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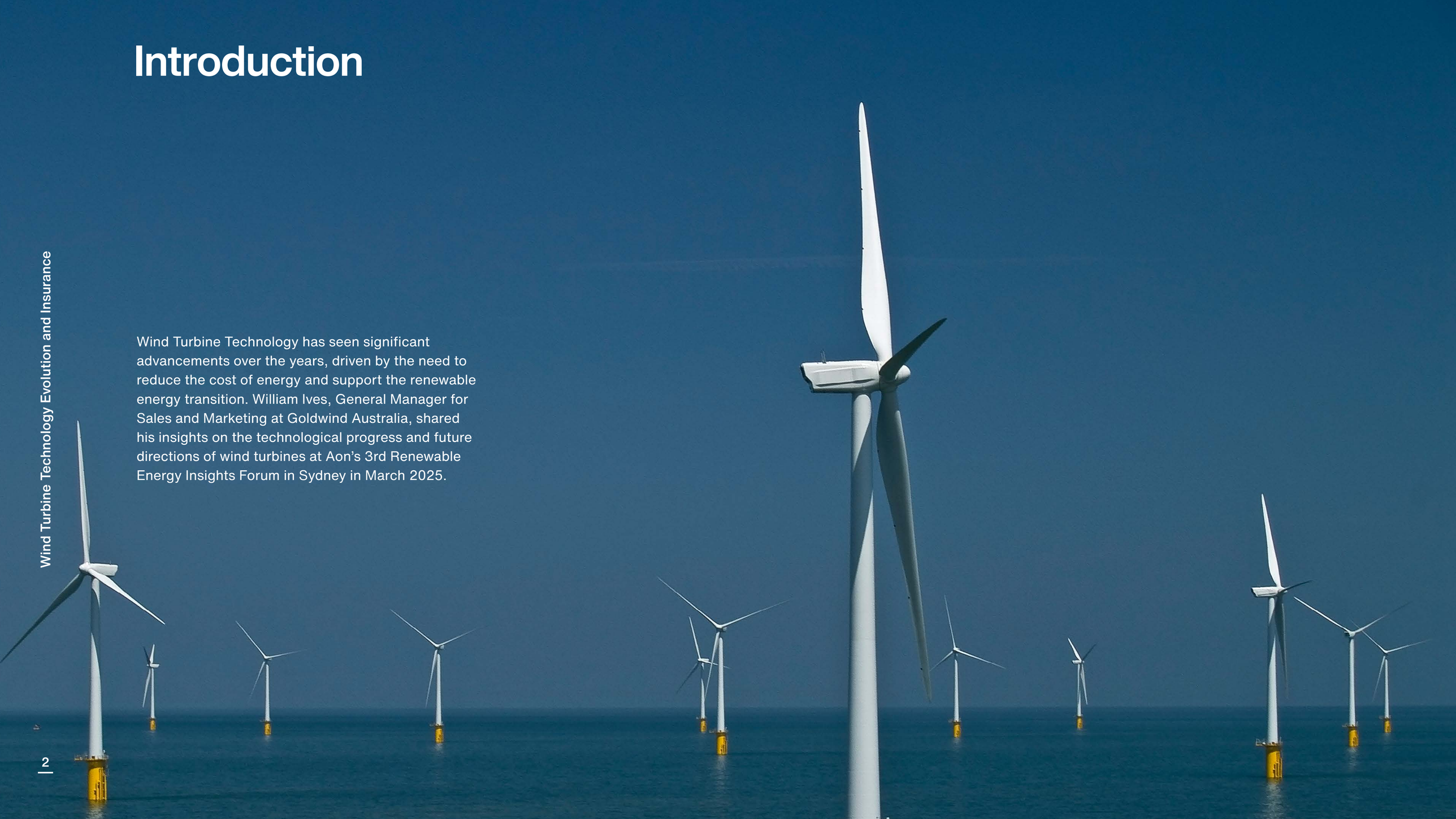
# Wind Turbine Technology Evolution and Insurance

# Introduction



Wind Turbine Technology has seen significant advancements over the years, driven by the need to reduce the cost of energy and support the renewable energy transition. William Ives, General Manager for Sales and Marketing at Goldwind Australia, shared his insights on the technological progress and future directions of wind turbines at Aon's 3rd Renewable Energy Insights Forum in Sydney in March 2025.

## Goldwind: An Overview

Goldwind is the largest wind turbine manufacturer globally, with a production capacity of around 20 gigawatts of wind turbines per year. Established in 1998, Goldwind has grown rapidly, boasting an installed base of 128 gigawatts managed by approximately 10,000 employees. In Australia, Goldwind has two gigawatts of installed capacity and 300 employees operating across various offices and operational sites.

## Advancements in Technology

A significant milestone in Goldwind's technology evolution was the partnership with the German entity Vensys. This collaboration focused on technology development and the importation of permanent magnet direct drive technology. The result was the development of the 1.5 MW platform, which saw the production of 35,000 wind turbines over a decade. This technology was well understood by European insurers, owing to its development in-house by Vensys Technology under Goldwind.

Goldwind's technological evolution continued with the in-house development of the 2.5 MW wind turbine, which was highly successful. The company then developed the 3 MW platform, which became popular in various regions, including Victoria, Tasmania, and New South Wales. The latest advancements include the 4.5 MW wind turbines used in the Clarke Creek project in Queensland and the first 6 MW turbines installed in Western Australia.

## Product Development

Goldwind's approach to product development is characterised by incremental improvements rather than radical changes. The company focuses on evolving its technology step by step, ensuring reliability and efficiency. For instance, the transition from a 5.2 MW wind turbine with a 165-metre rotor diameter to a 6 MW turbine involved only minor changes, such as increasing the rotor diameter. Goldwind is set to introduce even larger wind turbines, with 7 MW and 8 MW models on the horizon. These advancements aim to reduce the cost of energy and support the renewable energy transition.

## Insurance Market Implications

Like Goldwind, most manufacturers are starting to see some challenges from the insurance sector when launching new turbines into the market. Insurers are keen to support the energy transition but are often challenged when considering if technology is deemed to be ‘proven’ or ‘prototype’ in their world. Typically, ‘proven’ will be a combination of full Type Certification and a certain number of operating hours amassed on a fleet leader unit or number of units depending on the individual insurer’s requirements.

The definition of a turbine being ‘proven’ or a ‘prototype’ could impact the level of defects coverage that can be obtained for the project under the contract Works Policy (i.e. LEG1 vs LEG2 exclusion clauses).

- **LEG1:** An outright exclusion for equipment that is deemed to be defective because of its design manufacture or material specification. Under LEG1 the defective component and all resultant damage as a result is excluded.
- **LEG2:** This provision excludes the defective component and any costs that would have been associated with the replacement of the component before a loss occurred. All resultant or consequential damage is covered.

The level of LEG coverage available is critical to financiers and lenders, who typically require LEG2 coverage or at least a plan to transition to LEG2 by the time the project reaches energisation and commissioning of the first turbines. To obtain LEG2 coverage, it is necessary to demonstrate to insurers that the turbine has met specific criteria under their definition of proven.

The definition of proven technology may vary from insurer to insurer but generally may include the following:

- Established Original Equipment Manufacturers (OEMs)
- Wind Turbine Generator (WTG) with at least 8,000 Trouble Free Hours (requirement varies per insurer)
- International Type Certification (RISO, DNV, UL, Germanishe Lloyd (GL) or other)
- Turbine tested in more than one environment.

When an OEM launches a new turbine to the market, if they have not attained Type Certification and/or operational hours at the time when project insurance is required to be in place, this can impact supply agreements and financing, placing the developer and OEM in a challenging situation. They must rely on their insurance adviser to navigate this landscape and secure adequate insurance to satisfy lenders.

Insurers will require specific information points and data to adequately assess whether the proposed turbine technology will fall within their criteria for ‘Proven” technology status. Our preferred approach is to engage with our Clients and their respective OEM’s at the early procurement stage to help them understand the implications of insurance coverage and work through a strategy to help them secure appropriate coverage levels that is acceptable to Lenders. This will include mapping out key milestones of when certain data points are achieved, and type certification will need to be in place so that coverage aligns with turbine deliveries, installation and commissioning.

## Conclusion

It is crucial for OEMs to collaborate closely with insurers to comprehensively understand the implications associated with launching a new turbine.

Goldwind are a great example of this, having taken a proactive step in engaging with insurers to present the evolution of their latest technology. They have positioned themselves and their projects to meet insurer requirements, ultimately providing assurances to project stakeholders that insurance may be available when required.

Like Goldwind, to maintain the insurability of new larger turbines, it is imperative that OEM’s engage with insurers and their in-house engineering teams early, so they can help build that understanding of the evolution of their technology and products.

*This content originates from a session delivered at **Aon’s 3rd Renewable Energy Insights Forum 2025** on 18 March 2025, in our Aon Sydney office.

## About Aon

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