

OX Motorcycles Builds a Tech-Enabled Riding Experience With Particle

Case Study

particle.io

Executive Summary



Problem

OX Motorcycles had a strong vision to combine IoT technology with a well-designed electric motorcycle, but its product development cycle was slowed significantly because of their existing IoT platform/hardware required them to build the software and connectivity themselves.



Solution

Particle's certified hardware and flexible, easy-to-use development platform allowed OX to integrate connectivity into its entire power train. OX could then focus on its design and rider experience, rather than building IoT infrastructure from scratch.



Results

OX is preparing to launch in several EU markets by early 2022, something that would not have been possible if they built on their own. OX can grow confidently with Particle because of the flexibility of the platform, the secure supply of components, and the product features that Particle enables.

The Company: OX Motorcycles

OX Motorcycles is a Spanish electric motorcycle brand born with the desire to inspire and promote the next generation of citizens. Founded in 2019 and based in Madrid, OX Motorcycles wants to lead the redefinition of the electric motorcycle market.

Focusing on the importance of design, the use of sustainable energies and the development of new technologies, the brand works daily to expand and become a global mobility leader. OX Motorcycles is past and future on two wheels, combining the old riding experience with the latest technology.

"Without Particle, we'd still be building all of this functionality. Instead, we're preparing to launch."

Martin Fernandez de Labastida
COO, OX Motorcycles

Problem

Building Future-Proof Connected Motorcycles

From the beginning, the OX Motorcycles team knew they didn't want to compete on design or price alone. That would make it very difficult to differentiate themselves even in a nascent electric motorcycle market. Connectivity and technology would have to enable a unique rider experience that riders couldn't get from just any electric motorcycle. And it is not only about the experience, but safer rides.

"Ultimately, our motorcycles aren't only about design and aesthetics or only about the riding experience. We want to bring both of those together to make something greater," OX CTO, Valeria Valverde, said. "We knew early on that the best way to build a strong connection between the rider and the machine is through IoT."

But they couldn't just add a layer of basic IoT functionality on top of an otherwise normal electric motorcycle. Connectivity and IoT would have to facilitate a seamless experience that felt like a natural part of the vehicle.

"We've always seen technology not just as a layer of the company, but a part of our DNA," Valeria added. "In this decade, technology will be key to unlock eMobility as the tool to transform our cities."

Beyond that, Valeria and her team knew that connected vehicles don't exist on their own. They are part of a wider smart city ecosystem, where infrastructure, vehicles, and riders constantly relay information to and from one another.

As the infrastructure evolved, OX Motorcycles would have to continually revisit their IoT stack to get connected devices recertified, upgrade trackers, and develop new integrations.

The team had a strong commercial vision, but were constantly slowed down because they were trying to build the connectivity and software elements of the IoT layer of the vehicles themselves.

Those efforts diverted critical resources away from creating a differentiated rider experience and a well-designed motorcycle and threatened to postpone their desired launch date.



Solution

Developing Elisa - The 'Brain' of OX Motorcycles - With Particle

"Elisa" is the name of OX Motorcycles "brain." It's a series of interconnected technologies that allows the team to get real-time feedback on the status of each vehicle on the road. At the same time, it's what provides the digital experience to riders that OX Motorcycles sees as a major differentiator.

"When we started with the idea for Elisa, we wondered who would even know about this sort of market?" OX COO, Martin Fernandez de Labastida said. "Our initial research showed us that the tracker would be the core of Elisa. We did a lot of comparisons of trackers on the market, but the fact that Particle's hardware was certified and had such a great reputation helped us choose."

"We were trying to create our own IoT platform at first - we didn't know anything about Particle," Valeria said. "So it was great that we found them and we didn't need to build from scratch. Our value comes from our design and technology. We could use Particle to save time and not waste resources building something that already hit the mark for us."

Building on Particle allowed the team to focus its efforts fully on Elisa's development.

"Elisa gives us the capability to have a management system for our entire fleet," Valeria said. "So this IoT system connects the motorcycles' electric control units with the trackers from Particle."

Because Particle can integrate with every component in the motorcycles' powertrain, OX Motorcycles can gather critical signals from each vehicle, such as:



Temperature



Ignition



Location Tracking



Objects Around the Vehicle



Battery Levels

OX Motorcycles uses proprietary algorithms to take the data gathered by the sensors to track trends and present the information to the rider via an on-vehicle screen. The seamless integration between the vehicle, its environment, and the cloud helps OX Motorcycles offer features like:



Blind Spot Detection



Battery Management



Handlebar vibration that warns riders when there are objects close to the motorcycle, and even offers riders tips to improve their experience based on their riding style.

"Without Particle, we'd still be building all of this functionality," Martin said.

"Instead, we're preparing to launch."

Results

OX Motorcycles has been able to get to market faster and with a stronger product offering by building with Particle instead of trying to reinvent IoT themselves. The team is preparing for a limited EU launch in the beginning of 2022, with wider EU launch later in the year. By 2023, the team expects to launch across more of Europe and explore a U.S. entry.

So what did OX Motorcycles' partnership with Particle give them?

Flexible Platform + Certified Hardware = Future-Proof Building

The OX Motorcycles team feels confident that Particle can grow with their business due to the flexibility and robustness of the platform, as well as the certified hardware.

"We know we can grow hand-in-hand in the future," Martin said. "We have something that will allow us to build many things without knowing right now what our future needs will be exactly."

Additionally, having already-certified hardware that can be used across several markets means that OX Motorcycles can rely on Particle devices without worrying about losing certifications or having to spend extra time getting recertified when they launch a new product.

Valeria expects Particle to be a critical partner post-launch. "Using Particle's Over-the-Air Updates to push firmware upgrades across the entire customer base will help the team continuously innovate, make riders safer, and add new features over time."

Secure Supply

While many vehicle manufacturers have struggled to keep up with demand due to chip and component shortages, OX Motorcycles has been able to rely on Particle to deliver the hardware they need.

"Particle has been able to provide us with what we need at every moment," Martin said. "The collaboration is going great, and we're already working on developing more devices together. It's looking good for the future."

Deeper Vehicle Insights for Premium Services

By having all of the components of the powertrain integrated with their IoT platform, OX Motorcycles can offer predictive maintenance to its customers.

"IoT helps us predict when a component needs to be replaced or repaired, which makes inventory management much easier," Valeria said. "We can let the customer know that their motorcycle needs to be repaired, send replacement parts to a nearby repair shop, and make it very convenient for the customer to be served."

Connectivity also makes it possible for OX Motorcycles to gather deeper insights into their customers' needs. They can build new features based on what customers actually want.

"Particle helps us gain a competitive advantage by helping us improve our rider experience. It gives us the ability to segment our best customers and offer additional premium services to them," Valeria said. "These value-added services we offer make us more than a way to get from point A to point B. It builds our brand."

Work with Particle

Particle has helped market leaders and innovative new companies alike bring IoT projects to life for over a decade. What makes our platform different?

Secure and reliable

End-to-end encryption from hardware to connectivity to cloud, with SOC II and GDPR certifications, public/private key authentication, open event logging framework, encryption at REST, encrypted API messages, and firewall protection.

Scalable

We've helped connect and launch hundreds of thousands of devices, with a fully managed cloud infrastructure processing billions of messages a month and zero planned downtime.

Upgradable

Wirelessly reprogram your fleet of vehicles in the field with our over-the-air (OTA) software updates without any hardware or software scalability issues, and add product features, improve bugs, and avoid vehicle disruption with the push of a button.

Open

Use our APIs and open, referenceable system architecture to access and share vehicle data to multiple different stakeholders of your choosing or integrate seamlessly into existing software architecture without any security hassles.

Global Connectivity

Our IoT-specific SIM card is built into our hardware and is powered by over 350 carriers around the world that automatically connect to the best networks across 2G, 3G, and LTE technologies, designed to make IoT cellular management simple and unified.



All-in-one

A pre-configured network and applications so devices remain online



Secure by Default

End-to-end encryption, limited attack vectors, a firewall-protected cloud, and more



Scalable Infrastructure

Sensor hardware are cloud platform that works the same from your first prototype to your millionth unit



Domain Experts

Developer community, support, & engineering services ready to assist



Data Autonomy

Put your data where you want - integrate with AWS, Azure or anything with a REST API





About Particle

We love helping game-changing electric vehicle manufacturers build better products, get to market faster, and win in competitive markets.

Speak to an expert today



particle.io