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# Charlotte Energy Hub

## Rotor Rewind Capabilities for Generators

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While all generator rotors have had a reliable service experience, an aging fleet leads to the need for service. Servicing generator rotors can include renewal of insulation systems, addressing fatigue and cracking of structural components, and extensive modification to upgrade capability, improve availability, or alter service duty.

### Rotor Rewind

The Charlotte Energy Hub's capabilities extend from air, hydrogen, and water-cooled OEM and non-OEM generator rotors. This encompasses rotor winding systems utilizing many different brazing configurations, insulation and blocking systems, and slot content assembly which have been adapted by all OEM over the last 60 years.

### Rotor Assembly

The rotor assembly area offers advanced technologies for the removal and assembly of structural components. The single piece flow concept and tooling development has been optimized to substantially reduce the disassembly assembly process times while also addressing the effects these structural components can have on the overall shaft stability and rotor dynamics.

### Performance Capabilities

The Charlotte Energy Hub offers rotor rewinding performance capabilities that include:

- (8) Rotor winding stations.
- (7) Integrated phase arrayed NDE technology.
- Resistance and oven heating methodologies to cure rotor windings.
- Lean cell setup for wedging and blocking assembly to address loose, tight and even single piece wedge configurations.
- Dedicated assembly fixtures.
- Induction and oven component heating capabilities allowing concurrent rotor assemblies.
- Non-destructive examinations including: Magnetic particle, fluorescent penetrant, phased array ultrasonic, and enhanced automated visual exams.



Generator rotor rewind and assembly performed by our experienced technicians.



Fast service turn around, quality parts and repairs and state-of-the-art manufacturing are hallmarks of the Siemens Charlotte Energy Hub

#### Rotor Winding Enhancements

- J-strap and pole cross-over modifications to address fatigue cracking.
- Braze joint interrogation via phased array ultrasonic inspections.
- Various rotor winding reconfigurations to address schedule constraints and/or deficiencies in original braze joint through replacement or refurbishment of parts or entire rotor winding.

#### Rotor Shaft Structural Upgrades

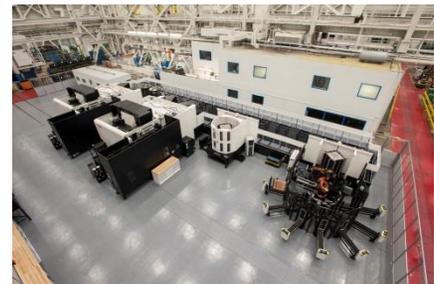
- Dedicated engineering resources encompassing FEA and CFD capabilities for performing RCA and redesign of emergent issues found during shaft requalification.
- (3) boring mills and (4) lathes to reconfigure rotor shafts.
- (2) 5-axis machining centers capable of producing any part found in need of replacement, reconfiguration or repair.
- Extensive TIG and SAW rotor welding capabilities to address journal and seal rubs, shaft cracking, and replacement of shaft ends.

#### Rotor Electrical Testing capabilities include:

- Dedicated Electrical Testing area
- Capable of performing stationary tests High Potential Electrical Test, Inspections to ensure product integrity
- Ensure short and ground free rotor winding through testing performed at operational speed and temperature.

#### The Charlotte Advantage

The Siemens Charlotte Energy Hub has the capacity to manage large and complex projects with service being our differentiator. With the ability to manufacture and service components, we strive to serve as the primary service center for gas turbine, steam turbine and generator equipment for the Americas. All functions necessary for a seamless process – from initial bidding to transport for delivery – are located on site. Our extraordinary depth of skill and experience enable us to service not only the Siemens fleet, but also components originally designed and manufactured by all large equipment manufacturers. We continually focus on the next generation of power plant management through innovative product and process development and skilled workforce development



The Charlotte Energy Hub winding station and Mazak component machining area are ready to serve you.

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