



Proceedings of
**INTERNATIONAL CONFERENCE ON ADVANCES IN
MECHANICAL & CIVIL ENGINEERING - 2023**



Organized by: Department of Mechanical & Civil Engineering



Editors

Dr. Maheboob Nadaf

Dr. Vaibhav Shinde

Mr. Ghanshyam Pal

Mr. Dipesh Tare

Ms. Dipika Dalvi

Ms. Supriya shinde

Ms. Pallavi Patil

Mr. Avinash Parajapati

In Association With



Yagdu Singh Charitable Trust's (Regd.)

THAKUR COLLEGE OF ENGINEERING & TECHNOLOGY

Autonomous College Affiliated to University of Mumbai

Approved by All India Council for Technical Education(AICTE) and Government of Maharashtra

A - Block, Thakur Educational Campus, Shyamnarayan Thakur Marg,

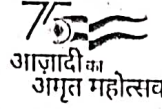
Thakur Village, Kandivali (East), Mumbai - 400 101

Tel.: 022-6730 8000 / 8106 / 8107 Telefax: 022-2846 1890 • Email: tcet@thakureducation.org

• Website: www.tcetmumbai.in www.thakureducation.org

INDEX - CIVIL

Sr. No	Paper Id	Title And Author	Page No.
40	1632	Lateral Load Performance of C Shaped Earth filled Wall-Panels with opening and Confined by Gi Wire Mesh - An Experimental Investigation <i>Sandeep Ranshur; Abhay Bambole</i>	203-207
41	4226	Effect of Variation in Stiffness of Transfer Girder on Stiffness of Floating Frame <i>Neelkanth; D. Joshi; Dr. M. M. Murud; Ankit M. Asher ;Amar D. Shah</i>	208-213
42	1899	Planning, Scheduling and Resource Allocation of Residential Building Using Microsoft Project- A Review <i>Abhishek Kumar Singh; Affan Khan; Shreyas Landge; Viren Chandanshive</i>	214-219
43	7663	Planning and Development of Waterways Transportation Along Coastal Cities – A Review <i>Hardik Vora; Alston Cerejo; Adarsh Pal; Ujala Yadav; Viren Chandanshive</i>	220-225
44	8818	A Review of Industry 4.0 In Construction Industry <i>Pallavi Dongare; Bhaveshkumar Pasi; Alfaiez Sorathia; Pranav Pawar; Rhea Gaikwad</i>	226-231
45	7269	Study on Partial Replacement of Fine Aggregate in High Performance Concrete <i>Ms. Neelam Petkar; Dr. Mohan Murudi; Dr. Vishal Thombare</i>	232-236
46	4658	Rain Water Harvesting & Waste Management for Community Building – A Review <i>Kanchan Chauhan; Pooja Dhanwade; Vaidehi Dombhare; Nazreen Khan; Puja Kadam</i>	237-244
47	6779	Selection of Construction Equipment Using Analytical Hierarchy Process (Ahp) & Analytical Network Process (Anp) <i>Sakshi Pashte ; Atish Pradosh ;Tanmayee Tele; Varun Valia;Viren Chandanshive</i>	245-248
48	7612	Influences of Fly Ash and Chemicals on Swelling Soil <i>Dr.Sachin Saraf ;Nilesh Bhopale; Suhas Pawar</i>	249-254
49	4873	Development of Ms Excel Spreadsheet for Various Civil Engineering Estimation Work <i>Arbaz Kazi; Jay Jadhav; Kamal Vaishnav; Raj Samnerkarmohit Kumar Verma</i>	255-258
50	5871	Sustainable Planning and Design of Kelthan Village <i>Prathamesh Gondhalekar; Nitish Kambl;I Mohammed Faraz Ansari; Harshita Patil ;Vikrant Kothari</i>	259-263
51	6170	Alignment and Design of Elevated Railway Track at Dahisar - A Review <i>Abhiraj Kadam; Nirav Rathod Uday Ghodke; Swaraj Chavan ;Jaydeep Chougale</i>	264-266
52	6131	Study of Planning & Design of A Commercial Structure <i>Vedant Ayare; Tejas Adsule; Suraj Dogra; Suraj Dogra; Jaydeep Chougale</i>	267-272
53	5067	Comparison of Pavement Analysis Software's for Indian Scenario <i>Kevalkumar Chaudhari; Abhishek Phadatare; Amogh Raut; Siddhesh Jadhav ;Prakash Panda</i>	273-277



MULTICON-W 2023

IC-AMCE 2023

14th International & National Conferences and Workshops

Certificate

APPRECIATION

This is to certify that Dr./Mr./Ms. Viren Chandanshive has presented / participated / contributed for a SLP length paper with the title Selection of Construction Equipment using Analytical Hierarchy Process (AHP) & Analytical Network Process (ANP) in the International Conference on Advances in Mechanical & Civil Engineering (IC-AMCE 2023) organized during February, 24th & 25th, 2023 at Thakur College of Engineering and Technology, Kandivali (E), Mumbai.

Dr. B. K. Mishra
Principal & Program Chair

Laxmi Singh Charitable Trust's (Regd.)

THAKUR COLLEGE OF ENGINEERING & TECHNOLOGY

Autonomous College Affiliated to University of Mumbai

Approved by All India Council for Technical Education(AICTE) and Government of Maharashtra

A - Block, Thakur Educational Campus, Shyamnarayan Thakur Marg, Thakur Village, Kandivali (East), Mumbai - 400 101

Tel.: 022-6730 8000 / 8106 / 8107 Telefax: 022-2846 1890 • Email: tcet@thakureducation.org

Website: www.tcetmumbai.in www.thakureducation.org

Selection Of Construction Equipment Using Analytical Hierarchy Process (Ahp) And Analytical Network Process (Anp) – A Review

1st Sakshi Pashte
U.G. Student, Civil Department
Vidyavardhini's College of
Engineering and Technology
Vasai (West), Palghar, Maharashtra,
India.
atish.pradosh26@gmail.com

2nd Atish Pradosh
U.G. Student, Civil Department
Vidyavardhini's College of Engineering
and Technology
Vasai (West), Palghar, Maharashtra,
India.
pashtesakshi214@gmail.com

3rd Tanmayee Tele
U.G. Student, Civil Department
Vidyavardhini's College of
Engineering and Technology
Vasai (West), Palghar, Maharashtra,
India.
tanmateetele@gmail.com

4th Varun Valia
U.G. Student, Civil Department
Vidyavardhini's College of
Engineering and Technology
Vasai (West), Palghar, Maharashtra,
India.
Varunvalia2001@gmail.com

5th Viren Chandanshive
Asst. Prof., Civil Department
Vidyavardhini's College of
Engineering and Technology
Vasai (West), Palghar, Maharashtra,
India
viren.chandanshive@vcet.edu.in

Abstract—Project duration and budgets are two highly important factors in the construction industry that affect any project's success. Reinforced constructions, sustainable development, and development of life and housing enhancement. To continue to exist in today's aggressive marketplace calls for complete expertise in recent construction technology that could enhance safety, sturdiness, and the construction speed. The demanding situations in construction enterprise are useless and cause huge delays and flaws. This paper briefly overviews the application of Multi-Criteria- Decision-Making (MCDM) strategies for selection of correct construction machine and equipment. The methodologies of the decision-making processes for selection of equipment's and machinery are also highlighted. The application of Analytical Hierarchy Process (AHP) and Analytical Network Process (ANP) in the construction equipment selection processes are thoroughly described. In this review, the important key parameters for the selection of various equipment's are also discovered which influence the choice of system and preservation of system. This review offers a system productivity at a construction project and selection procedure of construction equipment's.

Keywords— *Strategy, Productivity, Infrastructure, Analytical Hierarchy Process (AHP) and Analytical Network Process (ANP), MCDM, etc.*

INTRODUCTION

Equipment choice is one of the choices to be taken with inside the preliminary segment of layout multi-characteristic gadget choice is a completely essential pastime for a powerful production machine. The delight of customer necessities forces businesses to emerge as extra touchy and to make deep analyses in choosing gadget Furthermore, right gadget choice is a very essential pastime for production structures considering fallacious gadget choice can negatively influence the general overall performance and productiveness of a construction project. In addition to this, gadget choice has a chief impact on the businesses' international competitiveness and is likewise an essential selection-making factor for the layout of a bendy production machine . Using the right gadget can decorate the manufacturing technique, offer powerful usage of manpower, boom manufacturing, and enhance machine flexibility. The choice of outsized gadget can disturb the company's coin waft and additionally the problems including immoderate stock and idle gadget may be met.

On the contrary, the choice of below-sizing gadget cannot satisfy asked best ranges and capability necessities. Selecting gadget below confined operating situations is a complex task, because of many viable options and conflicting objectives. In addition to these, as a huge style of gadget is to be had today, every having a wonderful traits and value that distinguish from others, willpower of the right gadget for a designed production machine is a completely complex selection The choice system is observed to be unstructured, characterized via way of means of substantial area structured expertise and requiring the software of an powerful and green multi-standards selection making device The standards taken into consideration in an gadget choice may be categorized into groups: expenses and technical traits. In evaluating the gadget in step with the technical traits or expenses, the position of the gadget, a good way to be used with inside the production machine, is very essential. Ghada Elshafei et al. (2022) contributes a complete state-of-artwork evaluation for the contemporary past due synthetic intelligence-primarily based totally practices (2000–2021) the usage of strategies, technologies, models, and strategies which have been used withinside the inexperienced constructing for evaluation to be able to locate the great inexperienced constructing solutions, strategies [23]. They confirmed that a growing fashion of hobby in optimization is maintained on the grounds that corporations and producers apprehend the excessive functionality of the AHP method including its combinations (for example, Fuzzy and GA schemes) on the grounds that they're confronting greater excessive demanding situations than ever. More growing calls for environmentally and economically layout desires greater optimization strategiesto acquire all the demands.

This review offers the use of the Multi-Criteria Decision-Making (MCDM) process for choosing construction equipment. The use of the Analytical Hierarchy Process (AHP) for the selection of construction equipment is briefly explored in Section II. In section III, the use of the Analytical Network Process (ANP) in the procedure for choosing construction equipment is methodically reviewed. Some other methods like Promethee selection is also considered and discussed to identify the effectiveness of MCDM