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VIDYUT ANUSANDHAN SAMACHAR

QUARTERLY NEWSLETTER

CENTRAL POWER RESEARCH INSTITUTE

(Government of India Institute, Ministry of Power)

Prof. Sir C V Raman Road
Sadashivanagar Post Office
P B No. 8066, Bengaluru-560080, India
Website : www.cpri.res.in

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CENTRAL POWER RESEARCH INSTITUTE
(Ministry of Power, Govt. of India)
Prof. Sir C.V. Raman Road. Post Box No: 8066,
Sadashivanagar (P.O), Bengaluru, India, Pincode: 560 080
www.cpri.res.in Ph: 080 2207 2201
Bengaluru|Bhopal|Hyderabad|Noida|Nagpur|Guwahati|Kolkata |Nashik |Raipur

ABOUT CPRI

Central Power Research Institute (CPRI) was established by the Government of India in 1960. It became an Autonomous Society in the year 1978 under the aegis of the Ministry of Power, Government of India. For the last six decades, CPRI has been rendering dedicated service to the power sector.

Over the years, CPRI has developed expertise in generation, transmission, distribution systems and has established world-class facilities for research and testing in the areas of High Voltage, High Power, Short Circuit, Power Capacitors, Power Cables, Solar PV, Smart Metering & AMI, Power System Studies, Energy Studies, Tower Design, Vibration Studies, Seismic Performance, Liquid Dielectrics, Diagnostics, Condition Monitoring, Cybersecurity, Smart Grid Systems, Energy Storage, RLA studies and development of newer materials for Power Sector.

Activities of CPRI

- Applied Research in Power Systems Engineering.
- Independent Third-Party National Laboratory for Testing & Certification
- Consultancy & Field-Testing Services

DIRECTOR GENERAL's MESSAGE

I am happy to place before you the 'Vidyut Anusandan Samachar' for the second quarter of the financial year from July to September 2024. CPRI continues to stride towards R&D activities, consultancy and testing activities and is making notable progress in these areas. CPRI officers continued efforts to obtain patents for their illustrious research work are commendable. We are also committed to take up and be a part of the Mission projects such as SAMARTH and MAHIR and efforts are being put to undertake proposals. I compliment the officers and staff of CPRI for conducting first time tests for the customers by evaluating their products and proving capabilities to undertake challenging technical jobs. I compliment the staff and officers of CPRI for participating in Hindi Maah and Hindi Divas programmes, Swachhata Mission programmes with enthusiasm. I also take this opportunity to wish the CPRI fraternity and their family a very happy 78th Independence Day celebration.

Shri. B A Sawale,
Director General, CPRI

RESEARCH HIGHLIGHTS

Central Power Research Institute (CPRI) continues to play a pivotal role as the nodal agency for coordinating research in the Indian Power Sector. During this quarter, CPRI focused on supporting the SAMARTH Mission aiming to increase the use of biomass in thermal power plants—a vital step toward making India's energy mix more sustainable and eco-friendly. Several meetings were conducted to review the progress of the research projects under the Mission and a workshop was also organized with the pellet manufacturers on ***"Addressing Technological Challenges and Establishing Standards for Pelletization & Torrefaction"*** at Noida, Uttar Pradesh.

CPRI held regular technical meetings for reviewing projects under the "R&D schemes of MoP being implemented through CPRI".

Key Research Highlights

R&D Schemes of MoP being implemented through CPRI:

Fifteenth Meeting of the Technical Committee on Hydro Research was conducted on 8th July 2024 through Video Conference mode. The meeting was attended by CEA, SJVNL, CPRI and chaired by Prof. Arun Kumar, IIT Roorkee.

The 17th meeting of the Technical Committee on Grid, Distribution and Energy Conservation was held on 18th July 2024 through video conference mode. The meeting was attended by representatives from CEA, IEEMA, TANGEDCO and CPRI and chaired by Prof. Sukumar Mishra, IIT Delhi.

A new committee has been formed for prudence check of R&D proposals budget. The first meeting of the Cost Committee was organized on 19th September 2024, at CEA-New Delhi to review nine (09) new research proposals and four (04) requests for re-appropriation / additional funds received from the Project Investigators.

SAMARTH Mission:

1. The first meeting of the Technical Committee for the study & identification of Suitable Proven Technologies and issue of model Guidelines for "Reactors for Torrefaction & Machines for manufacturing of non-torrefied pellets" was held on 12.07.2024 through video-conferencing mode.
2. A "Call for Proposal" was published for submission of research proposals in specified areas identified by the SAMARTH Mission and the same was also published in national newspapers (English, Hindi), as well as on the CPRI website. The said "Call for Proposal" was uploaded in the 'MANTHAN' portal and also circulated via e-mail to all the IITs and NITs.
3. Eleventh Meeting of the Sub-Group-1 under National Mission on use of Biomass in coal fired Thermal Power Plants (SAMARTH) held at NTPC-NETRA, Greater Noida on 12th & 13th August 2024.

The meeting of the "Study visit of the Committee on Petitions, Rajya Sabha" was attended by Dr. Venkateswara Rao M., AD&HoD (R&DM) along with Director General, CPRI on 15th July 2024 at Bengaluru.

Study visit of the Committee on Petitions, Rajya Sabha

Patents Granted

➢ Patent Title: Successive Cooling Method to Reduce Global Warming

Patent Number: 549051 Date: 29.08.2024

Inventor: Mr. T. Mallikarjuna Rao

TECHNICAL SPOTLIGHT

Annual Customer Meet at CPRI, Bhopal

Annual Customer Meet was organized at CPRI, STDS- Bhopal on 20th September 2024. About 70 senior representatives from various organizations, MSME, MNC & utilities attended the meet.

Annual Customer Meet at STDS, CPRI, Bhopal

Site Visit to Karnataka Solar Power Development Corporation Limited (KSPDCL), Pavagada Solar Park

On July 17, 2024, the Director General and a team of senior officers visited Karnataka Solar Power Development Corporation Limited (KSPDCL) at the Pavagada Solar Park, a 2050 MW facility that ranks as the second-largest solar power plant in India and the third-largest globally. The CPRI team delivered a brief presentation to the CEO and officers of KSPDCL. A site visit to the solar power plant and substation was arranged, during which the CEO,KSPDCL provided an overview of the plant's power generation and installed capacity.

Meeting at KSPDCL, Pavagada

Pavagada Site visit at Solar Power Plant, Pavagada

First Time Tests

Smart Grid Research Laboratory carried out conformance testing on Multifunction Protection Relay (MIED 12) as per IEC 61850 for M/s. Megawin Switchgear Private Limited, Salem. The laboratory is accredited by UCA International Users Group (UCA Iug), USA as Level A – Independent Test Laboratory with certified ISO/IEC 17025 quality System for IEC 61850 Edition 2 with Amendment 1 (Edition 2.1), the only laboratory in the country to receive this accreditation for the latest versions of the IEC standard is CPRI.

CPRI carried out its first sample testing for IEC 61850 Edition 2 with Amendment 1 conformance of the standard for M/s. Megawin Switchgear Private Limited on its Multifunction Protection Relay (MIED 12).

Handing over first conformance test certificate to M/s. Megawin Switchgear Private Limited.

Consultancy and Field Testing

Thermal Research Centre (TRC), CPRI, Nagpur carried out Condition Assessment and Preparation of Bankable DPR of Nashik TPS Units (3*210 MW) and Bhusawal TPS (1*210MW) for M/s. MSPGCL, Nashik Thermal Power Station

ELCID Test at 210 MW Turbo generator at Nashik Thermal Power Station

Winding Resistance test at 250 MVA Generator

Thermal Research Centre (TRC), CPRI, Nagpur carried out the metallurgical analysis of failed reheater rear coil tube, Unit No.3 and Insitu Oxide scale Thickness (IOT) measurement was carried out for M/s. MSPGCL, KhTPS, Khaperkheda, Nagpur.

Thermal Research Centre (TRC), CPRI, Nagpur carried out the Magnetic Particle Inspection (MPI) & Ultrasonic Testing (UT) for compressor diaphragm, thrust bearing and journal bearing in Unit No.1 for M/s. NEEPCO, AGBPS, Bokuloni, Assam.

Thermal Research Centre (TRC), CPRI, Nagpur carried out condition assessment of RCC Structure of TG Deck slab of Unit 2, TG Deck pedestal, TG Deck columns, TG Deck slab beams for M/s. NTPC Ltd., Gadarwara, Madhya Pradesh.

OVERSEAS CUSTOMERS

Testing for overseas customers

Energy Efficiency & Renewable Energy Division, CPRI Bengaluru carried out Electrostatic Discharge and Electrical Fast Transient Tests on 22kW AC EV Charger for the first time in CPRI. The EV charger was manufactured by M/s. ChargeNET, Sri Lanka.

High Voltage Division, CPRI Bengaluru carried out tests on 400kV semi fog disc insulators string with hardware fittings. Representative from Bhutan Mr. Yonten Jamtsho, BPCL (Bhutan Power Corporation Limited) witnessed the tests.

Single Suspension (Pilot) insulator string

Short Circuit Lab, CPRI Bengaluru carried out short-circuit withstand strength test at 10kA rms for 1s with 17 kA peak on Incomer vertical fuse switch disconnector of 440V, 400A, 50Hz 14Way TPN LV service cabinet as per IEC 61439-1: 2020 & IEC 61439-2 :2020 for M/s. Novateur Electrical & Digital Systems Pvt Ltd., Rohad (Haryana).

The test was witnessed by Mr. Luai Alnakawai from M/s. AADC – Power Services Section – CS, Abu Dhabi and Mr. Sanjeev Kumar, AGM – R & D from M/s. Novateur Electrical & Digital Systems Pvt Ltd., Rohad, Haryana.

Ultra-High Voltage Research Laboratory (UHVRL), CPRI, Hyderabad carried out type testing of 420kV, 4800pF CVT for M/s. Hitachi Energy, Vadodara, Gujarat.

The test was witnessed by Ms. Lavrov Noor Hidayath Binti Mustafa Kamal, Malaysia.

Short Circuit Lab, CPRI Bengaluru carried out overload performance test under Test Sequence on 440V 630A 4P MCCB as per IS/IEC 60947-2 : 2016 for M/s. ABB India Pvt. Ltd., Nelamangala, Bengaluru.

The test was witnessed by Mr. Andrea D'Adda from M/s. ABB, Milano, Italy, Mr. Chidanand & Mr. Madhu from M/s. ABB India Pvt. Ltd.

Electrical Appliances Technology Division, CPRI, Bengaluru carried out IP testing on 400A LV service cabinet for M/s. Novateur Electrical & Digital, Haryana.

The test was witnessed by Mr. Luai Alnakawai and Mr. Omair Juma Mohammed Khalifa Alameemi of M/s. AADC, Abu Dhabi and Mr. Arif Abdul Samad Shaikh, M/s. DHAFIR, Abu Dhabi.

LEGACY DESK

Technical Article

Biological effects of Extremely Low Frequency (ELF) Electric Field produced by EHV and UHV Transmission Lines

1. Background

Electric Field in the frequency range of 3Hz to 3kHz is categorized as Extremely Low Frequency (ELF) electric field. The fundamental frequency of electric field produced by an energized electric power line, being 50 or 60 Hz, lies in the ELF range. Electric power being an important source of energy, the demand for which is ever increasing, necessitates increase in the voltage level for economic transmission of bulk power. In this regard Extra High Voltage (400 kV & 765 kV) and Ultra High Voltage (1000 kV and above) levels are being adopted. It is evident from the available literature and computations done in CPRI that the magnitude of the ELF field at ground level below the line increases appreciably with the increase in the line voltage. 400 kV, 765 kV and 1050 kV lines typically produce ELF electric field strengths of 3.5 kV/m, 7 kV/m and 10kV/m respectively at mid span and at 1 m above ground. The field strength being highest below the line, rolls down to zero as one goes away from the line in the lateral direction as shown in figure 1.

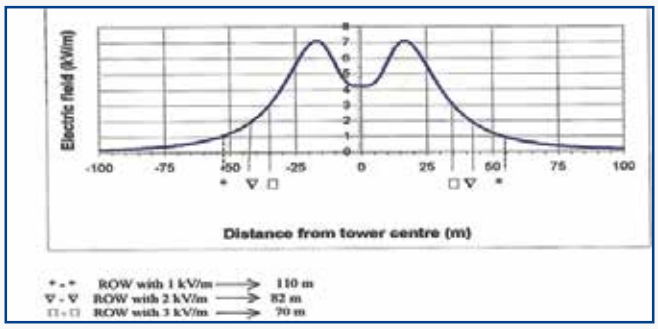


Figure. 1: Typical lateral profile of ELF electric field in the vicinity of a 765 kV single circuit horizontal configuration line

The corridor of a transmission line is called Right-of-Way (ROW) which is a strip of land where the transmission line is constructed, erected, operated and maintained. The ROW increases with increase in the transmission line voltage. For example, ROW of 400 kV line is 42 meters, that of 765 kV line is 85 meters and that of 1050 kV line is 110 meters. Inception of corona on the line conductors and hardware is known to cause power loss, Radio interference and audible noise. The later two being of nuisance value to human beings, the power line operator is not expected to guarantee interference free AM radio signal reception and tolerable audible noise within the ROW. However, at the edge of and beyond the ROW, the levels are to be well defined such that the general public are not put into unnecessary hardship.

In the 90's much debate went on worldwide on the interaction of the ELF electric and magnetic fields produced by power lines with metabolism of living organisms. The interaction was called "Biological Effects". Some adverse health effects attributable to them were reported, particularly in Europe, on the basis of epidemiological studies. Around the same time, the Central Power Research Institute of India established the UHV Research Laboratory (UHVRL) at Hyderabad to undertake research activities leading to an indigenous UHV line design to be adopted in the country and also to provide quality assurance testing facility to Indian manufacturers of 800 kV and higher voltage class insulators and substation equipment. In this context it became imperative to characterize theoretically as well as through field measurements the ELF electric and magnetic fields under such an UHV line and investigate experimentally the Biological Effects it may cause and to define safe exposure limits which could be adopted in the country for EHV and UHV lines. The safe limits so obtained could become a parameter to define the ROW of transmission line in addition to the already considered parameters like, Radio Interference Voltage and Audible Noise levels. A long-term collaborative inter-disciplinary research program was initiated during the year 1996-97 between the UHV Research Laboratory and Department of Biochemistry of Osmania University, Hyderabad. The research program was planned to be executed in two parts. The first part comprised of studies related to the ELF electric field and the second part was to study the effect of ELF magnetic field. The first part of the program was funded by the Ministry of Power, Govt. of India through Central Board of Irrigation and Power, New Delhi.

This discussion paper presents briefly the work done and the outcome of the first part, that is, the study on the Biological Effects of ELF electric field.

2. Objectives of the research work

The objectives of the research work were to evaluate the effect of short and long-term exposure of rodent system to different intensities of 50 Hz electric field and to conduct exposure tests on developing chick embryo as well as germinating seedlings leading to establishment of biologically safe continuous (24-hour x 365 days) exposure to ELF electric field for both animal and plant systems. Using this as the basis, to define ROW of EHV and UHV class transmission lines from electric field exposure considerations.

3. Roles played by the project teams

3.1 The role played by the UHVRL team was:

3.1.1 to determine through field studies and established theoretical methods the electric field levels prevalent in the vicinity of different voltage class transmission lines for fixing the electric field exposure levels for experimental studies to be carried out by the Osmania University team,

3.1.2 to design, fabricate and calibrate the electric field exposure facility suitable for carrying out short-term and long-term exposure studies on mice, rats, seedlings (Figure 2) chick embryo (Figure 3), and

3.1.3 to define the ROW for EHV and UHV transmission lines based on the outcome of the study.

3.2 The role played by Osmania University team was:

3.2.1 to conduct short term exposure studies on mice at 15 kV/m field exposure to validate the test setup,

3.2.2 to conduct long-term exposure studies on rats at 1,2,5 and 10 kV/m exposure levels,

3.2.3 to establish the safe exposure level by investigation the functions of liver, brain, endocrine glands, etc, of rats,

3.2.4 to conduct exposure studies on developing chick embryo at 5 kV/m to find the effect on neuronal function of animals,

3.2.5 to conduct exposure studies on germinating seedlings at 5 kV/m to investigate the effect of electric fields on the growth of plants, and

3.2.6 to establish the safe continuous electric field exposure levels for animals and plants.

Figure 2: Electric field exposure test facility for mice, rats and seedlings

Figure 3: Electric field exposure test facility housed in an incubator for chick embryo

4. Observations on the results of the studies

4.1 Studies on mice at high intensity electric field of 15 kV/m over short periods showed minor alterations in hepatic function unaccompanied by cytotoxic and genotoxic effects,

4.2 Long-term exposure of animals (rats) to electric fields of lower intensity (5 to 10 kV/m) seems to result on lowered basal metabolic rate accompanied with increased body mass and decreased humoral immune response. The possibility of altered neuronal metabolism and adrenal cortical functions was evident,

4.3 Exposure of chick embryos to electric field of 5kV/m seems to result in stimulation of important neuronal enzymes during the initial stages of development,

4.4 The metabolism of germinating seeds appears to be stimulated with regard to turnover of either proteins or carbohydrates at 5 kV/m, and

4.5 Long-term exposure of rats and germinating seeds indicate that electric field strengths of 1 and 2 kV/m do not cause any harm.

5. Conclusions

On the basis of the outcome of the study, it could be deduced that interaction between the ELF electric field and the living organisms is not very alarming up to a field intensity of 5 kV/m. The results indicated that there is no effect at and below the field strength of 2 kV/m. Hence it is proposed as the safe limit for 400 kV lines as some of them may pass through inhabited areas. However, a higher exposure level of 3kV/m is proposed for 765 and 1050 kV lines as these voltage level lines mostly pass through uninhabited areas. Figure 1 shows the ROW requirement of a 765 kV line with different safe limits on the electric field as obtained from the studies.

The observations made here need to be further authenticated by studies in regard to, activity and behavioral studies on exposed animals, studies including additional parameters indicative of neuronal metabolism and field and epidemiological studies with animals under actual exposure conditions.

Study Team:

CPRI team: Dr. C.S. Lakshminarasimha, Dr. Channakeshava, Shri. N.S. Mohan Rao, Dr. N.S. Parthasarathy, Dr. R.S. Shivakumara Aradhya, Dr. Pradeep M. Nirgude, Dr. Shaik Shavali, and Ms. Arunjothi.

Osmania University team: Prof. Dr. C. Subramanyam, Dr. B. Shashidhar Rao, Dr. Jayanthi, Dr. Sujatha Nayak and Dr. Rachel Jacob.

Reference:

Biological effects of Ultra High Voltage Transmission Lines, CPRI Project No. 11.1.6, August 2000.

Author:

Dr. R. S. Shivakumara Aradhya

Former Director, CPRI

INDUSTRY TRENDS

Power Cable System Evaluation: A CPRI Perspective

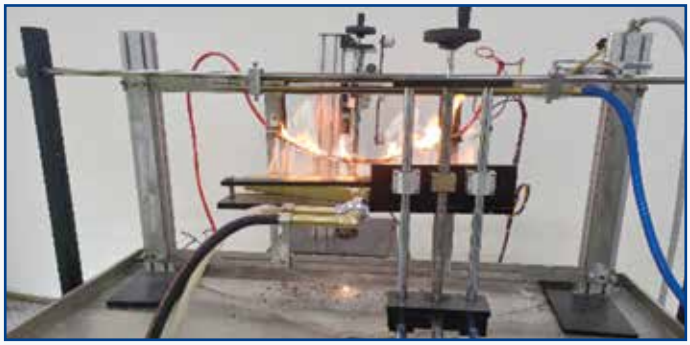
Power cable systems are crucial components of the electrical grid, transporting electricity from power generation sources to substations and ultimately to consumers. While overhead lines are the primary method of transmission in India, underground cables are gaining significance, especially in densely populated urban areas and ecologically sensitive regions. Despite India's advanced 765 kV AC transmission system, the maximum voltage capacity for underground power cables in the country currently stands at 400 kV AC. To meet the stringent demands of industries and utilities for reliable and efficient power distribution and transmission, CPRI has established test facility at Cables & Diagnostic Division, Bengaluru, for conducting type tests on power cables, terminations and joints, upto 400 kV AC, encompassing all available insulation types.

EHV cable system become increasingly complex due to higher operating voltages and load demand conditions, due to which stringent quality control is paramount. To guarantee the long-term reliability of these systems, pre-qualification testing has become mandatory. CPRI is well-equipped to conduct these tests on EHV cable system in accordance with IEC 62067-2022, subjecting cable systems to comprehensive evaluation under simulated operating conditions.

Leveraging its extensive experience, CPRI has successfully conducted type tests on more than thirty numbers of 220 kV cable systems and two 400 kV cable systems. Furthermore, the institute has completed pre-qualification tests on three 220 kV cable systems, underscoring its expertise in this field. Currently, CPRI is actively involved in a pre-qualification test for a 400 kV cable system, further solidifying its position as a leading authority in power cable system testing.

400 kV XLPE Cable system set up for Load Cycle Test

Additionally, technological advancements have led to the development of specialized cables with novel materials for low-voltage and medium-voltage applications. These cables are designed to meet specific requirements, such as fire retardancy, low smoke generation, zero halogen content, UV resistance, and high-temperature tolerance. CPRI possesses the necessary test facilities to evaluate the performance of these specialized cables, including those adhering to standards like IS 17293-2020 for photovoltaic systems, IS 17505-Part I-2021 for fire survival cables, and IS 17048-2018 for HFFR cables.



Test for Resistance to Fire with mechanical shock for fire survival Cable

CPRI's extensive power cable test facilities as per National & International standards are below.

Products	Standards
PILC cables up to 33 kV	IS 692, IEC 55-1, BS –6480
Elastomeric,& Polymeric insulated Power cables up to 400 kV	IS 7098 Part I,II, & III, IS 1554 Part I.& II, IS 694, IS 9968 Part I & II IEC 60227, IEC 60245,IEC 60840, IEC 62067 ,IEC 60502 –1,IEC 60502-2, BS 6004, BS 5467,BS 6231,BS 6387,BS-7211,BS -6500,BS 7835, BS 6622,
Aerial bunched cables, Mining Cables	IS 14255, IS 14494
Fire survival Cables, LSZH Sheathed Cables	IS 17505-Part I-2021, BS-7846, BS 6724
Halogen Free Fire Retardant Cables	IS 17048
Cables for Photovoltaic applications.	IS 17293-2020, BS EN 50618
Cable joints & Terminations from 1.1kV up to 400 kV	IS 13573, IS 13705, IEC 60502-4, BS EN 50393,CENELEC HD 629

Power Cables Laboratory is NABL accredited and also takes up special testing as per customer requirements. Our expertise extends to providing consultancy services for failure analysis of in-service cable systems, catering to utilities and process industries.

Authours :
Smt. Meena K.P
Smt. Arun Jyothi R
Sri Thirumurthy
Cables and Diagnostics Division.

CONFERENCE/ SEMINAR/ WORKSHOP/ TRAINING

Training Programme on "Auxiliary Power Consumption Audit" at Koradi TPS, MSPGCL, Maharashtra on 11th July 2024 conducted by Thermal Research Centre (TRC), Nagpur.

An International Symposium on Ceramics & Advanced Materials for Green Energy Value Chain - 'Green Energy Materials Meet (GEM MEET 2024)' was jointly organized by Indian Ceramic Society, Karnataka Chapter (ICSKC) along with American Ceramic Society- Southwest India Chapter, The Electrochemical Society of India, Visvesvaraya Technological University, Atria Institute of Technology, Bengaluru and Central Power Research Institute (CPRI)- Bengaluru during 23rd-24th September, 2024 at Hotel Radisson Blue, Bengaluru. Dr. M. G Anandakumar, Joint Director, BD&CBD delivered an Invited Talk on 'Green Energy- Indian Scenario: Issues, Challenges and Way Forward'.

EVENTS

Independence Day Celebration:

CPRI celebrated the 78th Independence Day on August 15, 2024, with the Director General hoisting the National Flag at Headquarters in Bengaluru. Celebrations were also held at other units of CPRI across the country.

Flag Hoisting Ceremony at CPRI Bengaluru

Celebration at CPRI Hyderabad

National Sports Day – 2024

CPRI celebrated National Sports Day (NSD) – 2024 during 23rd to 30th August 2024 to commemorate the birth anniversary of hockey legend Major Dhyan Chand. Various sports were conducted and winners were awarded with medals.

The NSD 2024 at CRTL, Bangalore was organised for various indoor and outdoor events between 23rd to 30th August 2024. DG CPRI has participated in the sports events, who has been the inspiration to all of us, creating more interest and enthusiasm towards the sport events to stay fit and healthy. There has been overwhelming response from the officers and officials in the sports event.

The culminating function of NSD was held on 4th September 2024. The function was presided by honourable Director General / President RC Club, followed by prize distribution to all the winners in the sports event.

"Hindi Maah" and "Hindi Divas" Celebration at CPRI, Bangalore and its Units

"Hindi Maah" was celebrated by CPRI during 28th August to 14th September 2024. As part of the celebration, various competitions like Hindi Translation, Essay writing, News Reading, Hindi Song, Crossword Puzzle, Hindi Skit, Quiz and Antakshari were organized, separately for officials with & without working knowledge and proficiency in Hindi. Cash Prizes and Certificates were awarded to the winners. Additionally, cash prizes and certificates were distributed to about 15 employees for usage of Hindi in official noting and drafting.

Hindi Divas' celebration on 17th September 2024 at S.J. Auditorium. Smt. Jaicy Fernandes, Assistant Director, Hindi Teaching Scheme was the Chief Guest. Director General presided over the function. Cash Prizes were distributed to 33 employees for clearing the Parangat Exam. Swachhata Pledge was also administered in Hindi by Shri K. Suryanarayana, Joint Director. Staff of CPRI and their children presented various cultural programmes.

Hindi Divas celebration at Bangalore

Hindi Divas and Hindi Pakhwada at Bhopal

Hindi Divas and Hindi Pakhwada celebrations were held at CPRI, STDS, Bhopal, from September 14 to 27, 2024. During this period, various competitions were organised for the office staff. Mr. Hemram Patel, General Manager of BHEL Bhopal was the chief guest for the closing ceremony of Hindi Pakhwada, held on September 27, 2024. During the ceremony, the Institute's in-house magazine, STDS Darpan 2024, was released. On this occasion, awards were presented to the winners of the Hindi Pakhwada competitions.

Quiz competition

Singing competition

The unit head welcomed the Chief Guest.

STDS DARPAN 2024 was released by the Chief Guest.

Hindi Divas and Hindi Pakhwada at Noida :

Hindi Divas and Hindi Pakwada celebrations were held at CPRI, RTL, Noida from 14th September to 28th September 2024. During the occasion, various competitions were organized for the staff. Dr. Ganga Sahay Meena, Associate Professor, JNU, Delhi was the Chief Guest for the closing ceremony.

Hindi Saptaah at Nagpur :

Hindi Saptaah was celebrated at CPRI,TRC,Nagpur from 13th September to 19th September 2024. During the celebration, various programmes and competitions were held for the staff.

Glimpses of Hindi Saptaah

Hindi Saptaah at Hyderabad :

Hindi Saptaah was celebrated at CPRI, UHVRL, Hyderabad from 23rd September to 30th September 2024. During this period, various competitions were held for the staff. The culmination of Hindi saptaah was marked by the celebration of Hindi Divas on September 30th 2024.

Glimpses of Hindi Saptaah

Hindi Divas and 4th All India Official Language Conference

Shri. Radha Krishna, Administrative Officer, Smt. Vidya Raj, Jr. Hindi Translator from CPRI Bhopal and Shri Netram Meena, Engineering Officer from CPRI Noida participated in the Hindi Divas celebration and 4th All India Official Language Conference organized during 14th and 15th September 2024 at Bharat Mandapam, New Delhi, by Department of Official Language, Hon'ble Shri Amit Shah, Minister of Home affairs and Cooperation, Govt. of India, graced the occasion.

Hindi Divas and 4th All India Official Language Conference inauguration

Swachhata Hi Sewa (SHS) 2024

- Swachhata ke Bhaagidhaari, the walkathon was organized as a part of creating awareness among the general public at CPRI, Bengaluru. The walkathon commenced from the CPRI main gate and ended at Sankey Tank, Bengaluru, Participants held the theme banners and Swachhata Placards during the walkathon. Participants included officials from CPRI, ULB-BBMP, Safai Mitras as well as general public and volunteers. The pledge in local language was administered to the participants.
- Swachhata Ke Bhaagidaari, Ek Ped Maa Ke Naam – Hon'ble Ward / Corporator / Councilor Smt. Sumangala . B, Members of MSRNRWA and CPRI Officials planted saplings at BBMP ward No. 35. Outreach of Swachhata & Swachhata Cultural Fest – Swachhata Awareness Rally: Officials of CPRI, Local Ward Councillor, BBMP Officials, Safai Mitras, Members of the MSR Nagar RWA and students from local school took part in the awareness rally. MS Ramaiah Nagar, Mathikere and surrounding areas of the BBMP ward No. 35, participated in the rally to create awareness among the residents of the locality.

Installation of Selfie Point Depicting Swachhata Awareness and SHS 2024 Program Invitation to local MLA for 'Swachh Bharat Divas' Celebrations

Power Research – A Journal of CPRI is a biannual publication by the Central Power Research Institute, Bangalore, India. The journal focuses on research and innovative applications in the generation, transmission, distribution, utilization, and conservation of electric power within the power and energy sectors. It serves as a platform for technical and managerial professionals across utilities, R&D institutions, planners, industries, and academia.

The journal invites authors to contribute original, high-quality research papers addressing current or futuristic topics of relevance to the power and energy sector, spanning concepts to practical field applications.

All submissions undergo a rigorous peer review process by subject experts. Detailed instructions for authors are available on the journal's official website.

https://cprijournal.in/index.php/pr