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Energy Storage, Control and Management Technology for Clean Renewable Energy Systems, Generators and Electric Vehicle Charging

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CEOCFO: ***Mr. Hammell, the tagline on your site is "Clean power made simple." How are you able to do that?***
Mr. Hammell: We are a technology company. We make power electronics, typically not for the home, but for larger industrial systems. We are able to control many different energy sources, including solar power, wind power, generators and energy storage systems. We control, combine and dispatch each of those sources when it is most useful, to manage a full energy system.

CEOCFO: ***When might someone turn to you?***
Mr. Hammell: One obvious application for us is geographical islands. Traditionally it is hard and expensive to generate electricity on an island. We can go to these places and install solar, batteries, generators or some combination of energy sources and provide electricity 24/7. An important place that we did this was at Alcatraz Island. It is a very public project, so we are able to mention that one. We do a lot of work in the Caribbean, and on the east coast. There are a number of islands out there that need clean power.

CEOCFO: ***How do you decide what is best?***
Mr. Hammell: Location is very important and the availability of energy resources. If there is a local coal plant or natural gas plant, energy tends to be cheap and they have good options, we tend to look at places that are more remote and have more difficulty accessing energy. That applies to both the US and internationally. There has to be an economic incentive. There has to be a desire to develop an area, or residents there that want access to electricity.

CEOCFO: ***Why doesn't everyone want electricity?***
Mr. Hammell: People can get accustomed to the current situation and not realize there are more reliable, cost-effective solutions available. They may have There are places that have access to electricity, but they only have it for a couple of hours a day, so there is a big possibility to improve, or there are locations that there is no access but the options they are aware of are very expensive and take too long and too much political support to get approved. The solutions we provide can be installed much more quickly than traditional power plants, but the places that could most benefit are often simply not aware of these alternatives.

CEOCFO: ***There seems to be many challenges in maintaining electricity in a more stable or normal environment. How are you able to maintain it in some of the remote areas?***
Mr. Hammell: That is a great question, and especially in the US, we have cheap electricity but it is such a complex and large system. If you think about it, we are in most cases using technology developed in the early part of last century and we are still relying on it. The reliability and performance issues are unfortunately not a surprise. Utilities are doing their best but there are many legacy issues, and people here are used to highly-reliable, very inexpensive energy, and have

very low tolerance for even short outages. Unfortunately, in most places we can expect those outages to get worse as the system continues to age. What we do, we call it distributed energy, so using more advanced technology, newer batteries, and power electronics, we can design small systems from scratch and it is much easier to manage a modern system and control it in a reliable and efficient way. Even using energy sources like solar or wind that are traditionally intermittent, we can add energy storage to generate reliable power sources. The sun is always going to come out in the morning but you may get cloud coverage. There is of course no sun at night. It presents challenges for controlling those resources, but we have software, digital controllers, and energy storage, and by leveraging these technologies we are able to make very reliable island systems. Even when they are on the mainland, they can be thought of as island systems since they can disconnect from the utility grid as needed. It is new and better technology that is available today and an investment that is very reasonable at today's cost, whereas if you looked back at redoing the entire electrical grid in the United States, it is such a daunting problem that it is really never going to happen. We end up with patchwork solutions to fix the electric grid, whereas on a new system like ours, we can start from scratch and get everything working together better.

CEOCFO: ***Are there systems or projects that you do not get called upon for enough? Are there services you can provide that people are missing overall?***
Mr. Hammell: I think there is a big educational component to what we do. We do a lot with advanced batteries and there are many places that those batteries can be used. I previously mentioned patchwork fixes for the US electric grid, but many times the best way to make these fixes is also with large battery systems. Most people are still learning about technology that is available today, and it's changing so rapidly it's difficult to keep up. The price has been dropping dramatically over the past few years. Many more applications are economically viable today than just three or five years ago. It is up to us to do the outreach and get in front of people whose problems we can solve.

CEOCFO: ***How do you reach out?***
Mr. Hammell: The best way is through word of mouth. It is taking a project like Alcatraz where we have public data that we are allowed to share and we do tours all the time of that system. We try to get people to come out and walk around and we can show them the components and they can kick the tires and really get a feel for it. We do trade shows where we present white papers and case studies to explain how the technology works. It is one thing to try to sell kind of a new idea, but we have many projects installed that have been working for a number of years so we can use real factual data on existing projects to prove out the benefits.

CEOCFO: ***Do you manufacture your products in the US?***
Mr. Hammell: Yes. All final assembly and testing is in either New Jersey or California, and most of our sub-assemblies and parts are sourced from the US as well.

CEOCFO: ***Is sourced from the US important for your customers?***
Mr. Hammell: For some customers it is critical. We work with national labs, the National Park Service, the US military. Even for others that do not have requirements, having local access to the manufacturer, the guys that actually build the equipment being a phone call or a drive away is important. It is the same with us for our suppliers, being able to go see product in process is very important. We have customers that come to our factory all the time, which they could not do if we were overseas. It is important to almost everyone in the US. We do a lot of international work, and the reputation of US manufacturing and technology is that it is very high quality and this does open some doors for us.

CEOCFO: ***Would you tell us about your ESIQ platform?***
Mr. Hammell: We struggled in the early days to educate the market about what we did and why it was different. What we settled on is explaining that our offering consists of both hardware and a software controls package, and it is this combination that enabled us to design and build battery systems that seem pretty complex but work reliably and seamlessly once all the pieces are tied together. We call this Energy Storage IQ or ESIQ. Adding the software and the hardware together, we have the capability to develop, install and commission battery systems that do everything the customer wants without the customer having to dive in and understand in detail how each of these components work. They can rely on us to bring that with our ESIQ platform.

CEOCFO: ***Are you able to add people as projects come up?***
Mr. Hammell: Our headquarters is in New Jersey and from there we cover the east coast. We have field service offices in San Francisco and a warehouse and field service in San Diego. About 80% of our business is either in California or the North East. We can cover most of that with our existing people, and for larger projects like temporary construction jobs, we work with local authorized service centers. We will train a company on using, operating and maintaining our products. We call them authorized service centers and we can leverage their workforce to expand or contract as we need to.

CEOCFO: ***What is next for Princeton Power?***
Mr. Hammell: We believe very strongly in performance improvements in batteries, a lot of which is driven by electric vehicles, consumer electronics and many places that batteries are getting used. There will be more and more applications on the electric grid for these batteries and that will have to do with electric vehicle charging, and making our electric grid more reliable. Responding to events like hurricanes, ice storms and times when the grid goes out where people really need to have a backup solution, especially at community centers or municipal buildings. We are focused on doing projects like that to support the grid. We also believe very strongly in bringing electricity to places that do not have it, like developing countries. We do a lot of work in Haiti and Africa. At this point, solar and batteries are the fastest and least expensive way to bring electricity pretty much anywhere in the world that does not already have it, or has a very unreliable grid. We expect to be doing a lot more projects like that over the next few years.

CEOCFO: ***Do people recognize that batteries are the best solution now or is more education needed?***
Mr. Hammell: There is definitely more education needed. People are hearing more and more about it. Cell phones are a big reason for that, and even the hybrid and electric car market, starting with probably the Toyoto Prius. People started thinking in terms of kilowatts and kilowatt hours instead of horsepower. People are getting used to living with and using batteries, and becoming familiar with their benefits as well as their limitations, safety concerns, expense, and all of the other trade-offs with energy storage. This will inevitably lead to greater adoption in applications where energy storage is most beneficial.