

Call for Innovative Clean Energy Technologies for SMEs in the Automotive Manufacturing Sector

Background

India's automotive industry is the fifth largest in the world, with the highest levels of emissions coming from vendor and supplier facilities (CSE, 2021). The bulk of Tier-II and Tier-III businesses, who make up more than 75% of the Indian component industries, provide Tier-I players and original equipment manufacturers with components and subassemblies (OEMs). In FY2021, a total of 22.62 million cars were produced in India. If we assume that the lifecycle greenhouse gas (GHG) emissions from all the major manufacturing processes of a generic 1532 kg vehicle are 2,013 kg of CO₂, then the overall CO₂ emissions from automotive manufacturing can be roughly estimated to be about *45 million tonnes*. Large OEMs like Tata Motors and Mahindra are striving to be carbon neutral and net zero by 2040. There is pressure on these companies to not only reduce their direct emissions but also regulate their supply chains to cut Scope 3 emissions. To address supply chain emissions, two things need to happen (i) enhanced awareness among the SMEs of the technologies and effective solutions available to decarbonise; (ii) proper linkage of SMEs with clean technology innovators and suppliers and (iii) financial support.

The Institute for Sustainable Communities (ISC) and the World Resources Institute (WRI) India are organizing their "Innovative Clean Energy Technology Platform (ICET)" in collaboration with the Technology Information Forecasting and Assessment Council (TIFAC) of the Government of India for the automotive sector in Maharashtra. The platform would allow clean technology innovators, start-ups, technology providers, and automotive SMEs to connect and work with one another. It would formalize and provide an enabling ecosystem for the SME sector to adopt clean technology. The platform will not only address national and state-level concerns, but will also focus on clean technology advancement at the cluster level. The platform will also be used as a base to connect other active projects and bring together innovators, entrepreneurs, and investors to explore synergies.

Clean Technology Road Show for Automotive Industrial Cluster

A platform will be provided to the technology innovators for showcasing their technological innovations to reduce GHG emissions in Maharashtra's automotive sector (including assembly, sheet metal work, tooling, forging, foundry, grinding & finishing, paint shop etc). The platform will also support, promote and "de-risk" the participating clean technology providers by connecting them with potential investors, customers, and partners in Maharashtra's automotive cluster. After-sales services and follow-up assessment of energy efficiency/savings for the implemented technology are mandatory. ISC and WRI India will facilitate demand aggregation for the product within the cluster and connect the SMEs with financial institutes for cost-efficient deployment.

On selection of relevant clean technologies by our jury, the provision would be made by ISC for the technology provider to conduct workshops, roundtables with key stakeholders, and pitch for pilots to the cluster.

Timelines and Submission:

Last Date for Submission of Application	7th January, 2023
Evaluation of Application	7th- 17th January, 2023
Announcement of Selected Applicants	23rd January, 2023
Date of Presenting and Showcasing Technologies	<i>date to be announced</i>

Applications will be accepted on a rolling basis. Please refer to annex 1 for more details on the indicative technologies for the platform. You may submit your interest by filling in the [google form](#) by **7th January, 2023**. For further information and any queries, contact us on, quotes@sustain.org.

Annexure 01

Technology Requirement:

The technologies are categorized as follows:

I. Thermal energy technology

- Fluidized bed combustion boilers
- Insulation for steam distribution systems
- Auto blowdown systems for boilers
- Waste heat recovery system for thermic fluid heater/furnaces/boilers
- High pressure hot water generators
- Steam traps
- Condensate recovery systems
- Biomass based gasifiers

II. Electrical energy technology

- Air compressors
- Variable frequency drive (VFD) for motors
- Energy efficient pumps
- Energy efficient motors / fans / blowers / equipments
- Energy efficient lightings and systems
- Energy efficient HVAC systems

- Digital signal processors (DSP's)

III. CETP technology

- Technologies for effluent treatment

IV. Renewable technology

- Solar thermal energy
- Solar photovoltaic systems (PV system)
- Wind energy
- Solar-wind hybrid technology
- Hydrogen storage systems - Compressed hydrogen (stored in high-pressure tanks), liquid hydrogen (stored in tanks at -253 degrees C) and solid hydrogen (by either absorbing or reacting with metals with chemical compounds or storing in alternative chemical form)

V. Process Automation & Intensification

- Combustion monitoring devices
- Monitoring instruments and control systems
- Environment-friendly and energy-efficient technologies for painting, powder coating, and finishing processes (Examples: waste treatment, ventilation, and conditioning)
- Innovative process intensification leading to increased energy efficiency & reduction in GHG emissions in press shops, sheet metal work, forging, casting, composite manufacturing, machine tooling including milling, grinding, polishing, FRP & molding and other manufacturing processes
- Recycling, circular economy and low carbon materials

VI. Hybrid Vehicle Technologies

- Power split propulsion systems
- High efficiency motors and transmission systems
- Regenerative braking systems - energy capture and advanced hydraulics
- Energy management systems for switching from hybrid to ICE and vice versa
- Axle systems for different types of hybrids - Series hybrids, Parallel hybrids, Series-parallel hybrids

VII. Electrical Vehicle Components

- Electronic throttle
- Traction battery pack
- Wheel rim integrated hub motor
- DC-DC converter
- On-board charger
- Lithium-ion batteries
- V2G integration – Electrical Vehicle Supply Equipment (EVSE)
- Battery Management Systems (BMS)
- Energy storage systems