

Revolutionary New Lithium-Ion Battery Manufacturing Process Compatible with Current Technologies and Chemicals



Dr. Charudatta Galande, PHD
CEO
Big Delta Systems, Inc.

CEOCFO: Dr. Galande, what is the concept and vision at Big Delta Systems?

Dr. Galande: We are developing new and innovative manufacturing processes for lithium-ion batteries. There are certain key problems associated with the current manufacturing process that we are addressing.

CEOCFO: What is wrong with the process today and how will you correct that?

Dr. Galande: The way batteries are made today, especially some of the coating processes used, put limitations on what kind of batteries can be built using the current process. Using our manufacturing process we can make batteries with a wider performance envelope than what is possible with today's processes.

CEOCFO: What is the Big Delta approach?

Dr. Galande: It is an additive manufacturing process, where we can make lithium-ion battery components.

CEOCFO: Have there been many attempts at new manufacturing ideas for batteries?

Dr. Galande: The battery manufacturing process has been pretty standard for many years, but over the last few years, the industry has started to realize that we can solve certain problems by not sticking to the old manufacturing process. You can push the envelope in both performance and cost if you rethink the way that you are making batteries. The most recent example of that is a company called 24M, which came with a significant media blitz last month and they are developing a new manufacturing approach for making batteries for grid applications. That just goes to show that the problems with the current manufacturing process are real.

CEOCFO: Where are you in the development and commercialization process?

Dr. Galande: We are in the technology stage. We are a little over one year old.

CEOCFO: Are you still under the radar screen or are those that should know of Big Delta Systems aware?

Dr. Galande: We are not under the radar in the sense that we have been at public events before. However, at this time we are only sharing limited information with media. We are sharing more with our customers and partners.

CEOCFO: Are you funded for the development or the timetable that you would like? Are you currently seeking investors or partners?

Dr. Galande: We just closed a 7-figure seed funding round. Therefore, we are not currently seeking investors. But we're seeking partners and end customers for whom we can create value with our innovative manufacturing approach.

CEOCFO: What are the challenges as you move forward?

Dr. Galande: The battery industry is a very challenging industry, because over the last few years several battery startups have appeared, but not many have succeeded. There is a certain amount of skepticism in the industry for battery startups and innovation in general. Therefore, we see that the bar for coming up with innovative solutions goes up every day. Every time a battery company fails, the bar becomes even higher. The second thing is that the market has become challenging from a capital raise perspective.

CEOCFO: Why are you sure that you are on the right track?

Dr. Galande: We have been working on developing the manufacturing process for the last five years or so. We started working on this in 2010, when me and my co-founders were working on our PhDs at Rice University. Therefore, we

understand the challenges with associated with the current manufacturing process and our customers believe that we have a pragmatic approach to solving some of their problems. We also have some really credible people on our team and we will be adding to our team as we go along.

CEO CFO: *Would you tell us about the customers you mentioned, as you are still in development?*

Dr. Galande: These are companies that are interested in what we are developing, and we have received some very encouraging feedback from them as to the technical and economic problems that we can solve. Therefore, they see us as a good fit.

CEO CFO: *Will you be manufacturing or licensing the technology?*

Dr. Galande: We are still looking for the best route. We are still answering some of the questions associated with being an early stage company.

CEO CFO: *What have you learned about the business side over the past year?*

Dr. Galande: It has been a very steep learning curve for all of us on the founding team, and with the help of excellent advisors and our board, we're making progress towards building a great technical and business team.

"We are bringing a very innovative approach to manufacturing that is compatible to most of the existing tooling and techniques... What we are doing in terms of pushing the performance and costs, is widely applicable to batteries across the industry and is compatible with almost all chemistries... Therefore, we believe that it is a real alternative to the current manufacturing processes."- Dr. Charudatta Galande, PHD

CEO CFO: *Are you concerned about other new technologies or materials or does the market have so much need that it will not make a difference?*

Dr. Galande: Many of the new startups are working on developing new materials, whereas we are working on developing new manufacturing processes. Therefore, our work is very complimentary to companies that are developing these new materials. So, when someone comes up with a new chemistry that works better, the advantages that we bring rise with the tide. That part is actually great for us. However, a large part of the business is being quickly commoditized because of large manufacturers, such as Samsung and Tesla, who are producing certain kinds of batteries in very large volumes. On the other hand, there are certain areas of the market that are becoming more and more specialized, where performance is still key. That is one big realization that has come upon us. Given these things, there is room for both for existing technology to improve incrementally and drive down costs, as well as new technologies to come up and push performance and costs down in the long run. Therefore, there is a real gap that we can fill.

CEO CFO: *What should Big Delta Systems be on the radar screen?*

Dr. Galande: We are bringing a very innovative approach to manufacturing that is compatible to most of the existing tooling and techniques. There are other companies who have taken a much more radical approach to manufacturing, such as 24M, who have a new manufacturing process, but it is only suitable for certain segments of batteries, such as for grid storage. What we are doing in terms of pushing the performance and costs is widely applicable to batteries across the industry and is compatible with almost all chemistries, as long as you can make the materials in a powder form. Therefore, we believe that it is a real alternative to the current manufacturing processes.

Interview conducted by: Lynn Fosse, Senior Editor, CEO CFO Magazine

For more information visit: www.bigdeltasystems.com

Contact: Charudatta Galande 713-540-9430 charu.galande@bigdeltasystems.com
