

A report on RAIET-2024

An in-person one-week short term training program (STTP) on “**Recent Advancements in Electric Transportation (RAIET-2024)**” was organized during **02-06 December, 2024**. The STTP was combinedly organised by **Department Electrical Engineering, SVNIT-Surat** and **IEEE Gujarat Section Jt. Chapter of IE-IA-PEL Societies**. The STTP was coordinated by Prof R Chudamani, Prof Ashish K Panchal, Prof Varsha A Shah, Dr Mahmadasraf A Mulla, Dr Chandani P Gor, and Dr Sanjay Tolani from the DoEE, SVNIT-Surat.

The STTP highlights the following salient features:

1. With an aim of recent developments in the electric transportation, the program has covered important aspects of electric transportation on the electric motor drives and control, the li-ion battery charge controller and charging infrastructures, and the role of power electronic converters and control.
2. The program was sponsored by the **IEEE Industrial Electronics Society** under their **SCLA GRANT 2024**.
3. Total 30 participants from various academic institutions/industries, 04 student volunteers and 06 faculty coordinators have attended the STTP.
4. **SIX** industry professionals and **Seven** academicians have imparted their knowledge and experience in electric transportation with the participants.

Industry Professionals:

Dr Sheshadri, Danfoss Drives Chennai.
Er Darshan Pandit, Synchronous Drives Surat.
Er Pramod Chaudhary, Varroc Engg Ltd Pune.
Er Manan Pathak, GERMI Gandhinagar.
Dr Uday Mhaskar, KPIT Pune.
Dr Manoj Rathi, RCSS Pvt Ltd Nashik.

Academicians:

Prof K Ragavan, IIT Gandhinagar.
Prof R Chudamani, SVNIT Surat.
Prof Ashish K Panchal, SVNIT Surat.
Prof Varsha A Shah, SVNIT Surat.
Dr Mahmadasraf A Mulla, SVNIT Surat.
Dr Chandani P Gor, SVNIT Surat.
Dr Sanjay Tolani, SVNIT Surat.

5. **THREE** industrial visits to TATA Motors Surat, SMC Siltalink Bus Services Surat, and KP group Rajpardi, Bharuch were organised to expose participants to present use of power electronics technology in EVs and storage.
6. Laboratory demonstration sessions were conducted on EV development using TMS controller, Battery charger developments, FPGA programming for EV converters, and Multi-phase induction motor drive development.

7. The program was spanned over more than 40 hours with experts talks, hands-on-experiences and industrial visits.

Day-1: The program was started with an inaugural function. In the first session, the talks on the marine transportation and research opportunities in electrical transportation have been delivered. The second session was dedicated to two industrial visits. First visit to TATA Motors Surat, a demonstration on the main electrical components in a TATA e-car was conducted. Second visit to Siltalink Bus Services (operated by the Surat Municipal Corporation), a live and operating demonstration of a 12-m JBM bus was conducted that includes the HVDC and LVDC transmission, the PMVR motor drive, 630 V 261 kWh Li-ion battery packs with BMS system. Moreover, 240 kW DC bus chargers and live bus charging were also demonstrated when the bus was connected for charging.

Day-2: In the first session, the talks on the li-ion battery charging algorithms and building own EV have been delivered. In the second session, the talks and practical training on design and development on EV battery chargers have been delivered.

Day-3: The third day was dedicated to an industrial tour to KP group Rajparadi, Bharuch. A full 10 MW solar photovoltaic tracking plant with a storage was visited. The nearby one of the Gujarat attractions SoJ was also visited.

Day-4: In the first session, the talks on the policies and regulatory for EV charging infrastructure and EV localization were delivered. In the second session, the talks and hands-on experience on FPGA controllers for power electronics converters and multiphase IM for EV were delivered.

Day-5: In the first session, the talks on control of PMSM and BLDC motors for EV applications and bidirectional and opportunity charging were delivered. In the second session, the talks on battery charger and power converters for e-mobility were delivered. The program was ended with a simple valedictory function, certificates distribution and vote of thanks.

8. Dr Priyesh Chauhan from IITRAM Gandhinagar attended the program on 05-Dec-2024. In the capacity secretary IEEE Gujarat Section Jt. Chapter of IE-IA-PEL Societies he addressed the participant about IEEE activities in the region and he has also delivered a talk on Marine Electrifications in the program.

The event received excellent feedback about the objective of the workshop, the speakers, and the interaction through networking as a whole with scope for improvement on organising more laboratory sessions in the future events.

Photos of the event:



