



INDEX

No.	Title of the Paper's and Author's	Page No.
<b>(1) Electrical Engineering and E &amp; TC</b>		
01	<b>Review Paper on Under Water Windmill</b> Pranali Pradip Chopade	001
02	<b>Review on A Hybrid-STATCOM with Extensive Compensation Range and Small DC-Link Voltage</b> Puja P. Bhole, Kalpesh M. Mahajan	004
03	<b>A Review Paper on Power Quality Issues and Mitigation Techniques</b> Chaitra N. Panat, Kalpesh M. Mahajan	008
04	<b>Review on Harmonic Mitigation by Using Hybrid Series Active Power Filter</b> Hitalee A. Mahale, Kalpesh M. Mahajan	013
05	<b>Review of Application of D-STATCOM to Control Power Flow in Distribution Line</b> Dipika K. Kolhe, Prasad D. Kulkarni	016
06	<b>Simulation Analysis Using Feedback Control System Modeling Including HVDC Transmission System</b> Wagh J. G., Prof. Mahajan K. M.	020
07	<b>A Review Paper on Quantum Motor and Application</b> Valmik G. Mahajan, Prof. Rajesh R. Waghulde	027
08	<b>Review on Cooperative Control of Two Area Network in Power System Load and Frequency by Using DG</b> Harshal K. Chaudhari, Kalpesh M. Mahajan	035
09	<b>Review On A Wireless Sensor Monitoring Node Based on Automatic Tracking Solar-Powered Panel for Paddy Field Environment</b> S. Y. Bhangale, A. S. Bhide	040
10	<b>Harmonic improvement of a Grid-connected Photovoltaic arrangement with Shunt Active Filter</b> Sarita M. Sonawane, Kalpesh M. Mahajan	045
11	<b>Smart Grid Management In Photovoltaic System Using Wireless Sensor Network With IOT</b> Sachin Ramesh Jadhav, Pravin G. Bhangale	048
12	<b>Mathematical Morphology and W-KNN Classifier based Exudate Detection</b> Ravindra Badgujar, Dr. P. J. Deore	051
13	<b>A Review on Primary Frequency Control of Smart Load Using Reactive Compensation</b> Priyanka Gopal Bhoge, Nilesh S. Mahajan	055
14	<b>Mobile Sink Based Energy Efficient Data Gathering in WSNs</b> N. G. Haswani, Prof. Dr. P. J. Deore	058
15	<b>Review of Nanofiber Production Techniques</b> P. H. Zope, Dr. S. R. Suralkar	063





16	<b>An Image Retrieval Using Extended Local Tetra Pattern And Image Indexing</b> Vijay Shrinath Patil, Pramod Jagan Deore	071
17	<b>Harmonic Elimination In Non-Linear Load By Shunt Hybrid Active Power Filter</b> Yojana S. Bharambe, Kalpesh M. Mahajan	077
18	<b>Ethernet Controlled Whiteboard</b> Priyanka S. Badgujar, Apurva S. Ghodke, Gayatri G. Bhalerao, Bhagyashree R. Baviskar	081
19	<b>Electric Vehical For Handicap Person</b> Nilesh Dayma	084
20	<b>Review on STATCOM-Based Voltage Regulation in Grid Integrated Wind Farm under Variable Loading Conditions</b> Pooja V. Patil, Jagdish R. Patil	085
<b>(2) Computer Engineering</b>		
21	<b>A Review on Basic Deep Learning Architectures</b> Yogeshwari Borse, Dipti Patil	088
22	<b>IoT Based Motion Control System of Robotic Car</b> Rasika D. Shelke, Neha G. Chaudhari, Chetan B. Patil, Pooja V. Naval	092
23	<b>Internet of Things (IoT) : Major Security Challenges &amp; its Solutions</b> Avinash Y. Surywanshi, Pradnya A. Vikhar	096
24	<b>Review on "IOT and Cloud Computing" &amp; Their Elegant Application and Security Issue</b> Sddiqui Wajeda	098
25	<b>Counterfeit Currency Recognition</b> Bhavana S. Kale, Aruna S. Chaudhari, Prof. Leena R. Waghulde	103
26	<b>Cyber Security</b> Prof. Jawale Priyanka Shivshankar, Prof. Choudhari Aruna Ramrao	109
27	<b>Secure Traffic E-Documentation Using Cross Encryption</b> Yamini U. Sutar, Leena S. Tayade, Pranjali S. Wani, Aishwarya S. Pawar, Rupali Zambre	113
28	<b>Fake Currency Detection Using Security Features-Review</b> Neha B. Narkhede, Monali Wankhede, Prof. Leena R. Waghulde	116
29	<b>The Study of Online EduHub Web Portal</b> Yuvraj Chaudhari, Shraddha Patil, Harsha Talele, Dr. K. P. Rane	121
30	<b>Smart-Finder : Storing And Maintaining Businesses</b> Harsha Sonawane, Jiteshree Kale, Rajnandini Chaudhari, Akshay Patil, Priyanshi Borase	123
31	<b>Secure Cloud Storage System Using Proxy Re-Encryption</b> Aishwarya H. Khandare, Apurva H. Khandar, Gauri B. Dalvi, Samiksha R. Jaiswal, Shivani A. Konde	126
32	<b>Natural Language Processing : State of the art, current trends and Challenges</b> Swapnil S. Shete, Pradnya A. Vikhar	128
33	<b>A Study Of Deep Learning Strategies And Its Application</b> Harsha V. Talele	132
34	<b>Automated Placement and Recruitment System Using Cloud Service</b> Hardeep B. Jethwani, Dhanashree S. Tayade	136





35	<b>Study of Online Social Network: Threats and Solutions</b> Nutan Sanjay Patil, Leena R. Waghulde	139
36	<b>Cross Lingual Sentiment Analysis For Indian Regional Language (Marathi)</b> Prof Pradnya Vikhar, Pratiksha Patil, Rohini Patil, Ribka Mavchi, Chhaya Patil	145
37	<b>An Android Application To Assist Teacher and Student</b> Pratiksha Gawande, Raksha Deshmukh, Kirti Kadu, Priyanka Khandar, Palak Agrawal	149
<b>(3) Mechanical Engineering</b>		
38	<b>A Review On Design And Development Of Hybrid Aluminium Composite Shaft</b> Hemant R. Nehete, Manoj M. Nehete, Dr. K. P. Rane	152
39	<b>Most Populer And Modern Methods Of Atmospheric Air Purification : A Review</b> Samadhan Khaire, Darshan Thakur	155
40	<b>Review Paper On Heat Transfer Analysis Of Helical Fin With Parabolic Cross Section</b> M. A. Salve, T. A. Koli, Dr. V. H. Patil	160
41	<b>A Study on temperature dependent DC conductivity of polysiloxane-ZnO nanocomposites</b> Md Nasir Ali	163
42	<b>A Review Paper on Variable Refrigerant Flow (VRF) System By Using Multiple Expansion Valve Used in Air Condition System.</b> Prasanna P. Gawande, Prof. M. P. Thakur, Dr. V. H. Patil	166
43	<b>A Review On Experimental Investigation And Evaluation Of Mechanical Properties Of Natural And Synthetic Composites</b> Mohit Dipak Pathak, Dr. Gopal Eknath Chaudhari	170
44	<b>A Review On Safety Impact Guard With Prv Based Damper</b> Hemant R. Nehete, Manoj M. Nehete, Dr. K. P. Rane	173
45	<b>A Review onSix Sigma Approach for Design Synthesis of Car Dashboard to Improve Interior Safety Like Head Impact and Knee as Per Standard FMVSS 201/ECE 21</b> Jayesh Sudhakar Sarode, Vijay LiladharFirake	176
46	<b>Review On Stress Analysis Of Bolt To Connect Two Plates In Circular Array Patteren By Using Finite Element Methodology</b> Sushil D Patil, Ramkant Patil	182
47	<b>A Review On Obstacle Detection Usingintelligent Braking System</b> Vivek P. Kolhe	185
48	<b>A Review On Design, Analysis And Optimization Of JIB Crane Boom</b> Chaudhari Govinda Shashikant, Prof. T. D. Garse	188
49	<b>Ergonomic Design and Development of Flywheel in Exercise Equipment</b> Ramkant Patil, Sushil D Patil	191
50	<b>A Review On Experimental Investigation And Evaluation Analysis Of Mechanical Properties Of Linear And Non-Linear Vibrations Behaviour Of Flax Reinforced Composites With An Interleaved Natural Viscoelastic Layer</b> Bharambe Umesh Hiranman, Prof. K. K. Chaudhari	197
51	<b>Review on Spalling of 20 HI Cold Rolling Mill Rolls</b> Dhiraj S. Patil, Manoj D. Salunke	201



52	<b>Deign of Green Skyscraper</b> Bhagyesh Khushal Rane, Prof. Mr. Farooq I. Chavan	205
53	<b>Implementation of Inventory Control Model and its Testing : A Case Study</b> Dr. A. D. Vikhar	209
54	<b>A Review - Solar Panel Cooling Technique</b> Mayur Bhgawan Vanjari, Asso. Prof. Dr. V. H. Patil	214
55	<b>Experimental And CFD Analysis of Forced Convection over Ribbed Surfaces</b> Mahendra Bhila Pawar	218
<b>(4) Science</b>		
56	<b>Utilization of Ash for AAC and Soil Bricks Industry</b> Dr. Ashok N. Shelgenwar, Ashutosh Mallikarjun Sakhare	222
57	<b>Room Temperature Synthesis of CuO Nanowires and their conversion into CuO Nanowires and their conversion for humidity sensing application</b> Kalyani Pravin Pathak	224
58	<b>FTIR and DSC Study of Cadmium Malonate Crystals Grown by Solution Method</b> S. P. Shukla, Mrs. M. B. Chaudhari, Dr. S. J. Shitole	230
<b>(5) Management</b>		
59	<b>Business Intelligence to Decision Making : A Conceptual Review</b> Dr. Abhishek Shukla, Dr. R. R. Chavan	232
60	<b>Globalization Challenges &amp; Opportunity for Industries</b> Mahesh Ramesh Tekwani	236
61	<b>Coprporate Social Responsibility And Sastainable Development</b> Priti Govind Bijave	238
62	<b>A Study of Cash Management</b> Vaibhav Laxman Mule	241
63	<b>A Study Of Working Capital Management</b> Rushikesh Ashok Dalal	246
64	<b>A Study of Competitive Market Position of Toyota Innova</b> Waqar Ali	249
65	<b>To Analytical Study of Ratio Analysis</b> Kanchan R. Mandale	252
66	<b>The Study of Impact on Digital Marketing</b> Sneha Ashok Patil	256
67	<b>The Study of Risk Management</b> Deepali Chhnnu Patil	261
68	<b>Credit Appraisal</b> Bhagyashree Raisinghani	264
69	<b>Analysis of Consumer Loans</b> Chandni Bhojwani	267
70	<b>The Analytical Study of Working Capital Management</b> Manisha Gautam Wagh	270





71	<b>Awareness Of Mutual Fund &amp; Suggestion To Investors For Investment Planning</b> Rekha R. Singh	274
72	<b>A Study of Globalisation : Challenges &amp; Opportunities</b> Prof. Digambar Bhaskar Sonawane	278
73	<b>Sales Promotion Strategies</b> Mohit Suresh Patil	282
74	<b>Customer's Satisfaction</b> Rohini Sadashiv Patil	288
75	<b>A Study On Working Capital Management At New Roop Tiles, Bhusawal</b> Nikita Jamanadas Balani	291
76	<b>Study Of Non-Performing Assets</b> Nikita Bajaj	294
77	<b>Business Intelligences Attention Span</b> Mayur Kishor Borse	298
78	<b>A Study of Retail Banking in Central Bank Of India</b> Shweta Pramod Chaudhari	300
79	<b>A Study of Cash Flow</b> Urvashi Mahavir Panchariya	303
80	<b>A Study of Loan &amp; Advance</b> Dnyaneshwar Dattu Shinde	306



## Utilization of Ash for AAC and Soil Bricks Industry

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**ABSTRACT** - After independence in India the construction is possible only using soil bricks continuously making house building, offices and apartments. In town the brick sectors in India is unorganized and the soil bricks are used in the process of making bricks AAC blocks using making bricks for construction sustainable growth in construction.

**Keywords:** Cement instead of soil and ash.

### Introduction

What is main factor used for making construction? India is the second largest country in the world which uses soil bricks continuously it always uses soil and ash for making bricks from last seventy years.

Historical places in India using large number of stone construction like Taj Mahal, Kutub Minar, Bibika Makhbara these are the construction in ancient period.

Today such types of stone are available but the population of India increases continuously in India. The stones doesn't made apartments and other construction only because heavy weight of stones apartment requires low weighted material for twenty to fifty floors. We see the condition of agriculture and condition continuously decrease trees are cut down for making furniture door, windows and maximum other wooden articles in daily use.

So AAC blocks are the best solution for making apartments in India.

### Definition of Bricks

A brick is building material used to make walls, pavements and other elements in majority construction. Traditionally the term brick referred to a unit composed of clay. But it is now used to denote any rectangular units laid in mortar. Two basic categories of bricks are fired and non-fired bricks.

### Urban Dictionary: Brick

4 A large quantity of drags packaged in brick shape, especially cocaine. 5 An Brick-definition of brick by the free Dictionary.

The use of soil for making bricks in any type of construction is harmful to the environment. So AAC blocks is the solution for making without soil bricks it is sustainable for environment and low weighted blocks fulfills the needs of common peoples in the society. According to continuous increasing population in India.

### Hypothesis

1. Continuous increasing its efficiency.
2. Trees and forest development without soil is impossible.
3. Making of bricks other than traditional method.

### Objectives

1. To make strong construction.
2. To avoid the soil for making bricks and constructions.
3. To save the soil and land for future generation.
4. To protect the environment by making pollution.

In the period of British in India large number of construction seen with the help of stones. Today these constructions are stronger as compare to soil bricks these types of constructions always seen in India. Designs and shape to create unique Kutub Minar, Bibika Makhbara these are examples of stone construction in India.

Today we see the population of India crossed 125 crores the expected home in India. Maximum population BPL (Below Poverty Line) doesn't have any home and they are willing to get the residence.

### Sustainable ash utilization

The fly ash produced as a by-product of coal combustion in the boiler posses environment challenges and its efficient, sustainable utilization has been of paramount importance to the power industry. According to latest Central Electricity Authority (CEA) data available for 2016-17 almost 169 million tones of fly ash was generated by thermal power plants (TPPs) plants in India.

Government tried to utilize ash 100% through several policies and regularity stipulations be ash utilization level in the country continuous around 60% of overall ash generation. Currently only a few utility has been able to comply with the environment ministries January 2016 notification which had stipulated 100% utilization of ash by Dec 2017.

### Existing Policies

The Ministry of Environment, Forest and Climate Change (MoEFCC) issued the first directive for promoting fly ash utilization in the country back in September 1999. This was subsequently amended with notification issued in 2003, 2009 and 2016, setting targets for fly ash utilization and promoting its use by construction agencies. Notification dated January 25th 2016 stated on the complete utilization of fly ash by thermal power plant (TPP) by end December 2017. In addition, it was specified that power plant developers would bear the entire cost of ash transportation up to a radius of 100 km. for distances off more than 100 km and up to 300 km for road construction projects or for ash based building products. The notification also made it mandatory to use fly ash based products for all government schemes such as The Pradhan Mantri Gram Sadak



Yojana, the Mahatma Gandhi National Rural Employment Guarantee Scheme and the Swachh Bharat Abhiyan.

<https://powerline.net.in> (02.04.2019)

#### Modes of ash utilization

Fly ash is used in the manufacture of bricks and concrete (8.81% in the end use of fly ash in 2016-17) which binds the ash and prevents it from escaping into the environment.

#### Ingredients in making AAC blocks

**Cement-S3-grade ordinary portland cement (OPC)** from manufacture is required for manufacturing AAC blocks. Cement supplied by plants is not recommended due to variations in quality over different bales of cement.

**Fly ash or sand**- Fly ash is mixed with water to form fly ash slurry. Slurry thus formed is mixed with other ingredients like lime powder cement, gypsum and aluminum powder in proportionate quality to form blocks.

**Lime stone powder**- Lime powder required for AAC production is acquired by crushing lime stone to fine powder at AAC factory or by directly purchasing it in powder form from a various plants.

**Gypsum**- Gypsum is readily available in the market. <https://www.researchgate.net>

These are some of the ingredients used making AAC blocks 53-grade ordinary portland cement (OPC) used for making strong and low in weightless bricks using different machinery. Fly ash or sand used for making weightless strong bricks. These ash mixed with water to formed is mixed with other ingredients like lime powder cement, gypsum and aluminum powder in proportionate quantity.

#### Advantages of Autoclaved Aerated Concrete

- 1) **Eco-friendly**- AAC reduce at list 30% of environment waste as compared to traditional concrete. There is a decrease of 50% of greenhouse gas emissions.
- 2) **Light weight**- It is 3-4 times lighter than traditional bricks and therefore, easier and cheaper to transport.
- 3) **Energy saver**- It has an excellent property that makes it an excellent insulator.

#### Suggestion

1. It is needed to save land for plantation of trees
2. Further, the need of the increasing agricultural production.
3. Lesser space should be used for making flores.
4. New science and technology should be applied for making bricks other than soil bricks.
5. It is the need of an hour to avoid traditional method of making bricks.

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