



SIEMENS

Ingenuity for life

Engineering Services

Providing innovative engineering solutions to address ever challenging market demands and customer needs

www.siemens.com/usa

About Our Facility

The Siemens Charlotte Energy Hub is a state-of-the-art manufacturing and materials laboratory testing facility with proven capability and experience in handling a wide range of large scale and technically complex manufacturing projects.

Our extensive manufacturing production and service background in highly engineered, large scale, high speed rotating equipment continually drives our dedication to accurate and consistent quality and process workflows, minimized lead times, competitive cost, and an effective task force approach to solutions.

Access to cutting-edge manufacturing tools, techniques, and technologies integrated with expertise in a variety of NDT and materials testing solutions results in exceptional product precision, quality inspection, and continuous innovation. With highly-skilled manufacturing workforce across a three shift operation, the Siemens Charlotte facility is geared to meet or exceed all customer-specific requirements with unparalleled flexibility while also maintaining a lean, globally-minded business structure.

Above all, the Siemens Charlotte facility is committed to being a leader in quality, technology, reliability, innovation and cost-effectiveness, as well as providing reliable, timely deliveries and complete customer satisfaction.

Generator Engineering Services

With more than 100 years of product development, production, and service experience, Siemens Engineering is committed to providing agile, inventive, and robust engineering solutions to meet unique needs.

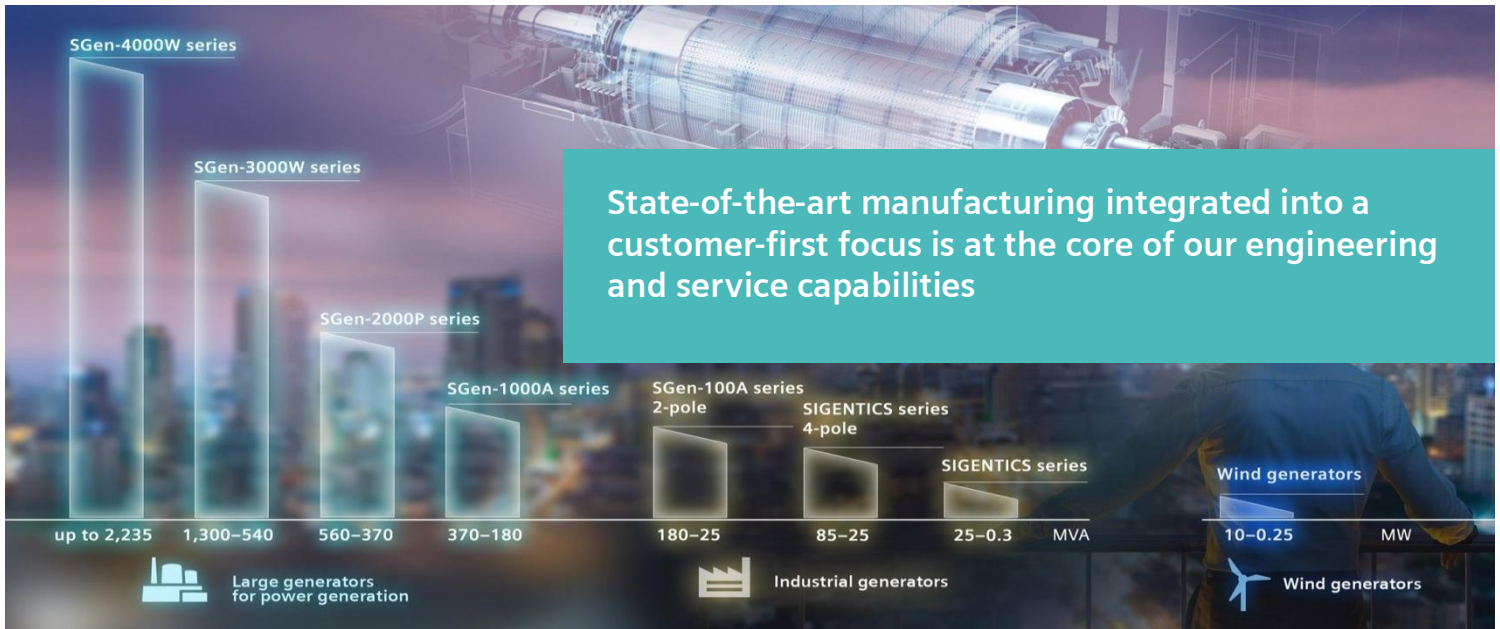
Our best-in-class engineering design and analysis services are provided by a highly efficient, in-house team with access to a collaborative engineering network spanning 7 languages and 20 countries, including top-tier engineers and technical experts from the United States, Germany, and India. Backed by our deep experience in designing highly engineered components for large scale, high speed rotating equipment, you can rely on our expertise to provide extensive engineering design and testing committed to high-quality and reliability with a customer-first focus.

Integrated into our global engineering infrastructure and combined with our vast experience base are proprietary engineering tools, techniques, and technologies on the cutting edge of a wide range of disciplines including FEA, CFD, 3D CAD modeling, and Design Optimization. These tools, techniques, and technologies enable us to provide customized solutions and continuous value-added innovative product development and improvement.

Siemens Engineering welcomes your custom requirement and will design and work with you to deliver solutions that meet your challenging needs.



Siemens Charlotte Energy Hub: One million square feet of production and office space running 24 hours a day



Generator Engineering Capabilities

Mechanical Design & Analysis:

- 3D CAD Modeling
- Drafting and Product Definition
- 2D and 3D Data Management
- Tolerance Stack-Up Analyses
- Rotor Dynamics
- Rotor Component Life Management
- Thermal Shift and Imbalance
- Low / High Cycle Fatigue Analyses
- Fracture Mechanics/Crack Propagation
- Creep / Life Prediction
- Vibration and Balancing
- Modal Testing
- Finite Element Analyses (FEA)
- Computational Fluid Dynamics (CFD)
- Structural Tooling Design
- Seal Design & Analyses
- Bearing Design & Analyses
- Cooler Design & Analyses
- Auxiliary Design & Analyses
- Failure Analyses
- Sensitivity Studies
- Thermal Analyses
- Test Rig Design for Prototypes
- Manufacturing Engineering Support
- Weld Repair Analyses
- Design Optimization

Electrical Design & Analysis:

- Electromagnetic Analyses
- Thermal Loads and Cooling
- Heat Transfer Analyses
- GUI Development and Testing
- Solver Development

Engineering Studies:

- Design for Manufacturability
- Design for Additive Manufacturing
- Rapid Risk Assessments
- Technical Risk Assessment (TLOA)
- Fact Finding
- Failure Modes and Effects Analyses
- Root Cause Analyses
- Interchangeability Studies
- Capability and Uprate Studies
- NERC Studies
- Electrical Model Developments
- Cost Reduction

Reverse Engineering Services:

- Other OEM (OOEM) Developments and Services
- 3D Laser Scanner
- 2D and 3D Data Management

Material Testing Capabilities

Mechanical:

- Strength and stiffness (Tension, compression, shear, bending)
- Hardness
- Creep
- Adhesion
- Temperature dependence
- Non-destructive examinations

Electrical:

- High Voltage (HV) breakdown strength
- Voltage endurance
- Flashover tracking resistance
- Resistance / capacitance
- Magnetic permeability
- Leakage current

Chemical:

- Composition
- Chemical resistance
- Density
- Moisture content
- Viscosity
- Microstructure
- Humidity effects
- High temperature aging

Thermal:

- Glass transition temperature
- Melting temperature
- Heats of reaction
- Cure state
- Weight fraction
- Decomposition temperature
- Temperature stability
- Cross-linking temperature
- Thermal conductivity

For questions please contact:
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