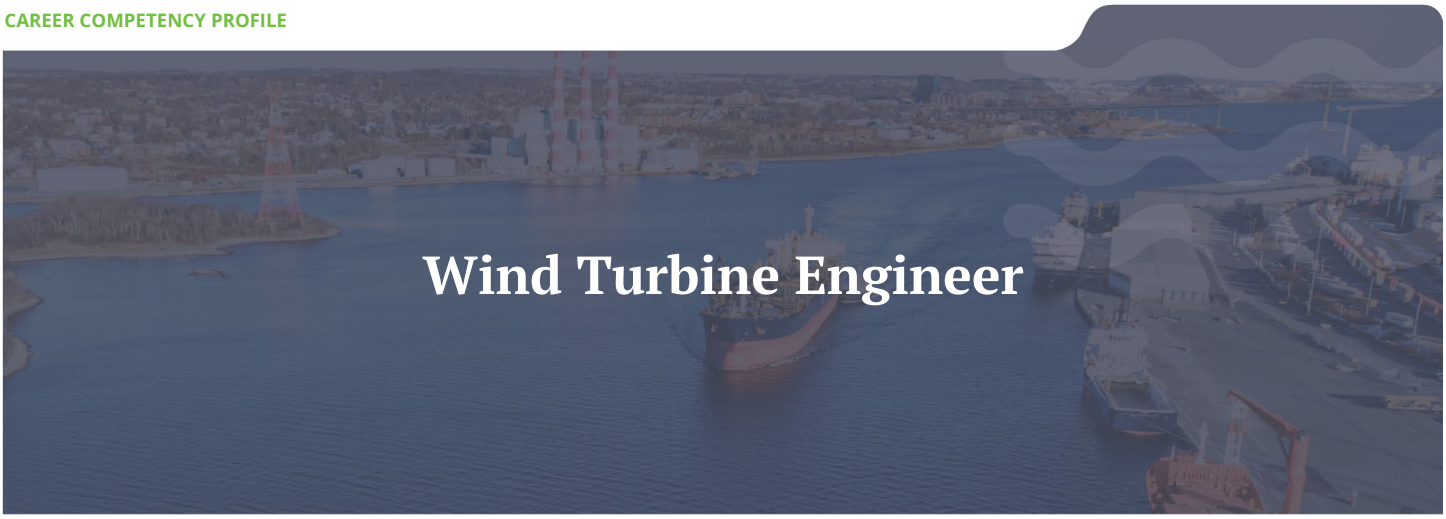

Wind Turbine Engineer

ROLE OVERVIEW

As a wind turbine engineer you will apply your knowledge in structural, electrical, and hydraulic engineering to offshore and near-shore projects wind farm projects.

Your job duties range from conducting power system studies to testing wind turbine components. You will work with wind turbines manufacturers, electric utility companies, or wind owners/developers. Your responsibilities will include providing technical expertise on electrical and hydraulic systems to model, test, configure, and maintain wind farms and components.

In this position, you will need to provide leadership in developing proposed modelling best practices. Wind turbine engineers are involved in all aspects of wind farm construction from conception to operation. You also have duties and responsibilities in project development, as you help the project manager determine the best locations for new utility projects like wind turbines or substations. As a wind turbine engineer, you also determine the best places within these locations for controls.

STRATA LEVEL: 3B – Technical Specialist

Also Known as:

- Wind Engineer
- Offshore Renewable Energy Engineer
- Performance and Operability SW Platform Engineer

Education and Experience:

- Completion of a University Degree in a relevant engineering discipline.
- Licensing by a provincial or territorial association of professional engineers is required to approve engineering drawings and reports and to practise as a Professional Engineer (P.Eng.).
- Leadership in Energy and Environmental Design (LEED) certification may be considered an asset.

Associated NOC(s):

- **2131** – Civil Engineer

TECHNICAL

Engineering Design

Responsible for the technical aspects of the planning and design of engineering project[s] to ensure project is constructed in a safe, efficient, and effective manner.

- Proposes technical design or process changes to improve efficiency, quality, or performance of structures, systems, or facilities.
- Creates sketches, notes, documentation, and design documents to prepare proposals, preliminary, and final design drawings for acceptance by the client and approval by regulatory authorities.
- Applies quality control techniques throughout the design and construction to ensure the safe construction of structures, systems, and facilities for the purposes of achieving regulatory compliance.
- Conducts site-specific risk assessment of the work area, identifying the hazards and implementing the control measures required to complete engineering work.
- Leads the design of electrical components and turbines to be used to generate energy from wind into electrical power.
- Considers information from multidisciplinary assessments to design offshore foundations for the safe construction of offshore structures.

Electrical Systems Diagnostics

Inspects electrical systems and components to identify faults and perform diagnostics to establish root cause and remedy faults.

- Reviews all relevant information and insights on symptoms and problem associated with electrical systems or equipment to identify root cause of fault.
- Uses diagnostics tool, techniques, and procedures to identify the root cause of faults to perform corrective maintenance in accordance with best practices.
- Identify root cause of fault and make recommendations to corrective action to initiate a repair.
- Considers the implications that different maintenance or corrective solutions will have to productivity and safety to select most appropriate course of action.
- Records defects and report findings of diagnostics work to communicate and determine appropriate course of action.

Engineering Review and Analysis

Reviews and analyzes relevant information pertaining to technical designs and complex systems to develop appropriate solutions.

- Recommends appropriate technical designs or process changes to improve efficiency, quality, or performance.
- Provides technical advice and expertise throughout the design, installation, and review process to ensure engineering designs are accurate and functional.
- Gives consent to the finished engineering design to review actual schematics and product assembly plans.
- Contributes to a detailed component review to assess turbine performance, supply chain, remediation solutions, maintenance plans, and regulatory compliance to capture commercial and technical risk.
- Tests new designs of wind turbine blades to ensure the blades are functional and safe for usage on the proposed wind farm.
- Conducts regular inspections from conception to completion on offshore facilities to minimize risk and ensure regulatory compliance.

Electrical Systems Configuration

Applies appropriate processes and procedures to configure electrical systems and components to ensure systems meet quality assurance and operating specifications.

- Determine variations in the performance of the plant and apparatus against its operating specification and performance to adjust systems.
- Configures electrical systems and equipment in accordance with operating specifications to ensure optimal system performance.
- Routinely verifies that systems and equipment meet specified operating parameters and performance requirements.
- Test new electrical system components to ensure systems function as expected prior to installation.
- Develop electrical contingency strategies to ensure swift actions can be taken to remedy faults in the event of a generation, transmission, or distribution disruption.

Electrical Systems Maintenance

Applies appropriate processes and procedures to maintain electrical systems and components to ensure systems meet quality assurance and operating specifications.

- Perform a site-specific risk assessment prior to starting work to identify hazards and implement necessary control measures.
- Makes appropriate checks and adjustments to electrical equipment to ensure components are correctly replaced, positioned, or aligned.
- Applies appropriate methods and techniques to dismantle, remedy, and reassemble electrical systems or components.
- Lockout and tags components or electrical systems prior to starting maintenance work to ensure stored energy is not released unsuspectedly.

Hydraulic Systems Maintenance

Applies appropriate processes and procedures to maintain hydraulic systems and components to ensure systems meet quality assurance and operating specifications.

- Interpret system plans and user information to identify the hydraulic system to be isolated.
- Makes appropriate checks and adjustments to hydraulic equipment to ensure components are correctly replaced, positioned, or aligned.
- Applies appropriate methods and techniques to dismantle, remedy, and reassemble hydraulic systems or components.
- Carry out troubleshooting and commissioning of PLC and Safety controllers so systems can react in the event of an unacceptable condition.

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Hydraulic Systems Installation

Applies appropriate processes and procedures to instal hydraulic systems and components to ensure systems meet quality assurance and operating specifications.

- Follow all relevant technical drawings and schematics to safely carry out the installation of hydraulic systems.
- Perform a site-specific risk assessment prior to starting work to identify hazards and implement necessary control measures.
- Instal, position, and secure equipment and components to commission and confirm systems are safe and functional.
- Determine operational baseline metrics and variations in performance to use to benchmark against future configuration and analysis.

Project Team Management

Apply relevant processes, methods, skills, knowledge, and experience to achieve power system project objectives according to specific criteria within agreed parameters.

- Monitors and controls the allocation of resources and reassigns staff as needed to support project deliverables.
- Identifies the technical competencies required by the project team to undertake and successfully complete the project.
- Manage tasks and projects according to approved scopes of work to deliver quality reports on schedule and within budget.
- Contributes to the development of detailed work plans and tasks for working crews to ensure work is effectively allocated to achieve desired goals in an appropriate time frame.

PERSONAL AND PROFESSIONAL

Communication

Positively directs outcomes by delivering communication that better understands goals and objectives, captures interest, and gains support for immediate action.

- Maintains communications with the team, as well as external stakeholders, to exchange information, assess progress and reassign work as needed.
- Leads presentations to technical and non-technical colleagues and clients to convey project plan and progress.
- Actively listens to team members to address concerns and integrate ideas, values, and new information where appropriate.
- Provides clear instructions, information, and duties to supervised employees to ensure employees clearly understand their position.

Collaboration

Engages in professional collaborative efforts with members of the team, including sharing information and expertise, utilizing input from others, and recognizing others' contributions to work towards common goals.

- Liaises with intra-departmental teams to establish priorities and provide general engineering support.
- Provides operational expertise and technical direction as appropriate to ensure harmonious and efficient operations.
- Shares relevant and useful knowledge, experience, or expertise to aid team members accomplish their objective more efficiently or effectively.
- Develops and maintains effective working relations with stakeholders, individuals, agencies, and the public to encourage cooperative partnerships or facilitate information findings and interpretations

Problem Solving

Identifies problems and uses logic, judgement, and evidence to evaluate alternative scenarios and recommend solutions to achieve a desired goal.

- Considers the impact to the organization and environment when analyzing specific project objectives and goals.
- Analyzes project metrics to understand trends and potential areas of concern to take appropriate actions where required.
- Simplifies complex ideas and technical concepts into accessible information to communicate with stakeholders, senior management, and team members.
- Considers all pieces of information when attempting to solve problems to produce a cognisant and comprehensive solution.
- Takes an unbiased stance to interpreting new information to solve a problem in an object manner.

Attention to Detail

Reviews completed work by monitoring and checking information, efficiently organizing tasks and resources, or all areas involved in achieving an objective.

- Provides accurate, consistent information on all pieces of work to ensure reliable results.
- Monitors the quality of work done by team members by establishing procedures to ensure information is reviewed.
- Maintains a checklist of tasks to ensure that all processes are followed, and small details not overlooked.
- Catches and corrects own errors or omissions, where applicable, to ensure efficiency and safety.

LEGAL, REGULATORY, AND POLICY

Regulatory Compliance

Adheres to specific regulations, codes, and legislation within a defined jurisdiction to ensure the health and safety of others and the environment.

- Analyzes relevant regulations, legislations, and standards to ensure project complies withs laws, regulations, and standards.
- Applies engineering codes and statues, of a defined jurisdiction, in the design process to ensure a safe workplace.
- Demonstrate knowledge of regulations, codes, standards, and safety, including local engineering procedures and practices to ensure the safe operation of facilities and systems.

Health and Safety Procedure

Abides by and advocates specific workplace safe operating procedures and occupational health and safety requirements within a defined jurisdiction to ensure the health and safety of others.

- Establishes safeguards and best practices within a project team to align with organizational health and safety plan to ensure the safety of all team members.
- Leads by example in following establish health and safety protocols to encourage all staff to do the same.
- Identifies potentially hazardous working conditions and safety problems to be corrected in workplace safe operating procedures and employee reviews.
- Applies appropriate health and safety procedures in all aspects of work to ensure zero-incidents.
- Participates in safe workplace training as required to ensure an up to date understanding of health and safety best practices.
- Operates all instruments and workplace equipment in a manner to ensure the safety of all.
- Documents any and all workplace incidents and accidents to ensure hazards are reduced.

ENVIRONMENTAL

Marine Pollution Prevention

Follows requirements to ensure projects and operations are conducted at the highest standard possible for the prevention of marine pollution.

- Takes appropriate precautions to prevent pollution of the marine environment.
- Applies procedures for monitoring offshore operations to comply with legislative requirements to ensure a positive environmental reputation.
- Takes into consideration seabed quality to safely develop offshore structures to withstand the weight of the structure in any meteorological scenario.

Environmental Evaluation

Studies environmental aspects of an area to understand the potential effects of proposed development activities on the surrounding natural and human environments.

- Contributes to the design, development, and implementation of complex environmental studies to assess the effects of development activities to an environment.
- Evaluates environmental management policy alternatives to recommend strategies for sustainable development.
- Uses oceanographic information to evaluate different locations to determine suitable locations for constructing wind energy farms.
- Participates in wave and tidal research studies to understand the relationship between wind farm construction and the ocean environment.