A photograph of an electric vehicle chassis, showing the battery pack, motor, and various cables. The image is overlaid with a blue tint and the text 'EVOLECTRIC Case Study' in white.

EVOLECTRIC

Case Study

Challenge

Evolectric, a California-based startup, needed to rapidly advance their processes and leverage best-in-class tools for planning, 3D design, simulation and engineering to scale with its business needs and store all data centrally.

Solution

Evolectric deployed the **3DEXPERIENCE** platform on Cloud enabling a comprehensive set of capabilities, from design to project management. The platform serves as a single reference to handle the full lifecycle of each electrification project, from concept stage to systems engineering and production.

Benefits

The cloud-based collaboration environment unifies Evolectric's business, enabling the company to accelerate product innovation from ideation to production. Quick and easy to deploy, upgrade and scale, the **3DEXPERIENCE** platform provides the latest technologies to stay competitive and improve efficiencies.



“I had previous design experience with CATIA, but it wasn’t until I had the opportunity to use the entire 3DEXPERIENCE platform that I really understood the overwhelming power of the tool.”

- Bill Beverley, co-founder, Technology and Engineering

POWERING THE FUTURE WITH ELECTRIFICATION

The amount of electricity we consume globally will double by 2050, according to US consulting firm McKinsey in its “Global Energy Perspective” report. Additionally, while only a quarter of the energy we generate today comes from renewable sources, McKinsey predicts that by 2035, renewables will make up more than half of all energy generation. And they say, by 2050, it will be close to three-quarters.

With the need for more renewable energy use, industries such as the transportation sector are increasingly using electrification to open up the prospect of decarbonized mobility. However, to make this transition a meaningful reality, energy generation and distribution around the world must undergo rapid changes to the way we fuel our transport and power our infrastructure. That is why Evolectric is on a mission to help advance global electrification.

“Electricity demand is increasing rapidly,” said Bill Beverley, co-founder, Technology and Engineering at Evolectric. “Renewables are expected to play a bigger role and we want to work on clean technology that can enable the efficient usage of energy, especially in transportation within developing markets. We want to create economic development through technology.”

ELECTRIC MOBILITY FOR ALL

Founded in 2019, the California-based startup, specializing in batteries, powertrains, power electronics and vehicle systems, provides consulting services and products designed to unlock electrification technologies in underserved markets to achieve sustainable, affordable mobility.

“We set up Evolectric to address a couple of major trends,” said Jakson Alvarez, co-founder, Finance and Strategy at Evolectric. “One is that players trying to get into this space lack expertise and guidance about how to get started and they need support. Two is we have seen the gap in good, low-cost technology available in developing markets. We want to help close that gap.”

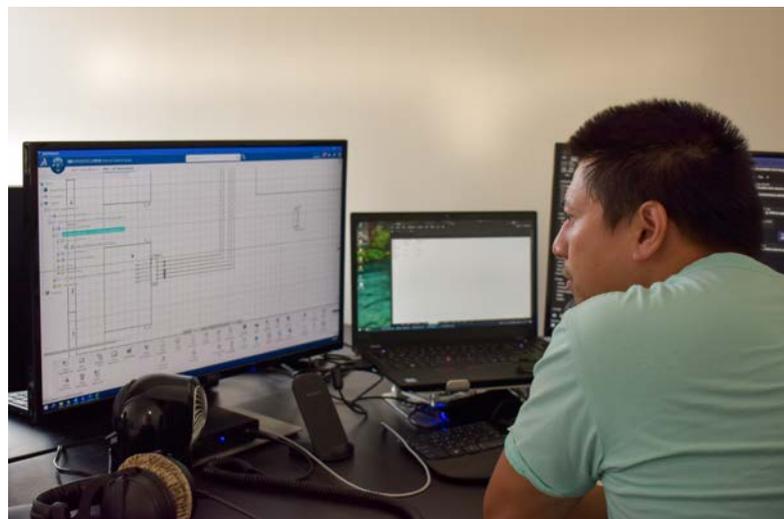
For Evolectric, this is about more than simply building electric vehicles or battery solutions; it wants to help its clients identify and take advantage of the right electrification technologies

and build sustainable businesses that serve the needs of local communities. This involves exploring innovative business and revenue models to maximize the use of assets, spread costs over time and with multiple users, and reduce the overall entry point of investment and cost. The company also integrates circular economy principles into its strategies.

“Through electrification technology, enabled by adopting the actual technology and supplementing it with education in those markets, we feel like we can have a lasting impact,” Beverley said. “Above and beyond that, recyclability is the right direction for future generations as we seek to reuse and recycle limited materials and preserve low-waste design practices. We want to follow these circular economy principles to reduce waste, extend the life of reused components and promote the recycling of those components. So it’s important for us to enable technologies that foster creativity in that circular economy market.”

In line with this way of thinking, Evolectric chose the 3DEXPERIENCE® platform on Cloud to power its business. It was a decision based not only on the founders’ previous experience with the platform, but a concerted choice to implement technology that had longevity and could deliver both in terms of the company’s business and engineering requirements.

“I had previous design experience with CATIA, but it wasn’t until I had the opportunity to use the entire 3DEXPERIENCE platform that I really understood the overwhelming power of the tool,” Beverley said. “It goes beyond the CAD to PLM and all other vertical enablement, so it was logical from that decision point. I also realized that it was important for us to get a platform that condenses all of the information in the business along with the actual engineering processes into one suite.”



Evolectric is developing a systems-design approach for all application-related design at both a product and systems level, backed by the 3DEXPERIENCE platform.

CLOUD FACILITATES IMMEDIATE START

Evolectric opted for a cloud deployment of the 3DEXPERIENCE platform to suit its immediate and future business needs.

“It became a decision of ‘OK, should we build a small server rack?’” Beverley said. “Or should we try to find a space for an on-premise installation? Do we have an IT person? The answer

was 'no' to all of that. And I needed it to be available for my own use within 24 hours to start using some of the toolsets. We needed immediate uptime. We didn't want separate IT management. I didn't want to install and deploy; I wanted to download and click 'go.' And the cloud version gave us all of that and more."

Evolectric partnered with Dassault Systèmes value solutions business partner XD Innovation through their cloud startup program to take advantage of the **3DEXPERIENCE** platform.

"Dassault Systèmes has been fantastic in providing the toolsets and the knowledge base behind it," Beverley said. "And XD Innovation has really supported us throughout with a lot of the coordination, training and implementation."

BUILDING DEDICATED SOLUTIONS IN THE CLOUD

Evolectric works with each of its clients to deliver a tailored approach that brings their electrification goals to life.

"We start by creating a space in the cloud for a customer," Beverley said. "We generate requirements and use the **3DEXPERIENCE** platform to exercise those requirements in a virtual model. Then we create a part design, test it and use the collaborative IP tool to regulate any revisions. Thanks to the platform, we can create accurate mechanical representations and analyze them using advanced simulation. We're using all the latest technologies on the cloud platform to continue to iterate beyond the product level and take it to the systems level."

Indeed, backed by the **3DEXPERIENCE** platform, Evolectric is developing a systems-design approach for all application-related design at both a product and systems level. This involves selecting battery sizes and cells; creating system architecture requirements and initial design together with its clients; creating the bill of materials before identifying manufacturing flow, the equipment and component list; and hardware supply chain management support.

The company also is taking advantage of the cloud-based platform to host virtual meetings with clients, which simplifies collaboration within the same user environment.

"Video conferencing and the ability to securely share data and 3D models online has allowed us to grow our connections and accelerate some partnerships in developing markets," Alvarez said. "We're now in conversations with more businesses to help them bring their electrification plans forward and grow our business."

MAKING THE SWITCH FROM GAS TO ELECTRIC VIABLE

All of Evolectric's decisions and client electrification roadmaps are guided by data, which is stored, retrieved and then used to support the resulting engineering processes – all within the **3DEXPERIENCE** platform.

"A great example is what we do with passenger vehicles," Beverley said. "We work with our clients to augment or replace the existing gasoline technology, which is not zero emissions, with components that are closer to or are even fully zero emissions, such as full electric."

Evolectric works closely with its clients to determine the best way of converting from gas to electric power, taking into account the most suitable electrification system and power

"Video conferencing and the ability to securely share data and 3D models online has allowed us to grow our connections and accelerate some partnerships in developing markets."

- Jakson Alvarez, co-founder, Finance and Strategy



Supported by the **3DEXPERIENCE** platform, Evolectric works closely with its clients to determine the best way of converting from gas to electric power.

Focus on Evolectric

Evolectric's mission is to advance global electrification by enabling and providing services and products that unlock current and new electrification technologies to underserved markets. The Californian business delivers battery pack expertise with cell block assembly, thermal management, conductors, enclosures, welding methodologies and more to provide maximum efficiency across the complete system.

For more information: <https://evolectricnow.com>

Focus on XD Innovation

XD Innovation is a Dassault Systèmes solution partner, which strives to help its customers innovate more efficiently by supplying best-in-class technologies powered by the 3DEXPERIENCE platform. The company provides software, consulting and value-added services to create product development technologies, equip 3D design, engineering, 3D CAD, modeling, simulation, data management, process management, and quality and compliance.

For more information: www.xdinnovation.com



sources, market viability and supply chain availability.

"We want to deliver incremental benefit and come up with an achievable solution that makes sense, is affordable and will be fit for purpose," Beverley said.

Critically, Evolectric is committed to ensuring its clients progress beyond theoretical and prototype stage and get their electric vehicle produced and onto the market.

"Once an electrification plan and set up is defined, we aim to get it into production," Beverley said. "There are three major tiers of engineering processes involved and we use the 3DEXPERIENCE platform to accomplish this."

The first stage is advanced engineering: "Before we go ahead and create a product, we put together a requirements study and we do that by collecting a lot of data in the platform that augments our day-to-day practice; reserving that data to be able to guide our later stages," Beverley said.

The next stage is systems engineering: "Once you have a target and a clear idea of what you want to do, we take a look at how it can be realized in virtual form," Beverley said. "This stage also involves some more market-related benchmark studies, characterization, risk planning, as well as some of the early-stage project management. All of this is handled on the platform."

The third stage is production: "We always aim to get the product built, otherwise it just stays in the cloud forever," Beverley said. "So we take that cloud data – everything that we've accumulated and managed throughout the lifecycle – and use it to build a minimum viable product. Then we get that out into the environment and get some early data and continue to close that loop."

A FACILITATOR OF CHANGE

Over the next couple of years, Evolectric hopes to stabilize its engineering services business, transition its customers into production-ready environments and bring more hardware partners onboard.

"We're working on building Evolectric as a respected contributor in the e-mobility ecosystem," Beverley said. "We want to be in the discussion and known for our expertise and culture as an enabler for our customers, backed by industry-leading technology. We want to help them navigate what seems like a barrier and find interesting and fruitful opportunities around how they can approach electrification and then accelerate the adoption of those vehicle technologies in their space."

Our 3DEXPERIENCE® platform powers our brand applications, serving 11 industries, and provides a rich portfolio of industry solution experiences.

Dassault Systèmes, the 3DEXPERIENCE Company, is a catalyst for human progress. We provide business and people with collaborative virtual environments to imagine sustainable innovations. By creating 'virtual experience twins' of the real world with our 3DEXPERIENCE platform and applications, our customers push the boundaries of innovation, learning and production.

Dassault Systèmes' 20,000 employees are bringing value to more than 270,000 customers of all sizes, in all industries, in more than 140 countries. For more information, visit www.3ds.com.

