



### Custom Designer and Manufacturer Flexible, Solid State, Ultra-Thin Film Batteries for Sensor/Labels, Medical Patches, Smart Cards and Internet of Things Devices



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CEOCFO Magazine

“The BrightVolt Polymer Matrix Electrolyte (PME®) is a unique and proprietary electrolyte that allows for the battery to be solid state which renders the battery safer and less likely for any type of thermal runaway events aka a fire.”- Todd Peters

**CEOCFO:** *Mr. Peters, would you tell us about Brightvolt?*

**Mr. Peters:** Brightvolt is the world’s leading designer and manufacturer of ultra-thin film batteries for Sensors/Labels, Medical Patches, Smart Cards and Internet of Things devices.

**CEOCFO:** *What qualifies Brightvolt as world’s leading?*

**Mr. Peters:** We not only design and develop ultra-thin batteries but also manufacture our batteries. There may be others in the space that have developed an ultra-thin battery but we have the most sales to the market which means real manufacturing in quantity. We have sold over 15 million ultra-thin film batteries. We also have leading patents in this area.

**CEOCFO:** *What is different about a Brightvolt battery?*

**Mr. Peters:** There are two things that make our battery unique. One is the formulation and chemistry of the battery which is patented and the other is the way we manufacture our batteries. The BrightVolt Polymer Matrix Electrolyte (PME®) is a unique and proprietary electrolyte that allows for the battery to be solid state which renders the battery safer and less likely for any type of thermal runaway events aka a fire. Our batteries are unusually durable and they can withstand a high degree of heat and pressure and lamination processes which makes it ideal for embedding in some types of applications. Second, the BrightVolt PME® also allows for an improved manufacturing process. Between the two, we have a safer, thinner, more flexible, and more energy dense cell than our competitors.

**CEOCFO:** *What is different about the manufacturing process?*

**Mr. Peters:** It is the application of our patented Polymer Matrix Electrolyte. With the BrightVolt PME® there is no separator layer required during assembly, which should be contrasted to traditional assembly that does requires a separator. The 2-component, as opposed to traditional 3-component, assembly makes registration easier and more precise. Because the BrightVolt PME®/electrode ensemble interpenetrates into each other during the application process and the laminated electrode surfaces bond well because of the adhesive nature of the- PME®, a continuous interlock is achieved and interfacial resistances are reduced to the barest minimum.

**CEOCFO:** *Are people using the batteries aware of why they are better?*

**Mr. Peters:** Of those that know Brightvolt quite well, they do know this is a superior formulation and construction of the battery for their purposes. When we are working with Fortune 500 companies, they cannot have their products fail in the field because of poor battery performance. There is a growing reputation around BrightVolt but it is with our direct customers right now. We are starting to do some marketing to get out there and tell the world. We just won the IDTechEx

New Component of the Year Award in Silicon Valley in November. We are starting to get some recognition for the inherent benefits of our production and our chemistry.

**CEOCFO: *Why is now the time to start telling the world in a greater way than you have before?***

**Mr. Peters:** There is massive demand. There are two things that are driving this global demand and it is quite fascinating to see. It is sort of a perfect wave of manufacturer push as well as industry pull. We see a growing demand in a wide variety of large high-scale vertical applications like sensor labels. These are front leading-edge IoT data collection devices that need onboard thin and flexible and safe power. There has been a growing demand from the application side. What has happened on the manufacturing side is the power demands for other components like micro controllers have come down so our batteries are actually becoming a perfect solution. With those two events going on in the industry, we see it taking off dynamically and we have positioned our company to capture the growing lion's share over the next five to ten years. There is a variety of studies out there all predicting significant dynamic growth in the thin film battery category.

**CEOCFO: *Do you have both a standard product range and custom solution?***

**Mr. Peters:** That is correct.

**CEOCFO: *How does that breakdown and do you see it changing?***

**Mr. Peters:** There used to be one-size-fits-all and that was a limitation for developers. With new applications comes the need for customization. For example, with a medical patch we are seeing tremendous types of versatility in a medical patch category that requires a custom build, a custom size cell. The types of applications vary from very simple in some respects like measuring a hydration level of an athlete through the sodium in their sweat to a patch that measure EKG. The designers are coming to us telling us their ideal size and specifications of the cell they need. We have a design team that works with the manufacturing team. We design it and in the same building we have a manufacturing team that looks at the designs and says this is what is going to take to build it out at scale. We have customers that are looking for 30 to 50 million of these units for medical patches and I see the mix actually right now of inbound solicitation inquiries is probably 50/50 custom to existing products and that is a great mix for us.

**CEOCFO: *With so much opportunity how do you stay focused?***

**Mr. Peters:** I harvest my close to 30 years in corporate America to use some rigor and analytics around where and how we focus. We are a small and rapidly growing company. We do two things. The first thing we do is we take a look at the customer and if the customer has a large market capitalization, they have a good track record of bringing product to the market, they have a large R&D budget, that seems to stand out. We love the entrepreneurs. We love seeing the Internet of Things visionaries that might have the next great solution. We want to work with them too. We put some prioritization around it and we look at the capabilities of our partners there. We then put together a resource plan so that we can provide them with world-class service. I spent seven formative years at Intel and a fair amount of the culture, type of rigor and discipline that I learned at Intel we are applying at BrightVolt.

**CEOCFO: *Do you need to maintain inventory?***

**Mr. Peters:** We keep some in inventory. The battery has to go into quarantine after production for 30 days. It is a fairly long lead time. I know quarantine seems like a funny word. For batteries, you deliberately short the battery and then you set it in quarantine and then you test it again. That is the way all batteries are manufactured. It is a quality assurance step in the process. We keep some batteries that are popular in inventory and then we build to order.

**CEOCFO: *Are your facilities adequate for the growth or are you looking at new facilities potentially?***

**Mr. Peters:** We have a facility in Lakeland, Florida. We build all our batteries in Lakeland, from raw materials right through to finished product. We have to expand capacity. We believe demand will eclipse our capacity within the next twelve months. We plan to be able to make 50 to 200 million batteries over the next three years, so we are absolutely going to be growing our manufacturing capabilities.

**CEOCFO: *What has surprised you so far as the company has grown and evolved?***

**Mr. Peters:** What surprised me a little bit is maybe the diversity in applications for our batteries. We have seen some interesting and diverse applications that are spanning so many different industries. The underlying technology, from our point, is the same but the type of data that they gather and the application varies significantly. To give you an answer like the sensor labels, the FDA passed a federal law that all human and animal foods must have a temperature logging label on the package that would tell you when the internal packaging exceeds an ambient temperature or a critical temperature for food safety. That is one type of application. Within that same shipping label we could also measure tilt or shock. We can know if your package was leaned over too far or if it was dropped. The time and place of where these things

happened could be measured as well. These are the types of things that I, almost on a daily basis, am surprised by the innovation that is happening.

**CEOCFO: Are you looking for investment or partnership?**

**Mr. Peters:** We are in the middle of Series B which we have secured a \$5 million investment from New Science Ventures out of New York City. We are raising capital right now to expand our manufacturing capabilities. While we are close to finalizing, we are still open to speaking with interested parties for either investment or partnership.

**CEOCFO: What, if any challenges, are you looking at?**

**Mr. Peters:** There is a lot that I have learned from my Intel days. Only the paranoid survive. I guess what worries me is the timing to market, we have close to 200 customers in a lot of different geographies. What theoretically could happen is that we would have more demand from our customers than we could actually supply. I am in a race against time to build out capacity. So I guess that would be the thing that concerns me, but it is a great problem to have versus having a technology you cannot sell. Ours is going to be a race to keep up with the demand.

**CEOCFO: For the business and the investment community, why pay attention to BrightVolt?**

**Mr. Peters:** One reason is our proprietary chemistry. The second reason is lithium ion batteries are just not safe. If you added up the total of hard and soft cost for say Samsung for the Galaxy Note 7, I read it is north of \$5 billion. There is a myriad of products, if you recall a year ago at Christmas, hover boards were going to be the hot product and they were catching on fire. Liquid lithium ion batteries were a poor choice by various industries to standardize their batteries because of the instability of the liquid lithium. Lithium is a tricky substance. Ours is solid state so you can cut it, smack it with a hammer, put a nail through it. We have a variety of product demonstrations that we can show and it is a safer environment. We just won a **Clean Energy Award** for being the best eco-friendly battery manufacturer. It is the safest technology on the market. There is increasing demands for this type of product. There is a lot of excitement and hype around cloud based big data for IoT and we are at the other end of it, at data collection. We think it is a phenomenal business where we can put up the kind of margins that are hard to find in hardware. From an investor standpoint, it is pretty interesting that this is a very potentially margin-rich business. There are three things; one is our proprietary chemistry and manufacturing process which is un-paralled by anyone in the world and we have significant patents protecting both. Two is demand has grown very fast in this business. Thirdly, the current solution is not very safe. I was just on a flight and they said if you have a Galaxy Note 7 you have to notify a flight attendant and turn it off. That is not going to meet future market demands. Those are the three reasons for investors to pay attention to this category. It is beginning to innovate and evolve, it has been lagging. It has been a bit of a bottleneck on the development side whereas in semiconductors, at Intel for example, they had Moore's law, which we do not have in batteries. Battery technology has been slower to evolve. The reason I took this job two and a half years ago was I saw a confluence to all these macro factors in the industry that suggested BrightVolt or my thesis at the time was BrightVolt was going to be in a position to grow and capitalize on the market and be a world leader.



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