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Decommissioning Onshore Wind

David Finnon

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Wood

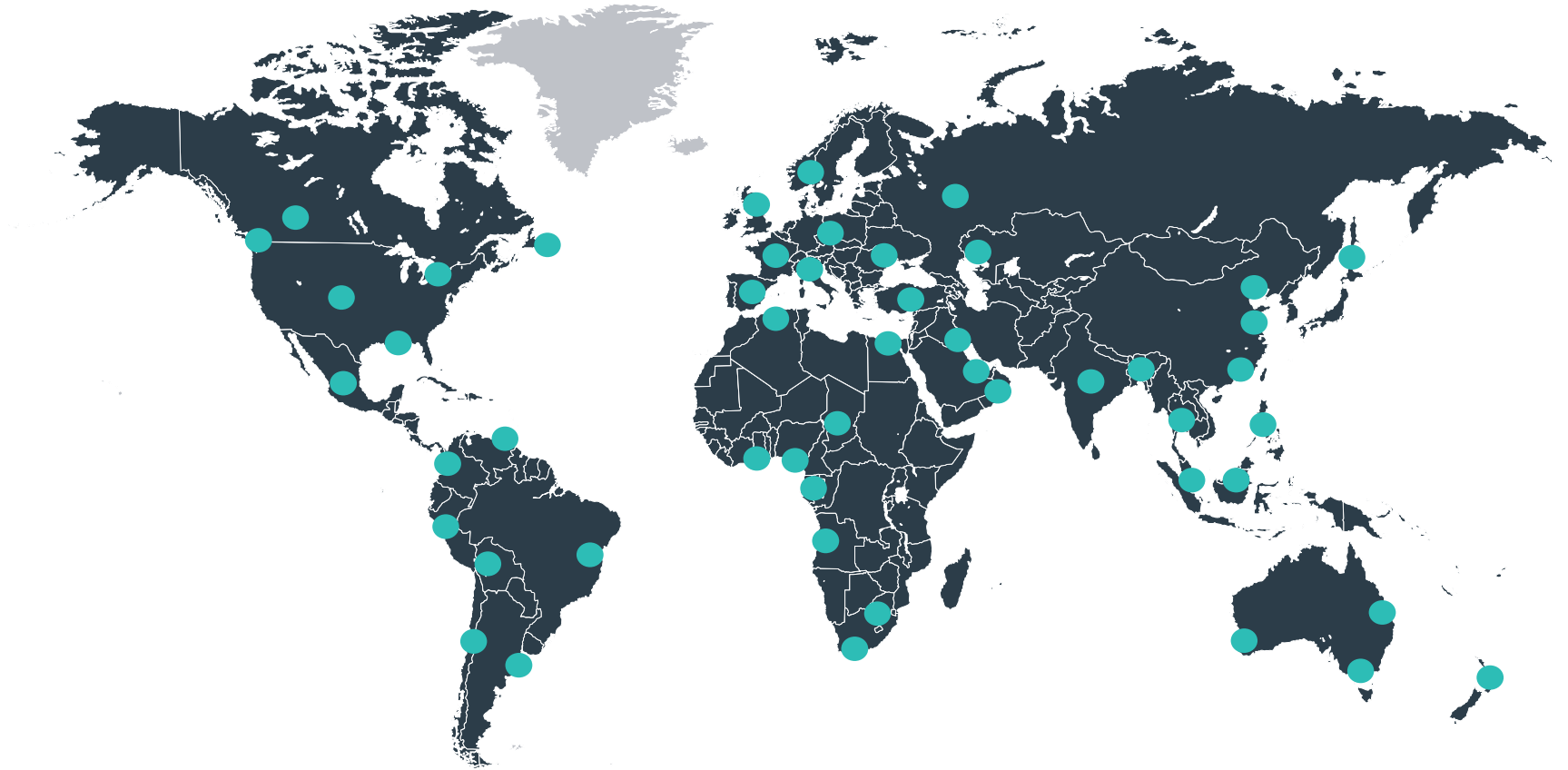
160+
Year history

60,000
People

60+
Countries

400+
Offices

\$10bn
Revenue



We have a global network of skilled professionals, delivering on our reputation for integrity and assurance

Decommissioning is the undoing of development, construction and operations phases to leave the developed area in an agreed and manageable state.

Decommissioning Scenarios for Wind Farms

- 1) **End of Life - the project is complete.**
- 2) **End of Life - the project continues in another form (eg Re-powering)**
- 3) **Emergency! due to an unexpected and unmanageable condition**



Decommissioning of Wind Projects

Project Management - 1

- Decommissioning Plan
 - Every wind farm should have one (Emergency Planning and End of Life)
 - Start at the consenting/permitting document
- Stakeholders
 - Owner's (these will change over the years)
 - Financial Institutions (Constant Output – low portfolio risk) – Years 1 - 5
 - Medium term Investors – Asset Sweat (Medium Portfolio Risk) – Years 5 - 20
 - Local Authorities
 - Landowners
- Access / Egress
 - Access was designed to take WTG Components in **NOT** out

Decommissioning of Wind Projects

Project Management - 2

- Records
 - Availability of records so that we can understand exactly what we are taking down and the hazards contained within (and without)
 - Below ground structures
 - Upkeep of existing infrastructure
- Site Activities
 - Availability of Special Tools (most WTGs have special construction tools which will be needed for de-commissioning)
 - Safety
 - Each WTG type and each site must be risk assessed with detailed attention to planning each element of removal to ensure that everything is done in a controlled manner.
 - Will site break up be required – Environmental Plans required to support
 - How much has to be removed sub-surface (permitting conditions and restriction of blasting)

Decommissioning of Wind Projects

Project Management - 3

- Commerciality
 - Who is going to pay?
 - Decommissioning bonds?
 - Will and can decommissioning pay for itself?
 - How do we dispose of what comes off site – 2nd hand market?
 - Insurance
 - Removal of materials – is this considered waste – will it be exempt from taxes?

Key Lessons From Oil and Gas Business

- Need robust planning not only for the act of asset decommissioning but also for where the dismantled products are dispatched to.
- The requirement to develop supply chains to recycle WTG components – this will be invaluable to the life extension / WTG repairs market
- The establishment of a Special Tools data base (most WTGs have special tools for erection which will be required for decommissioning but are only held by manufacturers (some of which have already gone out of business))
- Development of techniques for ensuring that components are dismantled in such a way as to minimise impact to the surrounding environment

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