

**Revolutionizing IoT with Wireless
Charging Solutions**
Overview



Energous®: Revolutionizing IoT with Wireless Charging Solutions

In today's rapidly evolving technological landscape, Energous stands at the forefront of pioneering change. By harnessing the transformative power of wireless charging, Energous is ushering in a new horizon for a myriad of industries. Dive deeper into the multifaceted applications of Energous technology, setting new standards for precision, convenience, and efficiency.

A Game-Changer in Sports Performance Monitoring

The collaboration between Energous, Catapult, and the AirFuel Alliance introduced unprecedented precision in athlete performance tracking. By integrating Energous' game-changing wireless charging technology with performance monitoring devices, athletes and coaches can now enjoy non-disruptive, real-time data collection.

With challenges like maintaining the traditional feel of sports equipment and ensuring consistent power to data-intense chips, Energous' solution emerged as a winner.

Beyond the Stadium: Diverse Applications of Energous Technology

Energous' innovative approach extends well beyond the sports arena, offering transformative solutions in various sectors that will be explored in this article.

Inventory Management & Retail

Energous brings uninterrupted product tracking to retail environments, a transformative leap from conventional systems. With smart, continuously charged tags powered by Energous, retail outlets can maintain real-time updates on product availability, significantly enhancing efficiency.

One major challenge retailers face is loss prevention. Traditional security tags often fall short due to battery constraints, intermittent connectivity, or manual deactivation processes. However, with Energous' advanced wireless charging solutions, these tags remain always active, ensuring that products leaving without proper checkout send instant alerts, thereby substantially reducing instances of theft.

Beyond loss prevention, one of the standout benefits of using Energous' technology lies in the domain of real-time inventory management. Energous can power sensor-embedded shelves that constantly monitor product weight or count. As products get picked up or put back, these sensors, always powered and connected, update inventory counts in real-time. This means the days of manually counting items, a time-consuming process prone to human error, are numbered. Restocking becomes a breeze, with systems automatically signaling when stock levels are low.

Furthermore, the labor-intensive and often grueling inventory days that require hours of manual work can now be repurposed. Retail staff, instead of spending countless hours on inventory, can focus on enhancing customer experiences, increasing the likelihood of returning customers. In essence, Energous doesn't just offer a technological solution; it provides a strategic approach to better use of human resources, underscoring its value in both tangible and intangible ways.

Medical Equipment Tracking

The pharmaceutical industry is acutely aware of the dire consequences improper storage and transport conditions can have on medications, biologics, and lab specimens. Energous' technology can be the solution against such risks. In a healthcare environment, ensuring medications are not just located but also stored at optimal temperature and humidity is paramount. With Energous, hospitals and clinics can wirelessly track the conditions of critical medicines, thereby ensuring patient safety and preserving drug efficacy. Such unwavering monitoring means that compromised or ineffective medications becoming a risk is a concern of the past.

Consider the logistical challenges faced during the COVID-19 pandemic. The vaccines, especially those using mRNA technology, demanded ultra-cold storage conditions, with some variants requiring temperatures as low as -70°C (-94°F). This

posed a significant challenge to the medical supply chain. Numerous reports highlighted discarded vaccine batches due to breaches in this cold chain, either because of power failures, equipment malfunction, or manual errors. With an estimated [\\$34.1 billion loss annually](#) due to temperature anomalies affecting vaccines, the stakes are incredibly high.

Energous' technology provides a fail-safe against such oversights. With Energous' wireless charging and tracking capabilities, storage units containing critical vaccines can be continually monitored for power and ambient conditions. Any deviations from the required temperature range could trigger immediate alerts, allowing for swift corrective action. In addition, this technology ensures that devices monitoring these conditions remain consistently powered, eliminating the potential for blind spots in the monitoring process. In scenarios like the global distribution of COVID-19 vaccines, where timely administration is pivotal to curbing the pandemic, Energous can play a vital role in minimizing waste and ensuring every dose reaches its recipient in optimal condition.

Agriculture and Livestock

The agriculture sector is increasingly looking towards technology to address some of its most pressing challenges. From unpredictable weather patterns to the evolving needs of livestock, the industry seeks solutions that offer both precision and convenience. This is where Energous thrives, seamlessly bridging the gap between traditional practices and the cutting-edge potential of IoT. The backbone of modern agriculture is its machinery – tractors, harvesters, and drones. These machines require constant monitoring to prevent unexpected breakdowns and ensure peak performance. With Energous' wireless charging solutions, farmers can ensure that sensors attached to these machines are always powered. This not only aids in real-time machinery health monitoring, but also guarantees that machinery is operating at optimal efficiency, leading to significant savings in time and operational costs.

Healthy livestock is also integral to the success of any farm. Traditional methods of monitoring livestock health can be labor-intensive and may miss subtle signs of distress or disease. By integrating Energous' technology into wearable devices for animals, farmers can now have continuous, real-time data about their livestock's health and location. This means early detection of potential issues, allowing for

timely intervention. Additionally, the seamless charging ensures that these devices are always on, reducing the risk of data gaps that could miss crucial health indicators.

Crop health and irrigation is also of utmost importance for farmers. Through continuously powered soil sensors, farmers can receive real-time feedback on the moisture levels and health of their crops. With Energous' technology ensuring these sensors never run out of power, farmers can achieve precise irrigation, ensuring crops receive the right amount of water at the right time. This not only optimizes yield, but also conserves water resources. Through continuous monitoring and real-time feedback, Energous is positioning itself as an indispensable ally for the modern farmer.

Supply Chain and Logistics

In the intricate world of logistics, Energous ensures an unwavering flow of real-time data, simplifying asset management. With Energous' technology, logistics companies can attach continuously charged tracking devices to their assets. Be it a container on a cargo ship in the middle of the Pacific, or a parcel in a delivery truck driving through city streets, companies can have real-time data at their fingertips. This continuous flow of information not only facilitates timely decision-making but also greatly reduces the chances of goods being misplaced or lost.

The vehicles used in logistics – trucks, ships, and planes – are the workhorses of global trade. Any downtime or unexpected maintenance can lead to significant delays and losses. Energous' technology ensures that the sensors monitoring these vehicles' health are always powered, alerting logistics companies to potential issues before they escalate. This means reduced downtimes, increased efficiency, and significant cost savings.

Warehouses are dynamic environments with goods constantly moving in and out. Energous can be the solution to the age-old challenge of inventory management in these spaces. With continuously powered tags on items and smart shelves, warehouses can automate inventory counts. This not only saves labor hours but also ensures that stock levels are always accurate, leading to better inventory turnover and reduced carrying costs.

Certain goods, like perishables or sensitive electronics, demand specific environmental conditions during transport. With Energous' technology, logistics providers can ensure that the sensors monitoring humidity, temperature, and other critical parameters are always on. This guarantees that goods arrive at their destinations in optimal condition, reducing waste and ensuring customer satisfaction. By ensuring an uninterrupted flow of critical data and automating many traditionally labor-intensive processes, Energous is reshaping the future of logistics.

Smart Cities

As urbanization surges worldwide, the challenges that cities face grow exponentially. Meeting these challenges requires an integration of innovative technologies, and Energous is pioneering this transformation. With its cutting-edge wireless charging solutions, Energous plays a vital role in shaping the smart cities of the future.

One of the perennial challenges of urban areas is traffic congestion. Energous can power the sensors and cameras that feed into advanced traffic management systems. By analyzing real-time data, these systems can optimize traffic lights, suggest alternative routes to drivers, and even predict congestion, leading to smoother commutes and reduced pollution.

Safety is paramount in urban settings. Energous' technology can ensure that emergency call boxes, surveillance cameras, and other critical safety equipment are always powered and operational. This not only deters crime but also ensures rapid response in emergencies.

With concerns about urban pollution and climate change, cities are increasingly monitoring air quality, noise levels, and other environmental parameters. Energous ensures that the sensors deployed for this purpose are continuously powered, giving city planners real-time insights and aiding them in making informed decisions.

The future belongs to cities that can adapt and sustain themselves. Energous can play a crucial role in powering sensors that monitor the structural health of

buildings, bridges, and other infrastructure. Early detection of potential issues can lead to timely interventions, ensuring longevity and safety.

The cities of tomorrow will be hubs of innovation, efficiency, and sustainability. Energous, with its transformative wireless charging solutions, is not just a participant in this evolution but a pioneering force. Through continuous data streams and uninterrupted powering of critical city assets, Energous is shaping the blueprint for the urban landscapes of the future.

Manufacturing

The manufacturing sector is on the cusp of a significant transformation. As the fourth industrial revolution or Industry 4.0 takes hold, digitization, automation, and real-time data become paramount. Energous, with its groundbreaking wireless charging solutions, is a pioneer in this transformative journey, bridging the gap between traditional practices and future possibilities.

Every second on the manufacturing floor counts. Delays, inefficiencies, or defects can result in significant financial setbacks. With Energous-powered sensors, manufacturers can gain instantaneous insights into their production lines. Be it the speed of conveyors, the efficiency of robotic arms, or the quality of products being churned out, Energous ensures that these sensors never run out of power, providing a continuous feed of valuable data.

Downtime is a dreaded term in manufacturing. A single malfunctioning machine can halt production, leading to missed deadlines and unsatisfied customers. With sensors powered by Energous, manufacturers can monitor the health of their machinery in real-time. Whether it's temperature fluctuations, unusual vibrations, or wear and tear, early detection can lead to timely maintenance, minimizing unplanned downtimes and potentially saving expensive machines.

Energous also contributes greatly to streamlining manufacturing inventory management. The days of manual stock-taking and inventory mismanagement are numbered. Energous' technology can power smart tags attached to raw materials, semi-finished goods, and final products. This ensures real-time tracking of inventory levels, making restocking efficient and reducing the risk of overproduction or stockouts.

In any manufacturing setup, the safety of the workers is of vital importance. Energous can power wearable devices that monitor workers' vitals, alerting them and supervisors of potential health risks. Whether it's exposure to hazardous materials, high temperatures, or heavy machinery, instant alerts can prevent accidents and enhance overall workplace safety.

As market demands fluctuate, manufacturers need to be agile. Energous-powered sensors can assist in creating flexible production lines that can be reconfigured based on real-time market insights, ensuring that manufacturers remain competitive and responsive. The manufacturing sector's future hinges on its ability to adapt, innovate, and optimize. Energous, with its advanced wireless charging solutions, is ensuring that manufacturers are equipped with the tools they need to excel in this new era. By providing a continuous flow of data and powering critical devices, Energous is setting the stage for a more efficient, safe, and responsive manufacturing landscape.

Hazardous Material & Cold Chain Monitoring: Ensuring Safety and Quality with Energous

Navigating the challenges of hazardous materials and maintaining the integrity of perishable items requires unwavering attention and precise tools. Energous, with its state-of-the-art wireless charging solutions, plays a critical role in ensuring that these sectors operate optimally, minimizing risks and guaranteeing quality.

Industries dealing with hazardous materials have zero room for error. Whether it's nuclear reactors, chemical plants, or waste disposal sites, the margin for error is minuscule. Energous-powered sensors ensure continuous monitoring of these materials. For instance, in chemical plants, these sensors can detect leaks or hazardous emissions, triggering immediate alerts. In nuclear facilities, real-time radiation level measurements can be continuously monitored, ensuring worker safety and environmental compliance.

The cold chain is a delicate balance of temperature and time, with perishables like vaccines, food, or biological samples at stake. Energous' technology can power temperature sensors that provide real-time data, ensuring that items within the cold chain remain within their required temperature ranges. Any deviation can trigger instant alerts, allowing for timely interventions.

As witnessed with the distribution of COVID-19 vaccines, maintaining stringent temperature requirements is paramount. Energous can play a pivotal role in minimizing vaccine wastage by ensuring that temperature sensors never run out of power. With estimates in the [billions](#) for vaccine losses annually due to temperature mishaps, the potential impact of Energous in safeguarding these vital resources cannot be overstated.

Transporting hazardous materials requires precise monitoring to ensure that conditions remain stable throughout the journey. Energous-powered sensors can provide real-time data on factors like temperature, pressure, and humidity, ensuring that these materials are transported safely, without any risk of accidents or spills.

Regulatory bodies have stringent guidelines for the storage and transportation of hazardous materials and perishables. With Energous' technology, industries can ensure compliance, as real-time data can be shared with regulatory agencies, reducing the risk of penalties, and enhancing transparency.

Enhanced Focus on Reefer Temperature Monitoring: A Key Benefit for the Cold Chain Industry

Energous' technology not only addresses the broad challenges of the cold chain but also zeroes in on the specific needs of refrigerated transport, a critical aspect for companies that operate extensive fleets of reefers. In the logistics of perishable goods, maintaining an even, optimal temperature throughout the entire length of a refrigerated trailer is a significant challenge. The temperature can vary notably from the nose to the tail of the trailer, potentially compromising the quality and safety of the goods.

Energous' wireless charging solutions offer a groundbreaking advantage in this regard. By enabling continuous, real-time temperature monitoring throughout different sections of a reefer, Energous ensures that temperature-sensitive goods are transported under consistently ideal conditions. This capability is vital for preserving the integrity of perishables like food, pharmaceuticals, and other sensitive products.

Consider a scenario where a reefer is transporting a variety of perishable goods. Energous technology can provide detailed temperature data from multiple points within the trailer. This granular level of monitoring allows for immediate adjustments, ensuring that each product is stored at its required temperature, regardless of its position in the trailer.

This enhanced monitoring capability doesn't just achieve quality control; it's a game-changer in sustainability by reducing waste and ensuring compliance with health and safety standards. With the implementation of Energous' technology, companies can significantly minimize the risk of spoilage and ensure that every item delivered meets the highest standards of quality and safety.

Waste Management: Pioneering Sustainability with Energous

With a societal increased focus on environmental awareness and sustainability, waste management stands as a pivotal concern. Whether it's dealing with mountains of daily urban waste or navigating the intricacies of e-waste disposal, the challenge is vast and multifaceted. Energous, through its cutting-edge wireless charging solutions, steps in as a game-changer, revolutionizing sustainability.

One of the most significant challenges in waste management is efficiently collecting and transporting waste. Energous-powered sensors, when placed on waste bins, can transmit real-time data about the fill levels. This allows waste collection agencies to devise optimal routes, ensuring bins are emptied just in time, reducing fuel consumption, and making the process more efficient. Such dynamic routing can result in substantial cost savings and reduced emissions.

The exponential growth in electronic devices has led to a surge in e-waste. This e-waste is often more detrimental to the environment than regular garbage and accounts for nearly [70% of toxic heavy metals in landfills](#). Often, these gadgets are discarded not because they are dysfunctional, but due to battery issues. Energous' wireless charging technology extends the life of electronic devices by providing consistent and efficient power, significantly reducing the volume of e-waste. Additionally, without the need for batteries, landfills could stay clear from their detrimental waste. It is estimated that [3 billion batteries](#) are discarded each year in America alone.

The modern landfill is more than just a dumping ground—it's an intricate system that requires careful monitoring. Energous can power sensors that continuously monitor factors like leachate levels, methane emissions, and ground stability. Such real-time data ensures that landfills operate safely, mitigating environmental impacts and ensuring regulatory compliance.

With a growing emphasis on recycling, facilities are constantly seeking ways to improve efficiency. Energous-powered sensors can help sort recyclable materials more effectively, ensuring that materials are correctly processed, and contamination is minimized. In fact, only about [6% of recyclable materials](#) are properly recycled in this country due to sorting issues and contaminated materials.

By incorporating Energous' technology into smart waste bins, municipalities can also provide real-time feedback to residents about their waste disposal habits. This can be a potent tool for educating the public and encouraging more sustainable behaviors.

As regulations around waste disposal become stricter, having real-time data becomes invaluable. With Energous, waste management facilities can ensure they adhere to guidelines, reducing the risk of penalties and fostering a more sustainable operational model.

Energous' involvement in waste management is emblematic of technology's potential to drive positive change. By providing real-time data and sustainable charging solutions, Energous is not just addressing immediate challenges, but is also laying the foundation for a cleaner, greener future. In a sector as crucial for the environment as waste management, the importance of such pioneering solutions cannot be overstated.

Leading the Charge

Energous stands as a beacon of innovation in the IoT landscape, transcending traditional boundaries with its advanced wireless charging technology. Across diverse sectors – from sports performance monitoring to logistics, smart cities to waste management – Energous is redefining efficiency, safety, and sustainability. By ensuring uninterrupted power to crucial sensors and devices, Energous’ technology enables real-time monitoring and decision-making, crucial for today’s fast-paced, data-driven world. Particularly in the realm of perishable goods, transportation, and cold chain management, Energous offer game-changing benefits, ensuring product integrity and minimizing waste.