

Distribution Systems Division

The Distribution System Division (DSD) was established in CPRI in September 2008 and has a team of professional engineers with vast experience in offering consultancy in Power Distribution System for Utilities and Industries. With the state-of-art facilities and software tools, the Division has been rendering consultancy services in finding solutions to various problems faced by the Electricity utilities and industries in the area of power distribution. The consultancy services are extended to the Electricity Regulatory Commission in estimation of losses in Distribution networks in various states.

1.0 INTRODUCTION

Recognizing the growth and opportunities in power distribution sector of India, the Distribution System Division (DSD) was established in CPRI in September 2008. The Division has a team of professional engineers with vast experience in offering Consultancy in Power Distribution System for Utilities and Industries.

CPRI had been Advisor cum Consultant (AcC) between March 2009 to October 2001 for the prestigious “Accelerated Power Development and Reforms Programme (APDRP)” – of the Ministry of Power, Govt. of India in three southern states viz., Andhra Pradesh, Karnataka and Kerala for capacity building. Distribution

Systems Division has been functioning as AcC in these states.

With the state-of-art facilities and software tools, the Division has been rendering consultancy services in finding solutions to various problems faced by the Electricity utilities and industries in the area of power distribution. The consultancy services are extended to the Electricity Regulatory Commission in estimation of losses in Distribution networks in various states. Recently, CPRI has bagged the prestigious consultancy as “Third Party Independent Evaluation Agency – Energy Audit (TPIEA-EA)” of Karnataka state under the R-APDRP of Ministry of Power, Govt. of India. The activities of RGGVY and R-APDRP works



A FIELD STUDY CONDUCTED BY DISTRIBUTION SYSTEMS DIVISION



REVIEW OF PROGRESS OF R-APDRP IMPLEMENTATION IN KARNATAKA, ORGANIZED BY POWER FINANCE CORPORATION, NEW DELHI AT CPRI, BANGALORE ON 9TH JULY 2010 AND CONDUCTED BY THE PRINCIPAL SECRETARY (ENERGY), GoK. DIRECTOR GENERAL, CPRI WAS A SPECIAL INVITEE

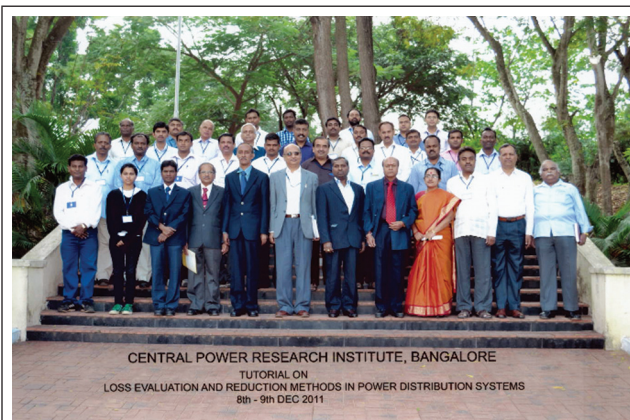


SHRI C.P. JAIRAM, JOINT DIRECTOR CONDUCTED A ONE WORKSHOP ON “ESTIMATION OF MEASUREMENT UNCERTAINTY IN TESTING” AT CPRI, BANGALORE ON 1ST JULY 2011

are coordinated by the Division in addition to the assignments related to SCADA and Distribution reforms.

Distribution Systems Division has expertise to take up the following Consultancy activities and to cater to the various problems of utilities and others in power distribution system.

- Energy Accounting/Audit
- Analysis of the technical efficiency of the system
- Segregation of Technical and Non technical losses



CHIEF ENGINEER (BMAZ), BESCO IS THE CHIEF GUEST FOR THE TWO DAY TUTORIAL ON “LOSS EVALUATION TECHNIQUES AND REDUCTION METHODS IN POWER DISTRIBUTION SYSTEMS” DURING 8-9, DEC 2011

- Identifying weak areas and suggesting further course of action to be taken for reduction of T&D losses and improving system performance
- Project Monitoring and Supervision
- Distribution System Planning and Analysis
- Distribution Automation & Implementation
- Software development and R&D for Distribution Utilities
- HVDS
- Distribution Systems Optimization
- Training and manpower development
- Design of grounding system for HV Substations.

Accelerated Power Development and Reforms Programme (APDRP)

In power sector, the distribution system plays a vital role where, the gap between the average revenue realization and the average cost of supply had been constantly increasing over the past decade. This was causing the state electricity boards (SEB) run under huge losses. In view of the losses faced by the SEB's, the Ministry of Power (MoP), Government of



SHRI C.P. JAIRAM, JOINT DIRECTOR REPRESENTED CPRI AND SIGNED THE MoU WITH HUKKERI ELECTRIC CO-OPERATIVE SOCIETY FOR THEIR RGGVY WORKS AT HUKKERI ON 25TH JULY 2011



SHRI A.S. BAKSHI, MEMBER (PLANNING), CENTRAL ELECTRICITY AUTHORITY AND EX-OFFICIO ADDITIONAL SECRETARY TO GOVT. OF INDIA INAUGURATED A TWO DAY TUTORIAL ON “HIGH VOLTAGE DIRECT CURRENT (HVDC) TRANSMISSION SYSTEMS” DURING 20–21, DEC 2010 OFFERED BY (1) PROF. K.R. PADIYAR, IISc. BANGALORE, (2) PROF. ANIGOLE, UNIVERSITY OF MANITOBA, CANADA AND (3) SHRI.M.M.BABU NARAYANAN, CPRI

India had undertaken the APDRP with the aim of restoring the commercial viability in the distribution sector.

The main aim of the programme is

- Reduction in Transmission and Distribution losses (T&D) to around 10%.
- Reliability of power supply.
- Quality of power supply.
- Computerization for Management integrated system (MIS).



SHRI S.M. DHIMAN, MEMBER (GRID OPERATION AND DISTRIBUTION), CEA INAUGURATED A TWO DAY TUTORIAL ON “REFORMS AND TECHNOLOGY ADVANCES IN POWER DISTRIBUTION” DURING 6–7TH, JANUARY 2011

- Computerization for billing, etc.
- Customer satisfaction.

2.0 ROLE OF CPRI

The Ministry of Power had appointed CPRI as Advisor cum Consultant (AcC) for the purpose of capacity building exercise in the State Electricity Boards/Power Utilities of Karnataka, Kerala and Andhra Pradesh for up gradation of Distribution network in their circles.

3.0 TERMS OF REFERENCE FOR AcC

- Training Manpower
- To collect relevant data from SEB officials related to 11 kV feeder in the identified Circles
- Feeder wise Analysis of data using computer tools
- Supervision of implementation
- Submission of periodical evaluation report
- MIS Development
- Development of GIS Mapping

The Distribution Circles that were assigned to CPRI are as follows:

- **Karnataka:** Mysore, Belgaum, Bijapur



SHRI S.M. DHIMAN, MEMBER (GRID OPERATION AND DISTRIBUTION), CEA DELIVERING THE INAUGURAL ADDRESS

- **Kerala:** Manjeri, Kasargode, Pathanamthitta
- **Andhra Pradesh:** Eluru, Tirupati, Warangal

Since May 2005, the activities of CPRI as AcC had been extended to the entire States of Karnataka, Andhra Pradesh and Kerala apart from three circles in each state as mentioned above.

4.0 RESTRUCTURED ACCELERATED POWER DEVELOPMENT AND REFORMS PROGRAMME (R-APDRP)

The R-APDRP is a Central Sector Scheme – with focus on actual, demonstrable performance in terms of sustained loss reduction, establishment of reliable automated systems for sustained collection of accurate base line data and adoption of Information Technology for Energy Accounting as prerequisite for project sanction.

The program started in 2008–2009 for 11th five year plan with the main objective of – reduction of the Aggregate Technical and Commercial (AT&C) losses to 15% and with proposed coverage urban areas-towns/cities with population of more than 30,000 (10,000 in case of special category states)

The various players in this program is indicated in the diagram below:

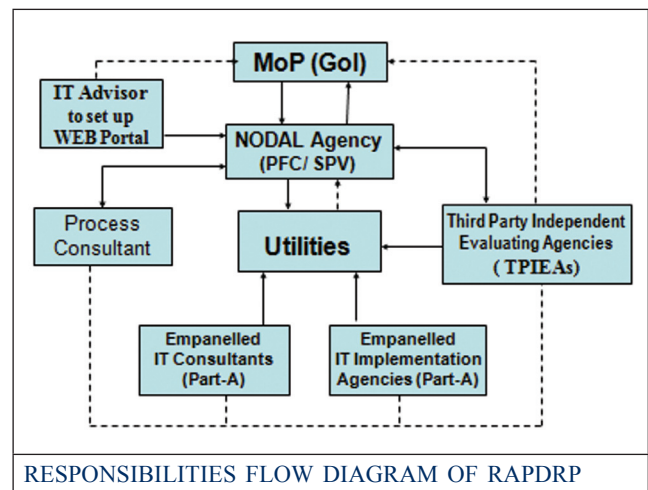
The Central Power Research Institute was appointed as the Third Party Independent Evaluation Agency-Energy Accounting (TPIEA-EA) for the state of Karnataka and SCADA-DMS consultants for the state of Andhra Pradesh.

Project Implementation taken up as Part A, Part B and Part C. The funding details are as follows:

Part A: IT implementation in Project Areas ₹ 10,000 crores

Part B: System Strengthening and Up gradation ₹ 40,000 crores

Part C: Capacity Building and Pilot Projects ₹ 1,177 crores



5.0 TPIEA-EA

As the TPIEA – EA for Karnataka, CPRI reports to Ministry of Power (MoP) and Power Finance Corporation (PFC) and is mandated to verify 100 project areas in Karnataka consisting of twelve towns in CESC, eleven towns in MESCOM, twenty five towns in BESCOM, thirty one towns in HESCOM and twenty one towns in GESCOM.

The base line data verification for TPIEA-EA shall be achieved through the following process:

- Establishing/Certification of (initial) AT&C losses of the project area



DR. RAJIV VARMA, ASSOCIATE PROFESSOR, UNIVERSITY OF WESTERN ONTARIO, CANADA CONDUCTING THE INVITED TUTORIAL ON "INTEGRATION OF WIND ENERGY" AT CPRI ON 10TH JANUARY 2011

- Annual verification of AT&C losses of the Project Areas and State power utilities/distribution companies
- Quarterly reporting of progress: Report on AT&C losses for each of the project areas shall be furnished to the Nodal Agency/MoP

Under this program CPRI has conducted training and awareness program on the methodology of AT&C loss computation as per the specified by the nodal agency (PFC). Verification is in progress for 15 towns spread across the five ESCOMs. The program is expected to continue for the next six years and may spill over

SCADA-DMS

CPRI is appointed as SCADA/DMS consultant for APTRANSCO covering seven cities of Andhra Pradesh. The Scope of this activity is to assist utility in SCADA/DMS project implementation and Project design, engineering, installation, testing and commissioning including integration of IT system with the objective of reducing outages and improving the reliability of the distribution system and customer satisfaction.

The broad scope of work involves as is study, DPR Preparation, Customization of detailed RFP, assisting utility for infrastructure facilities, assistance to utility for selection of SIA, assisting utility in Project Management and testing and hand-holding utility



EMERITUS PROF. K.R. PADIYAR, IISc. BANGALORE AND SHRI N. MURUGESAN, DIRECTOR GENERAL, CPRI AT THE TUTORIAL ON "INTEGRATION OF WIND ENERGY" AT CPRI ON 10TH JANUARY 2011

6.0 RAJIV GANDHI GRAMEEN VIDYUTHIKARAN YOJANA (RGGVY)

Ministry of Power has introduced the Rajiv Gandhi Grameen Vidhyutikaran Yojana (RGGVY) in April 2005 for achieving the National Common Minimum Programme objective of providing access to electricity to all Rural Households over a period of FOUR Years. Rural Electrification Corporation (REC) is the nodal agency for the programme. This programme has been brought under the ambit of Bharat Nirman.

The main aim of the programme is:

- Create necessary infrastructure through
 - ✦ REDB (Rural Electricity Distribution Backbone). Provision of at least one 33/11 kV (66/11 kV) substation of adequate capacity in each block.
 - ✦ VEI (Village Electrification Infrastructure). Electrification of every village with a distribution transformer in each habitation
 - ✦ DDG (Decentralized Distributed Generation and supply) system in villages where grid connectivity is not feasible or cost effective.
- Below Poverty line (BPL) households to get electricity connection free of charge. Revenue sustainability of supply electricity to be ensured through franchisees who could be NGOs, User Associations, cooperatives or individual entrepreneurs with the association of panchayatraj institutions
- The scheme aims at electrifying all un-electrified villages over a period of four years and provides access to electricity to all rural households.

ROLE OF CPRI IN RGGVY

CPRI has been appointed as Third Party Inspection Agency (TPIA) for Karnataka and Kerala.

As third party inspection agency, CPRI will report the progress and quality of works as per

the Monitoring and Inspection report formats specified in REC guidelines. The basic areas are monitored in the village are:

- Project Parameter.
- Highlights of major project monitoring observations of the project.
- Village snap shots of each village visited covering.
 - ✦ Physical Performance in the village.
 - ✦ Workmanship and construction standards.
 - ✦ Quality of Materials and equipment in the village.
 - ✦ Adherence to Indian Electricity rules.
 - ✦ Photographs of deficiencies and defects requiring rectification in the village.

The Districts assigned to CPRI is as follows:

Karnataka: Chamrajnagar, Kodagu, Mandya, Mysore and Hassan Districts of CESC, Mysore, Belgaum and Uttara Kannada Districts of HESCOM, Hubli, Gulbarga District of GESCOM, Gulbarga.

Kerala: Idukki, Thodupuzha, District.

ACKNOWLEDGMENT

The Managerial team associated in guiding the activities of DSD toward success are Shri M.M. Babu Narayanan, Additional Director, Shri C.P. Jairam and Shri T. Raghunatha, Joint Directors.

The officers who have contributed to the success of the Division in carrying out the assigned jobs are Shri P. Chandhra Sekhar, Shri R. Sudhir Kumar, Shri K. Devender Rao and Smt. Viji Bharathi.