



Training Course Offerings September 2009

Wind Turbine Technician Course

| Date | Subject | Lessons | Estimated Lesson Duration in Hours | Comments |
|-------------------------------|--|---|------------------------------------|--|
| Day 1-2 Sept. 14-15, 2009 | Introductions Fall Protection / Climb Test | Tech Safety Lines | 16 | Two day fall protection course administered by Airstreams or Tech Safety Lines personnel. Will cover extensive usage of fall protection equipment with a climb test performed on a local wind project. |
| Day 3-4 Sept. 16-17, 2009 | Self and Assisted Tower Rescue | Tech Safety Lines | 16 | This course is offered under the assumption that the Client shall be using Tech Safety Lines self and assisted rescue equipment. Airstreams can also coordinate with other suppliers at the Clients request, however, pricing for this course varies due to Tech Safety Lines travel and lodging costs. |
| Day 5 September 18, 2009 | First Aid,CPR & AED | | 8 | Certified Airstreams instructor / Cards issued upon completion |
| Day 6 Sept. 21, 2009 | OSHA Safety | A. Intro to OSHA B. Electrical OSHA C. Fall Protection OSHA D. PPE OSHA E. Power Tool OSHA F. Walking & Working Surfaces OSHA G. Cranes & Rigging OSHA H. Materials Handling, Storage, Use & Disposal OSHA I. Hot Work/Fire Prevention OSHA J. Confined Space OSHA | 8 | OSHA Safety Requirements with 10 hour cards issued to students upon completion |
| Day 7 Sept. 22, 2009 | | K. Machine Guarding OSHA L. Lock Out Tag Out OSHA M. Hazard Communication OSHA | 4 | |
| | Introduction to the Wind Industry Safety in the Wind Park | | 2 2 | Basic overview of wind industry history and where it is headed. Basic wind park safety requirements, Industry related accident examples discussed and analyzed in detail, Accident and Near Miss Reporting, JSA (JSEA) form creation and usage. |
| Day 8-10 Sept. 23-25, 2009 | Voltage Test Procedures 50 Volts or Higher | | 2 | Presentation, videos & quiz. Electrical Hazard Categories, Boundaries, Arc Flash Gear Demonstration, NFPA70E Electrical Safety Requirements. |
| | Electrical Metering | A. Electrical Measurement Safety B. Multimeters C. Amp Clamps D. Voltage Pens E. Megohmmeters F. Infrared Testers (hand held) G. O Scopes H. Phase Rotation Meters | 8 | Fluke video and customized presentation with written quiz Presentation, hands on usage, quiz & certification. Presentation, hands on usage, quiz & certification. Presentation, hands on usage, quiz & certification. Presentation, hands on usage, quiz & certification. Presentation, hands on usage, quiz & certification. Presentation, hands on usage, quiz & certification. Presentation, hands on usage, quiz & certification. Hands on Lab exam. |
| | Electrical Metering Practical Exam Compressed Gas Safety / Accumulator Re-Charge Procedures Practical Exam | | 12 2 | Presentation on Compressed Gases Safety and Accumulator Charging and Quiz and hands on Lab Exam |
| Day 11 Sept. 28, 2009 | Electric Static Discharge (ESD) Basic Hydraulics | | 1 4 | Presentation hands on experience & quiz. Presentation & quiz, wind turbine hydraulic diagram understanding. If geared towards a specific turbine it is recommended to incorporate manufacturers drawings into this course. |
| | Torquing, Fasteners, and Torque Equipment level 1 | | 2 | Presentation, quiz and certification. In depth discussion on fasteners and torquing applications. Includes presentation, hands on usage of hand held torque wrenches. |
| Day 12 Sept. 29, 2009 | Turbine Maintenance and Service Practices | | 3 | Presentation & Quiz. Overview of maintenance requirements and practices proven to succeed in the wind industry. |
| | Wind Turbine Electrical Systems | | 2 | Presentation & quiz. Overview of wind turbine electrical systems and how they work together to form an operating unit. |
| | Wind Turbine Mechanical Systems | | 2 | Presentation & quiz. Overview of wind turbine mechanical systems and how they work together to form an operating unit. |
| Day 13 Sept. 30, 2009 | Direct Current Theory Direct Current Theory Alternating Current Theory | | 3 2 3 | Classroom presentation & quiz. Lab session Classroom presentation with labs & quiz. |
| Day 14 October 1, 2009 | PLC's & Control Algorithms | | 4 | Presentation & Quiz. Overview on PLC functionality and control algorithms used in the wind industry. |
| | Wind Turbine Schematics | | 4 | Presentation & Quiz. In depth review of wind turbine schematics and how to successfully navigate them for troubleshooting purposes in the field. |
| Day 15 October 2, 2009 | Wind Turbine Schematics | | 8 | In depth review of wind turbine schematics and how to successfully navigate them for troubleshooting purposes in the field. |
| Day 16 October 5, 2009 | Substations and Transformers | | 2 | Presentation & Quiz. Overview of substation and transformer usage on a typical wind turbine project. Does not cover switching activities. |
| | Fiber Optics | | 2 | Presentation & quiz, basic fiber optics used in the wind environment and light testing procedures. |
| | Yaw System | | 4 | Presentation covers turbine yaw, wind instrumentation, data and cable untwisting. |

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| Day 17 October 6, 2009 | SCADA and Data Analysis | | 2 | Discusses the basics of SCADA systems and data analysis. Geared towards the technicians to educate them on the value of disseminating information gathered by SCADA and what to do with it. |
| | Site Documentation | | 2 | Covers the basics of service reporting and why it is important to the technician and the company. Can be modified to include specific service reporting processes from company to company. |
| | Wind Turbine Power Curves | | 2 | Covers basic power curve data and what it means in the overall health of a wind turbine. Geared to educate technicians the importance of monitoring production along with availability to stay current in today's market. |
| | Meteorology | | 2 | Presentation on how meteorology affects the wind industry as well as the technicians that work in the elements |
| Day 18 October 7, 2009 | Drivetrain / Gearboxes / Secondary Braking | | 2 | Presentation & Quiz. Overview of wind turbine mechanical systems and how they work together to form and operating unit. |
| | Troubleshooting Techniques and Procedures | | 2 | Presentation & Quiz. In-depth troubleshooting theory and techniques proven over the years within the wind industry. Technicians that understand the basics will fix turbines quicker while replacing fewer components. If on site training will take place on actual turbine. |
| | Site Visit | | 6 | Visit to local wind project. Depends on weather. |
| Day 19 October 8, 2009 | Rotor Construction / Airfoils | | 1 | Presentation & Quiz Discusses the basics of what an airfoil is and the role it plays on a blade. Rotor construction portion covers the basics used by large turbine manufactures in the industry today. Recommend to use the manufactures process and turn it into a turbine specific training program. If done on site with an actual rotor the time increases as reflected. |
| | Electric Pitch Systems | | 6 | Covers SSB electric pitch systems using schematics |
| | Blade Pitch and Balancing | | 1 | Classroom training covers the basics of pitch and balance validation for both fixed and variable pitched blades. Recommend manufactures specific process be incorporated into this training program. |
| Day 20 October 9, 2009 | Summary and Final Exam | | 8 | Course review and final exam. Final exam is a closed book test with approximately 150 questions taken from all module quizzes |

Total Hours 160
Total Days 20.00