Host Utilities

TATA

TATA POWER

TATA POWER-DDL

BSES

BSES Rajdhani Power Limited

BSES

BSES Yamuna Power Limited

Co - Host Utility

ORGANIZER

ISGF

India Smart Grid Forum

Supporting Ministries

MINISTRY OF POWER
GOVERNMENT OF INDIA

MINISTRY OF NEW AND RENEWABLE ENERGY
GOVERNMENT OF INDIA

नीति आयोग

MINISTRY OF ELECTRONICS & INFORMATION TECHNOLOGY
GOVERNMENT OF INDIA

MINISTRY OF HEAVY INDUSTRIES
GOVERNMENT OF INDIA

MINISTRY OF JAL SHAKTI
DEPARTMENT OF WATER RESOURCES, RIVER DEVELOPMENT & GANGA REJUVENATION,
GOVERNMENT OF INDIA

MINISTRY OF POWER
CENTRAL ELECTRICITY AUTHORITY

India SMART UTILITY Week 2024

Session : EVOLVING TRENDS IN UTILITY AUTOMATION

National Mission on Power Electronics & CDAC Initiatives

Presented By

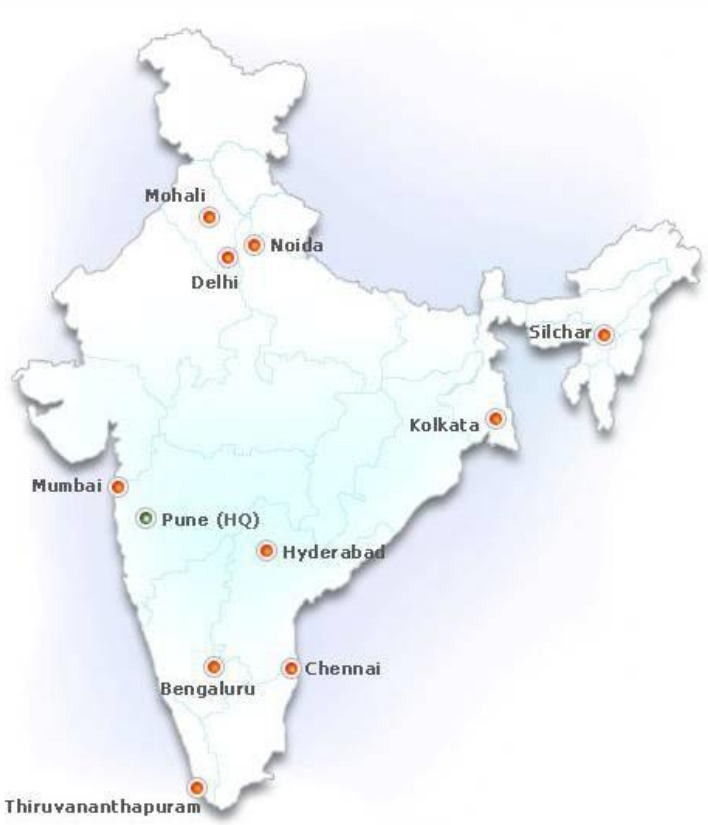
Shri. Renji V. Chacko, Scientist G, CDAC

NaMPET
towards power electronics excellence

Centre for Development of Advanced Computing (CDAC)

CDAC is the premier R&D organization of the Ministry of Electronics and Information Technology (MeitY) , Govt of India, for carrying out R&D in IT, Electronics and associated areas.

Multi-locational, Multi-activity R&D organization with Headquarters at Pune Spread out at 11 locations with 14 laboratories, 3000 employees, involved in the design, development and deployment of electronics and advanced Information Technology products and solutions



NaMPET Nodal centre- C-DAC(T)

www.cdac.in

Centre for Development of Advanced Computing

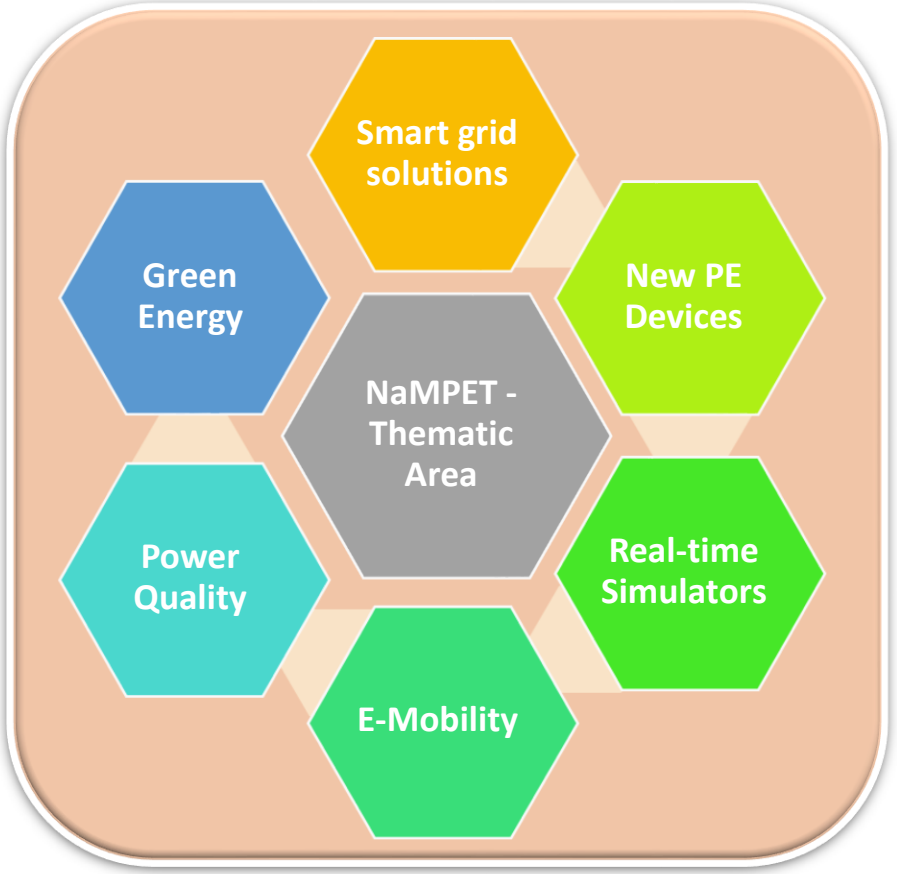
Thiruvananthapuram

An Autonomous Scientific Society of the

Ministry of Electronics & Information Technology

Government of India

National Mission on Power Electronics (NaMPET)



New Horizon in Power Electronics Technology

Theme

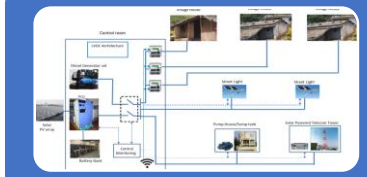
- Next generation Power Electronics with WBG devices (reliability, system integration, miniaturization) High-frequency high-performance magnetics, MEMS applications in power Electronics

1. ***Consortium (Academic and R&D Institutes) for New Horizon in Power Electronics Technology***
2. ***Exploratory Research Projects from Academic and R&D Institutes***

Deployment of Technologies Developed in NaMPET

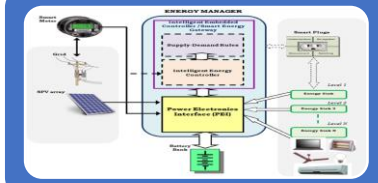
Theme

- System technology demonstration in real life application in diverse conditions (geographical, environmental, grid power availability)
- Technology integration and optimisation and evaluation
- Visibility of Technology for Market identification and Industry involvement



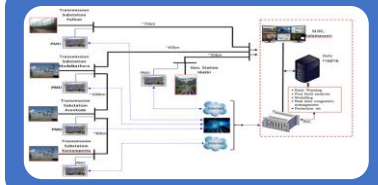
Micro-grid for Villages

- Improvised off grid and on grid applications
- Solar Power Plant , Backup Diesel power source, metering infrastructure, telecom power supply solution, water pump, energy efficient street lighting and EV Charging



Green Energy systems for Comm l buildings

- **Net Zero Energy Management Concept**
- **LVDC technology**
- **Smart meter**



Deployment of Wide Area Monitoring (WAM) systems

- PMU Deployment
- Wide Area Monitoring for a state wide network and implementation of real-time WAM applications

Application Oriented Research, Development & Deployment

e-mobility

- **Technologies for charging infrastructure, High efficient EV drive with reliability in automotive environment, EV system test platforms**
- WBG device application in Charging and drives
- EVSE , Vehicle Interface and CMS interface (As per AIS standards)
- Battery emulator, Test platforms for drives and chargers
- Autonomous vehicle technology

Smart Grid

- **Smart Power Quality Centre in Distribution Grid**
- Power quality management, renewable energy and storage, demand response schemes, advanced sensors, advanced metering infrastructure, digital substation technology

High Voltage PE

- **High Voltage application in Food processing, Agriculture, Industry and Health**
- High Voltage High frequency Planar Magnetics
- Pulsed Electric Field (PEF)for food processing
- Electrostatic nozzle for agriculture
- Mass spectrometry

NaMPET

Projects	
New Horizon and Exploratory R&D (Academic Partners)	17 Nos
Application Oriented R&D (CDAC, Industry, User Agency, Academia)	16 Nos
Deployment projects (CDAC, Industry & User agency)	5 Nos
NaMPET offers	
Technology transfers	
Technology Handholding for User agencies, Industries and start-ups	
Technology outreach and awareness creation	

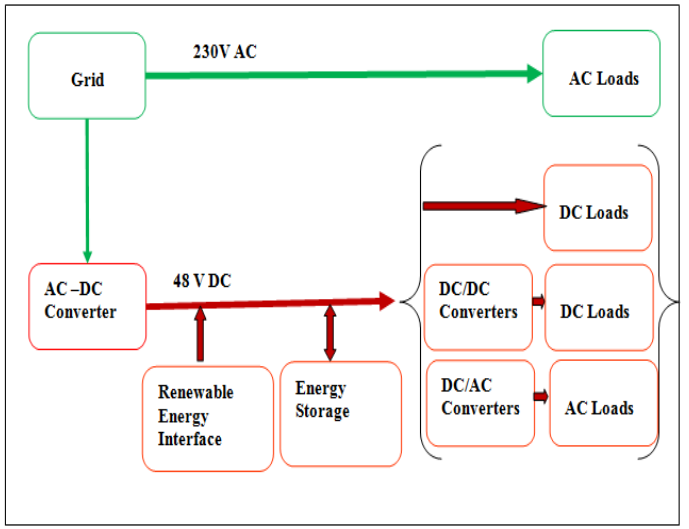
Research Areas - CDAC

Energy Efficient LVDC Powering

C-DAC Thiruvananthapuram, Energy Management Centre (EMC) Kerala, NIT Calicut

- Energy efficient & Green power distribution system for houseboat hotel loads through LVDC (48V) with solar PV primary source

- **2BHK Houseboat hotel load powering**
  - 6kWp monocrystalline flexible SPV Panels (18-21 kWhr/day generation on average sunny days – 1/4th shall be used during day & ¾; 15kWhr to store in battery)
  - 24.5kWhr Lead acid battery storage – use factor 60%DoD
  - No external charging need- matching seasonal Conditions of generation and loads- onboard charger 3.3 kW
  - 48V Light, Celling Fan, Air Conditioner
  - Eco friendly and better tourist comfort– No CO emission, No oil spillover, No Noise
  - Energy Saving 5kWhr per day (20%)
  - CO2 removal - 40kgper day
  - 8 Lakhs capital investment /Rs. 2 Lakhs per year savings on diesel for 200days operation



- Looking forward for Problem statements in Smart Grid technologies
- Collaborations with stakeholders

THANK YOU

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