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## Helping Manage the Electrical Distribution System

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*Not sure where to begin? Consider a Base Study or Engineering Site Survey.*

### **Base Study:**

*Making the complex easy to understand.*

This service offers a great way for customers to get their arms around the system, with benefits that last for years. System analysis is presented in a simplified format. Fundamental questions are answered, problem areas identified, and recommendations provided.

#### Package Includes:

- On-Site Data Collection
- System Information
- One-line Diagrams
- Short Circuit Analysis
- Protection/Coordination Study
- Recommended Breaker/Relay Settings
- Engineering Report

Customers learn what they have, where they have it, and how equipment ratings and device settings can impact the system. Existing and potential problems are identified, and recommendations are provided for improving problem areas.

### **On-Site Data Collection:**

An MPS engineer visits the job site to collect information needed for one-line diagrams and system analyses. On-site data collection reduces the time needed to finish the job, minimizes the effort required of the customer, and provides the engineer with a more accurate and complete view of the electrical system, reflected in the study's contents and recommendations.

*First hand knowledge is important!*

### **Engineering Site Survey:**

Not the right time for a study? An engineering site survey may be just the thing. This service gathers the same information needed for the Base Study, but stops short of the analysis.

#### Package includes:

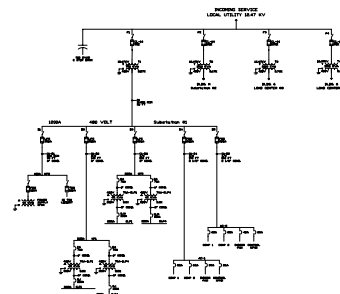
- On-Site Data Collection
- System Information
- One-line Diagrams
- Report

It's a good first step towards managing the system, and is easily expanded to the Base Study at a later date.

*Information is the key!*

### **One-Line Diagrams:**

One-lines provide a basic map to the interconnection of the electrical system, and serve as a building block from which all analyses are based. Developed on AutoCAD using

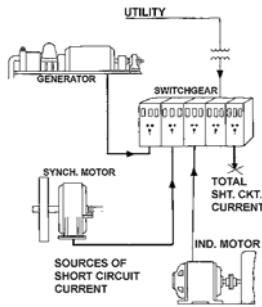


modified versions of existing drawings, or from scratch if drawings are not available. Hard copy plots are provided along with computer drawing files on CD for ease of future revisions.

*One-lines are a key indicator! If drawings are missing or not up to date, a System Study is probably overdue.*

### **Short Circuit Study:**

Fundamental and critically important to the safe and reliable operation of the system. This study uses a computer model of the electrical system to calculate the maximum levels of short circuit current at various locations. Calculated values are compared to manufacturer's ratings to evaluate the application of protective devices and other equipment. Results are provided in an easy to read format with a written summary of the findings and recommendations.



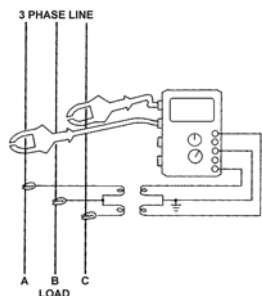
*Safety and reliability go hand in hand.*

### **Arc-Flash Hazard Study:**

Managing the electrical system isn't limited to just hardware. Personal safety, company insurance, and OSHA requirements are all part of the equation. Addressing NFPA-70E, this service plays an important role in risk management, providing Arc-Flash warning labels specific to each location. Derived from short circuit levels and protective device characteristics, these labels include protective clothing requirements, and other details to address this growing concern.

### **Load Study:**

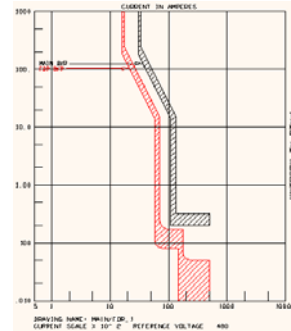
Provides on-site electrical measurements at selected system locations. Recorded information is contrasted with the load carrying capacity of transformers, panels, cables, and circuit breakers to determine the reserve capacity available. Information is provided to the customer in data tables and easy to read bar charts. Includes a written discussion of the findings and recommendations.



*For customers considering load additions or other system changes.*

### **Protection/Coordination Study:**

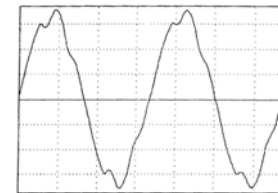
This study seeks to minimize unnecessary power outages and improve system protection. The service offers recommended device settings to make best use of the equipment already in place. Fuse, circuit breaker, and relay applications are reviewed with respect to code requirements and applicable standards. The goal is to isolate service interruptions to the smallest area possible, while still maintaining adequate protection. Recommendations for improving coordination and system protection are commonly provided.



*For those concerned about power outages, nuisance tripping, and minimizing system damage.*

### **Harmonic/Power Quality Study:**

On-site measurements of harmonic distortion and voltage disturbances are provided to evaluate the quality of electrical power. This service is typically used to help identify and correct problems related to the system's power quality. Voltage disturbances & system harmonics are examined with respect to recommended limits and industry standards. IEEE-519 evaluations are also provided. This study includes samples of recorded data, graphical illustrations, and a written discussion of the findings and recommendations.



### **Additional Services:**

- Electrical Measurements & Monitoring
- Load Flow Studies
- Power Factor Studies
- Conceptual Design Studies
- AutoCad Services
- & More...