Electric Dreams Keeps e-Bike Riders in Sync with their Bikes
A Sierra Wireless® Smart City Solution

CUSTOMER CRITICAL CHALLENGE
To improve users’ electric mobility lifestyle by offering a variety of high performance and reliable connectivity features in its EDG e-Bikes.

SOLUTION
Electric Dreams selected the Sierra Wireless BC Series industrial-grade Bluetooth module to connect the riders to their e-Bikes through its EDG Nobium mobile app, so bikers are always aware of their bikes’ performance.

BENEFITS
EDG e-Bike provides e-Bike riders with a high performance and innovative mobility lifestyle while protecting the environment.

BACKGROUND
EDG is a subsidiary of Electric Dreams, a Brazilian technology company with the goal to change the way people move by making it cleaner, cheaper and smarter, through developing technologies and solutions for electric vehicles. EDG is focused in tackling short distance and micro-mobility issues, of great importance in the ever-growing urban centers of today.

Founded by Lucas Di Grassi, former world champion of Formula E (a world-class electric racing series), EDG was born out of the need to bring a revolution to urban mobility worldwide.
“The Sierra Wireless modules provide stable communication over Bluetooth Low Energy, as well as scalability to LPWA Cat-M or LTE-M.”

Pedro de Castro
Embedded Systems Engineer
EDG

Business Challenge

EDG wants transportation to be, well, electric. On average, a gas or diesel fueled car releases more than two tons of carbon dioxide every year. EDG’s mobility technology could power cars with zero emissions, leading to better air quality and hence fewer health problems and healthcare costs associated with air pollution. Not to mention noise pollution reduction resulting from significantly quieter vehicle operation.

With its development center installed in one of the most important technological centers in Brazil, the São José dos Campos Technological Park - SP, Electric Dreams has an important laboratory structure to implement and validate the technologies developed for all sorts of electric vehicles that meet the demands of today’s consumer looking for urban mobility solutions without pollution emissions.

“Sustainability and reduction of fossil fuels consumption are issues that drive us,” explained Fábio Guillaumon, CEO of Electric Dreams. “But we also want to deliver performance; the goal is to provide our customers with a superlative vehicle that offers a unique combination of power, style, performance and innovation.”

Electric Dreams recently applied its mobility technology to an electric bike, the EDG Niobium e-Bike. In order to provide the same desirable user experience that it offers in its automobiles, EDG was looking to offer a variety of performance and location tracking features to further improve the electronic mobility lifestyle. The company wanted users to be able to track energy performance, know the available travel range before the next charge, be notified of impending mechanical issues, as well as to be able to track the location of the bike in case of theft or in the service of a bike-sharing program.

“Using a Niobium-enhanced steel alloy for our framework grants greater resistance, strength and toughness to the material, which is fundamental to reach our low-cost and lightness standards,” said Fábio. “We needed to ensure that whatever additional mechanisms we incorporated to provide connectivity didn’t affect the weight of the bike, yet could match the same performance and reliability standards we expect from every other aspect of our product.”
Sierra Wireless Smart City Solution

Electric Dreams selected the Sierra Wireless BC Series Bluetooth IoT module for its innovative EDG e-Bike. Built on the compact, industrial-grade form factor, the BC Series offers full regulatory certification, integrated antenna, embedded Bluetooth stack with simple UART interface, to get designs to market faster.

“The Sierra Wireless modules provide stable communication over Bluetooth Low Energy, as well as scalability to LPWA Cat-M or LTE-M,” said Pedro de Castro, Embedded Systems Engineer at EDG. “They offer local support and good products at good prices; we were able to rely on a trusted partner in Brazil to quickly develop and get our products to our local market.”

The EDG Niobium e-Bike weighs just 17 kilograms and can run up to 100 kilometers of range in a single charge. The EDG Niobium mobile app, connected through Bluetooth Low Energy to ensure that the e-Bike’s range isn’t affected, will offer e-Bike riders features including:

- Performance Tracking
- Speed & cadence (pedal speed)
- Range (distance that can be travelled before charging again)
- Distance travelled
- Fault indicator
- Pedal assist mode
- Geo Fencing (enabling the EDG Niobium e-Bike to be automatically locked if it goes beyond a certain perimeter)
- E-Bike locator
Results

Electric Dreams develops its projects in line with the National Policy on Urban Mobility developed by the Ministry of the Environment and implemented by Law 12,587 / 2012, which provides, among its guidelines, the incentive to scientific and technological development and the use of renewable energies and less polluting, as well as mitigating the environmental, social and economic costs of people and cargo transport in cities.

The company’s EDG Niobium e-Bike is just the latest example of its commitment to the environment. And when electric bikes are compared to motorcycles, automobiles and rail transit, the differences in environmental effects are stark. Because they don’t burn any fuel, electric bicycles do not release any gases to the atmosphere.

“I estimate that the Sierra Wireless modules reduced our product development time by at least 10 percent,” said de Castro. Electric Dreams is working on a cellular version of the EDG e-Bike using Sierra Wireless’ low-power wide-area (LPWA) HL Series modules for the scalability, support, and reduced time-to-market. “We are now on a very good path, as this product conforms to new environmental protection laws to be implemented worldwide in the next five years and enables us to move forward with plans for a global roll-out.”