Paving the way towards a greener, more resilient grid infrastructure

Through expert environment services, site design and engineering, ENERCON is helping to modernize our power grids. This not only ensures greater infrastructure resilience, but also increases connectivity potential to renewable power sources.

The use of renewable energy is rapidly increasing and now accounts for around 22% of global power generation. This is expected to double in the next 15 years.

The challenge is how to move as much electricity as possible from renewable generation sites like solar and wind farms without impairing the function of the power networks that need it. This requires re-thinking the traditional designs, operations, and planning practices from a technical and an economical point of view.

ENERCON, a multiple discipline engineering and environmental services firm, is helping to build stronger, smarter, and more resilient energy provision. The team operates through four business units – Power Delivery, Energy (Power Generation and Critical Infrastructure), Nuclear, and Environmental Services – to deliver a broad range of professional services to private, public, and government sector clients across the United States and internationally.

As the renewable energy industry grows rapidly, the ENERCON team is supporting utilities by developing and executing approaches that enhance decarbonization efforts and support modern grid initiatives at the local and regional scale.

The team is doing this through environmental services at site identification, energy generation and critical infrastructure, and storage and transmission.
Environmental services during site identification resilience

Identifying the best sites for renewable energy projects is a critical step for any developer. ENERCON applies its expert experience while leveraging big data, choosing the best route or location for a project. This includes understanding potential environmental or regulatory risks that could add delay or cost. Also key to ensuring the suitability of a potential site is identifying sensitive natural resources, and guiding site design with measures to enhance the habitat.

Supporting Lightsource bp

ENERCON has been working with Lightsource bp to responsibly develop solar projects which form part of their carbon reduction initiatives.

One such project was an 1,800-acre solar energy site in Texas, with the potential to power over 50,000 homes. ENERCON led the development and implementation of the site’s environmental management plan. This included assessing the habitat for protected species and natural habitats such as wetlands and riparian zones, considered critical natural sinks for carbon sequestration.

Biologic carbon sequestration is one strategy for decarbonization, whereas CO2 can be removed from the atmosphere and stored in vegetation, soils, wood/trees and aquatic environments.

The team provided Lightsource bp with environmental management plans to enhance the existing habitat of their site (which included over 50 acres of forested land) and achieve net gain for local biodiversity. Design recommendations for habitat enhancement included the creation of pollinator gardens, installation of bird and bat boxes, and creation of hibernacula for reptiles and mammals.

ENERCON is supporting Lightsource bp on further solar energy projects by providing environmental management design and services, one of which involves increasing site carbon sequestration of up to 80% through sheep grazing areas and fixation of soil nutrients under solar panels.

ENERCON is working on a 1,800 acre solar energy site in Texas, with the potential to power over 50,000 homes.
Supporting solar and wind farm developments

Marshall Wind Energy
Marshall County, Kansas
7,000-acre wind farm
72 megawatts of generating capacity
ENERCON services:
- Bald and Golden Eagle survey
- Acoustic bat survey
- Avian surveys

PacifiCorp Winds farms
Oregon and Washington
Upgraded two wind farms across 32,238 acres
334 megawatts of generating capacity
ENERCON services:
- Eagle conservation plan

RWE/E.ON, Stella Wind Farm
Kenedy County, Texas
35,000-acre wind farm
201 megawatts of generating capacity
Ability to power >60,000 homes
ENERCON services:
- Site feasibility study
- Captured environment habitat, including protected species
- Attained required permit plans

Solar farm project
600-acre solar farm
Energy for 30,000 homes Leading clean energy U.S. provider
ENERCON services:
- Civil, structural, and electrical designs for site construction management
- Stormwater pollution prevention plan
- Site evaluation and permit application
- Presentation for local township

The UN Sustainability Goals outline 17 global goals as a “blueprint to achieve a better and more sustainable future for all”. One of those goals is to ensure access to affordable, reliable, sustainable and modern energy for all.
Energy generation, building infrastructure resilience

ENERCON is now working with several organizations to modernize the infrastructure of their electric grids. This will ensure they not only deliver a scale-up of secure, resilient and affordable power, but also help build a path to a smarter grid able to manage increased renewable energy sources.

Grid Modernization in Georgia, U.S.A
ENERCON is working with a state energy provider to support the upgrading of their infrastructure. This will ensure the provider not only meets their customers’ expectations, but that a resilient, reliable and future-proofed infrastructure is developed.

In this area, ENERCON services include: field data collection; detailed engineering design; environmental assessment; permitting coordination; distribution system analysis utilizing CYME software to identify pre-existing planning criteria violations; identify customer counts, verify equipment loading, recommend phase balancing, and verify device coordination; and construction support, with the aim to strengthen and improve the electrical distribution circuits across Georgia.

This program has also involved distribution engineering on 62 miles of overhead to underground conversions; 72 miles of overhead hardening (with an additional 105.4 miles currently in design); and planning criteria evaluation of distribution circuits following substation upgrades for 15 substations.

ENERCON increased its staff numbers from 10 team members to 50 designers within the first year of this program.

Resilient Infrastructure

Storm Protection Plan
Tampa, Florida
Underground power lines to improve grid resiliency
Facilitation of more efficient and faster restoration times in the event of storms

ENERCON services:
- Design concept to construction management
- Full service – engineering, construction management, project, environmental and customer outreach services
- Surveying and land acquisition

Substation Optimization
North Carolina and South Carolina
Upgrade aged distribution infrastructure to promote improved system reliability and sustainability

ENERCON services:
- Design and engineering services on 68 miles of overhead distribution lines

Distribution Hardening / System Improvement / Turnkey Storm Secure Underground
Florida
Systematically upgraded and enhanced distribution across all FPL territories for increased customer reliability and storm resilience

ENERCON services:
- Distribution engineering for overhead and underground designs
- Assistance with permitting
- Environmental assessments
- Construction management

Another UN Sustainability Goal is on infrastructure resilience. Investment in infrastructure and innovation are seen as crucial drivers of economic growth and development.
Power grids with a significant portion of generation from renewables can benefit from storage to capture and retain energy when production exceeds demand. Electricity can be stored during times of high generation (for solar, during sunny days; for wind, during times of high wind speeds) for later use during periods of high demand, helping to address the problems with fluctuations in renewable generation.

**Renewable energy storage and transmission**

Energy storage and transmission

One solution to tackling the problem of balancing supply and demand of renewable energy is Battery Energy Storage Systems (BESS). BESS capture and store excess generated electricity for delayed discharging, and can be standalone or connected directly to the grid.

**Designing and preparing BESS capabilities**

ENERCON has been using their civil engineering expertise in this area to work with a large electric utility in the southeast (US). The project, part of a larger Battery Storage Research Program, includes site designing, preparing and installing a lithium-ion BESS and interconnecting to 69kV power lines, which serves as the backbone of a neighborhood electrical system.

**Electric Vehicles (EV)**

The electrification of America’s roads means transportation infrastructure must be reinvented. For utilities, strategically supporting national EV growth not only requires significant investment ($2.8 billion), but also effort to balance electrical efficiencies, technology adoption, grid improvements, and user experiences.

Several significant commercial players are now accelerating this drive towards EV as they commit to transition their fleets by 2030. These companies recognize not only the business and economic opportunities, but also how EV will support their own ESG KPIs.

With a growing number of energy transition and decarbonization projects under its belt, ENERCON is focusing its efforts on enhancing its EV charging infrastructure expertise.

**Charging installations for a major global logistics organization**

ENERCON is supporting one major global logistics organization’s objective to reach carbon net-zero by 2040 through the design and installation of nearly 3,000 EV fleet charging stations across 12 eastern distributions centers.

The project originally included electrical engineering, civil engineering, and structural engineering for turn-key engineering and construction installation packages. As it progressed, the scope expanded to include research and site acquisition services for the original 12 sites plus several additional sites.
Smarter Future,
Greener Grid

The rapid shift towards renewable energy requires modernization and expansion of electrical grids.

The next stages of innovation for ENERCON will be to design and engineer greater connectivity and resilience of the electric grid with renewable resources. A smarter, greener grid needs to be more flexible and better equipped to absorb larger shares of renewable energy technologies. Higher interconnection and transmission capacity will also enable the optimal use of surplus generation, alleviating the problem of daily and seasonal demand peaks.

Discover more about AEI’s ESG agenda

AE Industrial Partners have developed a robust ESG program to ensure ongoing risk mitigation and value creation, and to assess performance in these areas through select ESG metrics. The program is governed primarily by our ESG policy, which provides a framework for how we assess and address ESG considerations, both within our firm and across our portfolio. AEI’s internal ESG committee is responsible for overseeing execution of the policy.

Our ESG integration applies throughout due diligence, investment, and ownership activities. Where possible, we seek to use industry standards as our benchmark, such as the U.N. Principles for Responsible Investment, to ensure that we are aligned with the most current ESG expectations.

Discover more at: www.aeroequity.com/esg

Our pledge

AE Industrial Partners is committed to its ESG and DEI principles at both the firm and portfolio company level.

From integrating social and environmental factors into our investment decision-making, to supporting diverse hiring and board representation, AEI will be a progressive voice in the industry, leading by example.

As we move forward in our ESG journey, we will continue to strive to deliver greatest value for our investors and society.