

Meet Breathe, unleashing the power in your batteries

As part of our quick founder questions series - or QFQs - we spoke to Dr. Ian Campbell, CEO at Breathe Battery Technologies, about battery management software, customer experience and engineering.

Temps de lecture : minute

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What was the catalyst for launching Breathe?

Breathe was spun out from Imperial College London in 2019 by Dr. Yan Zhao, Professor Greg Offer, and myself. We shared a collective dissatisfaction with the lack of emphasis being placed on optimising battery system performance.

Driven by the urgency to combat climate change, we decided to start a company that could amalgamate global capital investment with top-tier talent across various domains, ranging from computer engineering to battery modelling. Since its inception, we have honed our efforts on developing battery technologies that can advance and enhance the world's transition towards more sustainable electrification practices.

Tell me about the business - what it is, what it aims to achieve, who you work with, how you reach customers and so on.

We provide physics-based battery management software that helps the world's most iconic electric vehicle and consumer electronics brands do

more with the power they have in their batteries.

Our embedded software products, *Breathe Charge* and *Breathe Life*, use adaptive charging to dynamically adjust the charging current across both the state of charge and state of health windows, indicating the ideal current at every moment. Our products extract more performance from existing batteries to deliver faster charging, greater cycle life and zero compromise on safety.

Our name is a wordplay - we dream that one day everyone will breathe clean air, so we are working to make batteries better so we can solve the big issues of air pollution, electronic waste and the consumable nature of batteries.

We employ a multi-pronged approach to reach customers. Digital marketing campaigns, strategic PR initiatives, and fostering collaborative partnerships all play a pivotal role in raising brand awareness and gaining access to key decision-makers within these rapidly evolving markets.

We place a strong emphasis on delivering an exceptional customer experience, which in turn facilitates word-of-mouth referrals and positive reputation-building within the cleantech ecosystem. We also actively participate in industry events, engage with relevant associations, and pursue speaking engagements to directly showcase our offerings to influential stakeholders and prospective clients.

How has the business evolved since its launch?

Following our launch in 2019 we have undergone significant evolution and growth. In 2020, we filed our first patent, collaborated with leading OEMs, received funding from Innovate UK, and were awarded the prestigious Royal Academy of Engineering Enterprise Fellowship.

The following year, in 2021, Speedinvest led the seed investment round in us, and we were accepted into the Creative Destruction Lab's Climate Stream program for massively scalable companies.

2022 saw the global deployment of Breathe Life on OPPO's Reno8 Series and Find X5 smartphones, while Breathe Charge was applied to VARTA's EasyBlade battery. Additionally, construction began on our state-of-the-art 7,500 sq. ft. battery laboratory, and we also received support from the Royal Academy of Engineering Shott Scale Up Accelerator.

In 2023, Lowercarbon Capital led the Series A investment round in us, providing further capital for growth and expansion.

This year we announced a partnership with Volvo Cars to provide Breathe Charge for their new generation of fully electric vehicles. This will reduce the time it takes to charge an electric Volvo while maintaining the same energy density and range. The Volvo Cars Tech Fund also invested in Breathe, positioning us as a key player in Volvo's transition to an all-electric future.

What are the reasons behind Volvo's choice of Breathe's adaptive charging technology?

Volvo had a choice to either develop battery charging technology in-house or work with external partners who have specialised expertise. They chose to use Breathe Charge to enhance the EV user experience by enabling significantly faster charging while maintaining battery health.

Working with us and leveraging our deep expertise in this area allows them to gain a competitive edge with up to 30% quicker charging times without having to build those capabilities internally. The partnership also aligns well with their sustainability ambitions by improving charging without redesigning battery packs or mining more materials.

Why do software-defined vehicles deserve software-defined batteries?

As vehicles become increasingly software-defined, with advanced electronics and computer systems controlling nearly every aspect of the driving experience, it's crucial that battery technologies evolve in tandem.

Traditional battery management systems are ill-equipped to handle the complex demands of these software-driven vehicles. By embracing software-defined batteries, automakers can unlock the full potential of their battery systems, ensuring optimal performance, longevity, and seamless integration with the vehicle's software ecosystem.

Tell us about the working culture at Breathe.

We take great pride in fostering an enjoyable and healthy working environment while maintaining a high-performing and driven culture. With a team of over 45 employees, creating a positive and productive atmosphere is vital, as our customers rely on us to be a trusted partner in their journey towards electrification and improving end-user experiences.

One of our core values is a commitment to honesty and transparency. We believe in saying it like it is, steering clear of overstated claims that can sometimes plague the battery industry. Instead, we strive to be incredibly real with our customers, providing them with an accurate and candid assessment of their situation.

Innovation is a key part of our cultural makeup, and we move quickly to stay ahead of the curve. We understand that time is of the essence in this rapidly evolving industry, so we embrace a fast-paced and direct approach to problem-solving. Rather than following the herd, we encourage our team to question established practices and approach challenges from first principles.

This mindset allows us to build differentiated products and value propositions, giving us a degree of defensibility and uniqueness in the market. It also helps establish our brand credibility as the go-to supplier for best-in-class battery performance systems.

How are you funded?

In 2021, we secured a £1.5M seed round led by Speedinvest, Europe's largest seed stage investor by dollars of assets under management. We subsequently raised a \$10 million series A with Lowercarbon Capital, one of the world's largest climate tech investors by assets under management. We have also secured additional investment from Volvo Cars Tech Fund.

What has been your biggest challenge so far and how have you overcome this?

Making the transition from the lab environment to real-world applications and driving revenue through customer deals, has been one of the most important things we've done. This comes with many challenges. One of which is scaling the team to allow this to happen.

Scaling the team and ensuring adequate financing are always obstacles. Recruiting the right people is challenging too. In the UK we simply aren't producing battery engineers at the pace required to meet the regulatory drivers for electrification, so it's an intensely competitive market for hiring.

How does Breathe answer an unmet need?

At the company level, we're addressing a significant gap in battery technology. When batteries leave the production line, they often

underperform due to outdated control systems. It's frustrating because consumers pay a lot of money for the devices in their car and the battery system in their laptop or smartphone. If these devices were more durable, you would pay less for the same end-user experience that you have today.

A battery is a complicated piece of electric chemistry, but the way it's looked after in the software application is archaic, outdated, overly simplistic, and it means there's a lot of performance and capability locked up in that battery that we never get to access.

At the product level, Breathe Charge and Breathe Life, replace these outdated charging strategies with adaptive solutions. Unlike traditional methods, our approach dynamically adjusts to the battery's needs, ensuring longevity and optimal performance.

We achieve this through a piece of maths that describes what's happening electrochemically inside the battery then we wrap that up as software. Every battery is unique, so our sophisticated software analyses various factors, including battery age and temperature. We have a software engineering team in house that develops tailored solutions for each battery system, maximising its potential.

What's in store for the future?

We're hugely optimistic about our future growth and industry impact, largely due to our deep understanding of evolving trends and customer needs.

Our successful partnerships with industry leaders such as Volvo Cars, OPPO, Rimac, and Cosworth reinforce this optimism, showcasing our ability to enhance battery performance, charging capabilities, and longevity.

One key differentiator setting us apart and giving us huge confidence in our future is our state-of-the-art lab facility. This cutting-edge resource enables us to seamlessly transition from concept to production, shipping innovative battery technologies to millions of vehicles, smartphones, and laptops worldwide.

What one piece of advice would you give other founders or future founders?

Focus on developing an insanely attractive product and delighting customers above all else. These are the pre-requisites, and everything else, such as hiring brilliant talent, financing the business, marketing and more, follows on from that.

And finally, a more personal question! What's your daily routine and the rules you're living by at the moment?

I'm like to do triathlons, so when I can, I try to fit in a workout - either a swim, bike, or run - weather permitting. Even when I'm not training for an event, exercising gets me energised and ready for a productive day ahead. Fitness is very important to me, and training for endurance supports my discipline and focus at work too.

When it comes to my daily routine at work, I like to tackle each day's challenges head-on to manage our rapid growth at Breathe. I wear many hats, from guiding R&D to seeking out new partnerships and market openings and engaging directly with customers. I believe in open dialogue, so I regularly collaborate with my colleagues to ensure we're all on the same page.

When issues pop up, I view them as chances to get creative with solutions

that keep us moving forward at full speed. Embracing setbacks with a positive attitude helps us continually improve and stay ahead in a competitive environment.

I'm passionate about doing things the right way. I strive to lead from the front, motivate our team to push boundaries, and redefine what's possible in battery technology every day.

Dr Ian Campbell is the CEO of *Breathe Battery Technologies (Breathe)*.



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