

**TECHNOLOGY DEVELOPMENT BOARD
[A STATUTORY BODY OF THE DEPARTMENT OF SCIENCE & TECHNOLOGY]**

Technology Development Board has entered into an agreement on 15th March, 2018 with M/s VerdeEn Chemicals Pvt. Ltd., Ghaziabad for financial assistance for the project “Scaling-up A Proprietary Room-Temperature Lead-Acid Battery Recycling Technology from a Pilot-Proof-of-Concept to A Pilot-Commercial Scale”.

VerdeEn has developed an indigenous technology to recycle used Lead-Acid Batteries (LABs) at room temperature. Its proprietary recycling technology is fundamentally different than Smelting. The main objective in the technology development is to eliminate the Smelter which is the root cause of all the problems such as i) Poor Recovery, ii) High Pollution and iii) Non-Viability at Small Scale. It has solved the above problems by developing a room temperature electrochemical process which is able to extract all the Lead out of used LABs and does not generate toxic emissions or solid waste.

Its innovative process utilizes a solid state electro reduction of lead compounds obtained from the scrap batteries (battery paste containing lead sulfate ($PbSO_4$) and lead oxides (PbO and PbO_2)) as compared to the typical electrode position processes which involve dissolution of the metal compounds in the electrolyte. The metallics (recovered battery plates's grid metallic at the battery breaking and separation stage) are treated separately and melted to recover the grid alloy(s). There lead compounds along with proprietary solid fillers on contact with cathode in an alkaline medium get converted to metallic lead. Since the process does not involve the dissolution of lead, there is no formation of lead dioxide (PbO_2) at the anode which is a major drawback of the various processes detailed in the literature. The low solubility of lead compounds is another major hindrance in scalability and industrial viability of the typical electrode position processes. Presently, at the anode, OH^- ions are consumed to produce oxygen, and at the cathode equivalent number of OH^- ions are formed.



Exchanging the Loan Agreement with M/sVerdeEn Chemicals Pvt. Ltd., Ghaziabad

#TDB support # M/s VerdeEn Chemicals Pvt. Ltd., Ghaziabad for Scaling-up a Proprietary Room-Temperature Lead-Acid Battery Recycling Technology from a Pilot-Proof-of-Concept to A Pilot-Commercial Scale”