

# ***Electrical Safety Consultant / Forensic Investigation Expert***

*Industry / Data Centers / Hospitals /  
Office Complex/ Commercial Buildings*

**CAPE**  
ELECTRIC

# Protecting electrical installations, since 1997

*Established in 1997, we have been the market leader in India for 25 years in lightning protection, earthing, and building shielding measures. In the early years, our reactive power compensation panels demonstrated their superiority by operating in challenging climatic conditions within wind turbine towers, where high temperatures, significant harmonic distortions, and frequent fluctuations in reactive power demand existed.*

*CAPE is well-known in the electrical engineering community for its proficiency in a variety of electrical engineering subjects and its innovative market solutions. CAPE recognises the significance of user-friendly and premium-quality products.*

*We have organised over a thousand webinars and training programs on the subject of electrical safety throughout Asia and have successfully reached fifty thousand people with our trainings. We at Cape have taken on the mission of eliminating electrical accidents in India and are collaborating with various institutions and NGOs to make this a reality.*

*We provide a vast array of products and technical solutions for Lightning Protection, Earthing, and EMP/HEMP protections, owing to our decades of experience in providing cutting-edge solutions. Our expertise includes product development, manufacturing, installation, training and consulting.*

*Having two manufacturing facilities in Chennai and Kanyakumari, the products have been tested and approved by major international laboratories and are compliant with industry standards. The success of CAPE is attributable to a workforce of more than 300 talented professionals.*



# We Help in Making Buildings IN COMPLIANCE TO

01

Central Electricity Authority  
(Measures relating to Safety  
and Electric Supply)  
Regulations, 2023

02

NATIONAL ELECTRICAL  
CODE OF INDIA 2023

*The concept of fault loop impedance and its importance is studied by the complete nation due to our efforts, which are now included in regulations and NEC 2023. This safety measure is one among many, ignored in the industry for decades.*

**start with one ....**

**Excellence with many new safety measures.**

**We don't do conventional electrical  
safety measures -**

**"NO EARTH PIT RESISTANCE MEASUREMENTS"**

**What we do ?**

- **ELECTRICAL SAFETY IN EXISTING BUILDINGS**
- **ELECTRICAL SAFETY IN NEW & UPCOMING BUILDINGS**
- **FORENSIC INVESTIGATION OF ACCIDENTS / FAILURES**

# SAFETY IN EXISTING BUILDINGS

## 1. Preliminary Site Study

Type of electrical installation depends upon the utility of electrical energy, dependency on public supply, captive power generation and its availability. Even though the fundamental safety requirements do not vary between buildings, the method of applying them varies. During the preliminary site study, various safety measures available in the location is analysed.

## 2. Identification of requirements

Safety measures for basic and fault protection vary between locations. Similarly the safety requirement for thermal, over current and over voltage also varies. Identification of safety requirements in each location is based on the type of equipment installed, type of people handling the equipment and the other influences which are going to affect the safety and reliability of the equipment in the location.

## 3. Preparation of technical requirements for audit

Based on the identified safety and reliability measures, technical requirement for audit is prepared. The requirement varies from physical inspection to different types of testing, to analyse the existence of a problem or probable cause of a problem.

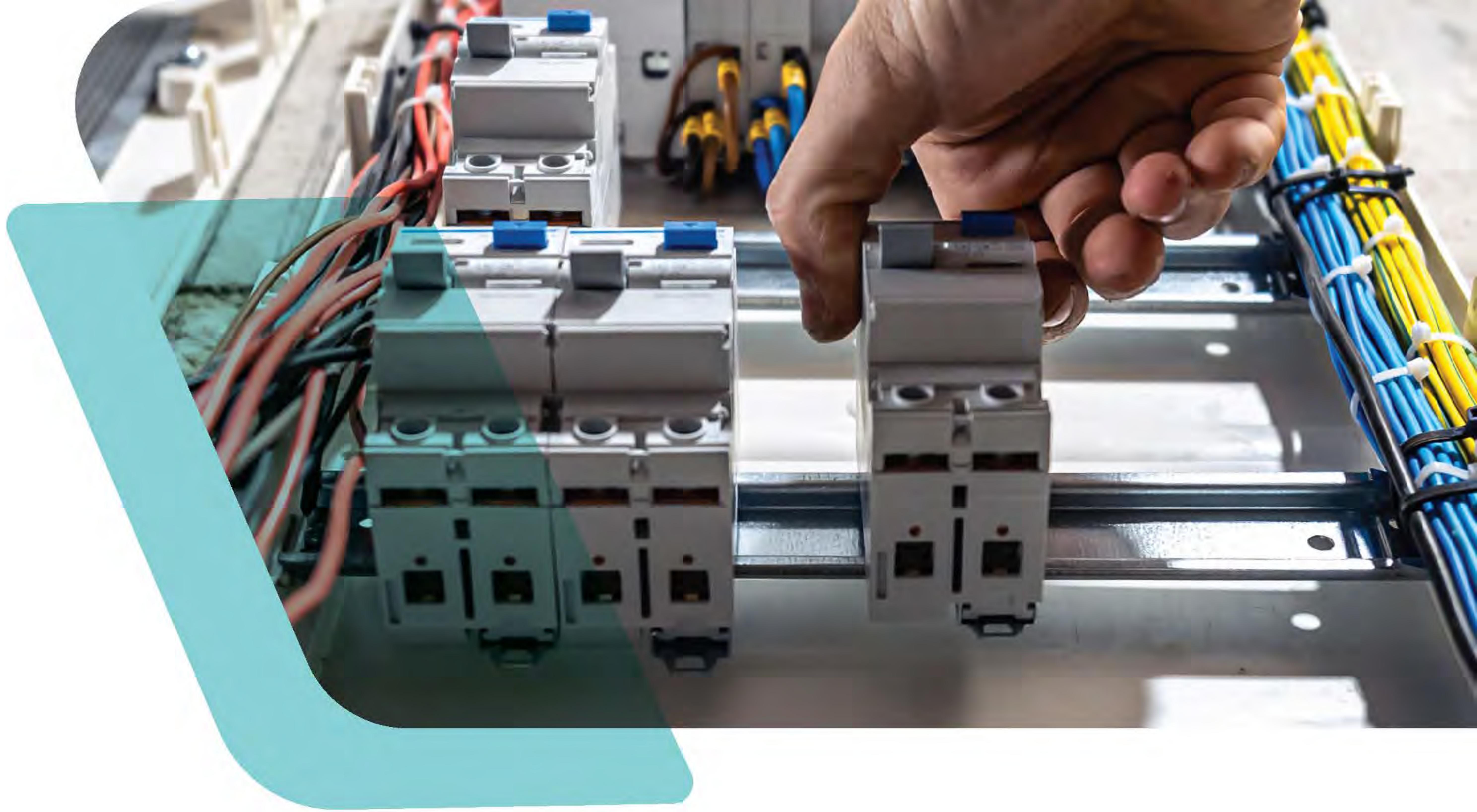
NEC 2023 recommend a list of 20 inspection and 13 testing for a given application. The selection of appropriate steps from this list is challenging, where the technical skills of the expert matters.

## 4. Identification (selection) of an Auditor

Typical electrical safety audit consist of a physical checking of the availability of danger boards & notices, drawings, PPE's and measurement of earth electrode resistance. In large industrial and commercial buildings, arc flash study and thermography are carried out in addition to the above. However, it's a fact that the above methods cannot ensure safety and are not included in the NEC of India 2023 as mandatory. Hence selection of an knowledgeable auditor is important.

Auditors are selected by CAPE with the support of the client. Finally, the idea is the technical team of the client should understand each of the tests so that they can include in their routine tests.





## 5. Supporting the auditor to complete the audits as per the standards.

The modern practices of electrical safety are never practiced in India, hence getting a skilled auditor and quality instruments are important. The audits are often time consuming and need expensive meters to carry out some tests.

We train the selected auditor to carry out the inspection and test recommended in the standards such as IS732 and NEC 2023. The team of engineers from CAPE, who are equipped with modern test instruments will train the auditor and the maintenance engineers of the client.

## 6. Identification of functional requirements (BMS, Electronics etc).

Modern industries use a large number of electronic equipment with communication facilities. The functional requirement of these devices depends upon the type of equipment, its communication protocol, frequency, voltage, immunity to EMI etc. Industrial and commercial buildings often cannot afford a failure in these equipment or the communication.

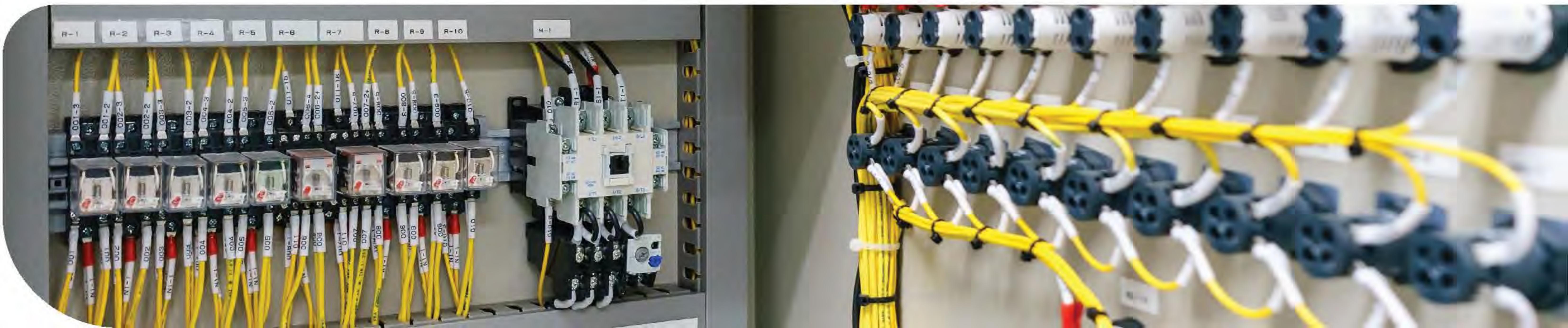
We identify the functional requirement of the BMS / Instrumentation / Security system and analyse its compatibility with the respective standards.

## 7. Preparation of improvement plan

After reviewing the audit report and functional requirements, we prepare and submit an improvement plan to the client. As part of this plan, we train the client's engineers to handle immediate improvement needs. We also select and train suitable contractors to implement the improvement plan.

## 8. Supervision and implementation of improvement plan

The improvement plan is finally implemented without disturbing the daily operation of the electrical and electronic installation.



# SAFETY IN NEW AND UPCOMING BUILDINGS

The National Electrical safety regulations called as "CEA Measures Relating to Safety and Electric Supply Regulations 2023" made compliance to NEC of India 2023, a legal requirement for all electrical installations. The NEC of India 2023 added new concepts of electrical safety.

Implementation of the new practices of electrical safety need high skills and knowledge on the standards, code of practices and modern safety methods. CAPE supports to make buildings in compliance to the requirements of CEA Regulations 2023 & NEC 2023.

## 1. Study of electrical drawings

Our knowledgeable and experienced team of engineers study the electrical drawings to find out the new requirements of electrical safety and reliability.

## 2. Value addition in drawings

The design is optimized without compromising the safety and reliability requirements of the standard. This often saves not only cost but increases the reliability of the installation.

## 3. Study of selected equipment, its compliance to standards and availability of test reports

Through understanding of the product standards including its application is necessary to make a safe electrical installation. Our database and the "SOLVE" supports in this case and ensure that all major products used comply to the standards. This selection control the usage of over specified products and ensure cost optimization.

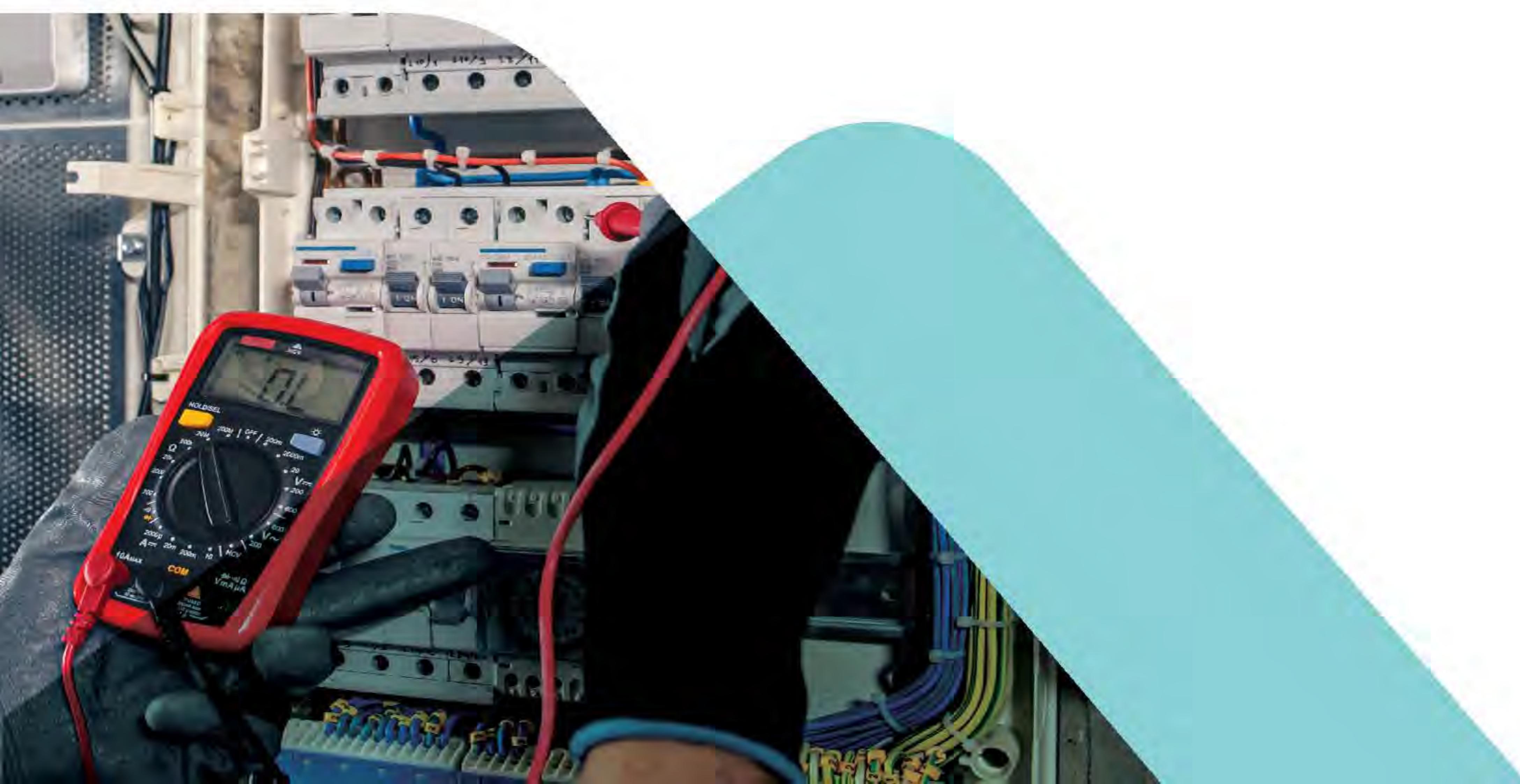
## 4. Guidance during erection

Erection of electrical installation is an important subject for safety. Mistakes once made could not be found or rectified later. Maximum life of the electrical installation can be expected if the products are installed in compliance to the requirements of the standard. Our supervision during erection ensure that quality of the installation is not compromised.

## 5. Complete verification during erection and commissioning / after commissioning

NEC of India 2023 recommends 20 inspection and 13 test in the Low Voltage part of the electrical installation itself. In addition, the functional requirements of electronics, safety requirements in the HV part of the installation and the measures in special locations are also verified.

CAPE's skilled team of engineers are equipped with all modern test instruments, backed by large knowledge database, and "SOLVE" ensure that the electrical installations are made in compliance to the standards and regulations of India.



# FORENSIC INVESTIGATION OF ACCIDENTS / FAILURES

Investigation of an accident in an electrical installation is a specialized job, which needs experience, deep understanding of the subject, knowledge on methods adopted in the installation, analyzing drawings and test results. cape is the perfect partner for forensic investigation of accidents/failures in industrial and commercial premise.

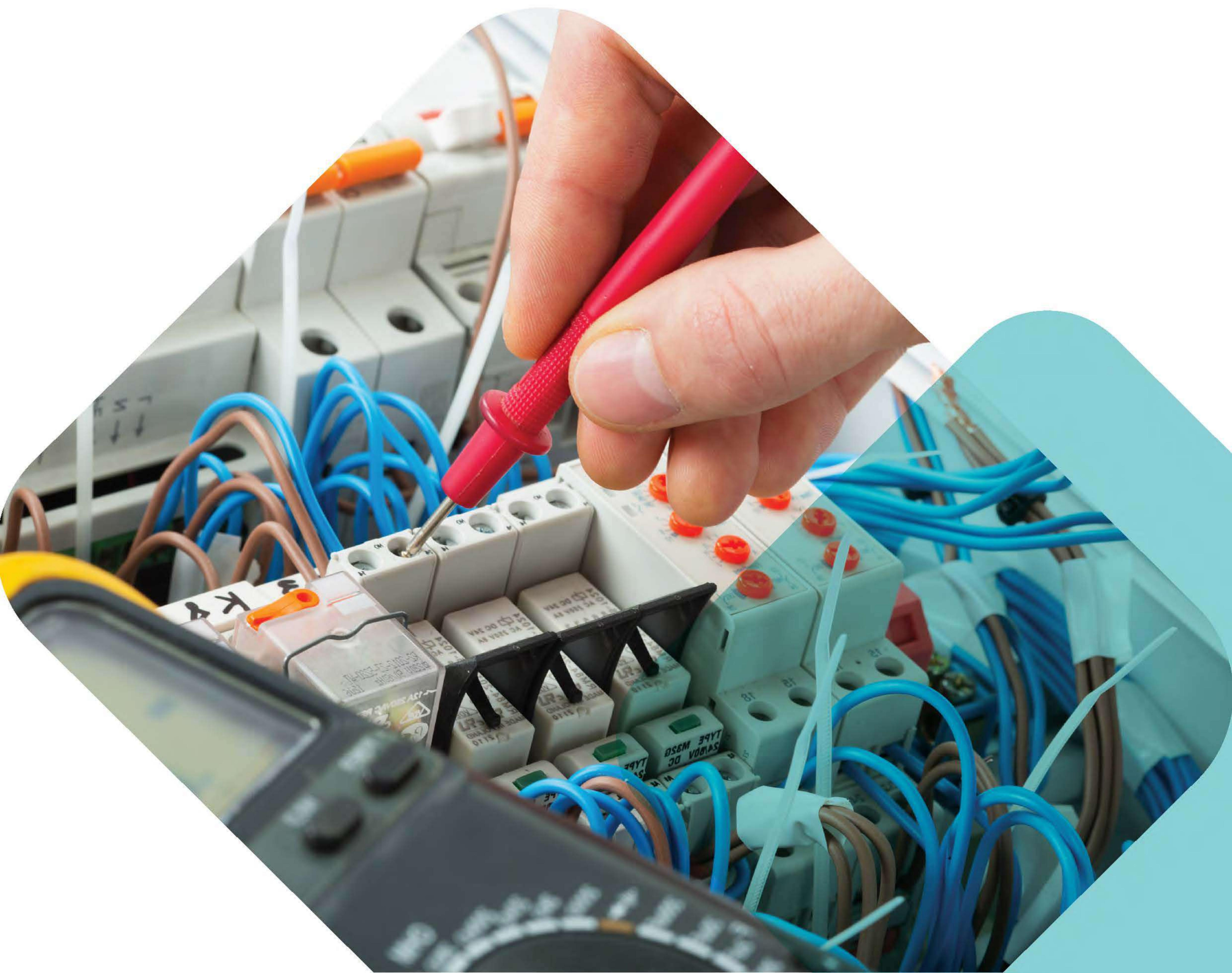
***“THE JOB WHERE YOU NEED THE SUPPORT OF A SPECIALIST”***

## Our Strengths

- Our Knowledge
- Large collection of Test instruments
- SOLVE – our own software
- Digital tools
- Qualified and Trained Team
- Participation in International forums

## Compliance to

- CEA (Measures Relating to Safety and Electric Supply) Regulations, 2023
- NEC of India 2023
- IS 732: 2019
- IS 3043: 2018
- IS/IEC 61936-1: 2022



***Your Trusted Partner in Electrical Safety!***

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## **Contact :**

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