



Massive Safety and Reliability risks discovered at a 500+ bed government hospital for women

Total Area approx	Age of the facility	Buildings	Critical rooms
2,00,000 sq ft	66 Years	3	4

Challenge

Very little maintenance or testing had been done. The loads were added randomly throughout the life of the hospital. There was no documentation available about the electrical network.

Risk Management Activity

- Detailed Single Line Diagram mapping - **300+ feeders**
- Electrical Safety audit with hospital specific Standards - **80+ facility areas, 12 days of inspection, 250+ compliance points**
- Performance assessment for entire electrical infrastructure (panels, DBs, Cables) eg. power quality, Earthing tests etc - **850+ electrical points tested**
- Short circuit and protective device assessment for localized fault clearance

Class 3 Electrical Safety and Health Audit

Some Key Discoveries

- Out of **800 inspection points** with respect to NEC, CEA and IS, **24% with severe risk, 29% with high risk** and **18% with moderate risk** to electrical infrastructure were observed
- **Equipment Damage Risks - 9 thermal hotspots, 42% feeders** with high ground potential and leakage currents
- **Patient Safety Risks - 65% sockets and 100% feeders** failed earth loop impedance, **17 Earth stations** with poor resistance values. **48 feeders** without short circuit protection.

Deliverables

- **All the risks were prioritized in by their severity and actionables were given for each risk in an easy to implement manner**
- **A systematic risk mitigation plan was proposed to the PWD in closing meeting**

"This audit was very elaborate, covering a lot of things in the electrical network. Very impressive. It is useful the way your app gives test results on site, no paper at all. We appreciate your service."

Deputy Engineer, PW Electrical





A pharma manufacturing company took up risk management for electrical network health, safety and better fault protection at one of their plants

Total Area approx	Age of the facility	Buildings	Motors and drives
50,000 sq ft	13 Years	3	287

Challenge

Previous audits didn't help increase safety & reliability of the facility's electrical network. Heavy duty motors were the majority of loads, so power quality risks were also necessary to be identified.

Risk Management Activity

- Motor health checkup for **287 motors** and earthing checks on **724 sockets**
- Electrical network health tests - **169 locations**
- In-depth Electrical Safety audit - **30 facility areas, 4 days, 250+ compliance points**
- Power quality compliance & event Analysis - **4 locations**
- Power system studies - arc flash hazards & protective device coordination

Class 3 Electrical Safety and Health Audit

Some Key Discoveries

- **Personnel Safety Risks** - PQ monitoring showed **heavy earthing leakages**
- **Electrical Fire Risks** - **24 Thermal Hotspots**, out of which 5 were very severe risk
- **Equipment Damage Risks** - **65 locations** had no earthing continuity
- **Unplanned interruptions and downtime** - miscoordination between HT and LT breakers, could cause massive shutdowns

Deliverables

- **Actionables were consolidated and handed over to the client for rectifications**
- **A post rectification audit was carried out to ensure the effectiveness of provided actionable**

Is Earth Continuity found?	Remarks	Continuity Result	Socket/ Motor
No	Earth wire not found	Fail	Motor-7
No	Earth wire not found	Fail	Motor-15
No	Earth wire not found	Fail	Motor-29
No	Earth wire not found	Fail	Motor-41
No	Earth wire not found	Fail	Motor-49



One of the leading real estate companies in India managed electrical risk on their commercial complex in Mumbai

Total Area approx	Age of the facility	Buildings	Floors
1,75,000 sq ft	15	1	4 Floors

Challenge

Even though the electrical network was routinely tested and maintained, it showed clear signs of aging, wear and tear and potential issues that may lead to catastrophic occurrences in the near future

Risk Management Activity

- In-depth Electrical Health and Safety assessment - **23 facility areas, 100+ risk points, 170 test locations**
- Power system studies based on as built data
- Advanced testing on transformers - Tan delta test on **2 transformers**
- Energy meters calibration - **15 energy meters**

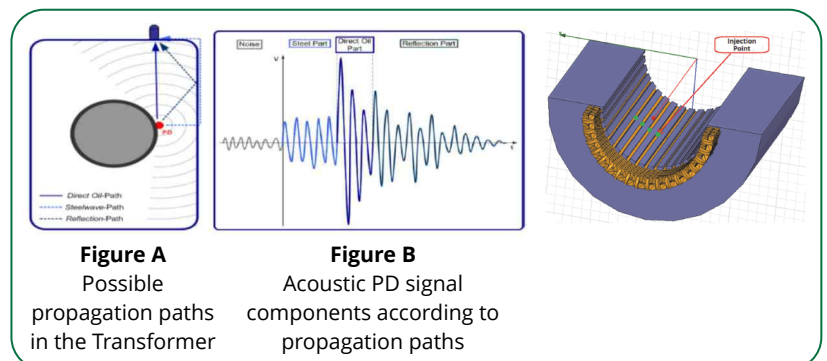
Class 3 Electrical Safety and Health Audit

Some Key Discoveries

- **Electrical & fire safety risks -**
 - **7 facility areas** had severe risks
 - **19 thermal hotspots** were identified, out of which **5 were priority 1**
- **Equipment damage risks -**
 - **27% RCDs** failed in performance assessment
 - **One transformer** had high possibility of partial discharges
- **Unplanned interruptions and downtime -** both incomers failed **IS 17036** compliance

Deliverables

- **Electrical safety risks were prioritized in terms of actionables for immediate rectification**
- **Appropriate actions were assigned for RCDs and transformer 2 so that the identified hazards don't turn into a catastrophe**
- **Continuous monitoring was recommended to keep the power quality issues from causing unplanned outages and equipment failures**



Electrical Networks are
Dynamic and Ever-changing.

To keep them Safe and Reliable,
**Continuous Risk Assessment
and Mitigation**
is the only way to go!



All the three classes are powered by **secqr**[®], Efficienergi's flagship analytics platform, for accurate actionable insights, through in depth scrutiny.

Various Risks that we assess

**Personnel
Safety Risks**

**Electrical
Fire Risks**

**Lack of Processes/
Training**



**Equipment
Damage Risks**

**Interruptions
& Downtime**

**Financial Losses
& Penalties**

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Class 1

- Immediate Electrical Risks (Human Life / Assets / Electrical Fires)

Class 2

- In-depth visual assessment of Electrical Risks (Human Life / Assets / Electrical Fires)
- Sample testing to discover risks in electrical distribution

Class 3

- In-depth visual assessment of Electrical Risks (Human Life / Assets / Electrical Fires)
- Complete Testing to assess risks in electrical distribution
- Safety Training to the staff
- secqr[®] app support for daily checks
- Electrical Fault Mitigation

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