ISSN: 2320-5407

International Journal of Advanced Research

Publisher's Name: Jana Publication and Research LLP

www.journalijar.com

REVIEWER'S REPORT

Manuscript No.: IJAR-50527 Date: 06-03-2025

Title: A REVIEW ON STRENGTHENING OF RC CYLINDER ELEMENTS USING BASALT FIBER REINFORCED POLYMER COMPOSITES"

Recommendation:
Accept as it is……**YES……**
Accept after minor revision……
Accept after major revision ……
Do not accept (*Reasons below*) ……

Rating	Excel.	Good	Fair	Poor
Originality	√			
Techn. Quality		√		
Clarity		√		
Significance			√	

Reviewer's Name: Tahir Ahmad

Reviewer's Decision about Paper: **Recommended for Publication.**

Comments (*Use additional pages, if required*)
.

Reviewer's Comment / Report

Abstract:
The abstract effectively introduces the significance of strengthening reinforced concrete (RC) structures to enhance their load-bearing capacity, particularly under seismic conditions. The discussion on Fiber Reinforced Polymer (FRP) systems as a rehabilitation technique highlights their advantages, including high stiffness, corrosion resistance, and ease of installation. The review provides insights into the structural behavior of Basalt Fiber Reinforced Polymer (BFRP) composites, including bond-slip characteristics, retrofitting techniques, shear strengthening, and flexural performance. The scope of the review is well-defined, offering a structured summary of the existing literature on the subject.

Introduction:
The introduction presents a clear justification for the study, emphasizing the necessity of structural strengthening in real-life applications. It outlines the challenges associated with strengthening existing structures and the importance of full-scale experimental testing to validate strengthening techniques. The role of FRP materials in structural repair and their benefits, such as lightweight properties and ease of application, are well-articulated. The discussion on bonding mechanisms and historical applications of FRP in bridge strengthening further contextualizes the study. The introduction effectively sets the stage

ISSN: 2320-5407
International Journal of Advanced Research
Publisher's Name: Jana Publication and Research LLP
www.journalijar.com

REVIEWER'S REPORT

for the literature review by highlighting key considerations such as mechanical performance, fire resistance, and durability.

Literature Review:
The literature review provides an extensive examination of previous studies related to BFRP composites. The review on bond-slip characteristics presents experimental findings on the durability of BFRP-concrete interfaces exposed to chloride environments. The detailed analysis of degradation mechanisms, including reductions in tensile strength and ductility over time, offers valuable insights into the long-term performance of BFRP materials. The inclusion of specific experimental conditions and failure modes strengthens the credibility of the review.

The study on bond-slip effects in RC beams strengthened with Near-Surface Mounted (NSM) CFRP rods is well-integrated, providing a comparative perspective on strengthening methods. The findings on stiffness variations, ultimate capacity reduction, and ductility changes contribute to the understanding of structural behavior under different reinforcement techniques. The discussion of strain measurements and theoretical validation enhances the technical depth of the review.

Overall Evaluation:
The manuscript presents a well-structured and comprehensive review of the strengthening of RC cylinder elements using BFRP composites. The inclusion of experimental studies and theoretical analyses provides a robust foundation for understanding the mechanical behavior and durability of BFRP reinforcement. The discussion on various strengthening techniques, including retrofitting and anchorage mechanisms, is relevant and informative. The manuscript effectively consolidates existing research and highlights critical aspects of FRP applications in structural engineering.