 tanks
- o Fuel cell stack cost
 - Dramatic reduction over past 5-years
- High operating performance
 - Cruising range ~650 kms (400 miles)
 - Cold start to approx. -30°C (-22°F)
 - Rapid refueling in approx. 3-minutes
- Large power supply
 - 4-to-5 times more than electric vehicles
 - Can power average household 1-week
- Positive driving experience
 - Quiet operation
 - Smooth start & good acceleration
- \circ Zero CO₂ emissions during driving



Toyota Fuel Cell Car



Audi "h-tron quattro" Fuel Cell Car

Other Potential Product Catalysts (Cont'd)

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• Continuous Power –

- Opportunities at off-grid residential & telecom sites
- Ballard launched a 12-month field trial in August 2014 with Anglo American,
 Eskom (power utility) and South Africa's Department of Energy
 - ElectraGenTM–ME systems powering 34-home rural community in S.Africa, delivering 70 kW's of power with battery support ... there are 10M off-grid homes in Africa
 - Trial objectives: validate technical & operating requirements; understand logistics of fuel delivery, electricity usage patterns & product maintenance needs



Prime power trial system at Naledi Trust community in S.Africa



Distribution of electric stoves in Naledi Trust

PEM Fuel Cell Market Adoption

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PEM fuel cell products are at the early stage of market adoption in a host of application areas with substantial growth prospects

Clean Energy Need Fuel Cell

Fuel Cell Technology

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Fuel Cell Industry Growth



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- ~40% industry shipment CAGR since 2009
- ~65% of shipments are for stationary applications
- >90% of total fuel cell units shipped are PEM



Source: "Fuel Cell Industry Review 2014", E4tech Consulting, December, 2014

Applications

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Thank You

Questions?