Matthew Senn, PE

Project Engineer

PROFILE

Mr. Matthew Senn is a Project Engineer and a licensed Professional Engineer with a strong background in Renewable Energy power generation (Megawatt class wind turbines). He specializes in failure analysis of low-voltage, high power generators/motors and their associated control systems. He has experience analyzing failed deep-groove ball bearings installed on generators and motors. He has performed root cause analysis on large gauge insulated conductor cables, high-power vacuum tube contactors, generator slip rings with carbon brushes, power factor correction capacitors and ultrasonic anemometers. He has experience designing installation of motor current monitoring systems, condition monitoring systems, large gauge conductor cable repair and engineered tower power and light systems. He has assisted in the development of electrical safety lock-out/tag-out programs and authored many repair instructions for electrical components. At Envista, he provides analysis of electrical and electromechanical equipment failure.

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5565 Glenridge Connector
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WEBSITE
www.envistaforensics.com

Key strengths include the following:

- Wind Turbine Repair/Installation
- Root Cause Analysis
- Power and Control Slip Rings
- Power Factor Correction Capacitors
- Asynchronous and Doubly-Fed Induction Generators
- Industrial Control Systems and fault analysis
- Electrical Design
- Large Gauge Conductor Cable termination/repair
- Pasteurization Control Systems
- Condition Monitoring Systems

- *Industries*: energy, wind, HVAC controls
- *Computer Skills:* Microsoft Office Suite, SAP, SC-Commander, Suzlon Trinity, Bachmann Solution Center, Adobe Acrobat Professional, Rockwell Automation, Python, MATLAB
- *CAD/Design Packages:* AutoCAD

EDUCATION

Bachelor of Science, Electrical Engineering, 2004
Purdue University – West Lafayette, Indiana

LICENSES

Professional Engineer (PE):

- Illinois

- Iowa
- Wisconsin

CONTINUING EDUCATION

- Arc Mapping Basics
- Electrostatic Discharge (ESD): The Silent Killer
- Grounded Systems
- Installation of Motors and Transformers (NEC Expert)
- Installing Services (NEC Expert)
- Overcurrent Protection of Conductors (NEC Expert)
- Remote Control and Signaling Circuits (NEC Expert)
- Spoliation of Evidence
- To Re-Wire or Not to Re-Wire
- Determining Liability in Electrical Generation, Distribution and Transmission Failures
- Fire Flow Analysis (CFITrainer.net)
- Understanding Undetermined (CFITrainer.net)
- Critical Evaluation and Testing of Commonly Reported Accidental Causes (CFITrainer.net)

PROFESSIONAL BACKGROUND

April 2020 – Present: Envista Forensics – Deerfield, Illinois
Project Engineer

November 2014 – April 2020: Suzlon Wind Energy Corp. – Chicago, Illinois
Sr. Electrical Engineer

September 2013 – November 2014: Suzlon Wind Energy Corp. – Chicago, Illinois
Reliability Engineer

January 2012 – September 2013: Suzlon Wind Energy Corp. – Chicago, Illinois
Regional Lead Service Engineer

April 2010 – January 2012: Suzlon Wind Energy Corp. – Chicago, Illinois
Sr. Electrical Engineer

October 2007 – April 2010: Suzlon Wind Energy Corp. – Chicago, Illinois
Electrical Engineer

August 2004 – September 2007: Siemens Building Technologies, Inc. – Mt. Prospect, Illinois
Systems Engineer I - BAU

REPRESENTATIVE PROJECT EXPERIENCE

Wind Turbine Re-Powering
Suzlon Wind Energy Corp – Tiskilwa, IL

- Developed and authored the electrical instructions for removing and installing the necessary components in an existing 2.1MW Wind Turbine to convert it to a doubly fed induction generator machine.

Power Factor Correction Capacitor Automatic Testing
Suzlon Wind Energy Corp – Chicago, IL

- Conceptualized and rigorously tested the software upgrade which automatically tested 14 banks of 3 capacitors each (42 capacitors total) on a weekly basis. The software upgrade would evaluate each bank of capacitors and provide an alarm if any feedback, current asymmetry or reactive power thresholds were exceeded.

Generator Cooling Fan Optimization
Suzlon Wind Energy Corp. – Chicago, IL

- Designed and built a full-scale test bench to determine the best performing generator cooling fan by measuring air flow through the air-to-air heat exchanger. The optimized fan blade improved airflow by 9%.

Generator Bearing Failure Root Cause Analysis
Suzlon Wind Energy Corp. – Chicago, IL

- Performed destructive analysis of over 100 generator bearings to identify the failure modes. Presented results and suggested mitigations to reduce generator bearing failure.

Generator Conductor Cable Jacket Failure Root Cause Analysis
Suzlon Wind Energy Corp. – Chicago, IL

- Developed a Shore A hardness testing method to estimate the brittleness, and thus exposure to excess temperature, of the CPE Jacket of the conductor cable. This allowed identification of conductor cables that were in acceptable condition and those that required replacement.