blues wireless

Remote Crane Monitoring

How American Crane & Equipment Corporation is Cutting Cost by 10x for Their Smart Crane Technology

"We expect a 10X factor in cost savings for our smart crane system. Through innovation in transmitting data, using the Blues system will provide lower up-front and ongoing costs than a traditional system."

Karen Norheim, President and CEO, American Crane & Equipment Corporation

Overview

American Crane & Equipment Corporation is known for manufacturing high-quality specialty lifting equipment for unique applications. Their products include remotely operated cranes for nuclear applications, cranes for the aerospace industry, explosion-proof jib cranes for oil, and more. Highly technical engineering and manufacturing processes support highly specialized industries.

Celebrating its 50th anniversary, American Crane & Equipment Corporation continues to make significant investments to meet the ever-changing needs of the specialty lifting equipment market. American Crane & Equipment Corporation was awarded several patents, and today their dedicated Innovation Lab is exploring digital technologies to further transform the field of overhead lifting. This includes the Smart Crane System that can be built into new manufactured equipment or retrofitted onto existing equipment.

"The functional simplicity of the Notecard and the associated JSON coding for developing the system communication functions contribute to significant up-front savings."

Jeff Eberly, Director of Engineering, Mechanical & Innovation, American Crane & Equipment Corporation

Solving the Challenges of Remote Crane Monitoring

Overhead cranes are critical to daily operations and are often in continuous service. The current default process for maintenance and repair often includes a technician going into the field to plug in their laptop and run diagnostic tests, then make recommendations from the findings. This

temporarily takes cranes out of service and requires more human resources. Remote crane monitoring is a logical solution for these manual processes, but there are unique challenges when considering IoT solutions for overhead cranes.

Many pieces of industrial equipment operate in a steady-state condition where they are either 'On' or 'Off'. Overhead cranes operate at diverse levels of speed for each motion and varying levels of load between 0 and 100% of the rated capacity. These variable conditions create several challenges including:

- identifying normal steady state data ranges to determine anomalous behavior
- interpreting data and drawing conclusions about machine health
- determining required maintenance when analyzing the data

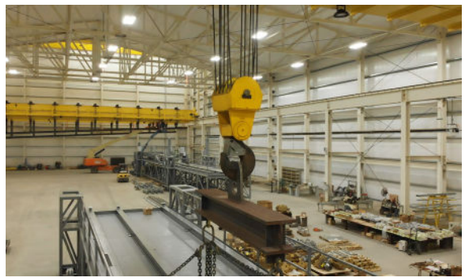
Cranes require more data to accurately understand what is happening and more complicated algorithms to analyze the data and convert it into useful, actionable outputs. American Crane & Equipment Corporation has solved these challenges and is working with Blues Wireless to create their IoT device.

Lower Costs with Out-of-the-Box IoT Connectivity

Using the Blues Wireless Notecard with its built-in prepaid cellular data and innovation in transmitting data, American Crane & Equipment Corporation has unlocked 10x lower up-front costs vs. out-of-the-box solutions, making their smart crane devices accessible even to small and medium-sized business. It provides a modular, scalable approach, allowing their customers to connect their equipment, whether they have one crane or 1,000+ cranes. Bringing this industrial equipment online is delivering data-driven insights to their customers, empowering them to make smarter and safer decisions.

The company is also delivering data-driven insights to its customers by turning cranes into smart devices.

American Crane & Equipment Corporation has created a comprehensive smart crane device with a host of data feedback, including:



- weight of load being lifted by the crane
- crane motion speeds
- crane motor currents
- number of lifts/motions
- durations of lifts/motions
- total run time of crane for each motion
- crane faults
- crane e-stop events
- crane limit switch status
- equipment lifecycle

As a value add, they can also offer general machine health monitoring by measuring temperature and vibration, among other variables , and alerting to anomalous machine behavior.

For American Crane & Equipment Corporation's customers, building smart cranes or retrofitting IoT devices onto existing equipment turns offline machines into online data-collecting assets. The data is securely transmitted to a cloud-based dashboard, where business owners and operators can access the data from their equipment in real time. This data delivers continuous insights into preventive and predictive maintenance, safety monitoring and alerting, and asset tracking and utilization statistics for increased operational efficiencies.

Cellular IoT Powers Smart Devices in Unpredictable Environments

Connecting their smart cranes to the internet allows American Crane & Equipment Corporation to get the information from equipment to cloud. Dependable internet connectivity is not always found on job sites, and connectivity is only one challenge to solve when thinking about operating and maintaining smart devices in dynamic environments with complex machines. When thinking about the long-term feasibility of these IoT devices, you must consider everything from connectivity to power supply, data security to firmware updates, and more. Solving these challenges led American Crane & Equipment Corporation to Blues Wireless.

"All of this is made possible by the Blues Wireless Notecard. By using the Notecard in our system, we're able to make this new technology accessible to our customers and others."

Karen Norheim, President and CEO, American Crane & Equipment Corporation

Cellular IoT made easy, and affordable with Blues Wireless:

- MapContainer.js loads the Google Maps script and provides a host container for Map.js.
- Map.js shows our map.
- 500MB and 10 years of cellular connectivity included
- Global cellular over LTE-M, NB-IoT, or Cat-1
- Secure bi-directional communications from device-to-cloud and back again
- Low-power hardware (~8µA when idle) enables power-conscious firmware
- OTA firmware updates
- Easy to embed with your preferred hardware
- Developer-friendly experience with JSON interface

Scalable Solutions for Any-Sized Business

IoT can be a complicated model to evaluate, but many of the same questions arise when adopting any new technology:

How can I make an informed choice? How do I determine if it's going to help my business? How do I find a good ROI? Is it scalable? And - most importantly for small and medium-sized businesses - how can I afford it?

Out-of-the box solutions can cost hundreds of thousands of dollars. With the American Crane & Equipment Corporation system powered by the Blues Wireless Notecard, the cost is 10x lower than out-of-the-box solutions so that small and medium-sized businesses can integrate the IoT into their operations. The 3 key pieces that increase the American Crane & Equipment Corporation system's accessibility and versatility are:

- Low point of entry
- Low monthly operating expense
- System customization

It's all about getting the right information to the right people at the right time. Dashboards and alerts can be set up based on business needs, including email notification of anomalies, notifications of fault status, or custom notifications to monitor activities and machine health and take actions that improve business operations:

- Predictive and preventive maintenance
- Safety monitoring
- Reduced downtime
- Maximized productivity

This information can be accessed in near real time, delivering remote visibility in a way that has never been done. American Crane & Equipment Corporation's hope is that they can raise the tide for everybody, showing others how they can embrace things like IoT, and turn data into business decisions that will have tangible positive outcomes for any sized business.get the information from equipment to cloud. Dependable internet connectivity is not always found on job sites, and connectivity is only one challenge to solve when thinking about operating and maintaining smart devices in dynamic environments with complex machines. When thinking about the long-term feasibility of these IoT devices, you must consider everything from connectivity to power supply, data security to firmware updates, and more. Solving these challenges led American Crane & Equipment Corporation to Blues Wireless.

How to Learn More

Leveraging AI, machine learning, and IoT connected by Blues Wireless, American Crane & Equipment Corporation is delivering real-time visibility into their customers' operations. This insight is invaluable for such highly specialized equipment, optimizing safety and efficiency through preventative maintenance and usage trends. By combining the company's dedication to unparalleled customer service with its tradition of innovation, they've found a way to bring their product and their customers into the era of big data.

Stay up to date with the latest breakthroughs in wireless IoT technology and applications. Visit Blues.io for more information, subscribe to the Blues Wireless developer newsletter, or ask questions via chat.

Have questions for American Crane & Equipment Corporation? Get in touch.