

## Chris Elkinton

### Offshore Technical Lead, Project Development & Engineering

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#### Summary

Chris Elkinton is a Principle Engineer at DNV GL and leads the technical aspects of the North American offshore wind group. His responsibilities include project development and due diligence services. Chris has worked in offshore wind for 13 years, starting with layout optimization research at the University of Massachusetts Amherst (Ph.D.). Chris joined GL Garrad Hassan (now DNV GL) in 2007 as a turbine technology engineer, conducting technical due diligence of wind turbines, and took on the lead technical role within the offshore wind team in 2012.

#### Academic Qualifications

Ph.D. Mechanical Engineering, University of Massachusetts Amherst, 2007

BA Physics, Williams College, 1998

#### Membership of Professional Societies

American Wind Energy Association (AWEA)

#### Languages

Language	Reading level	Writing level	Speaking level
English	Native	Native	Native
French	Beginner	Beginner	Beginner

#### Career Profile

##### DNV GL – Energy, Renewables Advisory (formerly GL Garrad Hassan)

Offshore Technical Lead, 2013 - Present

- Project manager, coordinator, and technical lead for delivery of offshore wind projects in North America.
- Coordinate work product input from technical specialists in other groups within DNV GL to execute offshore projects in North America
- Support and grow of the offshore wind practice in the North American region.
- Develop technical, business, and staffing strategies and budgets for offshore practice in North America in collaboration with global Offshore Wind teams.
- Coordinate offshore wind business development
- Represent DNV GL within the North American offshore wind industry

##### GL Garrad Hassan

Lead Project Manager, Offshore Wind, North America, 2012 – 2013

- Project manager, coordinator, and technical lead for offshore wind projects in North America, facilitating and supporting the growth of the offshore wind practice in the North American region.

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- Coordinate work product input from technical specialists in other groups within GL to execute offshore projects in North America
  - Coordinate offshore wind business development
  - Represent GL GH within the N. American offshore wind industry

Senior Engineer, Turbine Assessment Group, 2011 – 2012

- Coordinate team of engineers within Turbine Assessment Group to deliver turbine reviews and site suitability reviews to clients
- Manage work flow within group
- Conduct conference calls with clients and lenders to explain and support due diligence work
- Draft reports and provide support on current status of specific turbine technology issues including availability, reliability, manufacturer history, type failures, and certification
- Review turbine technologies, manufacturers, and supply chains as part of due diligence review process. Includes visits to manufacturing facilities and project sites
- Lead projects focused on offshore wind technology, project feasibility, and strategy in the US
- Develop new client relationships and prepare project proposals

Engineer, Turbine Assessment Group, 2007 – 2011

- Turbine site suitability: Review and report on the suitability of specific turbine models to wind project sites, with particular attention to IEC 61400-1 certification requirements, primarily in support of GL GH's due diligence work
- Turbine technology reviews: Provide reports and support on current status of specific turbine technology issues including availability, reliability, history, type failures, and certification
- Due diligence: Review turbine technologies, manufacturers, and supply chains as part of due diligence review process. Includes visits to manufacturing facilities and project sites
- Marine renewables: Coordinate marine renewables work and business development for GL GH as part of global Marine Renewables team
- Offshore wind: Due diligence review of turbine technologies, business development, and coordination with GH Offshore Group in the UK

Renewable Energy Research Lab, University of Massachusetts

Research Assistant, 2001 – 2007

- Assistance to the town of Hull, MA, with design of offshore wind farm
- Evaluation of current and future onshore and offshore wind turbines concepts
- Analysis of US offshore external conditions for IEC offshore turbine design standards
- Wind resource data processing, interpretation, and report preparation
- Consultant for offshore wind energy feasibility studies in the US
- Economic, engineering, and GIS analysis and reporting of projects and technologies
- Field installations of wind monitoring systems including met towers and sodar system

Applied Geomechanics, Inc.

Engineering Technician, 1998 – 2001

- Leading field technician in charge of management of field operations, installation of instruments, monitoring of systems, database management, and software design
- Design and installation of integrated automated data acquisition systems for dams, tunnels, buildings, and deep excavations
- Design of real-time user interfaces for analysis and display of instrumentation data
- Technical support and training for customers

## **Publications**

Elkinton, C.N., Blatiak, A., Ameen, H., "Assessment of Ports for Offshore Wind Development in the United States", Document 700694-USPO-R-03, *Published by the U.S. Dept. of Energy* (March 2014)

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Elkinton, C.N., "Are U.S. Ports Ready for Offshore Wind?" *Proc. Offshore WINDPOWER Conference and Exhibition*, AWEA, Providence, RI (October 2013)

Elkinton, C.N., Baldock, N, and Blatiak, A., "Optimized Ports Assessment" *Proc. Offshore WINDPOWER Conference and Exhibition*, AWEA, Virginia Beach, VA (October 2012)

Elkinton, C.N., and Clayton, J., "Offshore Wind Balance of Station Costs in the United States" *Proc. Offshore WINDPOWER Conference and Exhibition*, AWEA, Virginia Beach, VA (October 2012)

Elkinton, C.N., J.F. Manwell, and J.G. McGowan, "Algorithms for Offshore Wind Farm Layout Optimization" *Wind Engineering*, 32 (1), p. 67-83 (2008)

Elkinton, C.N., J.F. Manwell, and J.G. McGowan, "Optimizing the Layout of Offshore Wind Energy Systems" *Marine Technology Society Journal*, 42 (2), p. 19-27 (2008)

Elkinton, C.N., J.F. Manwell, and J.G. McGowan, "Optimizing the Layout of a Proposed Offshore Wind Farm Near Hull, Massachusetts" *Proc. European Offshore Wind 2007 Conference & Exhibition*, Berlin, Germany (December 2007)

Lackner, M.A. and C.N. Elkinton, "An Analytical Framework for Offshore Wind Farm Layout Optimization" *Wind Engineering*, 31 (1), p. 17-31 (2007)

Elkinton, C.N., J.F. Manwell, and J.G. McGowan, "Optimization algorithms for offshore wind farm micro-siting" *Proc. of WINDPOWER Conference and Exhibition*, AWEA., Los Angeles, CA (June 2007)

Manwell, J.F., C.N. Elkinton, A.L. Rogers, and J.G. McGowan, "Review of design conditions applicable to offshore wind energy systems in the United States" *Renewable & Sustainable Energy Reviews*, 11 (2), p. 210-234 (February 2007)

Elkinton, C.N., J.F. Manwell, and J.G. McGowan, "Modeling The Trade-Offs In Offshore Wind Energy Micro-siting" *Proc. of WINDPOWER Conference and Exhibition*, AWEA, Pittsburgh, PA (June 2006)

Elkinton, C.N., J.F. Manwell, and J.G. McGowan, "Offshore Wind Farm Layout Optimization (OWFLO) Project: Preliminary Results" *Proc. of the 44th AIAA Aerospace Sciences Meeting and Exhibit*, American Society of Mechanical Engineering, Reno, NV (January 2006)

Elkinton, C.N., J.F. Manwell, and J.G. McGowan, "Offshore Wind Farm Layout Optimization (OWFLO) Project: An Introduction" *Proc. Copenhagen Offshore Windpower Conference*, Copenhagen, DK (October 2005)

Elkinton, C.N., A.L. Rogers, J.F. Manwell, and M. Lueck, "Influences of offshore environmental conditions on wind shear profile parameters in Nantucket Sound" *Proc. 8th World Renewable Energy Congress*, Denver, CO (2004)

Manwell, J.F., A.L. Rogers, J.G. McGowan, and C.N. Elkinton, "Characterization of external conditions for the design of offshore wind energy systems for the United States" *Proc. of the 42nd AIAA Aerospace Sciences Meeting and Exhibit*, American Society of Mechanical Engineering., AIAA Paper 2004-1008, Reno, NV (2004)

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