

# Electronic Design **70** YEARS

Wireless Power is Already Changing the World

By Hatem Zeine



It may sound like futuristic technology from a sci-fi movie to many people, but wireless power is already transforming the logistics industry, and soon it will improve healthcare and unleash a wave of innovation in the consumer sector.

What you'll learn:

- How wireless power is already transforming the logistics industry.
- How wireless power will change healthcare
- How wireless power will ramp up innovation in the consumer sector.

We live in a world that's continuously increasing in devices that help us with our safety, security, entertainment, productivity, and health. These electronic devices may be connected—today called the Internet of Things (IoT)—but many devices are not connected, such as our electric toothbrush, kid's thermometer, and numerous other applications everywhere.

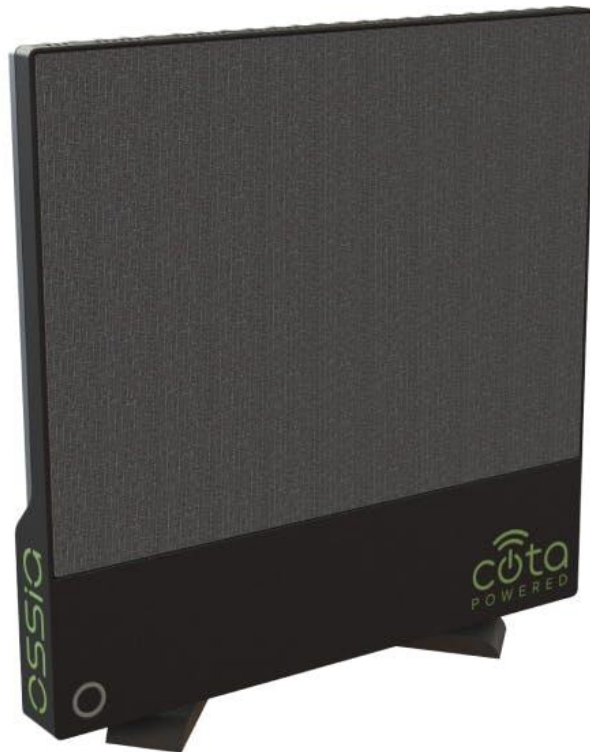
Each of those devices requires a power source, and we've been using wires and batteries for over 150 years to meet their power needs. The 21st century brings a third type of power to devices: wireless power.

Imagine a world where devices are powered wirelessly, from a power source—not conceptually different from the Wi-Fi hub—delivering the power needs of those sensors, smartphones, and other types of industrial or consumer devices as seamlessly as our Wi-Fi experience. As a relatively small

number of people know, we already live in that world, but soon, the broader public will become aware of the possibilities.

Ossia's Cota Wireless power devices have already been approved by top regulatory agencies on multiple continents. Transmitters licensed under those authorities are delivering wireless power to receivers embedded in many device types, including IoT sensors, temporary location trackers, smartphone cases, gaming controllers, smartwatches, and more. With the right wireless-power technology, these devices can receive power at a distance, whether at rest or in motion, with no need for line-of-sight placement or exclusion zones for people or pets.

### Powering Up the Logistics Sector



Cota Home 5.8GHz Transmitter

Wireless power is already saving time and money while improving safety in the logistics sector. Take, for example, distribution centers. Large retail organizations rely on massive distribution centers to efficiently deliver goods to people or store chains across the U.S. But misplaced truck trailers are a costly problem for the centers, which have trailer storage lots that often sprawl across multiple acres.

Conventionally powered GPS trackers aren't a solution because trailers may sit in the lot for days while awaiting loading dock access, and batteries run down from constant pings. Manually recharging batteries isn't feasible because truck yards lack the infrastructure and personnel to manage a large volume of charging cables. So, when trailer lot managers lose track of trailers, they send workers out on foot or in a vehicle to find it, which is time-consuming and potentially unsafe in high-traffic areas.

Wireless power solves the problem. In a pilot program, the world's largest retailer used wireless-power technology from Sensata Xirgo, deploying hundreds of wirelessly powered GPS trackers with a motion-activated sleep/wake mode to conserve energy. Yard workers placed the devices on incoming truck trailers and put them back into a cabinet where they're wirelessly charged when trailers exited the yard.

The distribution center was able to accurately locate trailers 100% of the time over the course of the pilot program, with the potential to save a minimum of 1,400 hours per year in labor costs at a single facility. Eliminating the need to send workers out to find lost trailers or repark trailers attached to trucks in error can save large distribution centers hundreds of thousands of dollars annually.

Wireless power has many other applications in the logistics space. For example, logistics managers can embed sensors on pallets or shipping containers to monitor goods as they move through the global

supply chain. With wirelessly charged sensors in place, the logistics team can gain far more insight than is possible with tracking methods that require human intervention.

In addition to location data, logistics managers can use wirelessly powered sensors to get information on conditions, such as temperature and humidity. It's also possible to embed devices that detect acceleration, enabling logistics professionals to ensure that goods are being handled with care by detecting drops. This is especially important for the transportation of fragile or perishable items.

### **Improving Dataflow and Patient Outcomes in Healthcare**

Vital signs: Healthcare is all about collecting, processing, and acting on reliable and consistent dataflows. Device use for healthcare has skyrocketed in recent years with the advent of non-intrusive oxygen meters, heart EKGs, and heart rate monitors we see around us in dedicated devices or in our smartwatches. Wireless power is becoming an essential part of our health.

Patients who are released from hospitals for home monitoring of vital signs via a device often must deal with bulky batteries that make it hard to live a normal life. As a result, they're less likely to comply with the monitoring protocol. Wireless power can change this by creating lighter monitoring devices and eliminating the need to manually recharge batteries.

Wireless power also can help improve outcomes by delivering data to care teams in real-time rather than relying on periodic downloads. With real-time data flow, care teams are able to assess patient information as it comes in. Furthermore, they can create automated alerts, such as messages to the patient, family members, or first responders in case a change in vital-sign status requires urgent attention.

### **Driving Innovation in Consumer Products**

Many people experience real anxiety when their smartphone battery gets below a certain level. Wireless power already addresses that scenario. Phone cases with wireless-charging capabilities can keep smartphones in the green zone. In the coming months, look for more wireless-power innovations, including power sources that can keep smart-home devices like cameras, air-quality and temperature gauges, fitness monitors, and more charged up automatically without the need for wires or pads.

Commercial and consumer drones are another excellent application for wireless power since wireless charging can eliminate the need for heavy batteries that limit drone miniaturization. With continuous charging in an enclosed area (like a warehouse or residence), drones are able to operate for longer periods without the need to land for recharging.

Gaming is incredibly popular, and wirelessly powered controllers not only will be a much-needed feature for the gamers, but also have the potential to open up new avenues of innovation. With a wireless-power source keeping controllers charged up, game developers can devote more time and product space on technology that syncs to player movements and connections that enable gamers to interact with other players.

Real wireless power is already changing the world. But, while applications are transforming the logistics industry and poised to make significant inroads into healthcare and consumer goods, we've only begun

to scratch the surface. In the coming years, wireless power will be a game-changer for engineers and designers, ushering in a future that will be brighter than we can currently imagine.

