C B E E V

C-BEEV Highlights

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About the Centre

- Foundation Stone of the Centre laid down in July, 2016
- Centre is focused on R&D and offer products for commercialization to Industry
  - Works jointly with Industry partners to develop a product in need to Indian Markets
- Houses two Centres of Excellence
  - Centre of Battery Engineering (CoBE)
  - Centre of Electric Vehicles (CoEV)

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Focus Areas of CoBE

- Performance analysis and testing
- Battery designing and Optimization (Price –Performance)
  - Battery Management Systems: Optimum Utilisation and Performance of available batteries
  - Thermal Control systems: control and protection mechanisms
  - Mechanical Management
- Development and analysis of Secondary Use
- Battery Swapping: Mechanism and standardization
- Battery Recycling
- Understanding Safety
- Training and building knowledge among large number of people

One stop Technology Knowledge Centre for Batteries, promoting Industrial Academia joint innovation and commercialization

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Centre of Battery Engineering (CoBE)

Advisory Board Members

Department of Heavy Industry
Ministry of Heavy Industries & Public Enterprises, Government of India
ISO:9001:2008 Certification; website quality Certificate by STQC

ABB

Mahindra Rise.

Essel GROUP

ASHOK LEYLAND

IndianOil

Texas Instruments

Working Partners

EXICOM POWER SOLUTIONS

EXIDE

AMARA RAJA
Gotta be a better way

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Focus Areas of CoEV

- Designing and developing motor, and controller of different ratings required for different segments of Evs
  - Optimization of drive train
- Designing, Developing Chargers
- Devise best strategy for EVs of different segments
- Electric air conditioning
- Enabling highly efficient EV through consultancy with various industries
- Testing and validation of EV against given specifications

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Centre of Electrical Vehicles (CoEV)

Advisory Board Members

Working Partners

ANALOG DEVICES

एनटीपीसी NTPC
A Maharatna Company

Essel GROUP

EXICOM POWER SOLUTIONS

EVI Technologies

LOHIA

CDIL
Continental Device India Ltd

GEM

ET ELECTROTHERM

PGCIL

DELTA

Mahindra Rise.

MASS-TECH CONTROLS PRIVATE LIMITED

KINETIC GREEN
A Better Tomorrow

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Projects in Hand

CoBE

- Development of 2/3 wheeler Battery Packs
- Development of Range Extender Battery Packs
- Development of Bus Battery Packs
- Battery Life Cycle Tester
- Dual Battery Bank Driver
- Second life of batteries and re-use cases

CoEV

- Vehicle Controllers
- AC and DC Chargers
  - Low Voltage DC Fast Charger for Electric Vehicles as per Bharat charger specifications
- Permanent Magnet Synchronous Motor and Controllers
- Communication Protocol Development and Testing for Public Charging and Battery Swapping infrastructure
- Vehicle testing
- Swapping infrastructure analysis

UAY Projects:

1. Mahindra & MHRD sponsored project titled “Integrated Efficient Electric Power Train for Electric Vehicles“
2. ABB & MHRD sponsored project titled “Integrated Multi-Village Microgrid“

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Technology Transfers

CoEV transferred battery technology to leading Indian Industry players - Amaraja, Nexcharge(Exide), Cygni, Exicom

The 2-wheeler and 3-wheeler battery technology developed inhouse was transferred to industry partners.

Ready for commercial production

CoEV helped IITM to transfer the VCU (Vehicle Controller Unit) technology to CDIL

- VCU is the interface board interfacing the motor controller of the vehicle at one end with the BMS and display unit on the other end.
- The communication protocol software developed inhouse, is programmed to the VCU and integrated with the vehicle

Motor Technology transfer (agreement stage)

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Other Achievements

- Defined LSVBCC protocol for Swappable Applications with Industry consortium
- Standardised Batteries, Vehicles, Chargers for Swapping applications
- Developed and Tested platforms with different OEMS

Swapping Model Adopted by BPCL, ETO (Launch Expected Soon)

We are present in all Leading Events, Committees and Discussions

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Start-ups Housed in C-BEEV

Motorz	Motorz develops energy-efficient and cost-effective traction and propulsion systems for industrial and transport applications.
Ozone Motors Pvt. Ltd.	Ozone develops mobility & transportation systems, with focus on electric vehicles
PiBeam Labs Pvt. Ltd.	Pi Beam manufactures variants of solar electric and Assisted manual bikes and trikes to move goods & passengers for private and public workspace applications.
Grinntech Motors & Services Pvt. Ltd.	Builds battery management systems for lithium battery packs & does electro-mechanical packaging of lithium battery packs, with a focus to make EV technically and economically viable.
ZaZen Systems Pvt. Ltd.	Develops Thermal Management systems for Batteries and also works on DC powered Appliances.
Esmito Solutions Pvt. Ltd.	Digitizating Electric Mobility : Its one-stop integrated solution includes Product + Hosting services + Management Services + Data Analytics
Flowtrik Technologies Pvt. Ltd.	Flowtrik develops smart chargers for batteries/electric vehicles, with solutions designed for Bulk chargers for swappable batteries, AC chargers for homes and public places