



ALLBRITE ELECTRIC SERVICE, INC.

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Providing **TEGG** Electrical Services

**Your
Electrical System Specialist
GUARANTEES
“Failure Is Not An Option”**

TEGG
SERVICE

SPECIALIZING IN ELECTRICAL SYSTEM RELIABILITY
SERVICE ♦ PRODUCTS ♦ EDUCATION

TEGG® ELECTRICAL ASSET MANAGER

Comprehensive Electronic Documentation
100% Tracking, Electronic One-Line Tree View
User Friendly Customer Interface

Equipment Item Tree View
 Agreement: ESA001 Site: Sample Company Store # 120

Search: _____
 by: Tag ID

- SWG 01 - Switchgear, Utility Side
 - SWG 02 - Switchgear
 - BCP 02 - Branch Panel PPH-1
 - BCP 02 - Branch Panel LPA
 - DSS 01 - Disconnect Switch-South
 - BCP 03 - Branch Panel LPC
 - BCP 04 - Branch Panel LPB
 - SWG 03 - Switchgear
 - DSS 02 - Disconnect Switch HVAC-1 Middle
 - DSS 03 - Disconnect Switch HVAC-2 North
 - TD 01 - Transformer Dry**
 - DP 01 - Distribution Panel
 - BCP 01 - Branch Panel RP-1
 - BCP 01 - Branch Panel RP-2
 - BCP 01 - Branch Panel RP-3
 - LCT 01 - Contactor 24
 - LCT 02 - Contactor 2

TD 01 - Transformer Dry

Nameplate | Variables | Problem History

Fed By: SWG 03 - Switchgear; Item Description: Transformer Dry

Equipment Type: Transformer (Dry) Location: Southeast Corner Main Service

Tag ID: TD 01 Critical Yes No

Manufacturer: ITE Serial No: N/A Model No: 3F3Y112

Attribute Name / Units	Value
Voltage / Volts	312
kVA / kVA	112.5
Current / Amps	135
Primary Voltage / Volts	
Fuse Type / Model #	208/120
Primary Current / Amps	
Horsepower / Hp	480
Conductor/Bus Size / Text	150.0
Primary Conductor Size / kcmil/gauge	
Secondary Voltage / Volts	
Secondary Current / Amps	
Secondary Conductor Size / kcmil/gauge	

Application: Assembly No. 475A645JAG001R0 Safety Notes:

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Problem Count: 1 Tasks: Opened: 0 Aborted: 0 Completed: 0

**TOTAL PEACE OF MIND
 GUARANTEED**

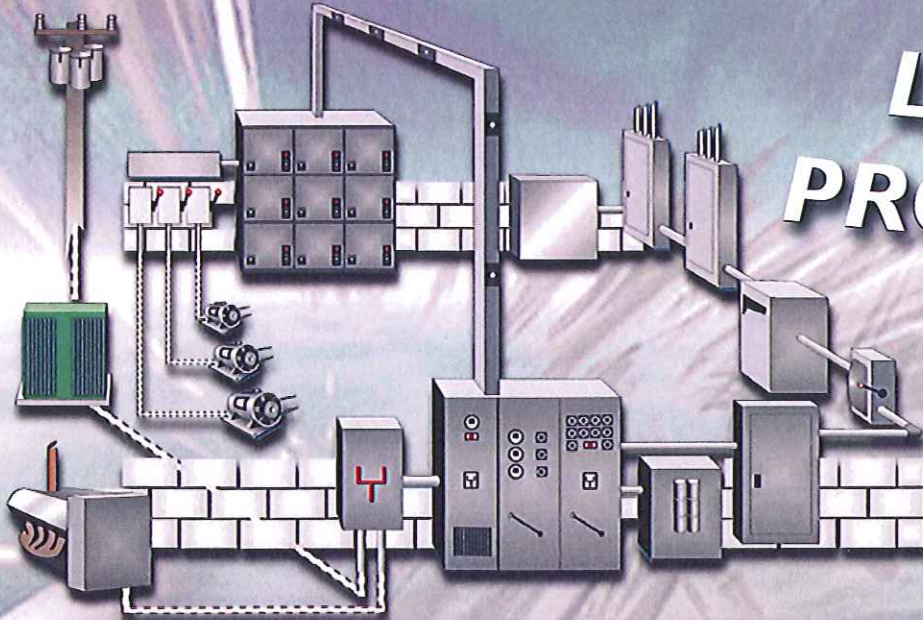


GUARANTEED PROGRAMS

TEGG
SERVICE

For Your
Electrical Distribution System

**LIFETIME
PROTECTION**



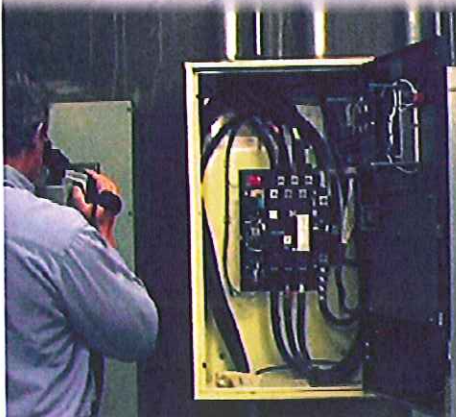
TEGG PRIME

- ✓ Energized and de-energized testing
- ✓ De-energized preventive maintenance
- ✓ Guaranteed repair or replacement on components that suffer a sudden and accidental breakdown
- ✓ Provides overtime for guaranteed repairs
- ✓ Includes extra expediting service (express freight)
- ✓ Includes downstream resultant damage protection for EDS
- ✓ Includes temporary power
- ✓ Includes emergency generator if required



TEGG PREMIUM

- ✓ Provides full energized testing and analysis
- ✓ Minor services such as exterior cleaning of equipment
- ✓ Comprehensive Electrical Systems Analysis reporting
- ✓ Guaranteed repair or replacement on components that suffer a sudden and accidental breakdown
- ✓ Provides overtime for guaranteed repairs



TEGG BASIC

- ✓ Utilizes thermographic and ultrasonic technology for analysis of the electrical system
- ✓ 90-day guaranteed repair or replacement
- ✓ Guaranteed repair service during normal business hours



TEGG BUILDERS

- ✓ Begins at the end of the new construction regular warranty period
- ✓ Energized testing
- ✓ De-energized testing optional
- ✓ Guaranteed repair or replacement on components that suffer a sudden and accidental breakdown
- ✓ Provides overtime for guaranteed repairs
- ✓ Includes extra expediting service (express freight)
- ✓ Includes downstream resultant damage protection for EDS
- ✓ Includes temporary power
- ✓ Includes emergency generator if required



FEATURES	BASIC	PREMIUM	PRIME
Visual Inspection	Yes	Yes	Yes
Infrared Thermographic Inspection	Yes	Yes	Yes
Ultrasonic Inspection	Yes	Yes	Yes
Comprehensive IR Report	Yes	Yes	Yes
TEGGTask View	Yes	Yes	Yes
Predictive and Proactive Service	No	Yes	Yes
Electronic Equipment Inventory	No	Yes	Yes
Energized Testing and Analysis	No	Yes	Yes
De-Energized Testing & Analysis	No	Optional	Yes
De-Energized Preventive Maintenance	No	Optional	Yes
GUARANTEED SERVICE	Yes	Yes	Yes
Guaranteed Repair and Replacement	90 Days	Life	Life
24 X 7 Emergency Call Out	Yes	Yes	Yes
Overtime for Repairs on Guarantee	No	Yes	Yes
Downstream Resultant Damage Repairs	No	No	Yes
Express Shipments for Repairs	No	No	Yes
Temporary Power (Wiring)	No	No	Yes
Emergency Power (Generator)	No	No	Yes

How To Care For The Electrical Distribution System Within A Healthcare Facility



Common Problems

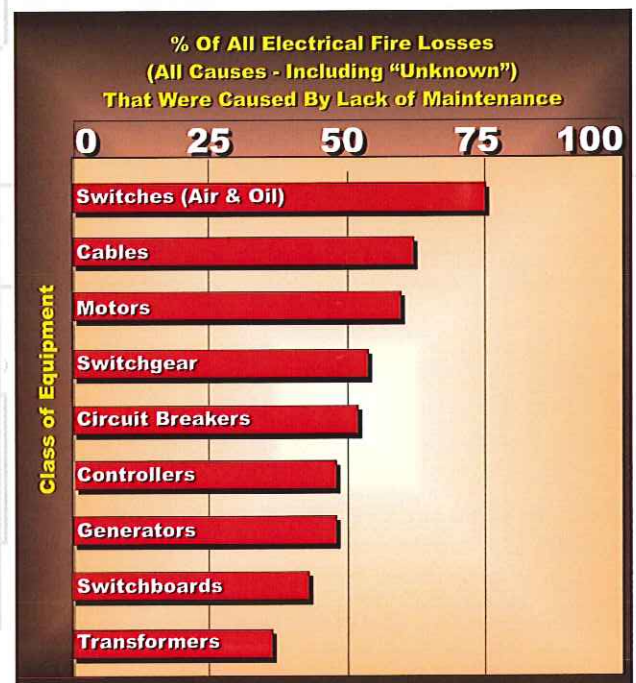
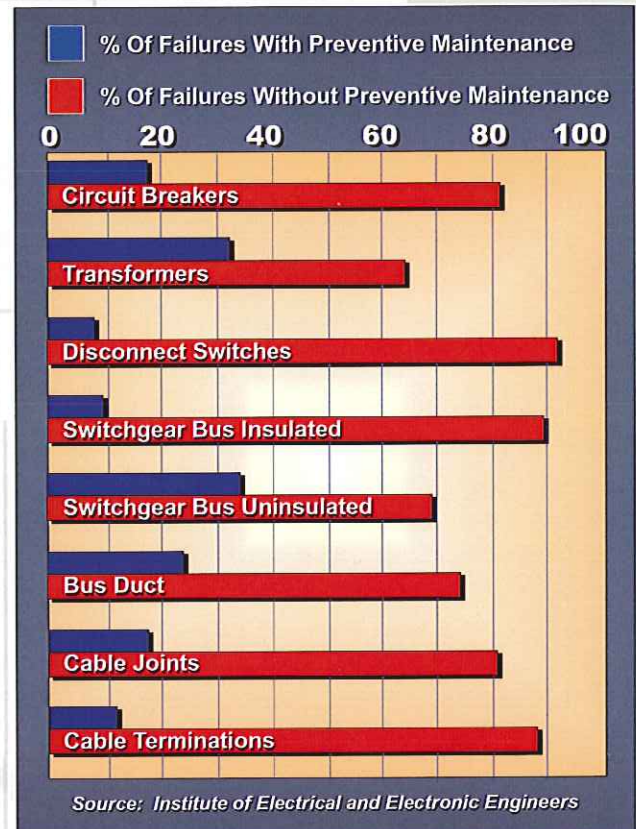
- Overloaded circuits.
- Code violations.
- Poor power quality.
 - Harmonics affecting critical systems caused by:
 - Computers.
 - Electronic lighting ballast.
 - Variable speed drives.
- Improper grounding due to:
 - New additions and upgrade.
 - Non adherence to the National Electric Code and/or IEEE 1159-1992 standards which are recommended practices for grounding of sensitive electronic equipment.
- Heavy energy usage:
 - This generates excessive amounts of heat that cause connections to loosen due to shrinkage and expansion. Loose connections cause arcing that generates extreme heat and high resistance, which is a major safety concern and also results in an inefficient use of power.
- Budget constraints.
- Maintenance department has many responsibilities.

Critical Areas

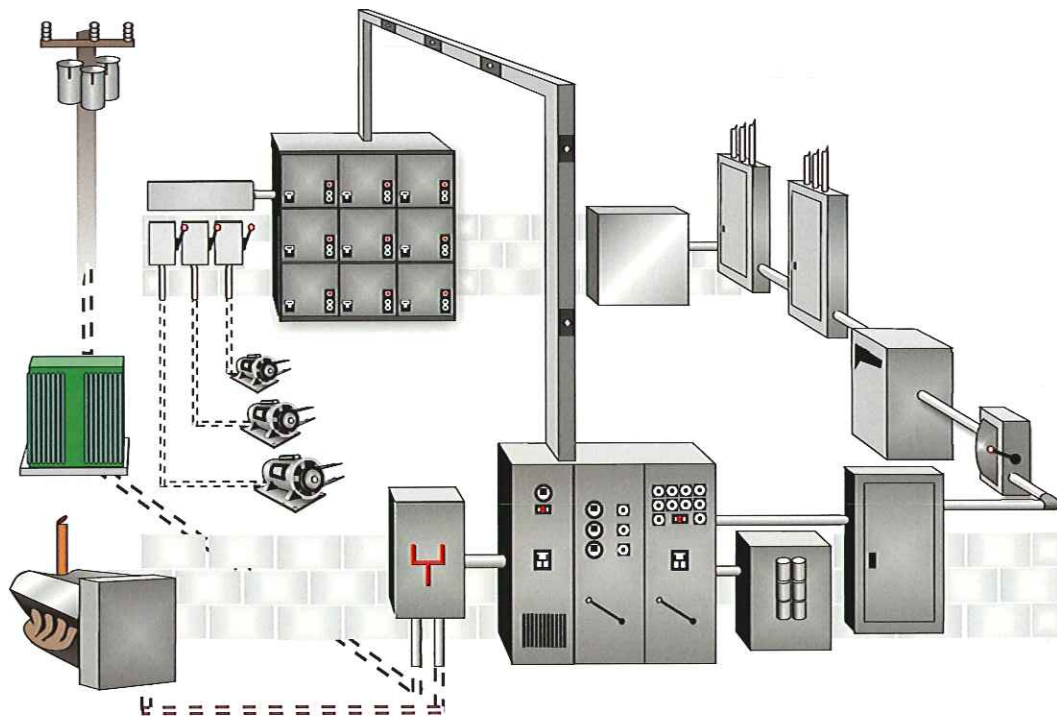
- Incoming service.
- UPS systems.
- Redundant power services.
- Emergency generator.
- Operating room.
- Diagnostic equipment.
- Computer room(s).
- Refrigeration and HVAC.

Financial Benefits of Electrical Preventive Maintenance

- Predictive budget.
- Minimize or eliminate unexpected outages and untimely repair costs.
- Extend the EDS life/lower replacement costs.
- Lower liability risks.
- **Greatly reduce electrical fires.**
- Computerized documentation for your electrical distribution system.



What to look for...



Electrical Distribution System

A full function hospital has miles of special wiring and circuits dedicated to very specific applications. The electrical distribution system will include transformers, electrical distribution panels, as well as bus and cable structures. In medical related locations, electrical equipment is most often damaged by electrical insulation failure that can lead to short circuits in breakers, distribution panels and motors. Some hospitals generate their own electrical power. If a co-generation unit or an electrical power producing facility provides electricity for the hospital, there is higher equipment breakdown risk. Because of the critical function of electrical systems in a hospital and the presence of fragile electronic diagnostic and imaging equipment, hospitals should have an Electrical Preventive Maintenance (EPM) program that includes regular predictive maintenance.



Emergency Generator

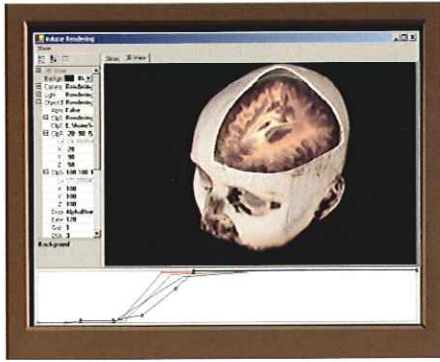
All hospitals require emergency power for life support and any piece of equipment necessary for operation of the hospital. Emergency generators are normally diesel driven and can be operated in parallel with other generators, or operated as a dedicated power supply to separate portions of a hospital. Diesel generators installed in hospitals are large units ranging from 600 hp to 1500 hp, and as a result, are very expensive to repair or replace.



Power Transformer

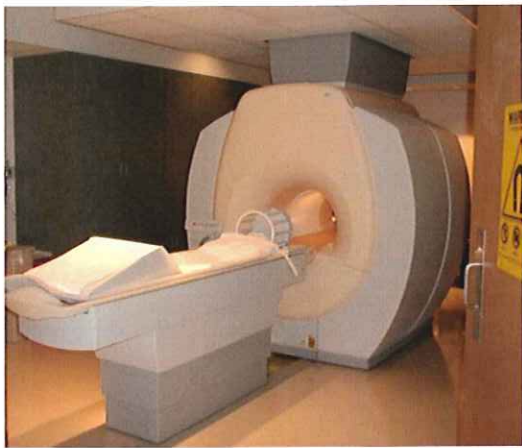
Every hospital has transformers to step down voltage to a level that can be used within the building. They are expensive to repair or replace and are subject to breakdown due to power surges, short circuits and aging insulation.

What to look for...



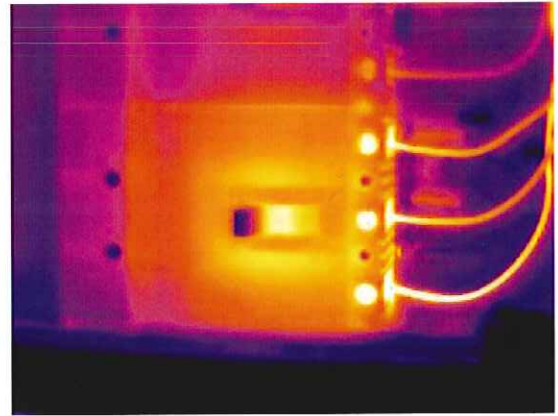
Computers

Hospitals and medical centers contain very expensive, sophisticated computer equipment usually in combination with mini-mainframes and personal computers. Computer equipment contains fragile components and electronic circuitry. Most equipment breakdowns to computer equipment are caused by power disruptions, interruptions, or a phase imbalance during power restoration.



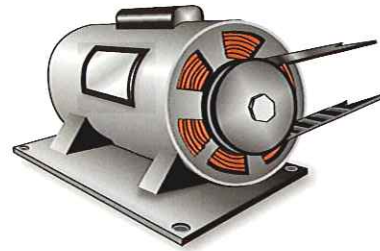
Medical Diagnostic Equipment

Many hospitals and medical centers have sophisticated medical equipment that includes one or more MRIs, Linear Accelerators, CT Scanners, PET Scanners, gamma cameras, ultrasound devices and hyperbaric chambers. The value of this equipment can range from hundreds of thousands to millions of dollars and requires special care and protective devices. For example, blood chemistry analyzers typically cost \$125,000 to \$200,000. The sensitive circuitry of advanced diagnostic equipment is fragile and extremely susceptible to power surges, short circuits and other electrical disruptions. Because of their high value and fragile nature, advanced diagnostic medical equipment requires clean and dependable power.



Electrical Panels

Electrical panels are an integral element of a hospital's electrical distribution system. The frequent cycling on and off of electrical loads creates heating and cooling, which can loosen connections in electrical panels and cause electrical arcing (or short circuits). Arcing can damage not just electrical equipment, but can also result in surges and electrical disturbances that can damage other expensive equipment on the premises or cause an electrical fire. Because of the critical function of electrical systems in a hospital and the presence of fragile electronic diagnostic and imaging equipment, hospitals should have an Electrical Preventive Maintenance (EPM) program that includes regular predictive maintenance.



Motors/Compressors/Condensers

Hospital air conditioning systems contain a variety of components including motors, compressors and condensers. Most air conditioning breakdowns are due to electrical failure. In addition, the air handling and medical air systems of a hospital are reliant upon various motors and fans. Air handling motors can be as large as 125 hp. Motors are also used to power large pumps for fire protection and water supply. These pumps are usually a single stage centrifugal pump driven by either electric motors or diesel engines ranging from 200 hp up to 2000 hp, depending on the size of the hospital. Failure of these pumps can cause hospitals to limit or curtail services in an area of the facility.

Hospital Accreditation Standards-JCAHO

TEGG Service has all of the tools to assist healthcare facilities develop customized programs to meet these recommended accreditation standards.

Intent of EC.1.7

Section f: Maintenance strategies for all critical components on the inventory.

Section g: Intervals for inspecting, testing, and maintaining appropriate critical components on the inventory (that is, those pieces of components on the inventory benefiting from scheduled activity recommendations, risk levels, and current organizational experience).

Intent of EC.2.8

Staff have been oriented to, and educated about the environment of care, and possess the knowledge and skills to perform their responsibilities under the environment management plans (as described in EC.1.1 through EC.1.7). This includes staff roles in the findings of safety inspections; roles in incident and risk reporting, roles in the notification and recall process; roles in the preventive maintenance process; and correct use of equipment, including required testing and handling of broken or potentially unsafe equipment.

- c. actions to eliminate, minimize, or report safety risk;
- v. capabilities, limitations, and special applications of equipment;
- w. operating and safety procedures for equipment use;
- aa. processes for reporting equipment management problems, failures, and user errors which utility system users can describe or demonstrate;
- bb. process for reporting utility system management problems, failures and user errors;
- cc. utility system capabilities, limitations, and special applications;
- dd. emergency procedures in the event of a system failure;
- ee. location and use of emergency shutoff controls;
- ff. whom to contact in emergencies which those who maintain the utility system can describe or demonstrate;
- gg. the knowledge and skills necessary to perform maintenance responsibilities;
- hh. process for reporting utility system management problems, failures, and user errors;
 - ii. location and use of emergency shutoff controls; and
 - jj. whom to contact in the event of an emergency.

Leaders can describe their roles in developing safety policies and procedures and provide examples or environment management program goals and performance improvement standards.

- 2003 Hospital Accreditation Standards

TEGG #2048

Equipment Loss Examples: Hospitals and Medical Centers

An emergency generator switched on when a slight power reduction automatically activated the emergency electrical system. The generator produced over-voltage, causing damage to various patient-monitoring equipment and the solid-state fire alarm system.

Total Loss: \$60,337

Electrical arcing occurred in a cardiac catheterization machine, which caused damage to a high voltage cable and other electrical apparatus.

Total Loss: \$40,995

A 1500 kVA transformer was damaged while in operation, causing damage to adjacent electrical system switchgear.

Total Loss: \$71,799

The main switchboard and cables burned out due to an insulation failure.

Total Loss: \$137,065

CT scanner, ultrasound and x-ray machines shorted out when the maintenance crew pulled wires through a conduit and a neutral wire came into contact with a high voltage cable. Equipment was rented while replacements were being obtained.

Physical Damage: \$339,283, Extra Expense: \$ 66,097, Total Loss: \$405,380

- Hartford Steam Boiler