

Care4Cable

UNDERGROUND CABLES WORKSHOP

(EHV, HV, MV, LV, HVDC and Speciality Cables)

Knowledge Cluster initiative

www.care4cable.org/workshop2024



MUMBAI - INDIA

Sept 3-4, 2024,
TUESDAY & WEDNESDAY



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SESSION THEMES & TOPICS

Syllabus / Topics of upcoming Care4Cable is designed based on survey conducted through online form and personal meetings with various stake holders of Underground Cable Infrastructure.

DISTINGUISHED CABLES PROJECTS FROM INDIA & ABROAD – THEIR CASE STUDIES

CABLE SYSTEM DESIGN & INSTALLATION (INDIA AND INTERNATIONAL BEST PRACTICES)

CABLE ASSET MANAGEMENT / HEALTH INDEXING

OPERATION & MAINTENANCE CHALLENGES & SOLUTIONS

ADVANCED DIAGNOSTIC TECHNIQUES

KEY NOTE SPEECHES BY INDUSTRY EXPERTS

DISTINGUISHED CABLES PROJECTS FROM INDIA & ABROAD

- Case Studies Entries are welcome from stakeholders for compilation & presentation
- Power Tunnels / Power Ducts / HDD / HVDC / SMART CITY & More
- Cable Installation Stories from Europe & North America

CABLE SYSTEM DESIGN & INSTALLATION

- Design of EHV Cable Termination on Support Structure / Towers
- Global Best Practices in Underground Cables Systems Design
- Cable Systems for Smart Grid & Smart City
- Cable Tensions and Sidewall Pressure Estimation in Underground Cable Installations
- Cable Laying & Pulling , Cable Entry Approach
- Technology & Innovations in Cable Sealing
- Real life examples and learning experience of LSZH cable installation in Australia etc.
- Cable Laying in congested urban areas - HDD - Horizontal Directional Drilling
- Cable Testing Standards
- Power Quality & its impact in digital age on cables



CABLE ASSET MANAGEMENT – O&M PRACTICES – CHALLENGES & SOLUTIONS

- Cable Fault Location, Cable Route Tracing & Fault Pin Pointing
- Case studies on cable failure & implementation of predictive maintenance tool
- Cable Jointing, Terminations & Failures
- Cables Fire Accidents & Safety - Design, Engineering Materials and Precautions
- Don't mess up with Cables - Swachh Cable Abhiyan – Cable Routing, Dressing & Safety.

ADVANCED DIAGNOSTIC TECHNIQUES

- Global Best Practices for Underground Cable Diagnostic Techniques and Methodologies
- Overloading Conditions, Temperature & Health Monitoring
- Fibre embedded cables with online Monitoring Systems – DTS + DAS + PDMS
- Online Partial Discharge Monitoring of HV & EHV cables - Experiences & Case studies
- Innovative Solution for continuous online PD monitoring MV Cable

WHO SHOULD ATTEND

We are expecting engineers from National & State Utilities, Railways, Metros, Solar & Wind Parks, Defense establishments, Oil & Gas Refineries, Steel Plants, Fertilizers, Cement Pharma and other industries.

The Consultants, OEMs, EPC Contractors, Installation & Commissioning Engineers, Testing and Diagnostic service companies, Energy Auditors, Analysts, Research organizations, Test Laboratories, Standardization Orgs, academic, institutions etc are expected to participate.

Over 1200 engineers have participated in earlier workshops on transformers from all above sectors.

GYANSABHA DISCUSSION & DEBATE

- Problems specific to Solar, Wind, Metro, Industries, Smart Cities, Discoms, Transco, Generation, Refineries can be discussed during these sessions.

UTILITY / INDUSTRY CABLES RELATED ISSUES

- Utility / Industry are requested to send issues & concerns related to any kind of Cables to our team Care4Cable. We will do our best to cover it in respective speakers' topics. Also before and after the workshop, we will continue to work on the respective threads of issues. Gyansabha is the best opportunity to discuss one problem from all angles of OEM, End user, Field expert, Lab Expert, Subject Matter Experts and Consultants. Every problem may not have a quick solution that works for all. Some of the issue may need more involved work, field study n research, involvement of more parties which do not fit in regular course of business. Care4Cable is committed to work on the issues highlighted by the utilities, industries and OEMs.



REGISTRATION

Registration Fee:

INR 15,000* + GST 18%

USD 300 only

(Non-residential - Fees for two days workshop access)

*Government Discount - 20%

To allow employees of Central & State Governments / PSU, to take advantage of the unique learning opportunities offered by these workshops, we offer 20% discount of the regular workshop rate. Government discounts cannot be combined with any other discount.

Group Discount

Group of 5 in Rs. 50,000/- plus 18% GST

Group of 12 in Rs. 1,00,000/- plus 18% GST

"Above prices are Discounted for Group" Any other discounts not applicable.

Registration Fee will cover only:

- Participation in the event
- Tutorial Material
- Refreshments & Lunch

BANK DETAILS

Knowledge Cluster Pvt Ltd.

ICICI Bank, Thane Branch, 400 602

A/C No- 003505012280

IFSC Code - ICIC00000035

GST Number -27AAECK7131P1Z3

PAN No - AAECK7131P

Cheque/DD in the name of "Knowledge Cluster Pvt Ltd, Thane" payable at Thane.

EVENT VENUE & DATES

Event will be held in Mumbai. Venue address will be intimated to registered candidates two weeks before the event date. SEPT 03-04, 2024, TUESDAY & WEDNESDAY

CONTACT

Bhavika Dhanwani

+91 9730135975

Jagdish Sandhanshiv

+91 9867976570

Office Address :

Unit No: FB 31, First Floor, Highland Corporate Center, Next to City Mall, Kapurbawadi, Thane (W) 400 607, Maharashtra, INDIA.

Ph.: +91 22 4127 6570

Email: support@kcluster.com

Web.: www.care4cable.org/workshop2024

TENTATIVE WORKSHOP SCHEDULE

Two days programs tentative schedule as follows

Breakfast, lunch and High Tea will be served 8

Sessions of 90 minutes each & Four hours of

networking time during Lunch and Tea

DAY 1 - TUESDAY SEPT 3, 2024

TIME	DESCRIPTION
9:00 AM to 10:00 AM	Registration & Breakfast
10:00 AM to 11:30 AM	Session 1
11:30 AM to 13:00 PM	Session 2
13:00 AM to 14:00 PM	Lunch Break
14:00 PM to 15:30 PM	Session 3
15:30 PM to 16:00 PM	Tea Break
16:00 PM to 17:30 PM	Session 4

DAY 2 - WEDNESDAY SEPT 4, 2024

TIME	DESCRIPTION
8:30 AM to 9:00 AM	Tea & Breakfast
9:00 AM to 10:30 AM	Session 5
10:30 AM to 11:00 AM	Tea Break
11:00 AM to 12:30 PM	Session 6
12:30 PM to 13:00 PM	Session 7
13:00 PM to 14:00 PM	Lunch Break
14:00 PM to 15:00 PM	Session 7 continued
15:00 PM to 16:30 PM	Session 8
Open House and Concluding Ceremony	

ABOUT ORGANIZERS

Care4Cable is organized by a cluster of individual engineers from Power Sectors, Mentors, associations, manufacturers, service providers, OEMs and Consultants. This is 9th edition of workshop with focus on Underground Cables – Patalvishwa.



ORGANIZING TEAM OF CARE4CABLE 2019

ABOUT CARE4CABLE

(EHV, HV, MV, LV, HVDC and Speciality Cables) Care4Cable is series of workshops on Underground Power Cables derived from the success of series of workshops "Trafocare - mission for conservation of transformers".

CARE4CABLE OBJECTIVES

- Create a niche platform of professionals handling EHV, HV, MV & LV Cable infrastructure. Gyansabha is them based session for discussing actual field working problems, experience sharing, analyse, getting solutions and learning on the Cable related topics that creates mastermind to avoid future problems.
- Development of Cable System Design in India – Do it right first time
- Survey, Research and Create awareness about best practices in Cable System Design, Supply, Installation, Testing, Maintenance and Asset Management in Cables from global experiences.
- Sensitizing stakeholders about avoiding mess of cables & ensure safety under Swachh Cable Abhiyan
- To conduct Roundtable meetings, Workshop, Conference, Awards and Expo to promote continuous improvement in work practices, materials, design, technology & innovations.

Care4Cable

UNDERGROUND CABLES WORKSHOP

MUMBAI - INDIA, Sept 3-4, 2024, TUE & WED.

Cable Installation Stories

From Europe & North America



SPEAKERS

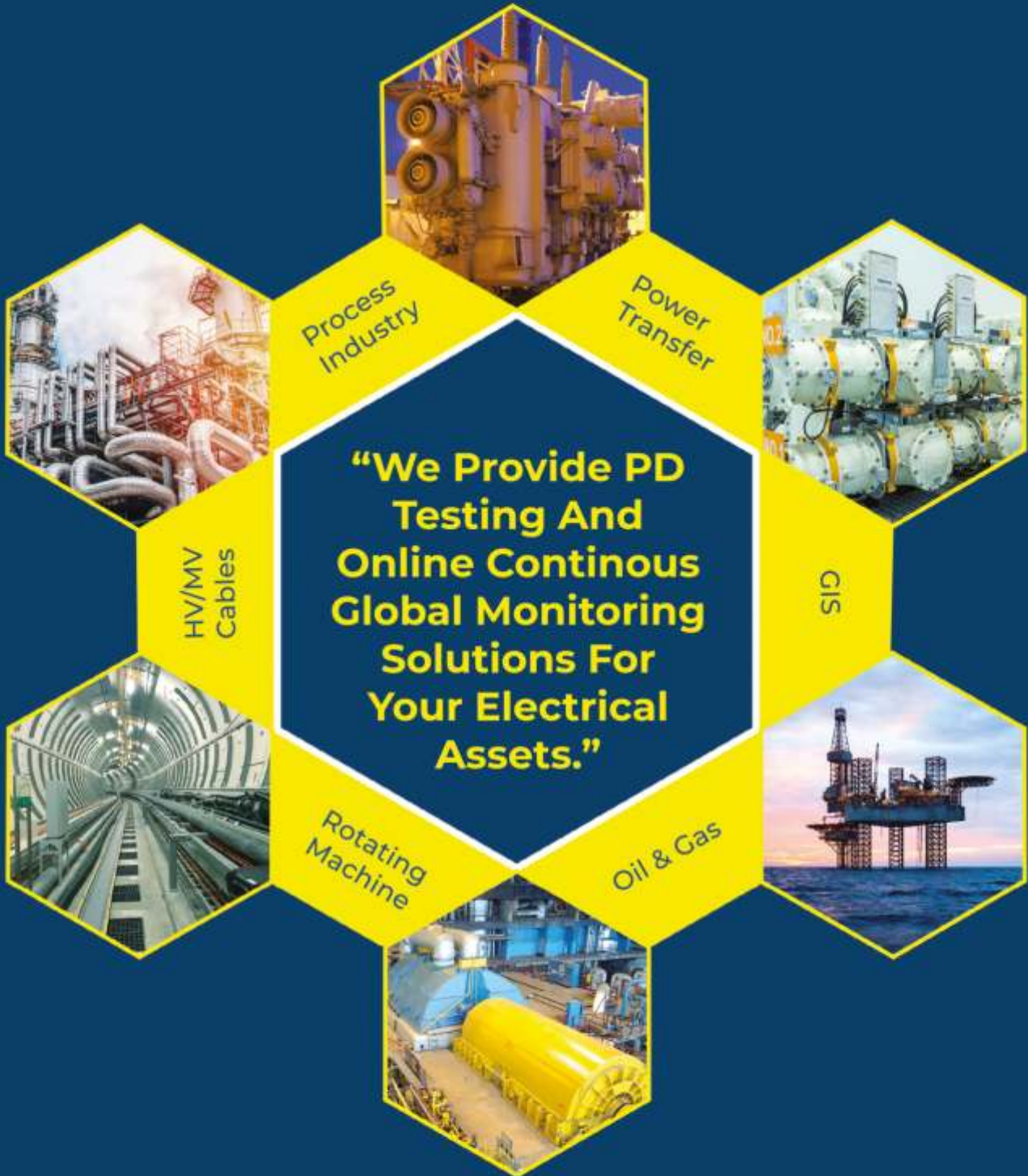


Sheri Dahlke
Technical Director



Erik Freyser
President

Polywater
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Sanjay Mishra
Chairman & Managing Director
SM Systems



MR. SANJAY MISHRA

Chairman & Managing Director

Mr Sanjay Mishra is an electrical engineer working in Test and Measurement sector for over 25 years. He was instrumental in bringing latest technologies in test and measuring instruments to India for various principles. Sanjay has worked in Rishabh Instruments, Secure Meters and Motwane on pan India basis, interacting with various end users from Utilities and Industries. Sanjay is a technical entrepreneur who likes to learn new technologies and reach out to the end users at the remotest of locations with his Cable Fault Location Van & other equipments. As a CMD of SM Systems he is running his enterprise with a team of 30 professionals promoting high end electrical test & measuring instruments.

Mr Sanjay Mishra was felicitated by India's Small Giants Award and Business Leaders Award 2019 by economic times.



Title – Global Best Practices for Underground Cable diagnostic test techniques and Methodologies

- Cable Investigation Reports from China, Malaysia & Singapore
- Guideline for establishing a diagnostic evaluation logic
- Philosophy SA Power Networks Singapore, Hong Kong Electric, Singapore Power Grid, EDF France, Middle East Power Utilities
- Latest Diagnostic Projects

Cable Fault Location Process

Fault Location is carried out methodically following a logical procedure and in four steps as follows



Cable Faults Types

Short Circuit | Earth Fault | Cable breaks
Intermittent Faults | Cable Sheath Faults



➤ Cable faults on paper-insulated mass-impregnated cable



➤ Joint faults

WITNESS THE POWER OF APAR

#1 Largest manufacturer in India for special application cables

140+ Countries receive our export products

66 Years of excellence

11 Certificates of compliance with 59 cable types for US markets

5 Electron beam facilities

APAR CABLE PRODUCT RANGE

SPECIALITY PRODUCTS & SERVICES

- ◆ Hybrid Cables with Fibre Optic & Coaxial
- ◆ Tether, Tactical, Torpedo Cables
- ◆ TOW, ROV Cables
- ◆ Harness: Locomotives, Solar & Automotive and EV

ELASTOMER & E-BEAM CABLES

- ◆ Ship & Submarine Wiring Cables
- ◆ Wind Mill Cables up to 33 KV
- ◆ Solar Cables as per TuV/EN/IEC/UL Specs
- ◆ Mining, Welding, Trailing Cables

XLPE ELECTRICAL CABLES

- ◆ XLPE Power Cables up to 66kV & 1000 sq.mm
- ◆ Medium Voltage Covered Conductors (MVCC)
- ◆ LT & HT ABC Cables
- ◆ UL Cables (PV/XHWW/URT)

OPTIC FIBRE CABLES

- ◆ Unitube & Multitube Cables
- ◆ Tight Buffer & Breakout Cables
- ◆ FTTH Cables
- ◆ Fire-resistant/Survival Optic Fibre Cables

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Dr. Aradhana Ray
 Technical Director
 Laxmi Associates



DR ARADHANA RAY

Technical Director,
 Laxmi Associates

Ph. D. in Electrical, 28 years' experience with Doble Engineering USA, Omicron, Austria, Short Circuit Test Laboratory ERDA. Consulting third party inspection and Asset management projects, specification & maintenance manual EHV class power equipment in India, Malaysia, Dubai, OMAN, North America, South Africa and Australia. Recipient of "Dr Vikram Sharabhai Young Scientist Award" Served on technical committees of IEC, IEEMA, CBIP, CIGRE, TIFAC, BIS, CIRED Malaysia Conferences. Worked on implementation of Asset Management project based on ISO 55000 Standards with Sarawak Energy Berhad (SEB), TNB & TAMAS Malaysia. Presently working as one of the Principle member for Development of IEC- ETD 53 on Standardization of the management of assets in power networks.



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- SWITCHYARD EQUIPMENTS
- GIS



GIS PD Testing



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- Testing & Commissioning
- Condition based Monitoring
- Asset Management
- Power Consulting & Training
- Third Party inspection

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E-mail: lxassociates@gmail.com

Corporate Office: 13, 14, 15 'Sun Enclave'
 Near Sun City Paradise, Manjalpur,
 Vadodara, Gujarat – 390016

www.laxmiassociates.in

POST-INSTALLATION TESTING OF EHV XLPE CABLES



EHV cable life-cycle support for:

- Cable Installation & Commissioning tests: Sheath test, Power Frequency HV/PD/TD etc
- Periodic Maintenance Diagnostic tests: Tan delta, VLF test
- Failure Event Activities: Fault location finding, Burn out, HV/PD test

Highlights:

- Testing as per IEC 60840 & IEC 62067:2022 standards, 1.7 x U_o for 1 hr HV AC test
- Modular 230kV x 4, 120A HV test kit
- Able to test 5kms of 400kV cable, or 10kms of 220kV cable, or 20kms of 132kV cable
- Have developed Tan-delta test system for field testing of cables at rated voltage or U_o



About speaker



Mr. Mustafa Baj
(Director at Samgor India)

Founder of Samgor India, holds degree in Electrical Engineering with 20+ years of experience in electrical field, and specializing in High Voltage Engineering. Under his leadership, Samgor India has become a trusted name for innovative solutions and reliable services.

His vision is to push the boundaries of what is possible in high voltage technology, ensuring safer and more efficient electrical grids.



+91 9823 726467

info@samgor.in

www.samgor.in

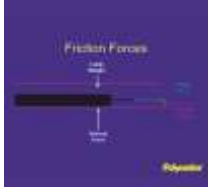


Fundas of Cable Pulling

Care4Cable
 UNDERGROUND CABLES WORKSHOP
 MUMBAI - INDIA,
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COF

PULLING FORCE



SIDE WALL PRESSURE



Fundamentals

Coeff Of Friction & Side Wall Pressure Calculation
 Simulation Of Cable Pull-using Cable Details,
 Duct Details & Bend Details In Pull Planner Software

Success Stories & Experience

Mv & Hv Cable Installation Through Ducts



Sheri Dahlke
 Technical Director



Charlie Coles
 Vice President

Polywater Friction Table



- What is Static COF (μ_s)?
- What is Kinetic COF (μ_k)?
- How do you calculate Coefficient of Friction, or COF, for cable pulling?
- What factors determine Coefficient of Friction, or COF, in a cable installation?

Measuring Cable and Conduit COF



- Why is Coefficient of Friction, or COF, important in cable pulling, cable hauling, or wire pulling?
- How do you reduce Coefficient of Friction, or COF, in cable pulling, cable hauling, or wire pulling?

Design safe and efficient cable pulls with Pull-Planner™ 4.0

Pull-Planner 4.0 makes the planning of complex, large-scale cable pulling designs easier and more efficient.

Consultation - Polywater provides services to Cable Owners, OEMs, Contractors on designing their Cable Pull Plan, maintain minimum COF and estimation of Cable Tension & Side Wall Pressure.

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CABLE SPECIFICATIONS
LIFE CYCLE MANAGEMENT
SUBJECT MATTER EXPERTS
DIAGNOSTIC TESTING
CABLE LAYING PRACTICES **CASE STUDIES**

VLF TESTING
FRLS / LSZH
HVDC Cables
CABLE OEMs
CABLE TERMINATIONS
HV CABLE JOINTS
PD - PARTIAL DISCHARGE MEASUREMENT

UNDERGROUND CABLES WORKSHOP

DTS - DISTRIBUTED TEMP SENSING IoT IN CABLES
NO DIG CABLE FAULT LOCATION

TRENCHLESS TECHNOLOGY **CABLE PULLING LUBRICANTS**
CABLE SEALING **HIGH CURRENT CABLES**
INNOVATION **UTILITY EXPERIENCES**
LATEST TRENDS IN CABLES **XLPE Cables**

MOISTURE IN CABLE



Mr. Surinder Kumar Negi
Mentor & Thought Leader
Former Managing Director of GETCO



Dr. K Rajamani
Mentor & Thought Leader



Er. S. M. Takalkar
Mentor & Thought Leader



Mr. P K Pattanaik
Senior General Manager (Elect)
OPTCL



Mr. Sanjay Mishra
Chairman & Managing Director
SM Systems



Er. Imteyaz Siddiqui
Managing Director(India) /
Regional Sales Director-GCC
Doble Engineering



Mr. Ajay Joshi
Director Operations
Knowledge Cluster



Er. Yogesh V Joshi
Convenor -
Care4Cable Technical Director
Knowledge Cluster



Mr. Jagdish Sandhanshiv
Director Business Development
Knowledge Cluster

WATERTIGHT CABLE SEALING SYSTEM

Leakxpert



MOMENT OF ELECRAMA 2022

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CABLE PULLING LUBRICANT



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MOMENTS OF Care4Cable

Knowledge Cluster initiative
www.care4cable.org/workshop2024



Mission – Conservation of Transformers

TRAFO CARE

8th WORKSHOP ON TRANSFORMER

Knowledge Cluster initiative

www.trafocare.org

Care4Cable & Trafocare

8 WORKSHOPS | 100+ SPEAKERS | 1200+ ENGINEERS



FLEET

MANAGEMENT

RIP / RIS Bushings

RESIDUAL LIFE ENHANCEMENT

OIL LEAK REPAIR

RETROFILLING

MAINTENANCE STRATEGIES

ASSET

MANAGEMENT

TRAFOCARE WORKSHOP ON TRANSFORMER

TRANSFORMER FIRE & SAFETY

Failure Analysis Bushings OLTC

ONLINE DRYING

LIFE ENHANCEMENT

O&M Mantras

Keep it Tight

Keep it Cool

Keep it Clean

Operation & Maintenance

ON-SITE REPAIRS

ESTER DIELECTRIC FLUIDS

DISSOLVED GAS ANALYSIS

HEALTH INDEXING

Moisture in Transformers

DISCHARGE ANALYSIS

Scraping of Transformers

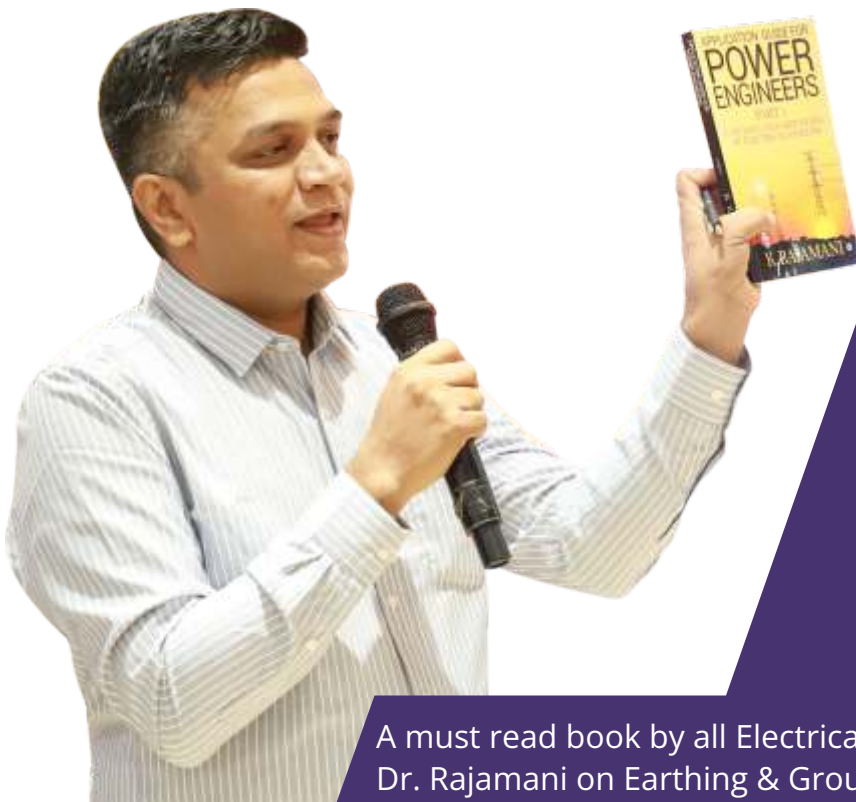
Moisture in Transformers

Moisture in Transformers



GYANSABHA
Theme based panel discussion by experts

Bhavika Dhanwani, +91 9730135975, Palak Sajjani +91 9004046563, Jagdish Sandhanshiv +91 9867976570, E: support@kcluster.com



AUTHOR



DR K RAJAMANI
Mentor & Thought Leader

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CABLE ENTRY PROBLEMS

WATER PROBLEM



RODENTS PROBLEM



5 Case Studies

Cable Sealing System

WEBINAR ON DEMAND



- GIS Cable Entry
- Metro Open Trench
- Data Centre Cable Entry
- Oil & Gas Industry
- Large Cable Entries



Charles Cole
VP Polywater USA

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Bhavika Dhanwani
Knowledge Cluster

Care4Cable
www.care4cable.org



Amol Sandhanshiv
Director BSS

Leakxpert
www.leakxpert.com

<https://www.care4cable.org/5-case-studies-cable-sealing-system/>
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UNDERGROUND CABLE SEALING STORY

1) Before 1 X 1 Meter Open Window With Cables

BEFORE



2) Civil Work With Admixture And Sleeves Around Cables

DURING 1



4) Finished Job

AFTER



3) Cable Sealing With Fst250 Application

DURING 2





Er Imteyaz Siddiqui
Managing Director(India) /
Regional Sales Director-GCC



ER IMTEYAZ SIDDIQUI

Managing Director (India);
Regional Sales Director-GCC;
General Manager-QATAR & UAE,
Doble Engineering,
Vice-Chair, TMMS Division,
IEEMA. Vice-Chair,
World Utility Summit (WUS) 2025.C

Imteyaz is an experienced leader in the power engineering and energy sector with over 30 years of professional experience. A global leader in diagnostic solutions and services for the electric power industry, with a B.Sc. Engineering degree in Electrical Engineering from Aligarh Muslim University, He has developed a strong foundation in technical expertise and industry knowledge, which I leverage to drive organizational growth and success.

KEY NOTE ADDRESSES (FROM PAST WORKSHOPS)



Dr Nilesh Kane,
Chief Distribution (Mumbai)
& EV Business Operations,
Tata Power
Trafocare Mumbai,
2024



Shri. R.K Tayagi
GM Opertaions,
Powergrid Operations of India
Trafocare Delhi,
2016



Dr. Dinesh Arora,
IAS
REC-PDCL,
Trafocare Delhi,
2016



ArvindKumar Sharma,
COO Transmission - Adani Electric,
Mumbai.
Care4cable - 2019

Dr K Rajamani,
Mentor & Thought Leader.
Care4cable - 2019

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Office Address :

Unit No: FB 31, First Floor, Highland Corporate Center,
Next to City Mall, Kapurbawadi, Thane (W) 400 607,
Maharashtra, INDIA. Ph.: +91 22 4127 6570
Web.: www.care4cable.org/workshop2024



www.facebook.com/knowledgecluster

Contact

Bhavika Dhanwani
+91 9730135975
Palak Sajnani
+91 9004046563
Jagdish Sandhanshiv
+91 9867976570
E: support@kcluster.com