

ABL



The **Energy & Marine** Consultants.

RENEWABLES • MARITIME • OIL & GAS



Will Cleverly | Global Managing Director – Renewables

Welcome to ABL Renewables

The climate emergency concerns us all at ABL Group, and we are proud to be working on major renewable projects that make a difference. The tailwinds for renewables get stronger year on year; the generation technologies more numerous, the markets more global, and the project boundaries stretching further. ABL Group has established itself as a leading independent technical consultancy partner to the renewables sector, including onshore wind, offshore wind, solar PV, floating solar PV, wave and tidal, energy storage and hydrogen, as well as subsea transmission solutions including interconnectors.

With our long-term legacy rooted in the marine industries, as a group we have amassed a large track-record of delivering multi-million-pound projects in challenging conditions all over the world, providing support from early concept development through to construction and operations. Our specialised competency across energy and oceans makes ABL Group expertly placed in this market to support our clients in delivering renewables and storage projects at every stage of a project or asset lifecycle, both offshore and onshore.

Our global network of over 60 offices worldwide offers a deep pool of world-class technical advisory and engineering expertise, enabling us to give our clients the very best advice and support. We have assembled a group of around 1,000 (and counting) technical and specialist consultants and colleagues, providing independent consultancy and

independent engineering, owner's engineering, loss prevention and loss management services to all clients in the renewables space. Our extensive global footprint allows us to provide local expertise with a swifter and more agile response.

At ABL Group, we understand that every project is different. We are active in research and development to understand the trends currently driving our sector, from established markets to new emerging markets, from existing technologies to the growth of new technologies such as hydrogen and power-to-X systems. ABL Group leads the conversation, undertakes the research, and is on hand to support our clients in these new exciting areas.

ABL Group has made a number of acquisitions and will continue to do so as we expand to be the advisor of choice. There are five lead brands which form the basis of the company including ABL, OWC, INNOSEA, Longitude Engineering and East Point Geo, many of which have a strong and unparalleled track record in their field. Together, we are ABL Group, your global renewables expert. I welcome you to explore our renewable energy and flexible service portfolio, and I look forward to discussing your project with you.

A handwritten signature in white ink, appearing to be 'Will Cleverly', is located in the bottom right corner of the page.

Our Markets



Offshore Wind

Growth in offshore wind is accelerating and bringing new risks that investors, developers, insurers and EPCI companies must understand, eliminate or mitigate. From new emerging markets to new technology such as floating foundations and +15MW wind turbines, the ABL Group can support from early site selection to decommissioning. We bring experience gained during more than three decades of consulting in the energy and marine sectors. ABL Group has been an independent and impartial partner to many of the major developments in offshore wind development over the last two decades.

Floating Solar

ABL Group is a pioneer in the development of floating solar PV (photovoltaic) farms, offering a comprehensive package of front end engineering, design and advisory services to support the innovation and construction of this growing technology. The group has successfully evolved its service offering and in-house capabilities at pace with the rapidly developing floating solar PV market and is involved in various multinational research and development (R&D) projects.

Wave & Tidal

Wave and tidal energy are vast untapped energy resources offshore. With technology still in its early days, our group companies provide a comprehensive range of technical, advisory, engineering and marine assurance services to support developers at every project stage.

Onshore Wind

Onshore wind power is widely established around the world, with substantial growth from 2009 to 2020, when global capacity reached more than 600 GW. ABL Group provides a wide range of independent engineering and consultancy services to support onshore wind from planning, construction through to operations & maintenance. With a track record of supporting investors, lenders, developers and owners, we provide independent engineering, owner's engineering, and performance services. Via our extensive in-house geoscience expertise, we also support all aspects of terrain, subsurface and soil geoscience to support the ground engineering projects for onshore wind. We also provide professional expert witness services.

Solar PV

Solar photovoltaics (solar PV) is recognised for its strong potential in reaching net-zero. One of the lowest cost green energy resources, and falling dramatically, solar PV produces electricity from our unlimited solar resources with zero greenhouse gas emissions in the process. Whether looking at monofacial or bifacial panels, ground-mounted PV or roof-top PV, ABL Group has the expertise to support the planning, engineering and development of solar PV projects. Our experience extends from established markets in solar PV to emerging markets.

Energy Storage

As renewable energy development accelerates pace across much of the world, energy storage solutions (ESS) are crucial to balancing supply and demand to mitigate against the variability of green energy production. ESS is proven to be vital in shoring up the stability of electricity networks and the market is predicted to grow up to 350GW / 1 TWh by 2030. ABL Group provides expertise in a range of ESS: battery energy storage systems (BESS), compressed air, pumped hydro and hydrogen for energy storage.

Hydrogen

Hydrogen is considered central to accelerating on our global climate goals and ensuring energy security. With potential for production from renewable energy such as wind, solar and hydro, creating zero carbon-emission hydrogen, this fuel provides both a clean and flexible energy carrier that can potentially be used for long-term large-scale energy storage to enable higher share of renewable energy and sector coupling, and for industries hardly decarbonized such as steel, chemical. Hydrogen can also be used as alternative fuels for heating and transportation especially heavy trucks and shipping. ABL Group hydrogen experts are supporting clients all over the world and covering the whole hydrogen value chain from R&D; project strategy, planning and development; production; storage; transportation; and applications.



Primary Services

Owner's Engineering

We deliver owner's engineering on renewables projects in Europe, Asia, Africa and the Americas. We can support and ensure your project will run on time and budget and meet your objectives. For developers stretched or without adequate in-house resources available or new to the sector and without the expertise necessary to develop a project, ABL Group can provide the specialist guidance required during the development and construction phases through to generation. We ensure the project is built to your requirements.

Project Development Services

We assist clients in understanding new markets, site screening and selection, project concept development, feasibility assessment, bid preparation and supporting early development stages. We seek to understand and align with client objectives and provide technical desktop studies with thorough and auditable written deliverables bringing deep expertise, proven science, the best available data and software, and a full range of innovative solutions.

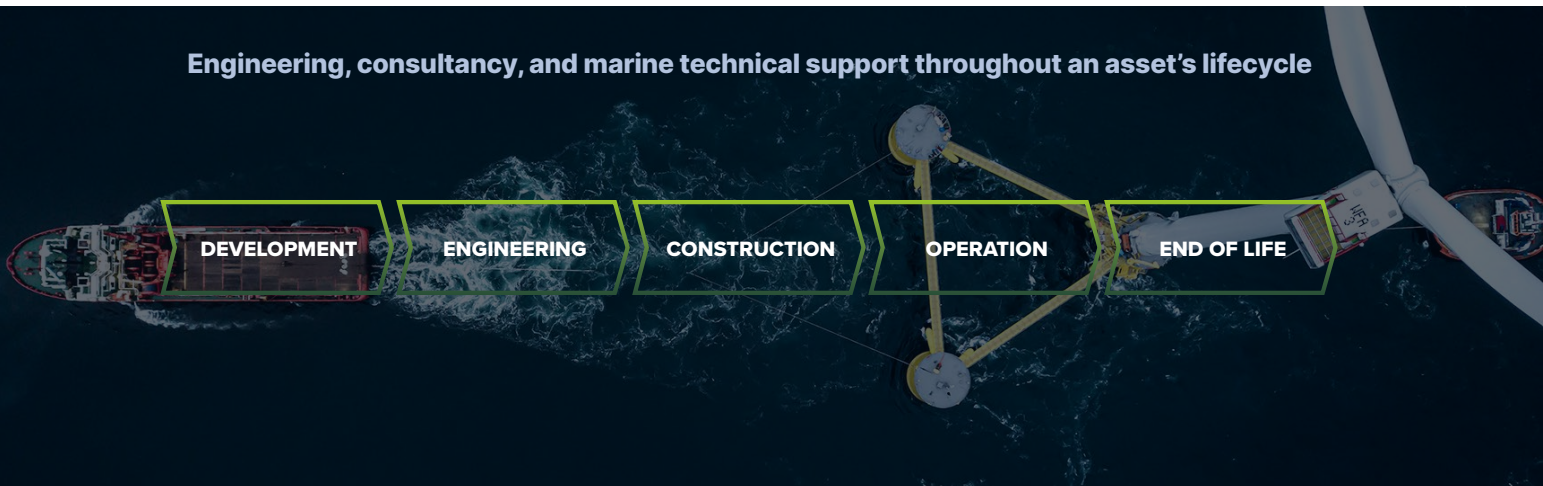
Independent Engineering

We offer expert and independent engineering advisory to developers, investors, and lenders, evaluating, identifying, and mitigating risks in all forms of renewable energy projects. Our services include bank-grade wind and solar energy resource assessments, including those integrated with battery storage, technical due diligence, and construction monitoring. We have experience in offshore and onshore wind, solar, marine energy, and storage technologies and their supply chains.

Marine Warranty Survey

We are a pre-eminent provider of marine warranty survey (MWS) services for the renewable energy industry, with a particularly strong track record and legacy in supporting offshore wind farm development from the early stages of this technology. We have acted as MWS on over 90 offshore wind farms, both fixed-bottomed and floating, across Europe, North America and Asia, contributing over 34GW of total capacity. Our MWS activities have covered every scope – foundations, turbines, cables and offshore substations, and are provided at development, operations and maintenance (O&M) and decommissioning phases.

Engineering, consultancy, and marine technical support throughout an asset's lifecycle





Consulting & Engineering

One of our five core values is **innovation** – helping our clients and projects to innovate to meet the challenges we face in our global climate fight. Bringing together six group companies, each specialising in a particular phase of the renewable energy value chain, we can offer a wide range of highly specialised technical consulting and engineering services to fully define a client's unique technical challenge, and to provide focussed advice or solutions to support the safe, efficient and sustainable execution of an operation or project.

Across our global network, we combine energy and marine expertise with the deepest pool of engineering disciplines. These include geotechnical and geophysical consultants, metocean and coastal engineers, electrical engineers, civil engineers, structural engineers, naval architects, subsea cable specialists, marine engineers, hydrodynamicists, mechanical engineers and design engineers, amongst others.

Our consulting and engineering services cover, but are not limited to:

- Technical due diligence
- Research and development (R&D)
- Digital solutions and design
- Owner's engineering
- Project development services
- Electrical, cables and grid consulting
- Yield assessment services
- Integrated loads analysis & foundation design
- Advanced analysis and simulation
- Geotechnical, geophysical and site investigations
- Engineering and design
- Vessel design and conversion
- Marine operations engineering
- Cable engineering
- Client representatives and construction monitoring
- Ports and harbours consulting and maritime civil engineering
- End of life study, engineering and design: decommissioning, life extension and repowering

Loss Prevention

Activities in loss prevention across renewable energy projects concern the advanced identification, assessment and mitigation of possible risks, losses or failures during an asset's design, development, and operational life: design, transportation and installation (T&I), operations and maintenance (O&M), and decommissioning.

ABL Group is a trusted and recognised provider of loss prevention services and consulting on behalf of underwriters, their assureds, the assureds' contractors or self-insured clients. We have a long track record of some of the world's most high-profile offshore wind farms dating back to the early days of the industry. Our project portfolio also includes a number of market firsts, including supporting the world's first semi-submersible floating offshore wind farm.

We combine marine expertise with multi-disciplined engineering capabilities, bringing experience from around the world in marine operations and assets of all types and sizes to provide support that is tailored to every project.

Our Loss Prevention services cover, but are not limited to:

- HSEQ and Risk Consulting
- Marine surveys, inspections and audits
- Dynamic positioning (DP) systems and trials
- FMEA and FME(C)A
- Marine Warranty Survey
 - Transportation and installation (T&I)
 - SURF (subsea umbilicals, risers and flowlines) and cables
 - Operations and maintenance (O&M)
 - Decommissioning & life extension

Loss Management

Our global teams include many recognised expert witnesses, experienced in providing trusted and impartial opinions and evidence on various marine operations concerning renewable energy infrastructure and related to the performance of onshore and offshore assets. With many of our consultants boasting long-term experience working in different areas of renewable energy, we are well-placed to provide expert witness and litigation support regarding renewable energy assets in the event of a loss or failure.

With our group's legacy entrenched in marine casualty management and salvage, we also have a team of specialised marine casualty managers and salvors to support in the instance of a marine loss or failure to a renewable energy asset or supporting asset.

Loss Management services:

- Marine casualty management & salvage
- Expert witness & litigation support services

Independent renewable energy consulting

ABL Group has been an independent and impartial partner to many of the major developments in wind power over the last 20 years, and we have expanded our expertise to support other areas of renewable energy development and integration: solar PV, wave and tidal energy, energy storage, hydrogen.

Through our global network of more than 60 offices and 1,000 technical staff worldwide, we provide cutting edge technical expertise in all established and emerging markets in renewable energy. Often trailblazers in this industry, our group companies have contributed with consulting and engineering, loss prevention and loss management services on some of the first commissioned and commercial renewable projects in the world.

Committed to the acceleration of integrated use of renewable energy sources, our multi-disciplined expertise supports at every project stage to ensure your operation's success – feasibility, development, engineering, construction, operations and end of life.

260+



WIND PROJECTS

150+GW



TOTAL WIND
POTENTIAL CAPACITY

30+



FLOATING WIND
PROJECTS

13+GW



FLOATING POTENTIAL
CAPACITY

60+



SOLAR PV PROJECTS

40+



WAVE & TIDAL
PROJECTS

The ABL Renewables family

Five lead brands, each focussing on a different market with a different expertise, to ensure we remain niche in our field.

ABL: Supporting offshore and onshore renewable energy projects and assets throughout their design and operational life, from consulting and engineering, loss prevention to loss management services. Market leader in marine warranty survey for offshore renewable projects.

OWC: A specialised and globally focused technical and advisory consultant offering project development services, owner's engineering and technical due diligence to the offshore wind industry.

INNOSEA: An engineering and technical consultancy and provider of support services in offshore renewable energies, supporting technology providers with feasibility, advisory, analysis, engineering & design across all marine renewable sources.

Longitude Engineering: Supporting EPCI contractors with independent engineering, design and analysis of marine operations and supporting infrastructure and assets, including subsea cables. Independence, expertise and experience make Longitude a natural choice for a wide range of design solutions. **OSD-IMT**, part of Longitude, is a well-established ship design company specialising on offshore vessels, experience in SOVs and clean shipping solutions.

East Point Geo: Expert Geoconsulting consultant supporting offshore and onshore wind developers understand their ground engineering risks, providing efficient client-focused deliverables, including data assurance, ground models and quantitative risk assessment.



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We have Renewable energy offices around the world in all key mature and emerging markets.

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