



Wind Power Solutions





# AETI Story



American Electric Technologies, Inc. (AETI) has been a leading provider of electrical products and services to the Gulf Coast marine and industrial markets for over 60 years. Initially founded in Beaumont and known as M&I Electric, AETI is headquartered in Houston and has global sales, support and manufacturing operations in Texas, Florida and Mississippi. In addition, AETI has interests in two joint ventures in Singapore and Xian, China. The company has hundreds of global customers, and total global revenues of over \$100M per year. American Electric Technologies is a publicly listed company on the NASDAQ stock exchange, and its ticker symbol is AETI.

AETI offers M&I Electric™ power distribution and control products, electrical services and E&I construction services, as well as American Access Technologies zone enclosures and Omega Metals custom fabrication services. South Coast Electric Systems, LLC, a subsidiary, provides products and services to the Gulf Coast marine and vessel markets.

Our mission is to be the premium global supplier of power delivery solutions to the traditional and alternative energy industries. Our customers include traditional oil and gas companies, among them off-shore and land drilling, production operators, marine vessels, pipelines, and refineries. We also serve traditional power generation, transmission, co-generation and alternative energy markets, including wind, geothermal, biomass and solar.

Our core competencies begin with our ability to apply proven, reliable electrical technologies to overcome complex power engineering challenges. Our power delivery experts will design and implement the most optimal solution for our customers' complex requirements. Our electrical engineers and project managers also recognize and help our customers navigate through the pressures involved with complex projects such as limited internal resources, quick response/turn-around projects, dealing with changing/evolving requirements, and managing multi-vendor equipment.

We specialize in helping our customers by providing global turn-key projects with 24 hour service/support, delivering total system responsibility.

For more information, please visit our web site at [www.aeti.com](http://www.aeti.com).

# AETI Wind Farm Switchgear



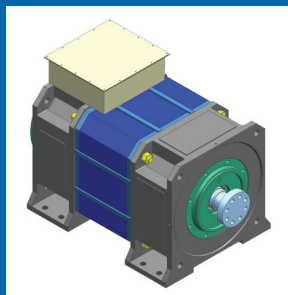
- **Custom-designed switchgear is available in voltage ratings from 4.76 kV through 38KV**
  - > ANSI and IEC switchgear
  - > MV Metal-enclosed switchgear for 600 and 2000 amp capacity through 38kV
  - > Down tower/turbine-located 24" switchgear
  - > Offshore wind power switchgear and power distribution/control systems
  - > Low voltage metal enclosed switchgear through 600VAC
- **M&I Electric metal-clad switchgear provides centralized control and protection of medium voltage power equipment and circuits involving generators, motors, feeder circuits, and transmission and distribution lines**
  - > Designed, manufactured and tested in accordance with the latest applicable standards of NEMA SG-4 and SG-5, IEEE and ANSI C37.20.2.
  - > Up to 4000 amp
- **Industry fastest 38KV switchgear delivery times**



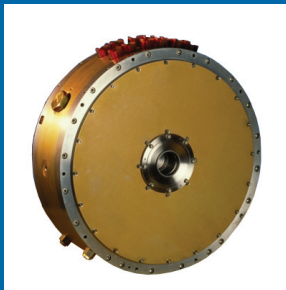
# AETI Wind Inverter, Converters, Drives & Motors



a



b



c

## AETI Wind Inverter/Converters/ Variable Frequency Drives

AETI's digital wind power inverters transform the dc voltage produced by rectifying variable-frequency ac from wind turbine generators to 60-Hz ac suitable for transmission and distribution lines. The AETI/M&I eDrive utilizes space vector control for reducing switching losses and has a voltage output 3-phase, 690 VAC.

AETI inverters/converters can be custom designed in various configurations to satisfy wind farm requirements. Outdoor, compact design, and the industry's fastest delivery times are also available.

- Ride through capability
- Air-cooled/ water-cooled inverter/converters up to 6MW
- Peak efficiencies of over 97%
- Custom permanent magnet generators
- Turbine mounted inverters available
- Pad mounted IP 23 outdoor rated inverters

## AETI Permanent Magnet Motors – partnership with



### a PRE 34 600/BC:

3,660 N-m (2,700 ft-lb) Continuous 447 kW (600 HP) @ 1200 rpm 1588 kg (3600 lbs) 536 mm (21.1 inch) square x 1245 mm (49 inches) long.  
Open drip proof, blower cooled, explosive environment.

### b PRE '1200':

7,122 N-m (5253ft-lb) Continuous 895 kW (1,200 HP) @ 1,200 rpm 2450 kg (3400 lb) 600 mm (23.7 in) square x 1360 mm (53.6in) long.  
Open drip proof, blower cooled, explosive environment.

### c PA44 Axial Field PM Motor:

2,000 N-m (1,475 ft-lb) output torque at stall 336 kW (450 HP) @ 2860 rpm 195 kg (395 lb) 648 mm (25.5") diameter 224 mm (8.8") length.  
Totally enclosed, liquid cooled 3 phase, full bridge connection.



# Wind Farm Services

American Electric Technologies has been a leading provider of high-voltage electrical system maintenance and testing services to the substation and industrial markets for 30 years. Our trained staff performs hi-pot testing, high voltage terminations, transformer testing and repair, coordination studies, and clean room based circuit breaker retrofit capabilities. We have technicians that travel the world who are ready to support our wind power customers to assure successful wind farm operations.

**Power system quality analysis/load studies:** AETI has the capability to perform a power system quality analysis and load study which is an engineering and trouble-shooting tool that we use to provide the customer with confidence that their system is working properly. Power outages and system failures are extremely costly and can ruin reputations. We have performed thousands of these studies for our customers, saving millions of dollars in unplanned power outages.

**Substation troubleshooting:** Our technicians have worked all over the world in various substation troubleshooting capacities. By providing maintenance and repair services, our technicians can contribute to predictive and preventive maintenance to ensure that your electrical system runs efficiently.

**Protective relay testing and calibration:** AETI can perform protective relay testing and calibration for any wind farm installation. Semi-annual maintenance is critical for any high voltage installation and power failure is never a good option. Our technicians will perform tests on your wind components to ensure relays are set properly and that they trip per the engineered settings.

**Ground grid test:** AETI will not only install your ground grid but we will also perform a ground resistance test each time the semi-annual maintenance is performed. Properly grounded systems are the key to ensuring that your entire installation operates properly and safely.

**Infrared analysis:** We are able to provide full infrared analysis for our customers. We have the equipment to perform infrared analysis for any installation. This is another tool that we use to keep the customer's equipment on line by ensuring that all connections are tight. Loose connections lead to various high cost failures.



# Wind Farm Electrical Construction



AETI has been a full-service electrical contractor for over 40 years. We have expanded our critical power construction operations by building an experienced wind farm construction organization, with wind farm design and installation experience in dozens of West Texas wind farm projects. Our experience in substation construction, overhead and underground line construction and high voltage distribution systems assures a successful construction project completed on time and within budget. We are capable of providing detailed cost estimates for any wind farm design requirement and guarantee we will exceed your expectations.

Our wind power construction operation is able to provide full wind farm electrical engineering, procurement and construction services directly to wind farm developers and operators, and as a subcontractor to EPC, general contractors and wind turbine OEMs.

## **E&I Construction Services**

- Sub-station/collector station design and construction
- Collection system design and construction
- Cable trenching and/or overhead line construction
- Project management

## **Electrical System Procurement**

- Transformers
- Cable
- UPS Systems
- Batteries
- Lightning protection systems
- Materials

# Full Source For All Wind Power Electrical Requirements

## Offshore Wind Projects



Leveraging AETI's offshore power expertise and our wind power electrical capabilities, AETI is able to supply full electrical balance of plant for offshore wind power requirements.

## Meteorological Tower



AETI provides complete met tower power management and data collection systems for land and off-shore wind farms.

## Full service wind farm equipment provider

In addition to providing our wind power switchgear, inverters, converters and VAR compensation systems, AETI can deliver the following as part of a complete solution offering:

- Substation step-up transformer
- Pitch/Yaw system and drives
- Pad-mounted, step-up transformer
- Collector lines & transmission lines
- Collector station switchgear/breakers
- Substation breaker/switches
- Battery/backup power system

## VAR compensation

VAR compensators provide fast-acting reactive power compensation on high-voltage power transmission networks.

## Energy storage systems

Energy storage systems serve as a buffer between variable power supply sources and the firm competitive requirements of a power contract. Wind generation systems have a fluctuating power output due to the variability of the wind speed. Energy storage can provide stabilization of wind turbine output and is a source of reactive energy. Additionally, voltage can be regulated and in off grid networks, system frequency can be controlled.

AETI works with a variety of back-up wind power and storage offerings including batteries and compressed air storage and looks forward to working with you on a comprehensive wind power solution to meet your requirements.





#### Corporate Offices

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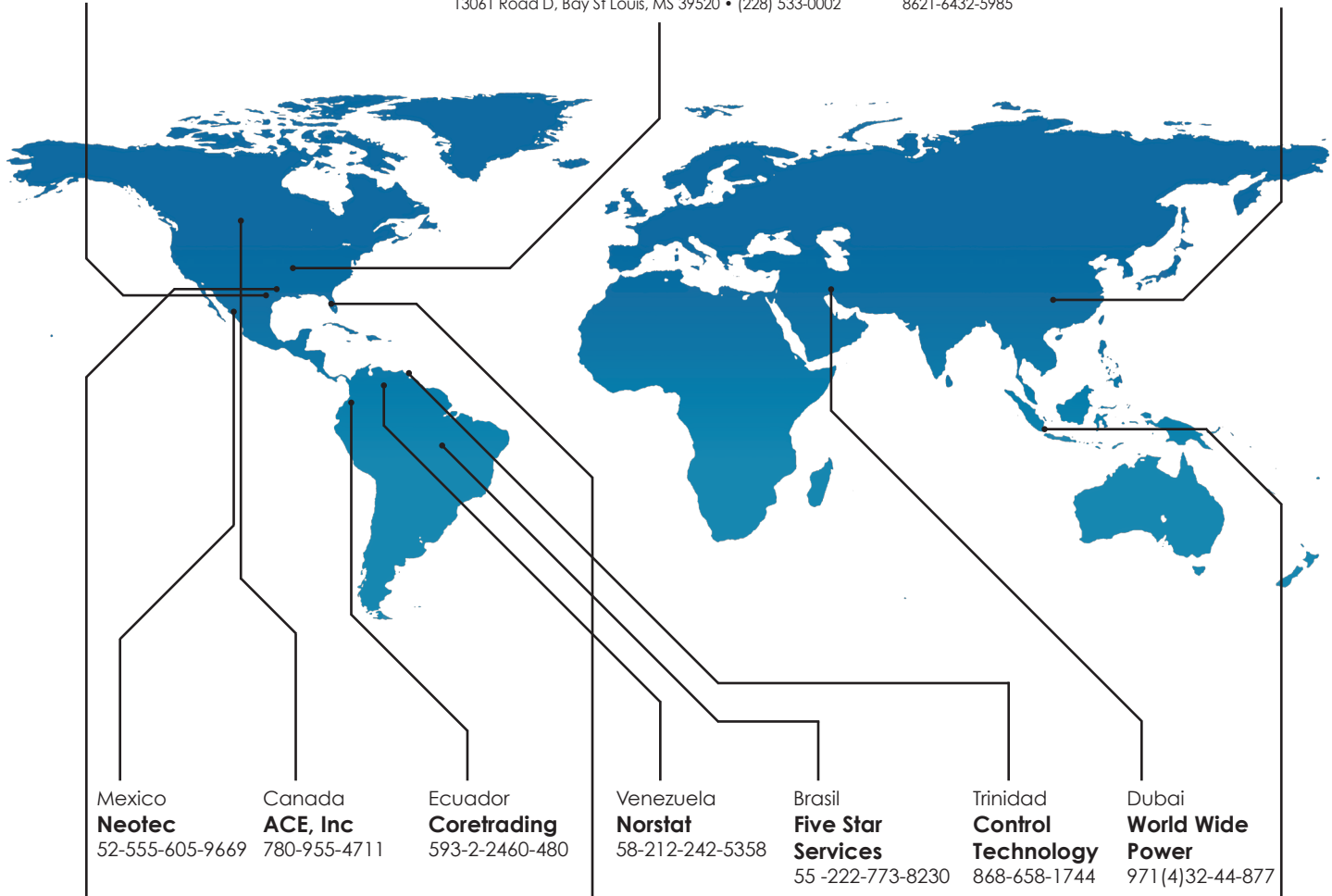
#### South Coast Electric Systems

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13061 Road D, Bay St Louis, MS 39520 • (228) 533-0002



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#### ACE, Inc

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#### Norstat

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Brasil

#### Five Star Services

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Trinidad

#### Control Technology

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Dubai

#### World Wide Power

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