Customer Stories:
Howden

AT&T Business

Engineering leader Howden uses

Internet of Things solutions from AT&T

to predict and prevent equipment problems

- **Business needs** - Howden needed to capture and analyze near-real-time data from its equipment at customer locations, on and off shore, around the world.
- **Networking solution** - Global SIM and satellite services from AT&T deliver highly reliable connectivity so Howden can receive and analyze data in near-real time. This allows Howden and its customers to proactively manage and maintain equipment. Howden also uses cloud-based Multi-Network Connect to manage its global IoT connections. In addition, they ramp up network performance and enhance security through AT&T NetBond® for Cloud.
- **Business value** - Optimized equipment performance, reduced down time, and decreased operating expenses
- **Industry focus** - Engineering and industrial equipment
- **Size** - 5,500 employees working from 68 sites across 28 countries

About Howden Group Ltd.

Howden Group Ltd. uses its legendary engineering to help solve customers' problems. For more than 165 years, it's been providing products, solutions, and services to the industrial sector. Howden's fans, heaters, compressors, blowers, steam turbines—and more—enhance the processes and production of several industries: oil and gas, power generation, iron and steel, wastewater, mining, chemicals, and others. In a nod to its history of designing and building rotating equipment, Howden's customer-first mantra is "Revolving around you."

The situation

Howden introduced a new business stream as part of its strategy for Data Driven Advantage (DDA). They would use sensors to record and analyze data on how well equipment performs for their customers. Howden could use this data to help customers fine-tune operations, proactively service equipment, and support the bottom line. Howden needed a way to capture and process the data. They were looking for a single provider with international reach. This provider would need to supply highly reliable, highly secure, and cost-effective mobile communications to transmit data from customer equipment to a cloud-based solution.

Solution

Howden chose Global SIM and satellite services from AT&T to deliver global connectivity for its DDA solution, Howden Uptime. They also use Multi-Network Connect, giving them a single-pane-of-glass view to manage IoT assets across networks. Finally, they use AT&T NetBond® for Cloud to provide a highly secure, private connection between an AT&T virtual private network or AT&T switched Ethernet network and Howden's cloud resources. The solutions give Howden access to AT&T expertise in networks, apps, asset management, device certifications, and technical support.

Generations of engineering innovation

Howden was started in Scotland by James Howden in 1854. They have become well-known for innovating ways to move gases, air, and fluid through the machinery used in many industries.

Still headquartered in Scotland, Howden has become a truly global company. "We are an organization of just over 5,500 employees working from 46 sites across about 28 countries," said CIO David Simpson. "We also have our products installed in over 120 countries. We've got to act globally and make sure any of the solutions, technologies, and support we use have global capability as well."

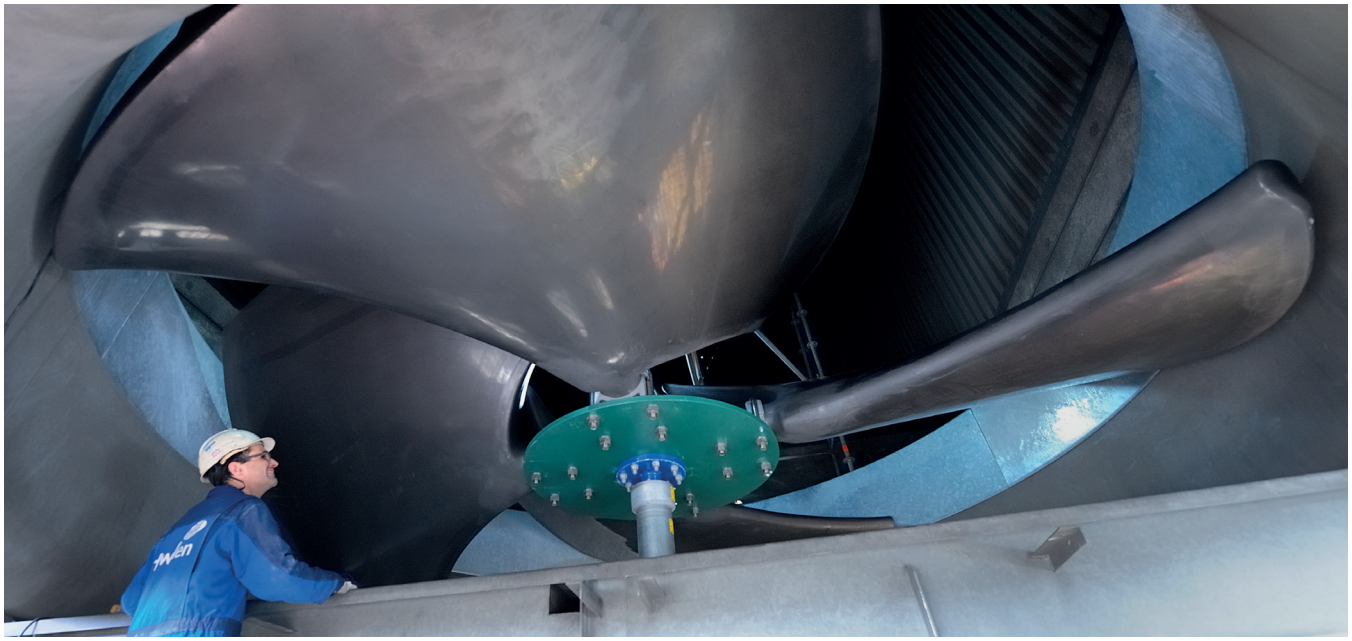
James Howden started his business to improve the performance of coal-burning, steam-powered ships. "Howden developed technology to improve boiler efficiency," Simpson said. "A steam engine that ran more efficiently could carry less coal—which meant space to carry more cargo. Mr. Howden's technologies were very attractive to the merchant ship industry."

Howden still improves the efficiency of sea-going vessels to this day. Of course, it has diversified operations significantly and become mission critical to many industries. "The reality now is that we've got fans, compressors, and heaters that cover industries from power generation, petrochemical, wastewater, mining and cement, to a vast array of other industrial applications," said Maria Wilson, Ph.D., Global Leader of Data Driven Advantage and Digital Growth at Howden.

Digital evolution enhances product lines

Innovation has always been at the heart Howden. "Since 1854, we've arguably been at the forefront, starting with the first Industrial Revolution," Dr. Wilson said. "And now with the fourth Industrial Revolution, we see this trend continuing. We are committed to digital innovation. We look for the best ways to support our customers with long-term value from all our products."

Howden continues to improve and refine products that were first designed 165 years ago. "In my book it's more than a digital transformation of our products



and services," Dr. Wilson said. "It's a digital evolution. An evolution of customer value and ourselves as an organization. An evolution of the value in the services that we can now offer our customers through the products that we've always made. There's a palpable pride in Howden's heritage and in its long history of being at the forefront of innovation. And that comes across in our organizational culture."

An advanced ecosystem of partnerships

Howden develops ways to extract more benefits from traditional products. This helps reduce the cost of ownership and improve product lifecycles. As part of this effort, the company was looking for a way to reduce equipment downtime and the associated problems and costs. Howden Uptime was created to solve those issues.

Howden Uptime is a unique and innovative platform. It gathers, interprets, and analyzes data on any kind of rotating equipment. "We put together Howden Uptime to look at process-critical equipment that can't go into unplanned outages and needs to operate efficiently," Simpson said. The solution supports vital applications and equipment so that they can run well with minimal downtime.

"Howden Uptime is the culmination of an ecosystem of partnerships," Simpson said. "We've worked really hard with leading tech providers and the industrial Internet of Things (IoT) landscape to put the ecosystem together. It's all about making the best partnerships and focusing on the value we can create with technologies that are already there—rather than getting lost in trying to develop a technology stack ourselves."

The solution measures equipment performance in near-real time. "This lets us provide guidance to the customer about performance enhancements," Simpson said. "Or, as the product name suggests, it helps us recognize where there's a downtime coming or has happened. And then we can try and help accordingly."

Uptime requires sensors that send near-real-time data from customer equipment to Howden's tech hub in the cloud. The company looked for an IoT innovator to supply the connectivity.

Optimized performance on demand

AT&T helped Howden bring the Howden Uptime solution to market by overcoming the challenge of getting data from customers in remote locations.

"Many remote customers really didn't have any means of connecting to the device," Dr. Wilson said, "so it was very important for us that our partner could provide a scalable solution. We didn't want to have patches of architecture that are different, moving from territory to territory or application to application. We were looking for a provider with a scalable and adaptable solution for connectivity to support us across all six continents because that's where our customers are."

Howden uses Global SIM and advanced satellite connectivity from AT&T to transmit data from customers' equipment and deliver performance optimization on demand. AT&T satellite services provide redundancy and virtually eliminate any coverage gaps.

"The technology stack that we built behind Howden Uptime is a cloud solution that uses one of the most advanced industrial IoT platforms," Simpson said. "And the connectivity piece with AT&T allowed us to come up with a highly secure cloud solution. It helps our customers operate efficiently and avoid unplanned outages."

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>
> **Maria Wilson, Ph.D.**
> Global Leader of Data Driven Advantage and Digital Growth at Howden Group

Visualizing problems deep inside equipment

Howden Uptime gives customers a suite of visualization layers that lets them monitor equipment health and performance. Authorized users can navigate their way through helpful dashboards. "We go through an extensive user experience workshop with every customer we onboard and make sure that these dashboards are native to that organization as much as we can," Dr. Wilson said.

Companies set up personalized alarms that deliver warnings when anomalies occur. To help companies understand as much as possible about their operations, Howden is developing compressed mobile and app versions of the dashboards. "And finally, another way of visualizing or consuming this visual data is through mixed reality (MR) or augmented reality (AR)," Dr. Wilson said.

Dr. Wilson compares the AR application with video games that submerge players in the gaming experience. "You want to keep people immersed in the experience of their job and give them context," she said. "The easiest way to do that is by bringing the digital information into their physical reality and the physical reality of the equipment."

For instance, if the dashboards tell machine operators that a critical component is about to fail, it's important for them to see exactly where that component is. "But no one can just poke their head inside the compressor and look at what's happened," Dr. Wilson said. "Some of these machines were installed 50 years ago and operators need to be reminded of where exactly the particular components are located."

In the mixed reality application, Howden superimposes 3-D models over the equipment. "This vision of consuming information from digital twins and predictive analytics, in the context of the actual equipment, is quite unique in the manufacturing industry landscape," Dr. Wilson said. "It's something that we and our partners have taken the lead with."

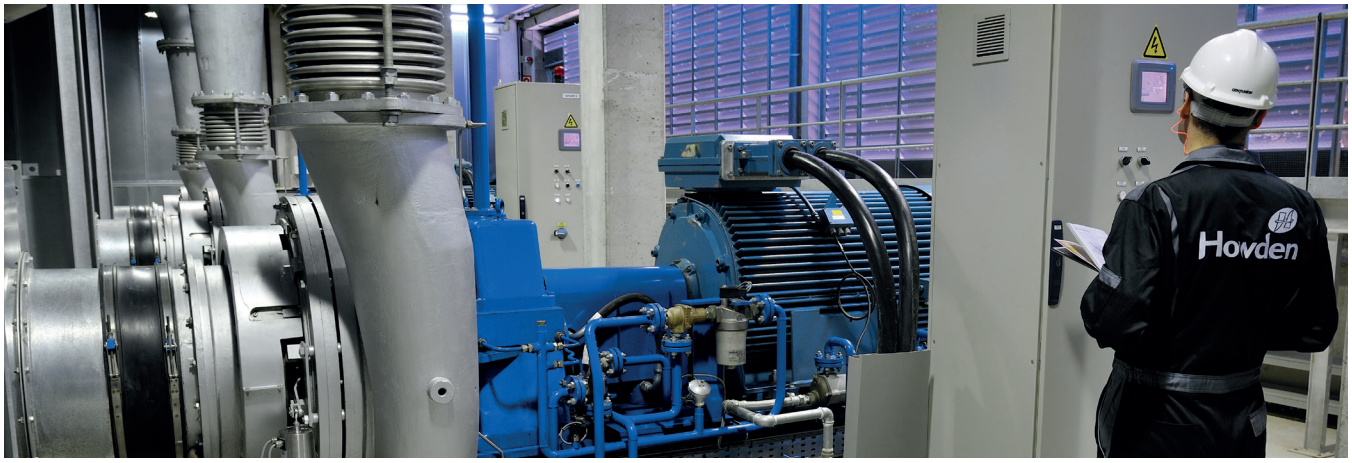
Simplified management, powerful security

Howden also uses Multi-Network Connect from AT&T to manage its IoT connections across cellular and satellite operators around the globe. It greatly simplifies the sometimes-complex management process by providing a view into all Howden's IoT devices on a single pane of glass.

The solution doesn't require the company to make any additional investments in equipment to monitor its IoT connections—company engineers simply use an intuitive web portal that's easily accessible from any computer.

And because security is always paramount, Howden chose AT&T NetBond® for Cloud, which helps reduce the potential for DDoS attacks and other cyber threats by providing a highly secure connection to the cloud.

AT&T solutions work well to support the international nature of Howden's business. "We really needed a company that could deliver that combination of technical options globally and be able to support it and provision services quickly and securely across a global environment," Simpson said.



Engineering to solve customers' problems

Thought leadership in its field is very important to Howden. "Our whole premise as a company is that we have fantastic engineering expertise," Simpson said. "When we originally started thinking about this whole world of digitization, we needed to differentiate ourselves from our competitors."

While some others could attach a sensor to a machine to extract data, Howden's engineering expertise has enabled it to provide customers with more valuable intelligence. "Our people are highly capable and able to analyze data to provide customers with near-real-time, effective solutions to optimize their equipment performance," Simpson said.

The products that Howden develops are based on the highest level of engineering expertise and providing optimal solutions to the customer. "Our vision is not about generating a product. It's about using our engineering to help solve the customer's problems, often before they know they have a problem," Simpson said.

Realizing this vision for its global customer base demanded a communications provider with global reach. "That dictated some of our choices. And when the review came through, AT&T was a clear leader," he said.

Howden also welcomed the ability of AT&T to provide technical guidance. "The world of connectivity, and particularly the world of satellites, aren't our specialties," Simpson said. "Therefore, we're very dependent on suppliers to provide us with guidance, observations, and options. And AT&T is clearly a company that can do it across the standard SIM technology and, more importantly, on the satellite connectivity. And that was a key differentiator."

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> **David Simpson**
> Chief Information Officer at Howden Group