HPEV, INC.
Form 10-K
April 02, 2014

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 10-K

x ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the fiscal year ended December 31, 2013

o TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the transition period from _____ to _____

Commission File Number: 000-53443

HPEV, Inc.
(Exact name of registrant as specified in its charter)

Nevada (State or other jurisdiction of incorporation or organization)	75-3076597 (I.R.S. Employer Identification No.)

8875 Hidden River Parkway, Suite 300
Tampa, Florida 33637
(Address of principal executive office)

Registrant's telephone number, including area code: (813) 975-7467

Securities registered pursuant to Section 12(b) of the Act: None

Securities registered pursuant to Section 12(g) of the Act: Common Stock, $0.001 par value

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes o No x

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes o No x

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes x No o

Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). Yes x No o

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. o

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting company. See the definitions of “large accelerated filer,” “accelerated filer” and “smaller reporting company” in Rule 12b-2 of the Exchange Act.

Large accelerated filer	o	Accelerated filer	o
Non-accelerated filer	o	Smaller reporting company	x

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Act). Yes o No x

The aggregate market value of the shares of voting and non-voting common stock held by non-affiliates based upon the closing price of $0.52 per share of such common stock as of June 30, 2013 was $15,036,549.

Indicate the number of shares outstanding of each of the registrant's classes of common stock, as of the latest practicable date: 54,884,432 shares of common stock as of March 28, 2014.

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PART I

Item 1. Business.

As used in this Annual Report on Form 10-K (this "Report"), references to the "Company," the "registrant," "we," "our" or "us refer to HPEV, Inc., unless the context otherwise indicates.

Forward-Looking Statements

This Report contains predictions, estimates and other forward-looking statements that relate to future events or our future financial performance. In some cases, you can identify forward-looking statements by terminology such as "may," "will," "should," "expects," "plans," "anticipates," "believes," "estimates," "predicts," "potential," "continue" or the ne terms or other comparable terminology.

Forward-looking statements involve known and unknown risks, uncertainties and other factors that may cause our actual results, performance or achievements to be materially different from any future results, performances or achievements expressed or implied by the forward-looking statements. Forward-looking statements represent our management's beliefs and assumptions only as of the date of this Annual Report. You should read this Report and the documents that we have filed as exhibits to this Report completely and with the understanding that our actual future results may be materially different from what we expect.

All forward-looking statements speak only as of the date on which they are made. We undertake no obligation to update such statements to reflect events that occur or circumstances that exist after the date on which they are made, except as required by federal securities and any other applicable law.

Corporate History

We were incorporated on July 22, 2002 in the State of Nevada under the name Bibb Corporation. On September 3, 2010, we changed our name to Z3 Enterprises, Inc. ("Z3") and on April 5, 2012, to HPEV, Inc.

On March 29, 2011, we entered into a share exchange agreement (which was amended on June 14, 2011) with HPEV, Inc., a Delaware corporation ("the Share Exchange Agreement") to acquire 100 shares, constituting all of the issued and outstanding shares of HPEV, Inc. in consideration for the issuance of 22,000,000 shares of common stock. Upon closing of the share exchange on April 15, 2011, HPEV, Inc. became our wholly owned subsidiary. There was a change of control of our company on April 15, 2011 as a result of the issuance of 21,880,000 shares of our common stock to the original shareholders of HPEV, Inc. pursuant to the terms of the Share Exchange Agreement. An additional 120,000 shares were issued during the fourth quarter of 2011 which completed the issuance of 22,000,000 shares of common stock under the terms of the amended Share Exchange Agreement.

As of March 20, 2014, we have 5 patents and 5 patent applications pending in the area of composite heat structures, motors, and related structures, heat pipe architecture, applications (commonly referred to as 'thermal' or 'heat dispersion technology') and a parallel vehicle power platform. The Company intends to commercialize our patents by licensing our thermal technologies and applications to electric motor, pump and vehicle component manufacturers; by licensing or selling a mobile electric power system powered by the Company's proprietary gearing system to commercial vehicle and fleet owners; and by licensing a plug-in hybrid conversion system for heavy duty trucks, buses and tractor trailers to fleet owners and service centers.

Business Description

We have developed and intend to commercialize dispersion technologies in various product platforms, and have developed and intend to commercialize an electric load assist technology around which we have designed a vehicle retrofit system. In preparation, we have applied for trademarks for one of our technologies and its acronym. The Company currently has two trademarks in the application process: HPEV and TEHPC.

We believe that our proprietary technologies, including our patent portfolio and trade secrets, can help increase the efficiency and affect manufacturing cost structure in several large industries beginning with motor/generator and fleet vehicles.

The markets for products utilizing our technology include consumer, industrial and military markets, both in the U.S. and worldwide. Our initial target markets include those involved in moving materials and moving people, such as:

Motors/Generators,
Mobile auxiliary power,
Compressors,
Turbines (Wind, Micro),
Bearings,
Electric Vehicles: rail, off-highway, mining, delivery, refuse,
Brakes/rotors/calipers,
Pumps/fans,
Passenger vehicles: auto, bus, train, aircraft,
Commercial vehicles: SUV, light truck, tram, bucket truck
Military: boats, Humvee, truck, aircraft, and
Marine: boats ranging in size from 30 feet to 120 feet and beyond.

Our Technologies

Our technologies are divided into three distinct but complementary categories: heat dispersion technology, mobile electric power and electric load assist.

Heat Dispersion Technology

Heat is an undesirable byproduct of anything that moves, especially motors and generators. Historically, a large percentage of the cost of manufacturing any motor has been in the technology necessary to remove heat during its operation to prevent failure and increase power. Heat can destroy motors, generators and many other types of machinery, and the energy necessary to remove heat can limit output.

Our patented thermal dispersion technology removes heat via composite heat structures and heat pipe architecture. Heat pipes have been utilized for more than 50 years, but we have a proprietary process and design technology that makes our heat pipes usable in many applications that have previously not been effective. The key is that our heat pipes move heat in ANY direction in a system that requires little or no maintenance and can be applied to almost any motor, generator or industrial product. We believe that this allows for more efficient, smaller, and higher output machines, resulting in cooler motors and a longer operating life.

Our patent portfolio covers the application and integration of our heat pipes into various cooling schemes for enhanced heat removal in motors, generators and numerous other industrial applications including marine, aviation and military. We believe that our technologies have the potential to deliver power output increases and cost reductions, depending on the machine type or motor/generator size, as follows:

1. Increase power density of current motor platforms by 20% to 50%,
2. Reduce total product cost by 12.5% to 25%,
3. Increase motor and generator efficiency by 1% to 2%, and
4. Increase motor and generator life.

Recent tests by independent laboratories showed a 200% increase in horsepower capability for a dry pit submersible pump and a 25 to 35% increase in power density for a 650 kVA alternator.

On December 6, 2013, ESSCO Pumps and Controls, a member of the Hydraulic Institute, conducted the tests in accordance with standards set forth by the Institute. The tests examined the tolerances of an industrial electric motor in an extreme situation. The tolerances determine the amount of power that can be driven through pumps run by the motor and are a strong predictor of the maintenance and other service downtime the pump will require. The original pump motor is rated to run, without submersion, for up to 15 minutes before the pump's protective circuits will turn it off to prevent overheating. This heat limitation restricts the output of the motor. The test pump used the same industrial electric motor, except with HPEV thermal dispersion technology incorporated. The result: the test pump ran without submersion for more than two hours at or above full power without reaching critical temperatures that would have caused an automatic shutdown.

On December 13, 2013, Mohler Technology, Inc. of Boonville, Indiana completed tests of an alternator enhanced with HPEV technology. A 650kVA alternator (generator) was run at full load to test its operational limits. The heat produced by generators of that size must be removed or controlled in order for the alternator to operate effectively. Manufacturers' current best practice is to add either a liquid cooling system or an extra large frame around the motor to provide additional surface area to help dissipate the heat. Both practices increase the cost and complexity of the generators.

The alternator tested used HPEV thermal technology with no other cooling of any kind. The results showed a minimum of 25% improvement in power density over the manufacturer's rating for the alternator when operating without water cooling. In fact, the alternator achieved power densities comparable to a liquid-cooled or over-framed one.

The tests confirmed our belief that our heat pipe cooling system equals the effectiveness of a more complex water-cooled system. Extrapolating the results, leads us to believe that simple designs incorporating our thermal technology combined with the increase in potential output will result in lower costs to manufacture by reducing the amount of material needed to produce a product with a specific output.

We also believe that products produced with our technologies have the potential to deliver operational savings as well, including savings from:

reduced maintenance costs,
the standardization of multiple platforms down to a single platform,
the standardization of drawings and data around existing platforms,
the ability to use standard designs and standard insulation systems versus customization, and
the ability to integrate and produce on existing production lines with no retooling and no additional or minimum capital investment.

Our revenue model for the heat dispersion technology is to license the technology in exchange for royalties.

The successful testing also represents a significant advance in our product development agreements with manufacturing partners. We anticipate that we will begin to enter into license agreements upon completion of our initial product development, when the product is ready to be manufactured on the licensee's regular production line, after all development and testing to industry or governmental standards have been completed. Field tests are at the discretion of each manufacturer.

We also plan to incorporate heat pipes in vehicle components which generate heat such as brake calipers, resistors and rotors. The new brake components should be incorporated in the initial conversion vehicle.

We currently expect to begin to generate revenues from our heat dispersion technology business in the second quarter of 2014.

Mobile Electric Power

The Company has a proprietary gearing system for its ELA which may also be used to power an on-board generator, eliminating the need for some commercial vehicles to tow a mobile generator to a work site. Management believes that there is a need for on-board, continuous generation of up to 200 kilowatts (kW) of power to remote jobsites as well for mobile generation of emergency power in the event of an outage or disaster. We intend to offer an on-board generator installation kit as a stand-alone (Mobile Generator) and as part of a hybrid conversion (Ultimate Work Truck).

Once quality testing and standards certification are completed for the electrical utility industry, we expect to introduce 25kW mobile generators early in the second quarter of 2014 and a 50kW later in 2014.

Our revenue model for the mobile electric power generation is to rely on either direct sales or indirect sales through a network of distributors. We hope to begin to generate revenues from our mobile electric power technology business in the third quarter of 2014.

Electric Load Assist Technology

We have also developed proprietary Electric Load Assist ("ELA") technology. The technology is the centerpiece of our vehicle retrofit system (separate and apart from our heat pipe technology and heat dispersion product development

partnerships), which also relies on the benefits of heat removal by composite heat structures and heat pipe architecture and is protected by patents and patents-pending.

With ELA, a vehicle engine does not have to work as hard as some of the work that was done by the engine is now performed by an electric motor running in parallel. The vehicle still drives and feels the same, and our ELA controller allows full acceleration and braking control; however, the engine runs much more efficiently and burns significantly less fossil fuel. The ELA controller allows the vehicle operator to determine the amount of load assist during operation, ranging from all-fuel to all-electric. We believe that our ELA system will provide a significant difference and improvement from, and competitive advantage over, current market offerings such as the Toyota Prius. If either the electrical system or the internal combustion engine fails, an ELA vehicle can operate on the remaining system. In current market offerings, if either system fails, the vehicle fails.

We believe our ELA technology is compatible with any manufacturer as well as any power source, including traditional gasoline/diesel engines, compressed natural gas, batteries and fuel cells. We also believe that our technology will have a wide range of marine, aviation, industrial and military applications.

Initially, we plan to implement a simple version of our ELA system technology for on-board mobile auxiliary power which we anticipate will generate revenue from transport companies and other businesses which own and/or manage fleets of Class 2, 3, 4 and 6 or light to medium-duty trucks. Our revenue model for the ELA technology will be to license the technology in exchange for royalties based on fuel savings.

We currently expect to begin to generate revenues from our ELA technology business in the second half of 2014.

Competition

Heat Dispersion Technology

Cooling solutions to remove or control heat produced by industrial electric motors, generators and alternators are provided by the manufacturers. Their current best practices are based on technology that's over 50 years old. They either add a liquid cooling system to the motor or build an extra large frame around the motor to provide additional surface area to help dissipate the heat. Both practices increase the cost and complexity of their products

The Company is not aware of any new alternatives on the market.

Mobile Electric Power

Other companies use a vehicle's engine to charge on-board batteries which then run the generator when the vehicle is stopped. While this eliminates idling, output tends to be less that 50 kW and lithium-ion batteries typically power the system. The batteries have limited runtimes and a shorter lifespan than acid batteries. In addition, they must be cooled to operate properly. Energy Xtreme, LCC; Crosspoint Solutions, LLC and Bergstrom, Inc. are the leaders in the field.

Two companies dominate belt driven systems: Aura Systems, Inc. and Mobile Electric Power Solutions, Inc. ("MEPS"). Their systems use a vehicle's engine to power a generator and produce electricity whenever the engine is running. The interface to the vehicle is under the hood via a separate belt system. Both are very efficient, capable of delivering the rated power at or near the engine's idle revolutions per minute ("RPM"). According to Aura Systems' 2013 annual report filed on Form 10-K, the Aura Systems system is over 80% efficient at the low RPM range and is approximately 75% efficient at the very high RPM range.. Aura Systems offers an axial-plus style motor and control that outputs up to approximately 16 kW. MEPS uses the alternator to power a belt-driven system that provides up to 15 kW. Both provide clean power to operate sophisticated electronic equipment. MEPS delivers alternating current ("AC") power whereas Aura Systems proves both AC and _direct current ("DC").

A variety of engine or transmission-based electrical power take off systems also provide exportable power. They tend to output small amounts like 7 kW of 110/220 volt power.

Management believes that the Company can compete in the mobile electric power market because there is a need for on-board, generators as opposed to trailer-mounted generators towed behind a vehicle. In comparison to the purchase price of new Doosan towable generator, we believe we can provide up to 200 kilowatts ("kW") of auxiliary mobile power to any location for less than half the production cost of a towable, trailer-mounted generator, which may weigh over 5,000 pounds. We intend to deliver the same power at under 1,000 pounds.

We believe our competition in the mobile generator market will be from well-established companies such as Cummins, Caterpillar, Doosan, WackerNeuson, Multi Quip and Generac. All of them offer towable, trailer-mounted generators. Only Cummins Onan offers an onboard generator and it's specifically engineered for mobile emergency vehicle use.

Vehicle companies are also working to provide customers and partners with exportable power in conjunction with the development of hybrid vehicles. According to a January 2013 press release from VIA Motors, Inc., the company worked with Pacific Gas and Electric Company, the leading subsidiary of PG&E Corporation, to convert two GM trucks into plug-in hybrids that export 15 kW of power for about $400,000 and is now working to boost that to 50 kW. VIA Motors plans to produce them commercially with prices in the $70,000 range according to a January 2012 article in Forbes.com.

Electric Load Assist Technology

While the new hybrid electric vehicle industry is intensely competitive and features several multi-national companies such as Ford, GM, Toyota, Volvo and Honda, we believe that the market for hybrid conversions is in its infancy. There are a number of small companies, such as EVDrive, Inc, and Verde Sustainable Energy, Inc., selling do-it-yourself conversion kits for individual vehicles, XL Hybrids, Inc. offers hybrid conversions through aftermarket installers for specific van, delivery and shuttle vehicles, EV Power Systems, Inc. is involved in conversions for fleet vehicles, AMP Holding Inc., is a manufacturer of AMP Electric Vehicles, Wrightspeed Inc. offers replacement electric drive trains for high fuel consumption vehicles and VIA Motors, Inc. is offering conversions of a GM pick-up, van and SUV. Echo Automotive, Inc., a company with a similar business plan, offers a technology based on a series platform. XL Hybrids The technology features a bolt-on retrofit kit that attaches to the drive train and adds lithium ion batteries and a controller. To our knowledge, no other company is involved in developing and commercializing ELA technology in a parallel platform or an aftermarket commercial platform.

ALTe Powertrain Technologies and Eaton Corporation are converting commercial vehicles by replacing the entire power-train including the engine, transmission, fuel tank and drive shaft. We intend to perform conversions by adding standard components along with a patented thermal-engineered traction motor and the patent-pending electric load assist.

We aim to compete in the fleet markets for currently-owned vehicles.

We believe the primary competitive factors in our markets include, but are not limited to:

technological innovation;
product quality and safety;
product performance; and
price.

To a limited extent, we will compete against new hybrid vehicles if a fleet owner has a vehicle that is near the end of its useful life elects to purchase a new hybrid vehicle rather than upgrade with a conversion to a plug-in hybrid. However, it may still be cost effective for the fleet owner to purchase a new vehicle and then add a conversion depending on the added cost for a new hybrid versus the conversion cost.

Some of our competitors and potential competitors may have greater resources than we do and may be able to respond more quickly and efficiently to changes in the marketplace whether as a result technological, economic or customer requirements or preferences.

Some of our potential competitors are significantly larger than we are, have been in business much longer than we have, and have significantly more resources at their disposal. That enhances their ability to obtain top engineering talent as well as sales representatives with strong industry ties. Plus, their greater market clout could effectively overwhelm our promotional and marketing efforts.

Equipment

As a Company that intends to commercialize or license its proprietary technology for others to install, manufacture and/or distribute, its equipment needs are project specific and temporary. We do not intend to purchase any production equipment to implement our business operations, but instead we will rent, lease or outsource as needed.

Manufacturing

We do not plan manufacture in-house. The Company plans to outsource manufacture of its on-board mobile auxiliary power kit. For our thermal technologies, the Company plans to rely on product development agreements with manufacturers who will then pay a license or royalty per unit. The agreements delineate the respective intellectual property owned by both companies, describe the goal of the testing to verify the savings and value to a particular company, the equipment to be modified, the criteria that constitute successful testing, how and where the tests will be conducted and the next steps to be taken in the event of successful testing. For plug-in, hybrid conversions, the Company plans to use off-the-shelf and made-to-order equipment combined with proprietary software owned by the Company and created specifically for use on our parallel platform. To that end, the Company has sourced and priced electric motors, generators and other components as well as software programming. Installations will be performed by licensees of our ELA technology, but we currently have no license agreements.

Suppliers

Our primary supplier for mobile power will be Inverom Corporation. They will supply the software to integrate the vehicle’s controls with our mobile generators. For castings, the initial supplier will be GearTech Heavy Duty, LLC. Production level quantities will be handled by Morse, a brand manufactured by Emerson Industrial Automation, a division of Emerson Electric Company. The generators will be supplied by Emerson Electric Company with a backup of General Electric Company. The balance of the components will be obtained from a number of other suppliers.

For the thermal technology applications in electric motors, Thermacore, Inc. will supply the heat pipes and mechanical structure which combine to make the heat exchangers. HPEV has an agreement with Thermacore to combine HPEV technology with Thermacore technology in the creation of heat exchangers.

For dry pit submersibles, the wound stator and the rotor-shaft will be purchased from Nidec Motor Corporation or General Electric Company. The castings will be purchased from the Quality Castings Company, located in Orville, Ohio. These components will then be assembled and tested by Consulting Point, Inc. located in Brownesville, Texas.

Intellectual Property

Our success depends in part on our ability to protect our technology and intellectual property. To accomplish this, we rely on a combination of patents, patent applications, trade secrets, copyright laws, trademarks, intellectual property licenses and other contractual rights to establish and protect our proprietary rights. Currently, we have no licenses or contractual rights in place to protect our technology and intellectual property.

As of March 28, 2014, we own five patents and have five patent applications pending in the area of composite heat structures, motors, and related structures, heat pipe architecture, applications and a parallel vehicle platform.

Our success will likely depend upon our ability to preserve our proprietary technologies and operate without infringing the proprietary rights of other parties. However, we may also rely on certain proprietary technologies and know-how that are not patentable.

We strive to protect such proprietary information, in part, by the use of confidentiality agreements with our employees, consultants and contractors. The Company has a policy of not disclosing its patent applications in order to protect the underlying technology.

The following table sets forth the patents we own or license which we believe support our technology.

Number Patent	Country	Filing Date	Issue Date	Expiration Date	Title
8,283,818 B2	US	February 4, 2010			