



Minutes of Awareness Workshop

Electrification of Trucks for Cement Sector in India

Date: 20th May 2023, 1000 hrs - 1315 hrs, Venue: HICC, Hyderabad

Members Present	Attached in Annexure I
Key Discussion Points	
<ul style="list-style-type: none"> • A brief introduction about Shakti Sustainable Energy Foundation & the project objectives & deliverables was presented Ms. Suchitra Subramaniam, Programme Manager – Electric Mobility • The objectives, benefits & future activities of the project were presented by Mr K Muralikrishnan, Principal Counsellor- CII. The PPT is attached as annexure III • Successful Case studies of E truck at cement sector was presented by Mr. Prashant Sharma, Manager-Commercial, Dalmia Cement Bharat Limited. Key sharing points are: <ul style="list-style-type: none"> ➤ Adoption of EV will lead to sustainable logistics with cost savings, as transportation cost(62%) is major driver for overall logistics cost. ➤ The trucking sector is responsible for 33% of transport related CO2 emission, Adoption of EV could save the significant level. ➤ Lesser maintenance & trouble-free driving is one of the key benefits of E- Trucks. ➤ Availability of required nos of E-Vehicle & import dependency of E-trucks spare parts is a concern. ➤ Dalmia Cement implemented E-trucks for Slag/other raw material transportation to their plant from source location. ➤ Trucks are not purchased & only the operating costs are bared by Dalmia Cement. ➤ Range Anxiety due to lack of Charging & Service Infrastructure across nation ➤ Delay in ARAI / I-CAT approvals from Govt. Agencies and EV Vehicle Registration at State RTOs is also a concern for fleet owners. ➤ Lack of appropriate & lucrative financing model is a concern for Etruck Implementation • Mr. Debabrata Sain, BU Head, Underground equipment- Epiroc Mining India Ltd, shared the recent development in Underground Electric mining equipment & its challenges, issues. <ul style="list-style-type: none"> ➤ Epiroc’s electric mining equipment are available for underground mining only ➤ Limited trial scenarios in Australia & India were shared. ➤ The technical issues in Batteries due to high temperature was also shared. • Mr. Venugopal Rao Nellutla, Vice President, Sales & Marketing- Olectra Greentech Ltd from Olectra Greentech Ltd presented on Olectra’s recent launched Electric tipper, case studies, features & business model. <ul style="list-style-type: none"> ➤ The Electric tipper is supported by technology providers BYD & CATL ➤ Trials at few cement plant mines for internal material transportation conducted. ➤ Battery life of 6 years / 3000 charging cycle as claimed. ➤ As claimed, the capex recovery period is 3-4 year through operating cost reduction. 	

- 4 years of AMC service is also available from Olectra on chargeable basis.
- During Open forum discussion, major Cement Industry representatives from Logistics, mining, Sustainability & Purchase Departments has shared the key points.
 - Reduction in road tax & specific policy for Electric vehicle for goods transport is required as a support from Govt.
 - Govt policy on EV mandate like RE power obligations, will help the E-Truck drive.
 - The charging infrastructure is one of the main concerns. Higher the range of distance served by E truck, higher will be the transformation from ICE trucks.
 - Charging infrastructure is costly as well as critical to achieve the higher range of Distance for cement transport. Collaborating approach between several cement industries on sharing the charging infrastructure cost for a particular route can be the catalyst to Etruck implementation.
 - The EV charging infrastructure of Bus/other vehicle can be utilized jointly for trucks. The feasibility of the same is to checked from the perspective of land requirement, RE requirement & economics.
 - ESG credits are available for RE, so collective & collaborative efforts with charging infrastructure & RE cost sharing model needs to be chalked out.
 - A common route map for E-truck with charging infrastructure feasibility is to be surveyed in Andhra Pradesh, Telangana & Telangana & another cluster.
 - Approved Payload capacity of E truck needs to be increased to match the capacities of ICE trucks.
 - For outbound cement logistics, Industry owned vehicle model & hybrid model of ownership between Vendor & owner needs to be pursued.
 - Retrofitting of existing ICE trucks to transform the same into EV is of great interest, but the cost economics & longevity of the same after many years of operation can be a concern.
 - The homologation process from Govt for retrofitted old ICE trucks to EV trucks is to be checked.
 - The comparative study between lease-based model & other ownership or operational cost basis model for E-truck is to be prepared for better understanding & business decision.
 - More involvement & awareness for logistic & transporter fleet is required for successful implementation of the E-truck drive. Awareness Webinar for both plant logistic team & fleet owner is to be conducted.
 - For mining sector, fully battery driven, or Hybrid electric model equipment are to be explored.
 - The feasibility of retrofitting of existing equipment to Electric mode is to be checked.
 - **Representatives from 10 no of plants, corporate offices of leading cement organizations from five different cement clusters of country have shown expression of interest to be a part of the project:**
 - Interest for cement dispatches: 100% (10 plants)
 - Interest for internal material movement: 80% (8 plants)
 - Interest for range above 100 Km: 80% (8 plants)
 - Interest for lease-based model: 90% (9 plants)

Physical demonstration of E-Tipper by Olectra Greentech Ltd was done for the participants at HICC ground floor. (Photographs attached at annexure)

Way Forward

Cement organizations:

1. Initiation & implementation of E-Truck initiatives as a green & sustainable as well as cost effective drive.
2. Participation in E-truck project activities & awareness drive.
3. Trial run of E-trucks for interested areas of business.

CII:

1. Hybrid mode (Physical & online) awareness workshop for clusters of cement sectors
2. Feasibility Study by CII at premises of Interested plants on selected clusters & organization.
3. Onboarding of several Vendors of E-truck & battery/charging solution provider.
4. Trial of E trucks in selected plant premises & establishment of the trial results with plant team
5. Survey & feasibility study of charging infrastructure on selected routes
6. Exploration of retrofitting solution providers to transform ICE trucks to E-Trucks
7. Exploration of Electric mining equipment solutions
8. Detailed framework for the support required from Govt policies on E-Truck implementation

Annexures:

Annexure I : Programme agenda of the workshop & List of delegates

Time	Particulars	Speakers
1000 hrs	Introductory remarks & welcome	CII-GBC
1010 hrs	About the project & other initiatives	Ms. Suchitra Subramaniyan Programme Manager – Electric Mobility, Shakti Sustainable Energy Foundation
1020 hrs	Presentation on white paper: “Electrification of Trucks for Cement sector in India”	CII-GBC
1040 hrs	Successful Case studies of E truck at cement sector	Mr. Prashant Sharma Manager, Commercial Dalmia cement Bharat Ltd
1055 hrs	EV equipment for mining application in Indian sector	Mr. Debabrata Sain BU Head, Underground equipment Epiroc Mining India Ltd
1105 hrs	Successful Case studies of E truck at cement/other sectors:	Mr. Venugopal Rao Nellutla Vice President, Sales & Marketing Olectra Greentech Ltd
1120 hrs	Open Forum Discussion: <i>(Opportunities, Barrier & way-forward to implement E-trucks in Cement sector)</i>	
1220 hrs	Closing remarks	CII-GBC
1230 hrs	Session close (Followed by Lunch)	

List of Delegates			
S.No.	Name	Company Name	Designation
1	Mr. Prashant Sharma	Dalmia Cement	Manager- Commercial
2	Mr. Anil Kumar Jain	JK Cement Ltd	Chief Sustainability Officer
3	Mr. Anit Chandran	JSW Cement Ltd	AGM,Plant Logistic head
4	Mr. Pradeep Sharma	Nuvoco Vistas Corp.	Sr. Vice President - Logistics
5	Mr. Nitin Maloo	Nuvoco Vistas Corp.	Manager,Business excellence
6	Mr. Venugopal Rao Nellutla	Olectra Greentech Limited	Vice President - Sales & Marketing
7	Mr. Yash Bhatt	Olectra Greentech Limited	Asst. Manager - Sales & Marketing
8	Mr. N.V.S Rao	Ultratech Cement	DH - Mines Maintenance, Sr. General Manager
9	Mr. Ramchand P Galani	Ultratech Cement	General Manager - Materials
10	Mr. BGL Goud	Ultratech Cement	HOD (Mines Maint)
11	Mr. Vijaykumar U.	Ultratech Cement	General Manager - Materials
12	Mr. Jugal Kishore	Ultratech Cement	HOD (Mines Maint)
13	Mr. Srihari Meda	Ultratech Cement	Manager- Commercial
14	Mr. Amit Pingale	Kalburgi Cement Pvt. Ltd	Chief General Manager - Head Logistics
15	Mr. P.G. Patil	Ultratech Cement	HOD- Materials
16	Mr. Sabari Girivasan R P	Ultratech Cement	GM - Mine Planning - HO
17	Mr. K. Sri Ranga Naidu	Sagar Cements Limited	Technical Advisor
18	Mr. Sandeep Tandon	UNIDO	National Project Manager
19	Mr. Santosh Kamat	Ultratech Cement	GM - Logistics
20	Mr. Chandrakanth Korwar	Ultratech Cement	Sr. GM - Logistics
21	Mr. Debabrata Sain	Epiroc Mining India Ltd	Business Unit - Head
22	Ms. Suchitra Subramaniyan	Shakti Sustainable Energy Foundation	Programme Manager - Electric Mobility
23	Mr. P.V. Kiran Ananth	CII – GBC	Deputy Executive Director

24	Mr. K. Murali Krishnan	CII – GBC	Principal Counsellor
25	Ms. Nisha Jayaram	CII – GBC	Principal Counsellor
26	Mr. Vaibhav Girdhar	CII – GBC	Senior Counsellor
27	Mr. Sougata Mahanti	CII – GBC	Counsellor
28	Mr. P C Rahul	CII – GBC	Associate Counsellor
29	Mr. Arvindh Jambunathan	CII – GBC	Engineer
30	Mr. Nikhil Kumar	CII – GBC	Engineer

Annexure II : Photographs :



Annexure III: CII PPT ON E-TRUCK PROJECT FOR CEMENT SECTOR





Confederation of Indian Industry

Electrification of Trucks for Cement Sector in India

Awareness Program

20th May 2023

Confederation of Indian Industry

- Non-government, not-for-profit, industry led & industry managed apex industry association
 - Founded over 120 years ago
 - Direct membership : 8030 organizations
 - Indirect membership : 2,00,000 enterprises
- Wide network
 - 66 offices in India (10 Centers of Excellence), 8 overseas offices (including one in USA)
 - Institutional partnerships with 320 counterpart organizations in 106 countries
- Serves as reference point for Indian industry and international business community
- CII – Proactive role to go beyond policy advocacy - Building competitiveness in the Indian industry
- Presently 10 Centers of Excellence
- Each COE has a unique area/sector of focus



Confederation of Indian Industry

COEs of Confederation of Indian Industry



1. CII Institute of Logistics, Chennai
2. CII Institute of Quality, Bangalore
3. CII-IEC Centre of Excellence for Sustainable Development, New Delhi
4. CII – Aarita Centre for Competitiveness, Chandigarh
5. CII Navroji Godrej Centre of Excellence, Mumbai
6. CII Suresh Neotia Centre of Excellence, Kolkata
7. CII – Thriam Water Institute, Jaipur
8. CII – Godrej Green Business Centre, Hyderabad
9. CII – TACE, New Delhi
10. CII – CoE for Innovation, Entrepreneurship and Start-ups



Confederation of Indian Industry

CII Godrej Green Business Centre, Hyderabad




Confederation of Indian Industry

Objective

Facilitating Indian industries to achieve world class standards in Energy Efficiency



Initiatives by CII Godrej Green Business Centre (CII GBC)




Confederation of Indian Industry

Energy Efficiency Studies

- CII GBC - India's largest energy audit team
 - 40 energy auditing professionals
- Multiple sectors served
 - Creating Islands of Excellence & Expanding!
 - Variety of services for sustainability
 - Auto, Pharma, Steel, Petroleum, Glass, Food, Cement, Pulp & paper, Power, Dairy
- Various Stakeholders
 - Ministry of Power
 - Major Energy Producers & Consumers
 - MSMEs
 - States & Union Territories

30+ Hours of Energy Efficiency Expertise

2,000+ Enabled Energy Audits

80+ Energy Efficiency Manuals Publications

100,000+ Proficiency Scored

3,80,000+ Energy Audit Hours

₹ 3 Billion+ Annual Energy Savings Achieved

100+ Energy & Efficiency Studies and Projects

300+ Research Trainings & Seminars Facilitated

Climate Change Initiatives

- Supporting Industry from Assessment to Reporting
 - Detailed Energy Audits,
 - Life Cycle Assessments,
 - GHG Accounting
 - Low Carbon Technology Roadmaps
 - Facilitating Energy Transition in States
 - ... and many more!



Background

- India is world 2nd largest cement producer
- Sector contributes to 8% of overall emission of India
- Logistics accounts to 2 – 3% of Cement Sector



Electrification of Trucks for Cement Sector in India

- Reduce the sectoral emissions of cement sector in India
- Replacing ICE trucks with E-Trucks
- Key activities under the project:
 - Development of white paper on the use of E-trucks in cement sector
 - Awareness programs
 - Feasibility Study
 - Proof of Concept (PoC)
 - Measurement & Verification (M&V)
 - White Paper & Policy Recommendations

© Contribution of stakeholders

EoI Forms - Cement plants

- Vision of Organization for EV (if applicable)
- Unit Location
- Production & Logistic details
- Other EV vehicles owned by plant
- RE power capacity
- EV charging facility
- Average distance travelled by product / raw material
- Details of similar initiative already taken up by the unit
- Suitable investment model
- Acceptance for Feasibility Study, PoC

Industry Initiative to adopt E-Trucks

- Dalmia Cement (Bharat) Limited**
 - E-truck for slag transport from SAIL, Rourkela to Rajgangpur plant
 - 2 e-trucks are in operation and 22 more proposed
- Tata Steel:**
 - Tied up with an Indian start-up
 - deploying 15 EVs at Jamshedpur plant and 12 EVs at its Sahibabad plant
- Hindustan Zinc Ltd.**
 - Company has set target to replace 900 ICE truck with E-trucks by 2025
- The global mining company Vale**
 - Claimed to have 100% electric 73 Ton truck for mining operation
- Assmang Limited**
 - Deploying a large fleet of battery-electric mining equipment

Logistic Scenario in Indian Cement Industry

- Cement & Clinker (significant share in road transport)
- Limestone (mines to plant: by road & other equipment transport)
- Slag (significant share for both road & rail transport)
- Fly ash (road transport in fly ash bulker)
- Coal (dominantly through rail & also road)
- Other additive transport (through road)

Logistic Scenario in Indian Cement Industry



E-truck adoption

Drivers



- Industrial commitment
- Logistic cost
- GHG emission
- Favorable Policy
- Brand Image

Barriers



- Operating Range
- Charging Infrastructure
- Time for battery charging
- Reduced Payload
- Safety
- High Initial Investment

CII Role

- Engage various technology suppliers
- Conduct feasibility study along with technology suppliers
 - Holistic solution for implementation (incl. charging infrastructure, RE additions etc.)
 - Analysis of key routes (terrain, distance, charging stations etc.)
 - Estimating the emissions associated with ICE truck
- Support the implementation of E trucks in minimum 3 clusters
- Conduct M&V study to measure the realized scenario after implementation
- White Paper & Policy Recommendation

Way forward...

- Expression of Interest from cement plants
- Nomination of Units for feasibility Study
 - Across different clusters
 - Grinding units
- Trail run of E-truck
- Interest for Proof of Concept

Discussion Points

- Proposed investment models
 - Deferred payment model including AMC
 - Leasing model (Rs/Ton km)
- Charger compatibility
- Service Cost / Service time
- Cluster driven business model (common charging station, service centre etc.)