



The State of

# STORAGE

Q&A with EnerDel



*It is nearly impossible to talk about a cleaner, safer, and more resilient energy infrastructure without talking about battery technology for electric vehicles (EVs) and electric grid energy storage. Which begs the question: are there domestic battery companies positioned to meet our needs?*

*Founded in 2004, Indianapolis-based EnerDel, Inc. produces energy storage and battery systems for heavy-duty transportation uses, on- and off-grid electrical, mass transit, and task-oriented applications. Eager to learn more about battery storage, ILLUME Managing Consultant, Kimberly Jaeger Johnson got us an inside scoop at EnerDel (her father and sister are employees) and sat down with the company's Head of Global Sales and Marketing, Charlie Travis; Director of Business Development, Bruce Silk; and Principal Software Engineer, Ron Jaeger to bring you a manufacturer's perspective on the state of energy storage.*

### How would you describe EnerDel to your neighbor?

**A:** We're delivering zero emissions/zero noise energy and power to communities. Whether it's powering more zero emissions vehicles or more microgrids to replace diesel engines and gas generators, we're deploying equivalent energy producing systems using lithium batteries to clean the air and get rid of noise.

**A:** We focus on the heavy-duty market as opposed to the automotive market, i.e., trucks and original equipment manufacturers (OEMs). With our hybrid bus pack, we work with a lot of different local and state transit agencies. With the grid product, we work with some utilities and the military.

### What is the current market landscape for your clients?

**A:** Adoption of electric vehicles and this whole technology has been great, but as people begin to acquire these assets, they start realizing where other problems crop up. A great example is a large commercial fleet of electric vehicles or a transit agency that wants electric buses. If they get a substantial amount, the infrastructure to charge them suddenly becomes the weak link. It may require them to upgrade the service to their facility. They start thinking about how much money it would cost to charge during the day versus overnight, what driving routes would have the best performance.



Some are forward looking and realize they may have an opportunity to add their own renewables to roofs, and it starts a really great discussion. They're starting to understand what they can do and what they're going to need if they deploy a much larger fleet of EVs. It's exciting how people can take this technology and come up with all these ideas. It's great!

**A:** Most battery manufacturers are focused on high-volume commodity and low-priced operations. So, if it's an electric car, they'll only make batteries and the car company will only make cars if there's a high volume to be produced that will cover the costs of their production. For medium and heavy-duty trucks and buses, it's tougher because the volumes are smaller. There's a difference between how a consumer uses their vehicle and how a transit or government agency uses their truck or their bus. It's a much more difficult, demanding application. There are significant differences in the usage profiles. At EnerDel, that's our specialty. We make more advanced batteries at a lower volume that have a higher value. Instead of just battery cells and lithium commodities, we're able to deliver systems.

**A:** There are companies out there selling electric cars, chargers for the cars, and solar panels for renewables. Cities are also pushing commercial fleets to deliver packages with less pollution. It just so happens that these functions are an ecosystem that all fits together. In the end, all of those things need advanced lithium ion batteries to make them perform properly. It's that kind of demand that creates the need for EnerDel.

**A:** You have about 200 cities across the world that have signed up to go zero emissions for mobility (automotive) and power integration (utilities). About 50 bigger cities in the United States and about half of the states in the U.S. have all signed up with California for the same kind of objectives. These mandates are out there driving demand.

### How do you see the future landscape of the grid and battery storage?

**A:** Utilities are going there. It's proliferating. It's going to be ubiquitous in every region, and utilities own a lot of the operations in various states. They tend to make long-term investments. Instead of building new power generation from coal, gas, or nuclear, they're looking at batteries. Batteries manage those peaks and valleys of the demand loads. It brings reliability and consistency, and this storage that has never existed before. It's a new market segment that we're very focused on. We provided a similar product solution to Portland General Electric years ago. We have a mature, commercially available, off-the-shelf product that's ready to go. We're excited!

## What are some market trends you're keeping an eye on?

**A:** Battery life—which the market is definitely interested in—is important. Everybody desires the longest life possible. We do a lot of analysis to make sure we can meet customer expectations, although it's fair to say that expectations are high in all our markets. EnerDel started making batteries and testing them over 10 years ago. Those same cells are here, still running. It's like a live laboratory here of real-life battery testing, and of course there are batteries out in the field, in buses, etc. These batteries are almost as good as they were 10 years ago. That just speaks to the quality of what we developed then, and they've been improved over time. The data that we have compiled over the years is great. Believe it or not, that data is plowed back into the battery management system. We update our software to better control our own batteries, we adjust our software to maximize that information. It's priceless information and the only way you can get it is to collect it over a very long time.

**A:** We've always had an eye toward making sure we could recycle our products easily. We always knew we wanted to be responsible stewards in this business. We were thinking about what happens when our batteries reach the end of their useful life and how to responsibly recycle them. That thought has gone into our design from day one.

“ Batteries manage those peaks and valleys of the demand loads. It brings reliability and consistency, and this storage that has never existed before. ”

## We've heard that the EV market will tip once EV batteries can hold a charge equivalent to that of about a tank of gas (about 250 miles). Has that factored into your design or approach?

**A:** We take calculated measured steps forward with cell development. The goal is to always increase cell capacity which would directly relate into a battery pack that could potentially get that mileage. We could do it today—your pack may be really big. The Holy Grail is the smallest pack that would get you there. Cell development has to always progress with the safest implementation of the advances of cell technology.

## From your personal perspective, what are your thoughts on how your work will affect future generations?

**A:** It's a really great motivating thing—less dependency on fossil fuels and cleaner air—everybody benefits.