EVALUATING THE TRAINING PERFORMANCE OF WIND TECHNICIANS IN SRI LANKA ON CRITICAL RESCUE STEPS

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Degree of Master of Science in Occupational Safety and Health Management

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Thesis/Dissertation submitted in partial fulfillment of the requirements for the degree

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Declaration

I declare that this is my own work and this dissertation does not incorporate without acknowledgement any material previously submitted for a degree or diploma in any other University or Institute of higher learning and to the best of my knowledge and belief it does not contain any material previously published or written by another person except where the acknowledgement is made in the text.

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Abstract

This study aims to assess the training performance of wind technician in Sri Lanka on critical rescue steps. Recognizing the inherent occupational hazards of working at heights within the wind energy sector, especially given the industry's rapid growth and the rising incidence of fall-related accidents (accounting for 44% of accidents in similar high-risk sectors), this research evaluates technician competency through structured rescue training. Utilizing the Global Wind Organization (GWO) Basic Safety Training standards, the research specifically investigates training retention and skill application among technicians.

The research employed a Situational Judgment Test (SJT) and Job Knowledge Testing (JKT) to measure technician performance in executing prescribed rescue procedures. A purposive sample of 45 wind turbine technicians, who recently completed GWO-certified training, participated in the study. Data collection involved an online questionnaire designed to reflect real-world rescue scenarios encountered in onshore wind farms.

Analysis revealed that approximately 58% of technicians demonstrated confidence in rescue device operation within the nacelle, whereas only 18% expressed similar confidence for external nacelle rescue tasks. Significant gaps in skill retention were evident, with skill decay notably higher among technicians lacking regular refresher training ($p<0.05$). Initial training, while comprehensive, was found insufficient alone, as performance assessments indicated a decline in critical rescue skills within six months of post-training. This research addresses a significant gap in existing literature by providing empirical evidence from Sri Lanka, an emerging market in wind energy. Results highlight the need for periodic skill assessments and refresher training as integral components of occupational health and safety protocols. Recommendations include structured refresher courses and regular performance evaluations to enhance the effectiveness of rescue training programs. The findings from this study not only inform local industry practices but also offer valuable insights applicable to global standards for technician safety and performance management in the wind energy sector.

Keywords: Onshore Wind Energy, Safety Performance, Training and Development, Situational Judgment Testing, Job Knowledge Assessment

Table of Contents

List of Figures

List of Tables

List of Abbreviations

Abbreviation	Description
BIM	Building Information Modeling
BS	British Standard
BST	Basic Safety Training
CAT	Computer-Aided Training
CEB	Ceylon Electricity Board
CIRO	Content, Input, Reaction, Outcome
CIPP	Context, Input, Process, Product
CO_2	Carbon Dioxide
EU-OSHA	European Agency for Safety and Health at Work
GVO	Global Wind Organization
GW	Gigawatt
HRD	Human Resource Development
ILO	International Labour Organization
IREA	International Renewable Energy Agency
ITP	Individual Trait Policy
JKT	Job Knowledge Test
LNG	Liquefied Natural Gas
MCQ	Multiple Choice Questions
MW	Megawatt

OHS	Occupational Health and Safety
PPE	Personal Protective Equipment
ROI	Rate of Return
RUK	Renewable Energy United Kingdom
SJT	Situational Judgment Testing
SMART	Specific, Measurable, Attainable, Realistic, Time-bound
SME	Subject Matter Expert
SRL	Self-Retracting Lifelines
TT	Traditional Training
WTG	Wind Turbine Generator

List of Appendices