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WEST

CTC GLOBAL

www.ctcglobal.com / Headquarters: Irvine, Calif. / Employees: 250 / Specialty: Powerline conductors / Anne McDowell, VP of commercial operations: "Market need drove us to innovate."

POWERING THE WORLD

CTC GLOBAL GROWS AS ELECTRIC POWER COMPANIES REAP THE BENEFITS OF ITS ACCC® CONDUCTOR. BY JANICE HOPPE-SPIERS



CTC Global has been improving the efficiency, capacity, reliability and resilience of the world's electric power grid since 2005 with the introduction of ACCC® conductor. "CTC Global essentially created an entirely new market by creating something that previously didn't exist," Vice President of Commercial Operations Anne McDowell says. "Market need drove us to innovate. We began developing the patented ACCC conductor when we recognized the enormous challenge of increasing transmission line capacity, mitigat-

ing thermal sag and improving conductor efficiency."

Based in Irvine, Calif., CTC Global is a privately held Delaware Corporation that began research and development in early 2003 to develop a conductor that could be used to upgrade existing transmission corridors without structural modifications. The objective relied on the incorporation of highly evolved aerospace technology and materials science to create a new higher strength, lighter weight core that could incorporate additional conductive alumi-

num without a weight or diameter penalty, and be utilized to reduce thermal sag, increase spans between fewer structures, carry more current, reduce line losses and improve grid reliability.

CTC Global commercialized its initial product line in 2005 and the company went on to develop ISO-certified manufacturing techniques and tooling in 2006 to allow for the cost-effective and continuous production of the pultruded composite core. To date, the company has supplied more than 200 elec- >>



WITH THE ACCC CONDUCTOR, LINE UPGRADES CAN BE COMPLETED WITHOUT THE NEED FOR SPECIAL PERMITTING AND/OR BUILDING NEW STRUCTURES.

» tric power utilities with more than 75,000 kilometers of high-performance, energy-efficient powerline conductors for more than 650 projects in more than 50 countries.

INDUSTRY DISRUPTORS

CTC Global developed and manufactures a hybrid carbon and glass fiber structural core to replace conventional steel core wires used in bare overhead powerline conductors. For more than 100 years, electric power producers have been delivering electricity to their customers using bare overhead conductors on higher voltage transmission lines. Once the power is transferred to distribution substations, the voltage is dropped and delivered to customers using insulated copper wires or in underground cables.

“The higher voltage transmission lines typically use conductive aluminum wires or ‘strands’ helically wound around steel wires that are

used to increase the overall strength of the conductor to enable long spans,” McDowell explains. “As increased levels of current are delivered through the wires, their electrical resistance causes the wires to heat up and sag. The use of CTC Global’s composite core mitigates the thermal sag, allowing the ACCC conductor to carry up to twice the current of conventional steel core conductors.

Because the ACCC composite core is so much lighter than steel, the ACCC conductor can use approximately 30 percent more aluminum without a weight or diameter penalty. “The added aluminum content not only helps carry more power, it also helps reduce electric line losses by approximately 30 percent,” McDowell says. “Reduced line losses serve to reduce fuel consumption and associated greenhouse gas emissions, while also freeing up generation capacity that is otherwise wasted. In

the case of connecting a renewable or clean energy resource where GHG emissions are not generated, the improved conductivity of the ACCC conductor can improve overall power delivery and project economics.”

In the past, if a utility needed to increase the capacity of an existing transmission line, they would have to tear down the old line, replace the structures and install new larger wires. “With the advent of the ACCC conductor, line upgrades can be completed without the need for special permitting and/or building new structures,” McDowell adds. “This reduces project costs, completion timeframes and environmental impact.”

TRANSPARENT PROCESSES

CTC Global’s direct customers are conductor manufacturers, but its true customers are the world’s leading electric power companies. These include investor owned utilities (IOUs), transmission companies (Transcos), municipalities (Munis) and others. “They are all highly risk adverse and conservative for good reason,” McDowell notes. “With that said, CTC Global has worked very hard to answer technical questions, which were largely derived from intensive testing and collaboration with our customers, manufacturing partners, well known labs and universities worldwide.”

The company also strongly encourages factory visits so its end-user customers can see the lengths it goes to ensure high-quality and product consistency. CTC Global’s Irvine campus houses two core production floors, main offices, a research and development facility, a number of lab and other business operations. The company also produces connectors for the finished conductor product in a machining center.

CTC Global also manufactures its own machines and production tooling for its factory, as well as for its two joint venture manufacturing plants in Indonesia and China. The company employs about 250 people in Irvine and produces core around the clock.

The composite core CTC Global produces for the ACCC conductor is manufactured using a pultrusion process. “While many aluminum and plastic profile parts are produced by pushing material through a die with a specific shape – which is known as the extrusion process – we actually pull materials through dies in various sizes. This is referred to as pultrusion,” McDowell explains. “Because our product is designed to perform flawlessly for decades in very harsh environmental conditions, we worked very hard to find the best materials and develop methods to accelerate line speeds without compromise.”

CTC Global continues to improve its manufacturing process, but the product formula remains the same. The company maintains quality and increases productivity in manufacturing through teamwork, improved systems and communication. “In addition to having a well-developed system in place, we also have project managers who follow specific projects and make sure deliveries are seamless,” McDowell says. “It’s all about communication and action.”

REPEAT CUSTOMERS

In 2006, CTC Global helped American Electric Power complete its first ACCC conductor installation. The project consisted of a 15-mile upgrade with a few installation-related problems that caused concern. However, CTC Global was able to work through those obstacles and went on to complete well over a dozen additional projects.

One of CTC Global’s more recent AEP projects was a 240-circuit-mile, 345,000-volt transmission line upgrade that was completed while the line remained energized. “Over 1,400 miles of ACCC conductor was used for the single project,” McDowell says. “This was an impressive demonstration of product confidence, teamwork and customer support.”

ADVANCING INTO THE FUTURE

Over the last few years, CTC Global has been growing at a very fast pace, McDowell says. “This has taken a concerted effort to ramp up production and product output, but most importantly to identify, target and train many new staff members to help us grow,” she adds. “Our investments in people and equipment are paying dividends.”

CTC Global cross-trains in various functions to respond quickly to change and increase productivity. The company also offers many job functions within the organization and there is room for growth. For example, line workers often become lab technicians.

CTC Global is run by a dedicated, highly capable management team with decades of experience in the development, growth and operation of both transmission-owning utility companies and in technology companies, including the development and use of composite materials. The team has guided CTC Global through the process of product development, manufacturing, product placement, customer acceptance and now rapid sales growth.

“Our product is the best performing product in its class on the market today and yet we only own 1 percent of the overhead conductor market, globally,” McDowell says. “We will continue to grow our business and establish relationships with new customers and manufacturing partners worldwide.” **mt**



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