

Project overview: Wind turbine O&M Market, Opportunities and Strategies for HSS



Executive Summary of Project Proposal

Context and Problem Statement

- Context: HSS wants to enter the wind turbine O&M industry
- Problem Statement: HSS has not identified specific opportunities and strategy roadmap to enter the wind turbine O&M industry

Project Objectives

- Overview of wind turbine O&M industry (with a focus on Vietnam)
- Identify suitable opportunities for HSS
- Develop strategy and timeline for HSS to capture wind turbine O&M opportunities

Project Breakdown and Timeline

- Market Research (6 weeks)
- Long List of Opportunities (6 weeks)
- Short List of Suitable Opportunities (4 weeks)
- Strategy Development (6 weeks)

Next Steps

- Market research on the roles of wind turbine O&M business



HSS specialises in APH/GGH restoration and is facing challenges in transitioning into providing wind turbine O&M services

Context

- Two business services: (1) air preheater (APH) and gas heater (GGH) restoration for coal-fired power plants and (2) environmental and CO2 consulting
- HSS's key strengths lie in service 1:
 - Quick restoration time (within 48 hours from plan shutdown)
 - Fully automated services without the use of chemicals, without removal of heater elements => safer, environmentally friendly compared to traditional methods
- Existing business operations in Malaysia and Vietnam, with non-trading companies in Indonesia and China, to enable access to these countries. Possible future expansion into Bangladesh, Laos, India and other Asian countries
- Aims to provide wind turbine O&M services by leveraging on experience in providing APH/GGH restoration services (i.e. service 1)
- HSS electricians and engineers have the knowledge and skills to learn about wind turbine O&M works

Problem Statement

- No existing experience in providing wind turbine O&M services
- Have not identified specific wind turbine O&M services to focus on
- No concrete strategy roadmap for developing wind turbine O&M services



This project helps HSS achieve its aim by providing an assessment of wind turbine O&M market, identifying suitable opportunities and develop strategy to realise these opportunities

Project Objectives

- Provide an overview of the characteristics of the wind turbine O&M industry, with a focus on Vietnam
- Identify suitable wind turbines O&M opportunities for HSS to penetrate the Vietnamese market
- Develop strategy and timeline for HSS to capture the suitable wind turbines O&M opportunities

This project will be divided into four phases: market research, long list of opportunities, short list of suitable opportunities for HSS, and strategy

Project Breakdown

- **Market Research:** Fundamentals of wind turbine O&M, status of wind turbine O&M activities, market players
- **Long List of Opportunities:** Promising new/improved wind turbine O&M services in the future and factors that enable/hinder their development
- **Short List of Suitable Opportunities:** Identify suitable wind turbine O&M services that HSS can build capability on, in short and long term
- **Strategy Development:** Key modality for product development and market penetration, business/government partners to collaborate with



The market research phase will provide an assessment of the roles, division and a case study of Vietnam wind turbine O&M market


Roles of wind turbine O&M business

- Position of wind turbine O&M within wind farm development and wind farm O&M
- Relationship with wind energy project construction and wind farm O&M

Division of wind turbine O&M services

- Division by product/service offerings: equipment inspection, blade cleaning, gearbox lubrication,...
- Division by application: onshore turbine, nearshore turbine, offshore turbine
- Division by geography: North America, Europe, Asia, Rest of the World

Wind turbine O&M Market in Vietnam

- Estimate of market size, division of product/service offerings, application and geography
- Advantages and disadvantages of wind turbine O&M in Vietnam (in terms of PESTEL factors: political, economic, social, technological, environmental and legal factors)
- **Analyses of key O&M players**  Sample slide in Appendix
 - Corporate background, estimated revenue, market share
 - Offered services, market entry strategy
 - Strengths and Weaknesses

A long list of opportunities will provide an overview of promising future development patterns in wind turbine O&M technology and services,...

List of promising wind turbine O&M technology and their impacts (on improving wind turbine and wind farm O&M works)

- Preventive maintenance (scheduled): usually consists of inspection work:
 - Manual inspection
 - Autonomous inspection
 - Remote inspection
- Corrective service (unscheduled):
 - Proactive maintenance before failure occurs
 - Reactive maintenance after failure occurs

Assessment of factors that affect the development of the above technology and services

- Financial cost
- Technological requirement
- Human resources requirement
- Existing regulatory standards/approval process

Categorising wind turbine technology/services into different type of opportunities

- Short-term: less effort and investment cost, collaboration with fewer stakeholders, but less and short-lasting impact
- Long-term: more effort and investment cost, complex collaboration with more stakeholders, may produce breakthrough and long-lasting benefits

... which serves as a reference to shortlist suitable opportunities for HSS

Analyses of HSS business capability to develop wind turbine O&M product/service offerings from a combination of two approaches

- **Business Functions and Elements:** Strategy, Finance, Sales and Marketing, Technology Research and Development, Human Resources, Stakeholder Networks, Organisation Structure,...
- **Strengths and Weaknesses:** in terms of technical know-how, financial capability, human resources,...

Matching of opportunities with HSS business capability to shortlist suitable opportunities

- **Suitable opportunities for short term:** strong alignment of opportunities' requirements with many of HSS strengths across various business functions (i.e. low-hanging fruit)
- **Suitable opportunities for long term:** strong alignment of opportunities' requirement of some HSS strengths, and HSS need more time to build capability to meet the opportunities' requirements



Suitable opportunities will be realised through customised strategy...

Potential strategies may focus on wind turbine O&M technology/service development, capital raising efforts, word-of-mouth marketing, talent attraction and development

- **Technology/service development**

- Technology license with another company (e.g. tech startup, foreign OEM,...)
- Proprietary retrofitting of steam turbine restoration technology into wind turbine O&M technology

- **Capital raising efforts**

- Government grants (e.g. from the UK government programmes)
- Financial loans (e.g. from governments or financial institutions,...)

- **Word-of-mouth marketing**

- Attendance in industry seminars and events
- Participation in business trips of business partners and membership bodies

- **Talent attraction and development**

- Engineers: Training in professional courses to get wind turbine O&M certificates
- Service-position Professionals: Recruitment of staffs with experience in key business functions (e.g. business development, finance, sales and marketing,...)

... which require the collaboration with stakeholders in the industry supply chain and ecosystem

	Industry supply chain stakeholders	Industry ecosystem stakeholders
Examples of stakeholders	<ul style="list-style-type: none"> • Wind farm operators • EPC contractors and sub-contractors for wind farm construction • Wind turbine OEMs and ISPs 	<ul style="list-style-type: none"> • Government agencies • Standard accreditation bodies • Trade associations • Non-profit organisations • Research institutions • Labour unions • Financial institutions/investors
Roles and benefits that HSS can receive	<ul style="list-style-type: none"> • Customers and competitors • Business partners (to collaborate and provide full-fledge service package) 	<ul style="list-style-type: none"> • Regulators, standards providers • Networking events organisers • Business group moderators • Technology innovators • Financial and human resources providers
Modalities of engagement	<ul style="list-style-type: none"> • Business pitching sessions • Contract bidding 	<ul style="list-style-type: none"> • Formal industry workshops • Informal business meals • Business capability development programmes • Financial grants/loans

This project may take 22 weeks to complete on a part-time basis

Type of work	Estimated Time
1. Market Research	6 weeks
• Roles of wind turbine O&M business	1 week
• Division of wind turbine O&M services	2 weeks
• Wind turbine O&M Market in Vietnam	3 weeks
2. Long List of Opportunities	6 weeks
• Listing and analyses of promising wind turbine O&M technology and their impacts	2 weeks
• Assessment of factors that affect the development of the technology and services	2 weeks
• Categorising wind turbine technology and services into different type of opportunities	2 weeks



This project may take 22 weeks to complete on a part-time basis

Type of work	Estimated Time
3. Short List of Suitable Opportunities for HSS	4 weeks
• Analyses of HSS business capability to develop wind turbine O&M product/service offerings	2 weeks
• Matching of opportunities with HSS business capability to shortlist suitable opportunities	2 weeks
4. Strategy Development	6 weeks
• Listing and analyses of potential strategies	2 weeks
• Collaboration strategies and modalities with stakeholders	2 weeks
• Identification of focused strategies, engagement modalities and next-step concrete actions	2 weeks
Total	22 weeks
1. Market Research	6 weeks
2. Long List of Opportunities	6 weeks
3. Short List of Suitable Opportunities for HSS	4 weeks
4. Strategy Development	6 weeks



Next step: Market research on the roles of wind turbine O&M business

Roles of wind turbine O&M business

- Position of wind turbine O&M within wind farm development and wind farm O&M
- Relationship with wind energy project construction and wind farm O&M

Key questions to address

- What is wind turbine O&M?
- Which part of the wind farm project lifespan requires wind turbine O&M service?
- In what ways does wind turbine O&M affect the O&M of other components of wind farms and the external environment (e.g. electric grids and cables, electric substations, surrounding habitats and local communities,...)
- How much cost does wind turbine O&M incur? How much percentage does this figure account for wind farm O&M costs and wind energy project development cost?

Deliverables and timeline

- 1 Presentation file (PPT/PDF format) and/or 1 elaborated write-up (Word/PDF format)
- Sent via Zalo/Email within 7 days from the presentation of this proposal



Appendix

[Sample slide] MB Wind is a notable wind turbine O&M player in Vietnam that transitioned from turbine transportation and construction services into turbine maintenance

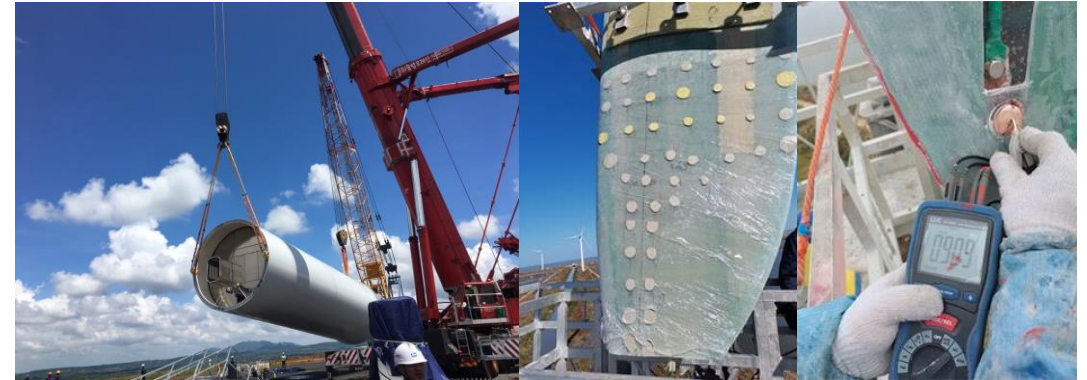
Corporate Background

- Full Name: MB Wind Power Service Joint Stock Company.
- Registered on 30 October 2020



Offered services

- Wind turbine construction
- Turbine blade maintenance services
- Construction transportation vehicle servicing (e.g. crane, maritime vessels)
- Factory and Warehouse Services



History of service development

- **[Assumption] Before 2020:** Company's expertise derived from the expertise of CF Group Joint Stock Company that provides cargo and freight handling service. The CEO of CF Group, Mr Phan Quang Cuong, expanded the company's business to cover natural resources sector in 2016 with the founding of two energy companies in Binh Thuan, then founded MB Wind in 2020 to provide more coverage in the wind energy business
- **Late 2020:** Started offering wind turbine transportation and construction services: Assisted wind power operators and OEMs with the transportation of turbines from maritime ports to wind farm sites, offered cranes to install turbines
- **2021:** "Booming" business as wind farm operators rushed to finish wind farm construction before the end of high electricity tariffs on 31 October 2021
- **2022 onwards:** Transitioned from wind turbine construction into turbine maintenance service. Focused on **maintaining external covers of turbines (blades, hubs and nacelles):** providing manual turbine inspection, cleaning turbine blades, preventive measures to avoid blade corrosion, etc.
- **[Assumption] 2024 onwards:** Further expansion into wind energy project development. CEO of MB Wind registered a new company called Metco Nam Monsoon on 27/02/2024

Clients and Experience

- Nearshore wind farms in the Mekong River Delta provinces: Tien Giang, Ben Tre, Bac Lieu., Soc Trang, Tra Vinh
- Onshore wind farms in the Central Highlands province: Gia Lai, Dak Lak,...
- OEM partners: Enercon, Vestas, General Electric, Siemens Gamesa, Goldwind



[Sample slide] MB Wind has extensive experience in logistics, turbine installation and simple/manual maintenance, but lacks advanced technology for sophisticated, faster and safer maintenance

Strengths: Strong background in logistics, turbine installation and simple/manual maintenance

- Leverages on the executive leaders' foundational businesses in cargo and freight handling to provide logistical transportation of turbine equipment
- Provides reliable proactive maintenance services through offering simple/manual maintenance on turbine external equipment
- Decent financial capability to expand into wind energy construction and project development through steady revenues generated from wind turbine O&M businesses, along with CEO's logistics business

Weaknesses: Lack advanced technology for sophisticated, faster and safer maintenance

- Lacks the technological capability to perform sophisticated and reactive maintenance when the internal equipment of turbines broke down (e.g. fire hazards,...)
- Needs up to 30 days for perform turbine maintenance services, which can be long and disruptive to wind farm operators
- Relies mostly on manual inspection, reparation, painting and cleaning of turbines that pose risks for workers using swinging ropes to do maintenance work

