

WINTERGREEN RESEARCH, INC.

**Worldwide Nanotechnology Electric Vehicle (EV) Market
Shares, Strategies, and Forecasts, 2009 to 2015**

Electric Vehicle Markets Set to Grow Rapidly



Picture by Susie Eustis

MOUNTAINS OF OPPORTUNITY

**WinterGreen Research, Inc.
Lexington, Massachusetts**

www.wintergreenresearch.com

REPORT # SH24030618 452 PAGES 165 TABLES AND FIGURES 2009
\$3,400 SINGLE COPY \$6,800 WEB SITE HOSTING

CHECK OUT THESE KEY TOPICS

ELECTRIC CARS

ELECTRIC CAR MARKET SHARES

ELECTRIC CAR MARKET FORECASTS

CHARGING ELECTRIC CARS

ELECTRIC VEHICLE

EV

EV Advances In Technology

Electric Vehicles Increase Resolution

Electric Vehicle (EV)s Nanotechnology

Electric Vehicle Economic Forces

Local Energy Storage

Electric Mini

OPPORTUNITY ABOUNDS

WinterGreen Research, Inc.

Lexington, Massachusetts

www.wintergreenresearch.com

**Worldwide Electric Vehicle (EV) Market Shares, Strategies,
Forecasts, 2009-2015**

Breakthrough technology in electric vehicles brings advancements that provide customers with personal transportation choices never before available.

REPORT # SH24030618 452 PAGES 165 TABLES AND FIGURES 2009

\$3,400 SINGLE COPY \$6,800 WEB SITE HOSTING

Electric vehicles are real. They come in a variety of styles and capabilities. The BMW features driving control and style. The Chinese BYD hybrid backed by Warren Buffet's company has features that enable plug-in hybrid power train flexibility. It has a full battery-powered electric mode. The series-hybrid mode has an engine which drives a generator to recharge the batteries, acting as a range-extender. There is a parallel hybrid mode, in which the engine and motor both provide propulsive power.

Electric vehicles represent a quantum shift in transportation. The design trajectories are varied; the opportunities are significant as a quantum shift occurs in what the vehicle basic functions are and how the vehicle works. The car companies that leverage the market opportunity to shift to a new paradyne are likely to succeed. There are others who merely try to migrate existing styles and designs to electric vehicles. Buggy whips come to mind.

The ability to plug a car into a hardened backyard set of batteries charged from a solar panel provides relief from gasoline spending. To have a second car, powered by a battery pack promises to provide growth of a new industry. The banks can loan against the car and the solar panel. Solar panels are evolving modular capability where they can be quickly installed and provide electricity for the car.

Investment in electric vehicle infrastructure is a priority. With countries seeking to invest in infrastructure that will provide economic growth, it is clear that special infrastructure for electric vehicles will stimulate growth from the private sector. Electric vehicle market segment is positioned for growth for vehicles used for local driving.

Worldwide nanotechnology thin film lithium-ion batteries are poised to achieve significant growth as units become more able to achieve deliver of power to electric vehicles efficiently. Less expensive lithium-ion batteries allow leveraging economies of scale and proliferation of devices into a wide range of applications. According to Susan Eustis, lead author of the study, "Economies of scale leverage the lithium-ion battery nanotechnology advances needed to make lithium-ion batteries competitive. Nanotechnology provided by lithium-ion research solves the issues poised by the need to store renewable energy. Lithium-ion batteries switch price reductions are poised to drive market adoption by making units affordable."

Nanotechnology results obtained in the laboratory are being translated into commercial products. The processes of translating the nanotechnology science into thin film lithium ion batteries are anticipated to be ongoing. The breakthroughs of science in the laboratory have only begun to be translated into life outside the lab, with a long way to go in improving the functioning of the lithium-ion batteries.

Unlike any other battery technology, thin film solid-state batteries show very high cycle life. Using very thin cathodes (0.05µm) batteries have been cycled in excess of 45,000 cycles with very limited loss in capacity. After 45,000 cycles, 95% of the original capacity remained.

Markets for electric vehicles at 685 units in 2008 are anticipated to reach 32.7 million autos shipped by 2015, growing in response to demand for a renewable energy powered vehicle that lowers the total cost of ownership by a significant amount. Lithium-ion batteries used in cell phones and PCs, and in cordless power tools are proving the technology to power electric vehicles. Early electric vehicles are being used as city cars, proving the feasibility of electric cars. Think in Norway has a viable manufacturing operation and 1,000 cars on the road. The large emerging markets are for hybrid and electric vehicles powered by renewable energy systems.

Electric Vehicle (EV) Companies Profiled

Electric Vehicle (EV) Market Leaders

Tesla Motors
Daimler AG
Think
General Motors
BMW
BYD / MidAmerican Energy Holdings
Miles XS500 Electric Car
Mitsubishi i MiEV Electric Car
NEC / Fuji Heavy Industries / Subaru
NEC / Nissan
REVA Electric Car
Zenn Low Speed Electric Car
Ford
Shelby Supercars

REPORT # SH24030618 452 PAGES 165 TABLES AND FIGURES 2009

\$3,400 SINGLE COPY \$6,800 WEB SITE HOSTING

Electric Vehicle (EV) Market Participants

Electric Vehicle Company Profiles

A123 Systems

Aperta

Better Place Model

E-One Moli Energy Group

Ener1 / Enertech

EnerDel Operations

LG Petrochemical

Panasonic / Sanyo

Saft

Samsung

Electric Supercar by Hybrid Technologies

Electric Mini by PML

Commuter Cars Tango Electric Car

Eliica Electric Car by KEIO University

Wrightspeed X1 Electric Car

Toyota Hybrid Prius

Chrysler

Phoenix

Aptera

Worldwide Electric Vehicle (EV) Market Shares, Strategies, and Forecasts, 2009-2015

REPORT METHODOLOGY

THIS IS THE 403RD REPORT IN A SERIES OF MARKET RESEARCH REPORTS THAT PROVIDE FORECASTS IN COMMUNICATIONS, TELECOMMUNICATIONS, THE INTERNET, COMPUTER, SOFTWARE, TELEPHONE EQUIPMENT, HEALTH EQUIPMENT, AND ENERGY. THE PROJECT LEADERS TAKE DIRECT RESPONSIBILITY FOR WRITING AND PREPARING EACH REPORT. THEY HAVE SIGNIFICANT EXPERIENCE PREPARING INDUSTRY STUDIES. FORECASTS ARE BASED ON PRIMARY RESEARCH AND PROPRIETARY DATA BASES. FORECASTS REFLECT ANALYSIS OF THE MARKET TRENDS IN THE SEGMENT AND RELATED SEGMENTS. UNIT AND DOLLAR SHIPMENTS ARE ANALYZED THROUGH CONSIDERATION OF DOLLAR VOLUME OF EACH MARKET PARTICIPANT IN THE SEGMENT. INSTALLED BASE ANALYSIS AND UNIT ANALYSIS IS BASED ON INTERVIEWS AND AN INFORMATION SEARCH. MARKET SHARE ANALYSIS INCLUDES CONVERSATIONS WITH KEY CUSTOMERS OF PRODUCTS, INDUSTRY SEGMENT LEADERS, MARKETING DIRECTORS, DISTRIBUTORS, LEADING MARKET PARTICIPANTS, OPINION LEADERS, AND COMPANIES SEEKING TO DEVELOP MEASURABLE MARKET SHARE. OVER 200 IN DEPTH INTERVIEWS ARE CONDUCTED FOR EACH REPORT WITH A BROAD RANGE OF KEY PARTICIPANTS AND INDUSTRY LEADERS IN THE MARKET SEGMENT. WE ESTABLISH ACCURATE MARKET FORECASTS BASED ON ECONOMIC AND MARKET CONDITIONS AS A BASE. USE INPUT/OUTPUT RATIOS, FLOW CHARTS, AND OTHER ECONOMIC METHODS TO QUANTIFY DATA. USE IN-HOUSE ANALYSTS WHO MEET STRINGENT QUALITY STANDARDS. INTERVIEWING KEY INDUSTRY PARTICIPANTS, EXPERTS AND END-USERS IS A CENTRAL PART OF THE STUDY. OUR RESEARCH INCLUDES ACCESS TO LARGE PROPRIETARY DATABASES. LITERATURE SEARCH INCLUDES ANALYSIS OF TRADE PUBLICATIONS, GOVERNMENT REPORTS, AND CORPORATE LITERATURE.

FINDINGS AND CONCLUSIONS OF THIS REPORT ARE BASED ON INFORMATION GATHERED FROM INDUSTRY SOURCES, INCLUDING MANUFACTURERS, DISTRIBUTORS, PARTNERS, OPINION LEADERS, AND USERS. INTERVIEW DATA WAS COMBINED WITH INFORMATION GATHERED THROUGH AN EXTENSIVE REVIEW OF INTERNET AND PRINTED SOURCES SUCH AS TRADE PUBLICATIONS, TRADE ASSOCIATIONS, COMPANY LITERATURE, AND ONLINE DATABASES. THE PROJECTIONS CONTAINED IN THIS REPORT ARE CHECKED FROM TOP DOWN AND BOTTOM UP ANALYSIS TO BE SURE THERE IS CONGRUENCE FROM THAT PERSPECTIVE.

THE BASE YEAR FOR ANALYSIS AND PROJECTION IS 2008. WITH 2008 AND SEVERAL YEARS PRIOR TO THAT AS A BASELINE, MARKET PROJECTIONS WERE DEVELOPED FOR 2009 THROUGH 2015. THESE PROJECTIONS ARE BASED ON A COMBINATION OF A CONSENSUS AMONG THE PRIMARY CONTACTS COMBINED WITH UNDERSTANDING OF THE KEY MARKET DRIVERS AND THEIR IMPACT FROM A HISTORICAL AND ANALYTICAL PERSPECTIVE. THE ANALYTICAL METHODOLOGIES USED TO GENERATE THE MARKET ESTIMATES ARE BASED ON PENETRATION ANALYSES, SIMILAR MARKET ANALYSES, AND DELTA CALCULATIONS TO SUPPLEMENT INDEPENDENT AND DEPENDENT VARIABLE ANALYSIS.

YOU MUST HAVE THIS STUDY

REPORT # SH24030618 452 PAGES 165 TABLES AND FIGURES 2009

\$3,400 SINGLE COPY \$6,800 WEB SITE HOSTING

Worldwide Electric Vehicle (EV) Market Shares, Strategies, and Forecasts, 2009 to 2015

Table of Contents

ELECTRIC VEHICLE (EV) EXECUTIVE SUMMARY

Figure ES-1 Aptera Pre-Production Model 2e	ES-2
Figure ES-2 REVA Electric Car	ES-5
Table ES-3 Electric Vehicle Market Driving Forces	ES-8
Table ES-3 (Continued) Electric Vehicle Market Driving Forces	ES-9
Figure ES-4 Worldwide Electric Vehicles On The Road Market Shares, Units, 2009	ES-10
Figure ES-5 Worldwide Electric Vehicle Penetration of Automotive and Light Truck Market Forecasts, Percent, 2009-2015	ES-15
Figure ES-6 Worldwide Electric Vehicle Retail Forecasts, Dollars, 2009-2015	ES-16
Table ES-7 Reasons For Aggressive Forecast For Electric Vehicle Markets	ES-19
Table ES-7 (Continued) Reasons For Aggressive Forecast For Electric Vehicle Markets	ES-19
Table ES-8 New Infrastructure, New Driving Modalities Brought By Electric Vehicles	ES-21

ELECTRIC VEHICLE (EV) MARKET DESCRIPTION AND MARKET DYNAMICS

1. ELECTRIC VEHICLE MARKET DESCRIPTION AND MARKET DYNAMICS	1-1
1.1 Auto Industry	1-1
1.1.1 Electric Vehicle Economic Forces	1-2
1.1.2 Cars Represent 20% Of The US Economic Retail Spending	1-3
1.1.3 Electric Vehicle Design Trajectories	1-3
1.2 Electric Vehicle EVs	1-4
1.2.1 EVs Cost Effective In City Conditions	1-5
1.2.2 Lithium-Ion Car Batteries	1-5
1.2.3 Private-Public Partnerships	1-7
1.3 Lithium-Ion Battery Target Markets	1-9
1.3.1 Project Better Place and the Renault-Nissan Alliance	1-10
1.3.2 Largest Target Market, The Transportation Industry	1-11

REPORT # SH24030618 452 PAGES 165 TABLES AND FIGURES 2009

\$3,400 SINGLE COPY \$6,800 WEB SITE HOSTING

1.3.3	Electric Grid Services Market	1-12
1.3.4	Portable Power Market, Power Tools	1-13
1.4	Lithium-Ion Battery Technologies Transportation	
Industry	Target Market	1-15
1.5	Energy Storage For Grid Stabilization	1-19
1.5.1	Local Energy Storage Benefit For Utilities	1-20
1.6	Applications Require On-Printed Circuit Board Battery Power	1-21
1.6.1	Thin-film vs. Printed Batteries	1-21
1.7	Smart Buildings	1-22
1.7.1	Permanent Power for Wireless Sensors	1-24
1.8	Battery Safety / Potential Hazards	1-25
1.9	Thin Film Solid-State Battery Construction	1-26
1.10	Battery Is Electrochemical Device	1-28
1.11	Battery Depends On Chemical Energy	1-29
1.11.1	Characteristics Of Battery Cells	1-29
1.11.2	Batteries Are Designed Differently For Various Applications	1-31

ELECTRIC VEHICLE (EV) MARKET SHARES AND MARKET FORECASTS

2. ELECTRIC VEHICLE MARKET SHARES AND MARKET FORECASTS	2-1	
2.1	Electric Vehicle Economic Market Driving Forces	2-1
2.1.1	Nanotechnology Forms the Base for Lithium-Ion Batteries	2-5
2.1.2	Lithium-Ion Batteries	2-5
2.2	Electric Vehicle Market Shares	2-9
2.2.1	Daimler Safety Cell	2-11
2.2.2	Daimler Smart Car	2-12
2.2.3	BYD 2-12	
2.2.4	Think Environmentally Friendly Vehicles	2-13
2.2.5	TH!NK City Safety Concept	2-13
2.2.6	Think Overnight Power Top-Up	2-14
2.2.7	GM Volt	2-14
2.2.8	GM Opel	2-15
2.2.9	Tesla Motors	2-16
2.2.10	i MiEV Electric Car by Mitsubishi	2-17
2.2.11	Mitsubishi	2-18
2.2.12	Subaru Selling EVs In Japan In 2009	2-18
2.2.13	BMW 2-18	
2.2.14	REVA Electric Car	2-18
2.2.15	Ford Advances Electric Vehicle Technology	2-20
2.2.16	Ford Partnership With Utility Industry	2-22
2.2.17	Toyota Hybrid Prius	2-22
2.2.18	Nissan	2-22
2.2.19	Phoenix Motorcars	2-23
2.2.20	Fuji Heavy Industries / Subaru	2-23
2.2.21	Chrysler	2-24
2.3	Electric Vehicles Market Forecasts	2-24
2.4	Electric Vehicle Battery Recharging	2-40
2.4.1	Changing Electric Vehicles On The Fly	2-40
2.5	2008 / 2009 Auto Sales Overview	2-42
2.5.1	Korean Cars Succeed In US	2-43
2.5.2	Total Vehicles Sold / GM Profile	2-43
2.5.3	GM Global Vehicle Sales and Market Share – 2007	2-45

REPORT # SH24030618 452 PAGES 165 TABLES AND FIGURES 2009**\$3,400 SINGLE COPY \$6,800 WEB SITE HOSTING**

WINTERGREEN RESEARCH, INC.

2.5.4	Worldwide Automotive Sales For 2007	2-45
2.5.5	Deepening Slowdown	2-47
2.6	Electric Vehicles As A Very Fancy Golf Cart	2-48
2.7	Worldwide Nanotechnology Thin Film Lithium-Ion	
	Battery Market Driving Forces	2-49
2.7.1	Market Driving Forces	2-51
2.7.2	Nanotechnology Forms the Base for Lithium-Ion Batteries	2-55
2.7.3	Competitors	2-55
2.8	Lithium-Ion Battery Market Shares	2-56
2.8.1	ExxonMobil Affiliate in Japan / Tonen Chemical	2-58
2.8.2	A123Systems Patent for Nanophosphate™ Lithium Ion Battery Technology	2-59
2.9	Lithium-Ion Battery Market Forecasts	2-61
2.10	Electric Vehicle and Hybrid Vehicle Lithium-Ion	
	Battery Market Shares	2-64
2.10.1	BYD	2-66
2.10.2	Johnson Controls-Saft	2-67
2.10.3	Saft Battery Technologies	2-67
2.10.4	A123Systems 32 Series Automotive Class Lithium Ion™ Cells:	2-68
2.10.5	NEC and Nissen	2-70
2.10.6	LG Chem	2-70
2.10.7	EnerDel	2-71
2.10.8	Competition	2-71
2.11	Electric and Hybrid Vehicle Lithium-Ion Battery	
	Market Forecasts	2-72
2.11.1	Largest Target Market, The Transportation Industry	2-77
	Thin Film Advanced Lithium-Ion Battery EV Market	2-79
	Thin Film Lithium-Ion And Lithium Polymer Automotive Batteries	2-80

ELECTRIC VEHICLE (EV) PRODUCT DESCRIPTION

3. ELECTRIC VEHICLE PRODUCT DESCRIPTION	3-1
3.1 BMW	3-1
3.1.1 BMW Second Version Of The Electric Mini	3-3
3.2 BYD / MidAmerican Energy Holdings	3-3
3.2.1 Warren Buffet - MidAmerican, A Collection Of Electric Utilities In The Midwest	3-4
3.2.2 BYD Plug-in Hybrid Power Train Flexibility	3-9
3.2.3 BYD E6 Electric Car and F6	3-10
3.2.4 BYD E6 Electric Vehicle Specifications	3-13
3.3 Tesla Motors	3-13
3.3.1 Electric Roadster by Tesla Motors	3-14
3.3.2 Tesla Motors Next Generation Model S	3-17
3.3.3 Telsa Battery Pack And Frame	3-18
3.4 Daimler AG	3-19
3.4.1 Daimler Smart Car Model Features	3-21
3.4.2 Electric Car by Daimler Mercedes (2010)	3-23

REPORT # SH24030618 452 PAGES 165 TABLES AND FIGURES 2009

\$3,400 SINGLE COPY \$6,800 WEB SITE HOSTING

3.5	Think	3-24
3.5.1	A123Systems / GE Production Contract for Norwegian Think Electric Vehicles	3-24
3.5.2	Think Overnight Power Top-Up	3-26
3.5.3	TH!NK City Safety Concept	3-30
3.5.4	TH!NK City Environmentally Friendly	3-33
3.5.5	Thinking Globally	3-35
3.6	General Motors	3-40
3.6.1	GM Volt	3-41
3.6.2	GM Challenge to Battery Developers	3-43
3.6.3	GM and A123Systems Co-Develop Lithium-Ion Battery Cell for Chevrolet Volt	3-47
3.6.4	GM Cadillac Electric Vehicle	3-49
3.6.5	GM / Opel	3-53
3.6.6	GM Chevrolet Equinox Fuel-Cell Vehicles	3-54
3.7	Miles XS500 Electric Car	3-54
3.8	Mitsubishi i MiEV Electric Car to be Sold 1 Year Ahead of Schedule in Japan	3-56
3.8.1	Mitsubishi i MiEV Electric Car Specifications	3-57
3.8.2	Mitsubishi i MiEV Electric Car Pricing	3-58
3.8.3	i MiEV Electric Car by Mitsubishi	3-59
3.8.4	Mitsubishi Electric Car i MiEV Coming to Europe	3-62
3.8.5	Mitsubishi Electric Car i MiEV Production Plans	3-63
3.8.6	i MiEV Electric Car Specifications	3-63
3.8.7	i MiEV Electric Car to be Sold 1 Year Ahead of Schedule	3-66
3.9	Fuji Heavy Industries / Subaru R1e Electric Car	3-67
Source: Subaru.		3-68
3.9.1	Subaru Selling EVs In Japan In 2009	3-69
3.9.2	Subaru G4e	3-69
Source: Subaru.		3-69
3.9.3	NEC / Fuji Heavy Industries / Subaru	3-70
3.9.4	NEC / Fuji Heavy Industries / Subaru Thin Film Battery Flat Shape	3-70
3.10	Electric Supercar by Hybrid Technologies	3-72
3.11	Electric Mini by PML	3-73
3.12	Electric Car by Nissan (2010-2012)	3-74
3.12.1	NEC / Nissan Low-Cost Lithium-Manganese Batteries	3-74
3.13	REVA Electric Car	3-76
3.14	Zenn Low Speed Electric Car	3-78
3.15	Commuter Cars Tango Electric Car	3-82
3.16	Eliica Electric Car by KEIO University	3-85
3.17	Wrightspeed X1 Electric Car	3-86
3.18	Saturn SP1 Electric Car Conversion by Students of Napoleon High School	3-87
3.19	Toyota Hybrid Prius	3-88
3.19.1	Toyota iQ Microcar	3-89
3.19.2	Toyota FT-EV Battery Electric Vehicle	3-91
3.20	Ford	3-92
3.21	Chrysler	3-93
3.21.1	Chrysler Town & Country EV	3-94
3.21.2	Chrysler Personal Mobility Revolution	3-95
3.21.3	Chrysler Dodge Circuit EV	3-99
3.21.4	Chrysler Jeep® Wrangler Unlimited EV	3-101
3.22	Phoenix	3-102
3.23	Shelby Supercars	3-105

ELECTRIC VEHICLE (EV) SERVER TECHNOLOGY

4. ELECTRIC VEHICLE TECHNOLOGY	4-1
4.1 Phoenix Motorcars Altairnano Lithium Titanate Battery Technology	4-1
4.1.1 Altairnano Battery Comparison	4-1
4.1.2 Lead-Acid Battery Technology	4-3
4.1.3 Nickel Metal Hydride (NiMH)	4-3
4.1.4 Lithium-Ion	4-3
4.2 Globalization Model For Electric Cars	4-4
4.2.1 Better Place Electric Vehicle Network	4-4
4.2.2 Better Place has partnered with AGL Energy in Australia	4-5
4.3 EFOY Pro Fuel Cell Electric Vehicle Charging Kit	4-6
4.3.1 Smart Fuel Cells SFC	4-12
4.3.2 Citycom AG's CityEL	4-13
4.4 Vendor Lithium-ion Battery Strategy	4-15
4.4.1 Rechargeable Lithium Batteries Characteristics	4-16
4.5 Challenges in Battery Design	4-17
4.5.1 Advanced Lithium-ion Batteries Requirements	4-21
4.6 Vendor Lithium-Ion Battery Positioning	4-22
4.6.1 High-Quality, Volume Manufacturing Facilities	4-24
4.7 Applications Of Lithium-Ion Batteries	4-25
4.8 Mobile Phone Industry	4-26
4.8.1 Nanowires	4-27
4.8.2 Thin Film Battery Enabling Chemistries	4-27
4.8.3 The Cathodes	4-28
4.8.4 Solid State Devices Provide More Energy Density	4-28
4.9 Advantages of Lithium-Ion Batteries	4-29
4.9.1 Lithium-Ion Battery Shortcomings	4-32
4.9.2 Charging	4-33
4.9.3 Applications	4-33
4.9.4 Costs 4-34	
4.10 Lithium Cell Chemistry Variants	4-34
4.10.1 Lithium-ion	4-34
4.10.2 Lithium-ion Polymer	4-36
4.10.3 Other Lithium Cathode Chemistry Variants	4-36
4.10.4 Lithium Cobalt LiCoO ₂	4-37
4.10.5 Lithium Manganese LiMn ₂ O ₄	4-37
4.10.6 Lithium Nickel LiNiO ₂	4-38
4.10.7 Lithium (NCM) Nickel Cobalt Manganese - Li(NiCoMn)O ₂	4-38
4.10.8 Lithium Iron Phosphate LiFePO ₄	4-38
4.11 Operating Performance Of The Cell Can Be Tuned	4-39
4.12 Lithium Metal Polymer	4-39
4.12.1 Lithium Sulphur Li ₂ S ₈	4-40
4.12.2 Alternative Anode Chemistry	4-40
4.13 ExxonMobil affiliate, Tonen Chemical Polyethylene-Based, Porous Film	4-41
4.14 Cymbet Alternate Manufacturing	4-41
4.15 Thin-Film Batteries Packaging	4-41
4.16 ITN Energy Systems Fibrous Substrates, PowerFiber	4-42

REPORT # SH24030618 452 PAGES 165 TABLES AND FIGURES 2009

\$3,400 SINGLE COPY \$6,800 WEB SITE HOSTING

WINTERGREEN RESEARCH, INC.

4.16.1	ITN Sensors	4-45
4.17	Cell Construction	4-46
4.18	Impact Of Nanotechnology	4-47
4.19	Thin Film Batteries	4-48
4.19.1	Thin Film Battery Timescales and Costs	4-51
4.19.2	High Power And Energy Density	4-51
4.19.3	High Rate Capability	4-52
4.20	Comparison Of Rechargeable Battery Performance	4-53
4.21	Polymer Film Substrate	4-59
4.22	Micro Battery Solid Electrolyte	4-60

ELECTRIC VEHICLE (EV) SERVER COMPANY PROFILES

5. ELECTRIC VEHICLE COMPANY PROFILES	5-1
5.1 A123 Systems	5-1
5.1.1 A123 Systems Revenue	5-1
5.1.2 A123Systems Registration Statement for Initial Public Offering	5-2
5.1.3 A123 Systems Batteries Benefits	5-2
5.1.4 A123 Systems Competitive Advantage	5-4
5.1.5 A123 Systems Strategy	5-7
5.1.6 A123Systems and GE	5-8
5.1.7 A123 Acquisition of Hymotion	5-9
5.1.8 Procter & Gamble Duracell and A123 Systems Collaborate	5-10
5.1.9 Cobasys and A123 Systems	5-10
5.2 Aperta	5-11
5.3 Better Place Model	5-13
5.4 BMW	5-14
5.5 BYD 5-15	
5.5.1 Warren Buffett Buys 10 Percent Stake In BYD Chinese Battery Manufacturer	5-16
5.6 E-One Moli Energy Group	5-17
5.7 Ener1	5-19
5.7.1 Ener1 Third Quarter 2008 Revenue	5-19
5.7.2 Ener1 Positioning Technology Originally Pioneered By Argonne National Lab	5-21
5.7.3 Ener1 Acquires Enertech Leading Korean Lithium-ion Battery Cell Producer	5-23
5.7.4 Ener1 / Enertech Specializes In Producing Large Format Flat ("Prismatic") Cells	5-24
5.7.5 EnerDel Operations	5-27
5.8 Ford 5-31	
5.8.1 Ford Electric Vehicle Positioning	5-32
5.8.2 Ford's Comprehensive Sustainability Strategy	5-32
5.8.3 Ford Partnership With Southern California Edison Electric Utility	5-34
5.8.4 Ford Partnership with Johnson Controls- Saft for Thin Film Batteries	5-35
5.8.5 Ford Partnership with Utility Industry	5-37
5.8.6 Building A Business Case	5-37

REPORT # SH24030618 452 PAGES 165 TABLES AND FIGURES 2009

\$3,400 SINGLE COPY \$6,800 WEB SITE HOSTING

WINTERGREEN RESEARCH, INC.

5.8.7	Governments Of Japan, China, Korea, And India Significantly Funding EV Research	5-39
5.8.8	Ford Energy Future Vision	5-39
5.9	Fuji Heavy Industries / Subaru	5-42
5.9.1	Subaru of America	5-43
5.9.2	Subaru of America Revenue 2008	5-44
5.10	General Motors	5-45
5.10.1	General Motors Factory In Michigan To Build Battery Packs	5-45
5.10.2	GM 2008 Global Sales of 8.35 Million Vehicles	5-46
5.10.3	GM Continues Growth in Emerging Markets	5-48
5.10.4	GM's North America Regional Performance	5-50
5.10.5	GM Europe	5-57
5.10.6	GM Strongly Believes In The Electrification Of The Automobile	5-58
5.11	Miles Electric Vehicles	5-60
5.11.1	Miles Zero Emissions, Full Electric Car	5-61
5.12	Johnson Controls-Saft	5-61
5.13	LG Petrochemical	5-62
5.13.1	LG Chem	5-63
5.14	Mitsubishi	5-63
5.14.1	Fleet Testing Of The Zero-Emissions iMiev Electric Vehicle	5-64
5.15	NEC / Nissan Low-Cost Lithium-Manganese Batteries	5-64
5.15.1	NEC Lamilion Energy	5-65
5.16	Panasonic / Sanyo	5-66
5.17	Phoenix Motorcars	5-68
5.17.1	Phoenix Motorcars Customers: Maui Electric	5-68
5.17.2	Phoenix MC All-Electric, Light-Duty Trucks	5-69
5.18	REVA	5-70
5.18.1	REVA Car Features	5-71
5.18.2	REVA Globally Tested Product	5-72
5.19	Saft	5-74
5.19.1	Saft Battery Technologies	5-75
5.19.2	Saft Industrial Battery Group (IBG)	5-77
5.19.3	Saft Specialty Battery Group (SBG)	5-78
5.19.4	Saft Rechargeable Battery Systems (RBS)	5-80
5.19.5	Saft Research and Development	5-80
5.19.6	Johnson Controls-Saft United States Advanced Battery Consortium (USABC)	81
5.20	Samsung	5-82
5.21	Shelby SuperCars	5-83
5.21.1	Sheffield International Finance Corporation	5-85
5.21.2	SSC Monthly Newsletter	5-86
5.22	Tesla Motors	5-87
5.22.1	Tesla Battery Packs	5-88
5.22.2	Tesla Roadster	5-88
5.22.3	Tesla Restructuring	5-89
5.23	Think	5-91
5.23.1	Think Manufacturing Capacity	5-93
5.23.2	Think Employees Called Back From Lay-Off	5-95
5.23.3	Think Confirms Interim Financing - Private Equity Firm Ener1 Group Is The Lead Investor	5-95
5.23.4	Kleiner Perkins And Rockport Capital, Two Leading Us Cleantech Investors Launch Joint Venture With Norwegian Electrical Vehicle Company Think	5-96
5.23.5	TH!NK city Crash-Tested And Highway-Certified EV	5-97
5.23.6	Think Strategic Partnership With Energy Giant General Electric	5-97

REPORT # SH24030618 452 PAGES 165 TABLES AND FIGURES 2009**\$3,400 SINGLE COPY \$6,800 WEB SITE HOSTING**

5.23.7	Think collaboration with Porsche Consulting	5-98
5.24	Toyota	5-98
5.25	ZENN Motor Company	5-102
5.25.1	Zenn Motor Strategic Energy Storage Partner, Eestor	5-102

List of Tables and Figures

ELECTRIC VEHICLE (EV) EXECUTIVE SUMMARY

Figure ES-1	Aptera Pre-Production Model 2e	ES-2
Figure ES-2	REVA Electric Car	ES-5
Table ES-3	Electric Vehicle Market Driving Forces	ES-8
Table ES-3 (Continued)	Electric Vehicle Market Driving Forces	ES-9
Figure ES-4	Worldwide Electric Vehicles	ES-10
Figure ES-5	On The Road Market Shares, Units, 2009	ES-15
Figure ES-6	Worldwide Electric Vehicle Penetration of Automotive and Light Truck Market Forecasts, Percent, 2009-2015	ES-16
Table ES-7	Worldwide Electric Vehicle Retail Forecasts, Dollars, 2009-2015	ES-19
Table ES-7 (Continued)	Reasons For Aggressive Forecast For Electric Vehicle Markets	ES-19
Table ES-8	Reasons For Aggressive Forecast For Electric Vehicle Markets	ES-21
	New Infrastructure, New Driving Modalities Brought By Electric Vehicles	

ELECTRIC VEHICLE (EV) MARKET DESCRIPTION AND MARKET DYNAMICS

Table 1-1	Principal Features Used To Compare Rechargeable Batteries	1-11
Figure 1-2	BMW's Mini E Electric Car Powered By A Rechargeable Lithium-Ion Battery	1-16
Table 1-3	Examples of Hybrid Electric Vehicles	1-17
Figure 1-4		1-27

REPORT # SH24030618 452 PAGES 165 TABLES AND FIGURES 2009

\$3,400 SINGLE COPY \$6,800 WEB SITE HOSTING

Typical Structure Of A Thin Film Solid State Battery	
Table 1-5	1-30
Characteristics Of Battery Cells	

ELECTRIC VEHICLE (EV) MARKET SHARES AND MARKET FORECASTS

Table 2-1	2-2
Lithium-Ion Battery Market Driving Forces	
Table 2-2	2-4
Energy Advantages Of Thin-Film Batteries	
Figure 2-3	2-6
Aptera Pre-Production Model 2e	
Table 2-4	2-8
Electric Vehicle Market Driving Forces	
Table 2-4 (Continued)	2-9
Electric Vehicle Market Driving Forces	
Figure 2-5	2-10
Worldwide Electric Vehicles	
On The Road Market Shares, Units, 2009	
Table 2-6	2-11
Worldwide Electric Vehicle Shipments Market Shares, Units On the Road	
2009 11	
Figure 2-7	2-17
i MiEV Electric Car by Mitsubishi - Red	
Figure 2-8	2-20
REVA Electric Car	
Figure 2-9	2-25
Worldwide Electric Vehicle Penetration of Automotive and Light Truck Market Forecasts, Percent, 2009-2015	
Table 2-10	2-26
Worldwide Electric Vehicle (EV) Unit Shipments and Automotive Market Retail Forecasts and Penetration Analysis, 2009-2015	
Figure 2-11	2--27
Worldwide Electric Vehicle Retail Forecasts, Dollars, 2009-2015	
Table 2-12	2-28
Worldwide Electric Vehicle (EV) Unit Shipments and Automotive Market Retail Forecasts and Penetration Analysis, 2009-2015	
Table 2-13	2-28
Worldwide Electric Vehicle (EV) Unit Shipments and Automotive Market Retail Forecasts, Penetration Analysis, 2009-2015	
Table 2-14	2-30
Worldwide Automotive and Light Truck Small Size Electric Vehicle (EV) Market Forecasts, Dollars, 2009-2015	

REPORT # SH24030618 452 PAGES 165 TABLES AND FIGURES 2009**\$3,400 SINGLE COPY \$6,800 WEB SITE HOSTING**

Table 2-15	32
Worldwide Small Electric Vehicle (EV) Market Forecasts, Units, 2009-2015	
Table 2-16	2-33
Worldwide Small Car and Small Light Truck Electric Vehicle (EV) Automotive Market Retail Forecasts, Units and Dollars, 2009-2015	
Table 2-17	2-34
Worldwide Sedan Size Automotive and Light Truck Electric Vehicle (EV) Retail Market Forecasts, Dollars, 2009-2015	
Table 2-18	2-35
Worldwide Sedan Size Automotive and Light Truck Electric Vehicle (EV) Shipments Retail Market Forecasts, Units, 2009-2015	
Table 2-19	2-36
Worldwide Sedan Size Car and Light Truck Electric Vehicle (EV) Unit Shipments and Automotive Market Retail Forecasts, Units and Dollars, 2009-201	
Table 2-20	2-37
Reasons For Aggressive Forecast For Electric Vehicle Markets	
Table 2-21	2-39
New Infrastructure, New Driving Modalities Brought By Electric Vehicles	
Table 2-22	2-52
Lithium-Ion Battery Market Driving Forces	
Table 2-23	2-54
Energy Advantages Of Thin-Film Batteries	
Figure 2-24	2-56
Worldwide Lithium-Ion Thin Film Advanced Battery Shipments, Market Shares, Dollars, 2008	
Table 2-25	2-57
Worldwide Lithium-Ion Thin Film Advanced Battery Shipments, Market Shares, Dollars, 2008	
Figure 2-26	2-62
Worldwide Lithium-Ion Thin Film Advanced Battery Shipments, Market Shares, Dollars, 2009-2015	
Figure 2-27	2-63
Worldwide Lithium-Ion and Advanced Lithium-ion Battery Market Forecasts, Automotive, Power Tools, Electric Grid, and PC Card, Dollars, 2009-2015	
Figure 2-28	2-64
Worldwide Lithium-Ion Thin Film Automotive Advanced Battery Shipments, Market Shares, Dollars, 2008	
Figure 2-29	2-65
Worldwide Lithium-Ion Thin Film Automotive Advanced Battery Shipments, Market Shares, Dollars, 2008	
Figure 2-30	2-73
Worldwide Lithium-Ion Thin Film Advanced Battery Shipments, Market Shares, Dollars, 2009-2015	
Figure 2-31	2-74
Worldwide Lithium-Ion Thin Film Advanced Battery Shipments, Market Shares, Units, 2009-2015	

Figure 2-32	2-75
Worldwide Lithium-Ion Thin Film Advanced Battery Shipments, Market Shares, Units and Dollars, 2009-2015	
Table 2-33	2-81
Commercialization Challenges Of The Automotive, Truck, and Bus Thin Film Battery Industry	
Table 2-34	2-83
Integrated Thin Film Battery Personal Transport Power Systems	

ELECTRIC VEHICLE (EV) PRODUCT DESCRIPTION

Figure 3-1	2-2
BMW'S Mini E Electric Car Powered By A Rechargeable Lithium-Ion Battery	
Figure 3-2	3-5
BYD E6 Electric Car	
Figure 3-3	3-6
BYD F3DM Front View	
Figure 3-4	3-7
BYD F3DM Rear View	
Figure 3-5	3-8
BYD F3 Moon Roof	
Table 3-6	3-10
BYD Plug-in Hybrid Powertrain Flexibility	
Figure 3-7	3-11
BYD E6 Electric Car	
Figure 3-8	3-12
BYD F6	
Figure 3-9	3-14
Tesla Motors Roadster	
Figure 3-10	3-16
Tesla Motors Roadster Torque and Power Graph	
Figure 3-11	3-17
Model S by Tesla Motors	
Figure 3-12	3-19
Daimler AG Smart car	
Figure 3-13	3-21
Daimler Smart Car	
Figure 3-14	3-23
Daimler Electric Mercedes	
Figure 3-15	3-27
Prince Albert of Monaco Driving TH!NK city	
Figure 3-16	3-28
Driving TH!NK city	
Figure 3-17	3-29
Think Driver Console	
Figure 3-18	3-31
Think Open	
Figure 3-19	3-33

Think OX	
Figure 3-20	3-35
Think City Electric Vehicle	
Table 3-21	3-36
TH!NK City Specifications	
Table 3-22	3-37
Think City Standard Equipment:	
Table 3-22 (Continued)	3-38
Think City Standard Equipment:	
Table 3-23	3-39
TH!NK City Features	
Figure 3-24	3-40
Think Lineup of Electric Cars	
Figure 3-25	3-44
General Motors Chevrolet Volt – Front View	
Figure 3-26	3-45
General Motors Chevrolet Volt - Angle View	
Figure 3-27	3-46
General Motors Chevrolet Volt - Rear View	
Figure 3-28	3-47
General Motors Chevrolet Volt	
Figure 3-29	3-50
GM Cadillac Electric Vehicle	
Figure 3-30	3-52
General Motors EV1 Electric Car	
Figure 3-31	3-55
XS500 Electric Car by Miles	
Figure 3-32	3-57
i MiEV Electric Car by Mitsubishi - In Traffic	
Figure 3-33	3-58
i MiEV Electric Car by Mitsubishi - Battery Packaging	
Figure 3-34	3-59
i MiEV Electric Car by Mitsubishi - Red	
Figure 3-35	3-60
i MiEV Electric Car by Mitsubishi - Gray	
Figure 3-36	3-61
i MiEV Electric Car by Mitsubishi - Interior	
Figure 3-37	3-62
i MiEV Electric Car by Mitsubishi - Features	
Figure 3-38	3-64
Mitsubishi I Miev Electric Car	
Figure 3-39	3-65
Mitsubishi I Miev Electric Car Interior Engine and Drive Train Layout	
Figure 3-40	3-67
Fuji Heavy Industries / Subaru R1e Electric Car	
Figure 3-41	3-68
Subaru R1e Electric Car Plug Station	
Figure 3-42	3-69
Subaru G4e Electric Car	
Figure 3-43	3-72
Hybrid Technologies Electric Supercar	

Figure 3-44	3-73
Electric Mini by PML	
Figure 3-45	3-74
Test Electric Car by Nissan	
Figure 3-46	3-76
REVA Electric Car	
Figure 3-47	3-78
Zenn Auto	
Figure 3-48	3-79
Zenn Electric Auto Close-up	
Figure 3-49	3-80
Zenn Auto Parked in Street	
Figure 3-50	3-81
Zenn Electric Auto – Gray with Sun Roof	
Figure 3-51	3-82
Commuter Cars Tango Electric Car	
Figure 3-52	3-84
Commuter Cars Tango in Washington DC	
Figure 3-53	3-85
Eliica Electric Car	
Figure 3-54	3-86
Wrightspeed X1 Electric Car	
Figure 3-55	3-87
Saturn SP1 Electric Car Conversion	
Figure 3-56	3-88
Toyota Hybrid Prius	
Figure 3-57	3-90
Toyota FT-EV Battery Electric Vehicle	
Figure 3-58	3-91
Toyota Electric Car	
Table 3-59	3-94
Chrysler ENVI Electric Minivan Features	
Figure 3-60	3-95
Interior of The Concept Car, The Chrysler 200C EV	
Table 3-61	3-96
Chrysler Electric Vehicle Positioning	
Table 3-62	3-97
Chrysler Electric Vehicle EV	
Figure 3-63	3-98
Chrysler Electric Vehicles	
Figure 3-64	3-99
Dodge Circuit EV	
Table 3-65	3-100
Dodge Circuit EV Features	
Figure 3-66	3-101
Chrysler Jeep® Wrangler Unlimited EV	
Figure 3-67	3-102
Jeep® Wrangler Unlimited EV Features	
Figure 3-68	3-103
Phoenix Motorcars SUT Truck	
Figure 3-69	3-104
Phoenix Motorcars SUV Vehicle	

Figure 3-70	3-106
Shelby Supercars	
Figure 3-71	3-107
Shelby Supercars - Doors Raised	
Figure 3-72	3-108
Aptera Pre-Production Model 2e	
Figure 3-73	3-109
Aptera 2e Pre-Production Models	
Figure 3-74	3-110
Aperta Three Wheel Vehicle	
Figure 3-75	3-111
Aperta Three Wheel Vehicle - Rear View	

ELECTRIC VEHICLE (EV) TECHNOLOGY

Figure 4-1	4-2
Altairnano Battery Performance:	
Figure 4-2	4-7
EFOY Pro Fuel Cell Kit For Electric Vehicles	
Figure 4-3	4-8
Electrica City Car - Red	
Figure 4-4	4-9
Electrica City Car - Yellow	
Figure 4-5	4-10
Electrica City Car - Open	
Figure 4-6	4-11
Electrica City Car - Dashboard	
Figure 4-7	4-14
Smart Fuel Cells (SFC) Supply The StartLab Open With Power	
Table 4-8	4-18
Challenges in Lithium-ion Battery Design	
Table 4-9	4-29
Advantages of Lithium-Ion Batteries	
Source: ITN.	
Table 4-10	4-49
Thin Film Battery Unique Properties	
Table 4-11	4-52
Comparison of battery performances	
Table 4-12	4-54
Comparison Of Battery Performances	
Table 4-13	4-56
Thin Films For Advanced Batteries	
Table 4-14	4-57
Thin Film Batteries Technology	
Table 4-15	4-58
Thin Film Battery / Lithium Air Batteries Applications	
Figure 4-16	4-59
Polymer Film Substrate Thin Flexible Battery Profiles	
Figure 4-17	4-60
Design Alternatives of Thin Film Rechargeable Batteries	

ELECTRIC VEHICLE (EV) COMPANY PROFILES

Table 5-1	5-3
A123 Systems Batteries Benefits	
Table 5-2	5-5
A123 Systems Competitive Positioning	
Table 5-2 (Continued)	5-6
A123 Systems Competitive Positioning	
Table 5-2 (Continued)	5-7
A123 Systems Competitive Positioning	
Figure 5-3	5-12
Aptera Vehicle Early Drawings	
Figure 5-4	5-12
Assembly Facility: Vista, CA	
Figure 5-5	5-13
Aperta Composite Facility: Carlsbad, CA	
Figure 5-6	5-27
EnerDel Operations	
Figure 5-7	5-28
EnerDel Lithium Power Systems	
Figure 5-8	5-29
EnerDel Lithium Power USABC Contracts	
Figure 5-9	5-30
EnerDel Lithium Power Think Project	
Table 5-10	5-41
Ford Key Government Energy Actions Recommendations	
Figure 5-11	5-67
Sanyo Battery Targets 2020	
Figure 5-12	5-73
REVA Electric Car	
Figure 5-13	5-76
Saft Revenue H1 2008	
Figure 5-14	5-84
Shelby Supercars	
Figure 5-15	5-92
Think Auto Production Facility	
Figure 5-16	5-94
TH!NK North America	
Figure 5-17	5-99
Toyota Consolidated Vehicle Sales	
Figure 5-18	5-100
Toyota Strategy	
Figure 5-19	5-101
Toyota Car	

ABOUT THE COMPANY

WINTERGREEN RESEARCH, RESEARCH STRATEGY IDENTIFIES MARKET TRENDS THROUGH READING MARKET MATERIALS AND INTERVIEWING OPINION LEADERS. **WINTERGREEN RESEARCH TEAM** WORKS TO GATHER PRIMARY INFORMATION FROM COMPANY INTERVIEWS, INDUSTRY MATERIALS, AND COMPANY DOCUMENTS TO WRITE MARKET RESEARCH STUDIES FROM AN INDEPENDENT PERSPECTIVE. THE ABILITY, TO THINK ABOUT MARKET TRENDS IS ENHANCED BY DOING IT OVER AND OVER FOR MANY DIFFERENT MARKETS. THAT IS WHAT **WINTERGREEN RESEARCH** IS ALL ABOUT: READING AND THINKING IS AN ESSENTIAL ASPECT OF COMPETITIVE ANALYSIS. TALKING TO OPINION LEADERS IS AN ESSENTIAL ASPECT OF PRODUCING GOOD, RELIABLE, INDEPENDENT DATA.

BY READING THE ELECTRONIC EQUIVALENT OF 40 FEET OF PAPER, **WINTERGREEN RESEARCH** SENIOR ANALYSTS CAN LEARN A LOT MORE ABOUT MARKETS. IDENTIFICATION OF MARKET TRENDS IS A HIGH PRIORITY AT **WINTERGREEN RESEARCH**. AS WITH THE VALUE PROPOSITION FOR COMPETITIVE ANALYSIS COMING FROM GETTING PRIMARY INPUT FROM A RANGE OF INDUSTRY PARTICIPANTS AND OBSERVERS.

WINTERGREEN RESEARCH, FOUNDED IN 1985, PROVIDES STRATEGIC MARKET ASSESSMENTS IN TELECOMMUNICATIONS, COMMUNICATIONS EQUIPMENT, HEALTH CARE, INTERNET AND ADVANCED COMPUTER TECHNOLOGY. INDUSTRY REPORTS FOCUS ON OPPORTUNITIES THAT EXPAND EXISTING MARKETS OR DEVELOP MAJOR NEW MARKETS. THE REPORTS ASSESS NEW PRODUCT AND SERVICE POSITIONING STRATEGIES, NEW AND EVOLVING TECHNOLOGIES, AND TECHNOLOGICAL IMPACT ON PRODUCTS, SERVICES, AND MARKETS. MARKET SHARES ARE PROVIDED. LEADING MARKET PARTICIPANTS ARE PROFILED, AND THEIR MARKETING STRATEGIES, ACQUISITIONS, AND STRATEGIC ALLIANCES ARE DISCUSSED. THE PRINCIPALS OF **WINTERGREEN RESEARCH** HAVE BEEN INVOLVED IN ANALYSIS AND FORECASTING OF INTERNATIONAL BUSINESS OPPORTUNITIES IN TELECOMMUNICATIONS AND ADVANCED COMPUTER TECHNOLOGY MARKETS FOR OVER 30 YEARS.

REPORT # SH24030618 452 PAGES 165 TABLES AND FIGURES 2009
\$3,400 SINGLE COPY \$6,800 WEB SITE HOSTING

ABOUT THE PRINCIPAL AUTHORS

ELLEN T. CURTISS, TECHNICAL DIRECTOR, CO-FOUNDER OF WINTERGREEN RESEARCH, CONDUCTS STRATEGIC AND MARKET ASSESSMENTS IN TECHNOLOGY-BASED INDUSTRIES. PREVIOUSLY SHE WAS A MEMBER OF THE STAFF OF ARTHUR D. LITTLE, INC., FOR 23 YEARS, MOST RECENTLY AS VICE PRESIDENT OF ARTHUR D. LITTLE DECISION RESOURCES, SPECIALIZING IN STRATEGIC PLANNING AND MARKET DEVELOPMENT SERVICES. SHE IS A GRADUATE OF BOSTON UNIVERSITY AND THE PROGRAM FOR MANAGEMENT DEVELOPMENT AT HARVARD GRADUATE SCHOOL OF BUSINESS ADMINISTRATION. SHE IS THE AUTHOR OF RECENT STUDIES ON WORLDWIDE TELECOMMUNICATIONS MARKETS, THE TOP TEN INTERNET EQUIPMENT COMPANIES, THE TOP TEN CONTRACT MANUFACTURING COMPANIES, AND THE TOP TEN TELECOMMUNICATIONS MARKET ANALYSIS AND FORECASTS.

SUSAN EUSTIS, PRESIDENT, CO-FOUNDER OF WINTERGREEN RESEARCH, HAS DONE RESEARCH IN COMMUNICATIONS AND COMPUTER MARKETS AND APPLICATIONS. SHE HOLDS SEVERAL PATENTS IN MICROCOMPUTING AND PARALLEL PROCESSING. SHE HAS THE ORIGINAL PATENTS IN ELECTRONIC VOTING MACHINES. SHE HAS NEW PATENT APPLICATIONS IN FORMAT VARYING, MULTIPROCESSING, AND ELECTRONIC VOTING. SHE IS THE AUTHOR OF RECENT STUDIES OF THE SERVICES ORIENTED ARCHITECTURE, CONTENT MANAGEMENT, MID SIZE BUSINESS MIDDLEWARE, WORLDWIDE ENERGY MARKETS, SOLAR UTILITY MARKETS, SOLAR TECHNOLOGY MARKETS, THIN FILM BATTERY MARKETS, WEBCAM MARKETS, REGIONAL BELL OPERATING COMPANIES' MARKETING STRATEGIES, INTERNET EQUIPMENT, BIOMETRICS, A STUDY OF INTERNET EQUIPMENT, WORLDWIDE TELECOMMUNICATIONS EQUIPMENT, TOP TEN TELECOMMUNICATIONS, DIGITAL LOOP CARRIER, WEB HOSTING, WEB SERVICES, NANOTECHNOLOGY, AND APPLICATION INTEGRATION MARKETS. MS. EUSTIS IS A GRADUATE OF BARNARD COLLEGE.

WINTERGREEN RESEARCH, INC.

ORDER FORM

Return To: WinterGreen Research, Inc.
6 Raymond Street
Lexington, MA 02421 USA
Phone: (781) 863-5078 --- Fax: (781) 863-1235 or (781) 860-0897

PLEASE ENTER MY ORDER FOR:

Worldwide Electric Vehicle (EV) Market
Opportunities, Strategies, and Forecasts
2009-2015

-ALL REPORTS ARE AVAILABLE IN EITHER PRINT OR PDF-

PDF PRINT

ENCLOSED IS MY CHECK FOR \$3,400 FOR SINGLE COPY, \$6,800 FOR WEB SITE POSTING

PLEASE BILL MY COMPANY USING P.O. NUMBER _____

PLEASE CHARGE MY MASTERCARD/VISA/AMERICAN EXPRESS—

CARD NUMBER _____ EXP. DATE _____

If charging to a Credit card you may e-mail the order form, but not the card information

Fax or Call with credit card information - Do not send card number as e-mail - You may send the order as e-mail

ADDITIONAL COPIES, @ \$375 (EXTRA COPY PRICE IN EFFECT ONLY WITH INITIAL ORDER)

NAME _____ TITLE _____

SIGNATURE _____

COMPANY _____ DIVISION _____

ADDRESS _____

CITY _____ STATE / ZIP _____

TELEPHONE _____

FAX _____

EMAIL _____

PLEASE NOTE: RESIDENTS OF MASSACHUSETTS AND CONNECTICUT MUST INCLUDE APPROPRIATE SALES TAX

SUBSCRIBERS OUTSIDE THE UNITED STATES MUST PROVIDE PREPAYMENT IN U.S. FUNDS

REPORT # SH24030618 452 PAGES 165 TABLES AND FIGURES 2009

\$3,400 SINGLE COPY \$6,800 WEB SITE HOSTING