

## GBatteries | Company Overview

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GBatteries is an advanced battery technology company on a mission to charge electric vehicles as fast as it takes to fill a tank of gas. Our goal is to accelerate the adoption of electric vehicles, therefore reducing greenhouse gas emissions. Operating at the intersection of artificial intelligence, electrochemistry, signal processing, and high-power electronics, we have the first and only demonstrated technology capable of ultra-fast charging Lithium-ion batteries without compromising battery lifespan or changing the chemistry.

If a product has a rechargeable Li-ion battery, our technology can drastically improve the charge time without causing degradation to the battery. Our charging protocol can be applied to products ranging from electric vehicles (EVs) to power tools to industrial robotics. The technology can charge off-the-shelf batteries to 50% in five minutes and 100% in approximately 10 minutes. This is significantly faster than other “fast charge” technologies, while also decreasing the irreversible chemical reactions that happen during charging.

### **Service Offering:**

We’ve developed an innovative way to charge Li-ion batteries using artificial intelligence. Our protocol uses adaptive pulses as an alternative to CCCV (constant current, constant voltage), enabling fast charge without compromising the health of the battery. It consists of two parts: 1) our proprietary algorithms, designed to generate unique charge pulse profiles; and 2) novel hardware that delivers the precise pulses at high frequency.

Since our technology works with unaltered Li-ion batteries that have been produced, validated, and tested by battery manufacturers, it has the potential to scale easier than some of the other battery technology being explored.

### **Target Market:**

If a product is powered by a rechargeable Li-ion battery, we can radically improve the charge time; therefore, our technology has endless applications. Our primary applications are transportation, consumer electronics, battery operated tools (lawn and garden tools, handheld vacuums power tools, etc.), and industrial robotics.

We are targeting automotive and consumer electronics manufactures but are also in discussions with ride sharing and micro-mobility companies, charging infrastructure providers, oil and gas companies, and utility providers. Global technology companies have also shown interest in our capabilities.

**Problem We Are Solving & Use Cases:**

Charge time is the problem we are solving. From Tesla's Supercharger to Samsung's Adaptive Fast Charging to Milwaukee's Rapid Charger, manufacturers in every industry are working to improve charge time to reduce downtime and maximize productivity.

Consumers, businesses, and fleet managers will buy electric vehicles if they can be charged in 10 minutes. Our technology is the solution for accelerating the adoption of electric vehicles by enabling EVs to charge in the same amount of time as getting gas. In as little as five minutes of charging, a typical 60kWh EV battery pack with a 238-mile range can charge to 119 miles (192km) of range with our technology, compared to 15 miles (24 km) possible with conventional charging.

We can make electric fleets economically feasible sooner as opposed to “over the life of the vehicle.” We can allow fleet operators to abandon fossil fuels, which will reduce operating costs and significantly reduce greenhouse gas emissions.

For consumer products (smart phones, wearables, vacuums, drones, etc.), fast charge will act as a selling feature that differentiates a product from the competition. For power tools and industrial robotics, fast charge would mean less downtime, maximized productivity, and a reduced inventory of batteries and chargers needed on commercial jobsites.

*EV Test Results (confidential EV battery):*

- GBatteries Technology - 52 minutes to 85% capacity; ability to charge more than 183 times without degradation;
- Other fast-charge technology - 67 mins to 79%; ability to charge 12 times without degradation.

**Competition and Unique Selling Proposition:**

Other players exploring fast charge or battery advancements include Qnovo, StoreDot, Sila Nano, and Enevate. The in-house battery teams of automotive and electronics manufacturers are also our competition. Unlike our competitors, who are looking at different battery chemistry or new materials, we are charging off-the-shelf batteries more efficiently using AI and high-power electronics. There is currently no competing technology that can offer close performance.

In addition to fast charge, in most cases, our technology increases the lifespan of the battery. We have tested hundreds of battery cells for thousands of hours and displayed improved performance over conventional fast charging methods. We have demonstrated repeatable results on power and energy cells ranging from 100mAh to 60Ah.

**Leadership Team** (complete biographies below):

- Kostyantyn Khomutov, Co-founder & Chief Executive Officer
- Tim Sherstyuk, Co-founder & Chief Commercial Officer
- Alex Tkachenko, Co-founder & Chief Engineer
- Nick Sherstyuk, Co-founder & Chief Technology Officer
- Bart Riley, Chairman & Technical Director

**Demonstration Videos:**

We have completed three videos as part of a series where we ultra-fast charge various devices.

- DeWalt power tool battery (20v) - <https://youtu.be/sCJLhNako18>
- Tello drone - <https://youtu.be/WwJhZsfkFvM>
- Xiaomi electric scooter - <https://youtu.be/E847GkKxfow>

**Business Model & Status of Development:**

We have a licensing business model, with an upfront license and per unit royalty component. The fee structure is different depending on the customer due to differences in product volumes, device types, and other business considerations. We are in the beta testing and validation stage of growth. We have several pilot projects underway with automotive and electronics manufacturers.

**Investors & Intellectual Property:**

Our investors include Airbus Ventures, Initialized Capital, Plug and Play, SV Angel, Y Combinator, and other private investors. Our patent portfolio includes 45 filed applications to date, with 10 granted patents and 28 pending, covering adaptive control methodologies, hardware systems, and implementation designs.

**Company History**

GBatteries began in 2012 by father and son team, Nick and Tim Sherstyuk. It was spun out of frustration with how quickly cell phone batteries started losing capacity. After significant breakthroughs improving the lifecycle of batteries, they filed their first patent application and applied to Y Combinator (YC).

The pair were not only selected to participate, they also received recognition as being one of the [top companies](#) in the W14 cohort and seed funding was secured.

That same year, a crowdfunding campaign allowed them to begin building their first product, BatteryBox - the first application of the technology and a test to validate it. Although it was very successful, the team halted production in 2016 and entered stealth-mode to focus on the technology and the initial business model of licensing to manufacturers, specifically automotive OEMs.

After three years of intensive R&D, constant iterations and several key breakthroughs, GBatteries launched at CES in Las Vegas in Jan '19.

### Awards & Recognition:

- [Tim Sherstyuk, Co-Founder and Chief Commercial Officer Named Forbes 30 Under 30](#)
- [AutoMobility LA Automotive Startups Competition: Top Ten Finalist \(2019\)](#)
- [Rice Energy & Cleantech Venture Forum: Top 10 Most Promising Startups \(2019\)](#)
- [SAE Global Automotive & Mobility Innovation Challenge \(2019\)](#)
- [CIX Top 20 Most Innovative Technology Companies \(2017\)](#)
- [IEEE Ottawa Outstanding Clean Technology Company \(2017\)](#)
- [VentureBeat – Top 5 Best Startups from YC Demo Day](#)
- [TechCrunch – Top 8 Startups from Y Combinator W14 Demo Day](#)
- [Silicon Valley Business Journal Paul Graham’s 6 Top Picks](#)

### Recent Press:

- 10 Automotive Startups to Watch in 2020 – [Design News](#)
- Recharge Electric Motorbike in 5 Minutes – [Motorbike Writer](#)
- Adaptive Micro-Pulse Technology Could Drastically Reduce EV Charging Times – [New Atlas](#)
- Artificial Intelligence, Big Data Optimized EV Batteries – [Automotive Engineering \(SAE.org\)](#)
- Father-and-Son Scientists Aim to Slash Car Recharge Times – [Financing Times](#)
- What if You Could Charge an Electric Car as Fast as Filling the Tank? – [OZY](#)
- Ottawa-based GBatteries is Overhauling the Way We Recharge – [Techopia](#)
- GBatteries Leverages AI & Intelligence to Amp Up EV Charging – [CleanTechnica](#)
- GBatteries Say its AI-Powered Protocol Can Charge an EV in 5 Minutes – [Charged](#)
- John Deere Trials Electric Tractor – [Farm Weekly](#)
- New EV Recharging Tech Lets Electrons Flow Like Gasoline – [Motor Trend](#)
- A Rapid Recharge that Goes a Long Way – [The Australian](#)
- Company Claims to Harness AI for Quicker Electric Car DC Fast Charging – [Green Car Reports](#)
- GBatteries Claims Amazingly Fast Charging Times for Electric Cars – [Inside EVs](#)
- 1 Big Thing: New Player Claims EV Charging Leap – [Axios](#)
- CEO of GBatteries Wants to Speed Up the Car Charging Process – [Cheddar](#)
- Startup GBatteries Claims it Can Charge an EV as Fast as it Takes to Pump Gas – [AutoBlog](#)
- GBatteries Lets You Charge Car as Quickly as Visiting the Pump – [TechCrunch](#)

## Executive Biographies:

**Kostyantyn Khomutov, Chief Executive Officer** – Kostya is a seasoned executive with more than 15 years of experience in the global technology sector. His focus is to deliver advanced battery technology while driving operational excellence. He has a Master of Applied Science in Aerospace Engineering from Carleton University. Prior to GBatteries, Kostya was the founder of several organizations including Wolna, a SatCom company and Smart Rotor Systems (SRS), an organization that develops vibration and noise reduction technology for helicopters. [View Kostyantyn's LinkedIn Profile.](#)

**Tim Sherstyuk, Chief Commercial Officer** – As the Chief Commercial Officer of GBatteries, Tim is the team visionary, driving the growth of the business. His role encompasses operations, marketing, business development, sales, and recruiting. Tim has over 10 years of experience as a Chief Operations Officer, Chief Executive Officer, and Chief Commercial Officer. He has been granted five patents for his work at GBatteries. [View Tim's LinkedIn Profile.](#)

**Alex Tkachenko, Chief Engineer** – Alex leads the team of engineers and determines the technical goals of the company. He has 15 years of experiences in hardware development and understands the new technologies and cutting-edge methods in the field. He devises plans for each phase of a project, identifies and procures the resources needed, and directs the integration of technology into customer's products. Alex graduated with distinction from the Electrical Engineering program at Carleton University. Prior to GBatteries, Alex was a RF Hardware Developer at Ericsson and a Digital Hardware Developer at Nortel. Alex has been granted five patents for his work at GBatteries. [View Alex's LinkedIn Profile.](#)

**Nick Sherstyuk, Chief Technical Officer** – Nick is critical thinker and experienced electric engineer. As our Chief Technical Officer, his role involves R&D, algorithm development, and battery testing. For over 30 years, Nick has worked in battery management, analog and mixed signal circuit design. He has nine years of patent deconstruction and licensing experience and has been issued 14 patents, nine with GBatteries and five previously. Before founding GBatteries, Nick was a Senior Systems Engineer at WiLan and the Director of Engineering, IMC (Information Mediarly Corporation), a medical compliance technology company. [View Nick's LinkedIn Profile.](#)

**Dr. Bart Riley, Chairman & Technical Director** – Bart is a founder and former CTO at A123 Systems, Boston's largest IPO in the past decade and one of the world's largest automotive lithium ion suppliers with revenue exceeding \$500M in 2016. He is a successful hard tech entrepreneur with over 25 years of experience leading projects, teams and businesses taking tech from lab to market. With senior management experience at AMSC, A123 Systems and Quantumscape, Bart has a track record solving complex technical and business problems to launch products in multiple verticals, including industrial equipment, consumer electronics, automotive, and grid. Dr. Bart Riley has a PhD in Materials Science from Cornell University, 85 publications and 62 US patents. [View Bart's LinkedIn Profile.](#)