

CASE STUDY

The logo for 'SMART WIRES' features a power button icon between the words. Below it is the tagline 'REIMAGINE THE GRID'. The background of this section is a photograph of a high-voltage electrical transmission tower against a sunset sky with orange and yellow clouds.

SMART WIRES

REIMAGINE THE GRID

COMPANY

Smart Wires

INDUSTRY

Energy

COUNTRY

United States

EMPLOYEES

150+

WEBSITE

smartwires.com

CHALLENGES

- Cost pressures to deliver products affordably as energy market grapples with aging, inefficient electrical grid prone to bottlenecks and renewables push
- Need for strong supply chain partner with global reach to compete with large, multinational competitors
- Highly-complex products requiring manufacturing collaboration and processes to expedite innovation while meeting rigorous safety and reliability requirements

SOLUTION

- Jabil's global supply chain reach created new sourcing avenues for custom electromechanical components to reduce cost and market risk
- Jabil's proven design and manufacturing excellence enabled Smart Wires to compete on a global scale while expediting delivery of highly reliable, quality products
- Jabil and Smart Wires' onsite collaboration with engineering and R&D led to better products and faster innovation

BENEFITS

- Multiple products deployed quickly and safely with others in development—continually reducing product cost with each iteration while improving manufacturability
- Proven agility to manage manufacturing capacity surges led to global recognition as one of the three most important transmission grid innovations of the decade, according to the World Economic Forum
- Growth-oriented partnership positions both companies for new market applications for clean energy, leading to a greener future

Smart Wires Powers a Smarter Grid for a Greener Future

Jabil's World-Class Supply Chain, Value-Added Engineering and Scalable Product Industrialization Help Advance Flexible, Efficient Delivery of Electricity Worldwide

It's a real lives-in-the-balance situation: world energy usage will swell by 50% by 2050, but a warming planet has challenged most sectors of society to be carbon neutral by 2035.

As electricity demand continues to grow, utilities must grapple with an aging electrical grid to deliver dependable capacity—increasingly from renewables—without missing a beat. The need to provide peak power with security and resilience will only intensify as electric vehicles (EVs), Internet of Things (IoT) devices and rising economies intensify the load on the grid.

So what's a planet to do? The answer certainly isn't to build more lines. Instead, Smart Wires is championing the ability to divert electricity instantly to unused lines while enabling real-time digital control of power flows. "We are transforming how power grids around the world are planned and operated," explains Marie Hayden, Chief Engineer of Smart Wires, a Silicon Valley-based developer of grid-optimized solutions. "Our diverse teams work all around the world united by a vision to develop a highly efficient electricity grid for a cleaner planet."

Smarter Energy Flow

Smart Wires' patented modular and scalable solutions—used by utilities across North America, Europe, Australia and Latin America—enable utilities to pinpoint power demand and move energy sources where needed for efficient balance of power delivery from the transmission grid. These solutions unlock gigawatts of new capacity on the existing grid by intelligently routing power to underutilized power lines.

"The technology we bring to the table allows transmission lines to push more energy without building new ones," adds Haroon Inam, CTO of Smart Wires. "For example, building a new transmission line might cost \$100 million, but our technology can push up to 30% more power on the same line for less than \$10 million."

Smart Wires' engineering prowess has brought major innovations to the market, including a "transformerless" technology called SmartValve™, which enables real-time control of power flow. SmartValve gives utilities flexibility to eliminate bottlenecks and redistribute power across underutilized lines. In an outage, this kind of deployment greatly reduces grid overloads and gives crews time to perform maintenance.

By using lightweight silicon instead of steel, Smart Wires enables a significant reduction in the cost of energy delivered. "Silicon is much lighter than steel," says Inam. "If you can make the silicon dance on the grid, you can do much more with it than you can with steel. That's the idea behind the innovation at Smart Wires."



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MARIE HAYDEN

Chief Engineer, Smart Wires



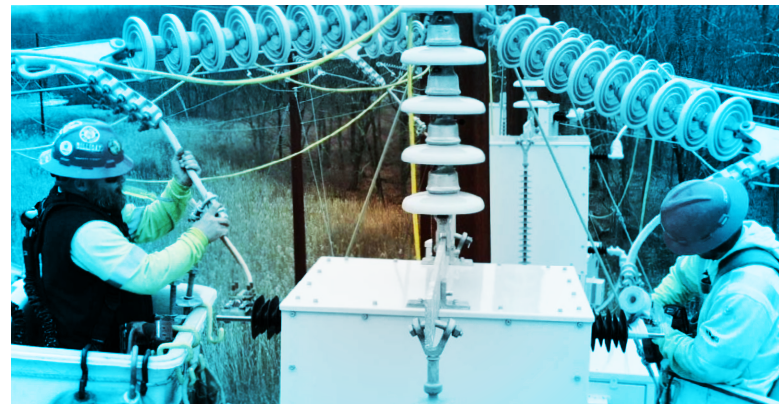
Smart Wires has no shortage of ideas for meeting its mission to “reimagine the grid.” A global team of engineers has earned 59 patents, with more underway. The focus is not just on improving the flow of power, but also developing services that further extend the value of the grid. “It’s invigorating to bring our customers’ needs into the heart of our product design and development process, so we have a better understanding from functionality and quality perspective,” Hayden adds.

Early on, Smart Wires saw the value of aligning with a manufacturing solutions provider to speed its path to large-scale commercialization. A partner with energy industry experience, deep engineering expertise and a global supply chain was needed. Another priority was having an established record of bringing complex electronics products to market.

The alignment with Jabil really stood out. “The respect for people and regard for a partnership really resonated with us,” Inam says. “We felt a lot of chemistry with the Jabil people we met with, and we’re very glad because we wanted a true partnership that would allow us to scale.”

According to Brad Beard, SVP of Manufacturing for Smart Wires, rapid business growth necessitated acquiring additional manufacturing assistance to move advanced prototypes into mainstream

production. “Jabil’s wealth of experience enables us to take ideas from concept through product design, supply chain development and into volume production so much faster than we could otherwise,” he says.



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BRAD BEARD

SVP of Manufacturing, Smart Wires



Unique Blend of R&D and Operational Expertise

Smart Wires' products contain a lot of semiconductors, printed circuit boards and electromechanical assemblies, requiring significant expertise on all fronts. Moreover, rigorous testing capabilities with complete traceability was needed to ensure the highest levels of product quality. "Our goal is to develop products that can be manufactured easily, transported and installed seamlessly, as well as maintained to perform flawlessly over a targeted 40-year lifespan," Hayden notes.

To address Smart Wires' product development and manufacturing demands, the teams formed i2i, a dedicated group of Smart Wires and Jabil experts co-located at a new Jabil facility in Florida. "We have a unique relationship with Jabil — our engineers and head of operations are actually stationed at Jabil's Florida factory," notes Inam. Operations, engineering and R&D from both companies collaborate to accelerate bringing new products to market. Adds Beard, "We work together on continuous improvement in design and manufacturing processes, and our customers benefit from this ongoing collaboration."

Working smart and working safe are top priorities. The use of smart torque drivers to control hundreds of fasteners on each Smart Wires product is an example of manufacturing and innovation alignment. "We start each workday and meeting with safety as everyone in the organization agrees it's our top priority," says Beard.

The evidence is typified by the ability to adhere to a world-class Quality Management System (QMS) and

Manufacturing Execution System (MES) while correlating massive amounts of testing and quality data to ensure adherence with rigorous quality and safety standards.

"Jabil has its own sophisticated processes while we have our own way of doing things fast in an entrepreneurial way," Inam says. "The idea was to use the partnership to merge the two, because that's where the magic happens as we can take innovation straight to the manufacturing floor."

In supporting Smart Wires' New Product Introductions (NPIs), Jabil brought together engineering, production and supply chain support to expedite the launch of game-changing products. "Our main competitors are very large, established companies," says Al George, Vice President of Operations for Smart Wires. "Jabil allows us to compete on equal footing as we now have a global manufacturing footprint that is competitive with anyone out there."



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HAROON INAM

Chief Technology Officer, Smart Wires



Global Supply Chain & Manufacturing Excellence

In Jabil, Smart Wires found a global supply chain partner second to none. It's a good thing because Smart Wires' solutions are complex, drawing from power systems, semiconductors, cybersecurity and civil and structural engineering, among other disciplines. They also vary in size from tiny products on wires to very large systems.

Jabil has an impressive comfort level with product and system complexity, building everything from thermostat components to large wind turbines and huge lithium-ion storage containers. The company's procurement team is equally adept at handling electromechanical and custom mechanical supply chain demands. This proved essential in sourcing components for Smart Wires' products, which comprise up to 95% custom electromechanical designs.

"The supply chain aspect of our business is vital," George adds. "We're also in a safety-regulated environment, so we must have the highest quality while still being competitive on price. The Jabil supply chain offers access to more than 27,000 suppliers worldwide, which enables us to deliver the highest quality we can for the best value."

Picking the right suppliers from reliability and sustainability perspectives can be daunting. Thanks to the impressive reach of Jabil's global supply chain, Smart Wires leverages a wider selection of suppliers than previously accessible, including companies across the U.S. as well as in Asia and Latin America. "When global supply chains were rocked by disruptions caused by the COVID-19 pandemic, we were grateful to have an experienced partner like Jabil help manage those challenges; the team has been great in working around those issues," recalls Hayden.

Partnering with Jabil also ensures Smart Wires can source and qualify complex mechanicals that can be difficult to attain but are crucial to product industrialization. Jabil's quality processes and ability to build to exact specifications ensures that when the company takes control of a safety-approved design, strict standards are fully maintained. "Jabil has really helped us improve product design, manufacturing processes and supply chain capabilities to increase production volumes and reduce order backlogs," says Beard.

Moreover, Jabil engineers continuously offer real-time insights to elevate manufacturing efficiencies. "Having people thinking about how to develop the actual manufacturing processes around their idea is invaluable," Inam adds. "And not only that, but they then deployed those processes in an efficient manner, too."



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AL GEORGE
VP of Operations, Smart Wires





Delivering on a Greener Future

With Jabil as its trusted partner, Smart Wires stands ready to make clean energy affordable. Three models have debuted across two product lines. “We manufactured more products in the first three months of 2020 than we made in the history of the company,” asserts George. “And that’s directly because of our relationship with Jabil.”

A close cultural alignment between Jabil and Smart Wires stands out as a driving force that continues to propel development of new product designs and phased rollouts. “Both company cultures are anchored by innovation, an overarching customer focus and respect for the environment,” says Beard. “I get really excited when I look to the future and what it means for Smart Wires, Jabil and the world.”

The world is taking notice. Smart Wires’ impact on clean energy has been recognized by The World Economic Forum, which lauded the company’s technology as one of the three most important transmission grid innovations of the decade. Smart Wires also was named a 2020 Technology Pioneer poised to have a significant impact on business and society and a 2021 Global Cleantech 100 Company for leading the way to a decarbonized, digitized and resource-efficient reality.

“The future of Smart Wires is product innovation,” says George. “Jabil is helping us continue to drive down the cost of our products with each iteration, which allows the grid to be more efficient at a better value proposition while improving the manufacturability of our products very early in the process.”

Cohesive teamwork will let Smart Wires make the grid more efficient and its products more affordable for markets worldwide—leading to a new level of grid efficiency and greener power. “It’s truly amazing that we have helped customers take advantage of something they already have to be more efficient and have a smaller impact on the environment,” says Beard. “It just makes you feel good at the end of the day.”

To strengthen its presence nationwide while positioning the company for strong momentum across key growth markets, Smart Wires recently announced a new corporate headquarters in North Carolina’s Research Triangle Park. “The uniqueness of our products, combined with Jabil’s manufacturing and supply chain expertise, gives us a strong competitive edge.”

Jabil (NYSE: JBL) is a manufacturing solutions provider with over 260,000 employees across 100 locations in 30 countries. The world’s leading brands rely on Jabil’s unmatched breadth and depth of end-market experience, technical and design capabilities, manufacturing knowhow, supply chain insights and global product management expertise. Driven by a common purpose, Jabil and its people are committed to making a positive impact on their local community and the environment.