

SALISBURY ASSESSMENT SOLUTIONS



Electrical engineering services for a safe
and compliant workplace

Electrical Safety Program Assessment - Safety Training
Arc Flash Hazard Analysis - Power Systems Engineering

www.arcsafety.com

SALISBURY
by Honeywell

SERVICES

Salisbury Assessment Solutions (SAS) provides a full range of services to ensure your compliance with NFPA 70E and ASTM F18 standards as well as OSHA government regulations. Our goal is to assist you in the process of creating, implementing and maintaining an electrical safety program.

Keeping your employees safe involves a thorough assessment of your facility, its hazards and potential risk levels. The purpose of an assessment is to determine how much danger is present and what personal protective equipment (PPE) is required to protect your workers.

An electrical safety program assessment provides the baseline on what your electrical safety program needs to meet the NFPA 70E, ASTM F18 standards and OSHA regulations. Results of the assessment allow you to create goals for the future state or development of your program. SAS can support and guide you toward meeting those goals through the numerous additional services offered. We can offer all of the tools you need to achieve the defined goals of your electrical safety program.

SAFETY TRAINING

Our training offerings include NFPA 70E and OSHA compliance, certification for electrical worker qualification, PPE training, electrical safe work practices and more. Our seminars, conferences and trade shows also provide additional learning opportunities. Our goal is to provide ongoing and continuous learning opportunities for you and your employees to ensure the safest possible working environment.

RESOURCES

Salisbury Assessment Solutions provides a full range of services, training opportunities and resources for safety professionals seeking to create, implement and maintain an electrical safety program. We strive to provide this community of safety leaders with relevant news, information and resources.

Our goal is to support you with the knowledge, tools and services you need to lead your team to safety. Available resources include videos, articles, news, literature and more.

EDUCATION

Salisbury Assessment Solutions offers a wide range of educational opportunities. We invite you to attend our training sessions, regional seminars and trade shows to learn more about electrical safety and work practices. Our goal is to educate safety leaders and electrical professionals to ensure safe work practices are understood and implemented.

SAS is your single source for electrical safety program support and compliance.

To learn more about electrical safety, news and upcoming events visit www.arcsafety.com

Committed to Safety

Hundreds of deaths and thousands of injuries occur each year due to shock, electrocution and arc flash. Almost all of these tragic events are preventable. NFPA 70E Standard for Electrical Safety in the Workplace provides guidelines and principles to follow to ensure worker and workplace safety. NFPA 70E is the guideline for compliance with OSHA 1910 Subpart S and OSHA 1926 Subpart K.

OSHA takes electrical safety seriously with nearly 100 standards that are deemed necessary for the practical safeguarding of employees in their workplaces. Citations in the Electrical-General Requirements category (Standard 1910.303) ranked in OSHA's top 10 most cited violations in 2011, according to the National Safety Council.

Salisbury by Honeywell is the world leader in electrical safety PPE. For over 150 years, our products have helped keep electrical workers safe on the job. Our protective clothing and tools save lives by enabling electrical workers to operate safely in hazardous conditions.

We are committed to your protection, and that means more than head to toe PPE. It means a safer workplace that mitigates risk.

It also means expert training, engineering services, safety audits and a complete electrical safety program for your workplace that ensures your compliance with OSHA, ASTM F18 and NFPA 70E standards and regulations.

We've expanded our services through Salisbury Assessment Solutions (SAS). SAS offers a team of electrical engineers and safety experts offering individualized services to meet your needs for electrical safety compliance and to help you achieve your electrical safety program goals.

SAS offers assessments, compliance support, electrical engineering and training. SAS is a customized service that meets the unique needs of each customer.

No matter what stage in the process of developing a safe and compliant workplace you are in, SAS can help.



Salisbury by Honeywell, a part of the Honeywell Automation and Control Solutions business group, is a world leading manufacturer of electrical personal protective equipment and live line tools. For over 150 years, our products have helped keep electrical workers safe on the job.

To learn more about Salisbury by Honeywell, visit us online www.salisburybyhoneywell.com

Get a free quote and learn more about electrical safety at www.arcsafety.com

SAS Services

SALISBURY ASSESSMENT SOLUTIONS AVAILABLE OFFERINGS

- Arc Flash Hazard Analysis
- Electrical Safety Program Assessment
- Electrical Engineering
- Personal Protective Equipment Selection and Training
- NFPA 70E Compliance Support

ARC FLASH HAZARD ANALYSIS

An arc flash is an explosion of electrical energy that can cause substantial damage, injury and death. Analyzing the arc flash hazards is critical to worker and workplace safety. NFPA 70E calls for an arc flash hazard analysis and risk assessment procedure to maintain a safe workplace.

An arc flash hazard analysis, per NFPA 70E, is a study investigating a worker's potential exposure to arc flash energy, conducted for the purpose of injury prevention and the determination of safe work practices, arc flash boundary and the appropriate levels of personal protective equipment (PPE).

There are three steps to completing an arc flash hazard analysis as outlined by NFPA 70E Article 130.5 (2012 Edition):

1. Arc Flash Boundary - When an arc flash hazard exists, an approach limit at a distance from a prospective arc source within which a person could receive a second degree burn if an electrical arc flash were to occur is known as an arc flash boundary. Incident energy and arc flash boundary calculation methods are provided in Annex D.
2. PPE for Application - Within an arc flash boundary, the amount of personal protective equipment (PPE) is based on either an incident energy analysis or Hazard/Risk Categories. Table H.3(p) in Annex H of the NFPA 70E offers information on selection of arc-rated clothing and other PPE.
3. Equipment Labeling - Electrical equipment that is likely to require examination, adjustment, servicing or maintenance shall be field marked with a label containing the following:
 - Available incident energy and the corresponding work distance, minimum arc rating of clothing, required level of PPE or highest Hazard/Risk Category (HRC) for the equipment
 - Nominal system voltage
 - Arc flash boundary

This process of data collection, calculation, analysis, PPE selection and labeling is a critical and complex task. The best way to avoid compliance and regulation issues and protect your workers is to allow an experienced, qualified electrical engineering team complete the analysis and work with you on creating and maintaining an electrical safety program.

SAS has a highly trained team of experts that will work with you every step of the way toward an electrically safe workplace. SAS offers services that ensure your workplace is compliant and that your workers are protected.

ELECTRICAL SAFETY PROGRAM ASSESSMENT

Salisbury's Electrical Safety Program Assessment is a thorough data collection process that allows us to understand your site, its equipment and specific needs. After the data collection, Salisbury will provide a gap analysis. The gap analysis will allow us to offer a complete site assessment that explains potential hazards and recommendations for improving your program. From understanding to compliance, SAS will assist you every step of the way.

Assessments are especially important in electrical environments due to the risk of arc flash. A hazard assessment and the use of appropriate PPE is a requirement by OSHA 29 CFR 1910.132(g):

- (1) The employer shall assess the workplace to determine if hazards are present, or are likely to be present, which necessitate the use of personal protective equipment (PPE).

ELECTRICAL ENGINEERING

An unsafe environment puts your workers and electrical equipment at risk. Electrical incidents can result in injury, costly repairs, penalties and even death. Companies can protect their workers, equipment and their bottom line by hiring an electrical engineering team to analyze their equipment.

SAS begins by performing a short circuit analysis and time current coordination study to evaluate your equipment and the risks it presents to your workplace. SAS will analyze the data to provide engineered solutions to improve the safety and efficiency of your electrical system.

Reliable equipment creates a safer more efficient workplace and lowers operating costs. SAS has licensed electrical engineers who can find ways to make your electrical system safer and more efficient.

CORPORATE ELECTRICAL SAFETY COMPLIANCE

SAS has a dedicated team to assist you in developing and defining a corporate electrical safety program for your organization. Our goal is to help you establish a program that is manageable and enforceable so that you can ensure company-wide compliance.

PERSONAL PROTECTIVE EQUIPMENT SELECTION AND TRAINING

The arc flash hazard analysis allows for calculation of Arc Flash Incident Energy levels (AFIE). The categories (0 - Dangerous) determine the amount of protective clothing and personal protective equipment. Table 130.7(C)(16) in the NFPA 70E carefully outlines the requirements for each category.

Salisbury is the world leader in electrical safety PPE. Our SAS team understands the requirements and can help you with all aspects of PPE including:

- PPE Selection, Care and Maintenance – Helping you understand the equipment you need and how to care for it. PPE generally requires periodic testing and a maintenance plan for each piece to ensure that it will properly protect the worker.
- PPE Testing and Use Training – PPE should be inspected prior to each use and tested regularly. SAS can educate your staff on PPE testing and how to use their PPE.
- Electrical Grounding Training – SAS can train your staff on working on best practices and procedures for working on or near electric equipment.

NFPA 70E COMPLIANCE SUPPORT

SAS has a staff of highly experienced loss control and risk managers. They can assist you in avoiding OSHA fines and citations. If you have already been cited or are involved in a worker's compensation claim, the SAS staff can assist you in meeting all requirements to help mitigate penalties and reduce possible costs on claims.

SAS is here to work with you to prevent injury and penalty by helping you establish and maintain a complete electrical safety program.

NFPA 70B COMPLIANCE SUPPORT

SAS has a team of highly trained field service technicians capable of capturing thermographic imaging while performing on-site data collection. By combining your on-site data collection and thermal imaging, your costs per service are reduced as the panels only need to be accessed one time.

If quality maintenance, service interruption prevention, and worker safety improvements are vital to your company, this comprehensive thermal imaging service should be an essential piece of your electrical safety program.

THE SOLUTION IS PREVENTION

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Training and Seminars

ON-SITE TRAINING

An essential element of any electrical safety program is professional training. When employers invest in continuous education for their employees, the result is a safer workplace. Salisbury Assessment Solutions offers on-site seminars to develop and enhance employee knowledge and confidence levels.

Companies that have invested in Salisbury's educational trainings and seminars realize the benefits in having a workforce where employees are educated to better understand codes, standards, regulations and safe work practices.

Electrical safety courses are available for both qualified and unqualified workers. Courses are also available on the selection and maintenance of PPE. SAS has expert trainers with the credentials and industry knowledge to provide training that ensures a safe workplace.

ARC FLASH AND SHOCK HAZARD FOR NON-MAINTENANCE PERSONNEL

2 HOURS –AFT1002
The purpose of this session is to provide training on NFPA 70E Article 130. This training is for personnel who are required to function near or interface with electrical equipment but are not qualified to be within the approach boundaries specified in NFPA 70E.

**This is (or may be) a requirement of your facility or one of your customer's facilities (i.e. steel mills, utility power plants, heavy industrials, etc.)*

- (4) The decision-making process necessary to determine the degree and extent of the hazard and the personal protective equipment and job planning necessary to perform the task safely
- (c) An employee who is undergoing on-the-job training and who, in the course of such training, has demonstrated an ability to perform duties safely at his or her level of training and who is under the direct supervision of a qualified person shall be considered to be a qualified person for the performance of those duties.
- (d) Tasks that are performed less often than once per year shall require retraining before the performance of the work practices involved.
- (e) Employees shall be trained to select an appropriate voltage detector and shall demonstrate how to use a device to verify the absence of voltage, including interpreting indications provided by the device. The training shall include information that enables the employee to understand all limitations of each specific voltage detector that may be used.

Arc Flash Labels PER NFPA 70E 130.5

* ARE YOUR LABELS UP TO DATE?

Per the 2004 version HRC Category 0 was defined as 0 – 2.0 cal/cm²; however, in the 2009 version it changed to 0 – 1.2 cal/cm² and has remained unchanged. 2009-70E 130.3(C) only required AFlE or HRC labeling; whereas, 2012-70E 130.5(B) requires Voltage, AF Boundary and either AFlE or HRC. There is an exception for labels installed prior to 2012 to be acceptable with only AFlE or HRC if the study is not over 5 years old.

⚠ DANGER

Equipment ID: MHT-UT MSB MAIN
Working Distance: 18 in
Calculated AFlE: 65 cal/cm²
Arc Flash Boundary: 206 in
List of Arc Flash PPE: FR Suit and Hard Hat Liner

ENERGIZED WORK PROHIBITED
NO SAFE PPE EXISTS

FLASH PROTECTION
Flash Hazard at 18 in: 65 cal/cm²
Min. Arc Rating: 65 cal/cm²
Flash Protection Boundary: 206 in
PPE Required: FR Suit and Hard Hat Liner
PPE: No FR Category Found (Do not work on LIVE)

SHOCK PROTECTION
Exposed Voltage: 480 VAC
Glove Class: 0
Limited Approach: 42 in
Restricted Approach: 12 in
Prohibited Approach: 1 in

Salisbury Assessment Solutions
101 E. Crestroads Pkwy Suite A
Bolingbrook, IL 60440
888-429-0389 877-406-4591
Mar 14, 2013 #110065

Lock-Out Tag Out Location: Nominal System Voltage
Shock Protection Per 130.4
Engineering Firm: Contact Information
Date of The Study

⚠ WARNING

Equipment ID: BUS: AVAL Prot: DBAH-1
Working Distance: 18 in
Calculated AFlE: 1.2 cal/cm²
Arc Flash Boundary: 18 in
List of Arc Flash PPE: FR Suit and Hard Hat Liner

Appropriate PPE Required
Arc Flash and Shock Hazard

FLASH PROTECTION
Flash Hazard at 18 in: 1.2 cal/cm²
Min. Arc Rating: 1.2 cal/cm²
Flash Protection Boundary: 18 in
PPE Required: FR Suit and Hard Hat Liner
PPE: Full Arc Flash Suit and Hard Hat Liner, Hearing Protection, Goggles, Non-flammable Suit and Pants

SHOCK PROTECTION
Exposed Voltage: 240 VAC
Glove Class: 00
Limited Approach: 42 in
Restricted Approach: Avoid Contact
Prohibited Approach: Avoid Contact

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Mar 14, 2013 #110065-Line

Lock-Out Tag Out Location: Nominal System Voltage
Shock Protection Per 130.4
Engineering Firm: Contact Information
Date of The Study

NFPA 70E DEFINES A QUALIFIED PERSON AS FOLLOWS:
Qualified Person. One who has skills and knowledge related to the construction and operation of the electrical equipment and installations and has received safety training to recognize and avoid the hazards involved.

NFPA 70E Article 10.6(D)(1)

- (a) Such persons shall also be familiar with the proper use of the special precautionary techniques, personal protective equipment, including arc-flash, insulating and shielding materials, and insulated tools and test equipment. A person can be considered qualified with respect to certain equipment and methods but still be unqualified for others.
- (b) Such persons permitted to work within the Limited Approach Boundary of exposed energized electrical conductors and circuit parts operating at 50 volts or more shall, at a minimum, be additionally trained in all of the following:
 - (1) The skills and techniques necessary to distinguish exposed energized electrical conductors and circuit parts from other parts of electrical equipment
 - (2) The skills and techniques necessary to determine the nominal voltage of exposed energized electrical conductors and circuit parts
 - (3) The approach distances specified in Table 130.2(C) and the corresponding voltages to which the qualified person will be exposed

ARC FLASH AND SHOCK HAZARD FOR MAINTENANCE PERSONNEL

4 HOURS – AFT1004

The purpose of this session is to provide training on NFPA 70E Article 130. This training is for personnel who are required to examine, adjust, service or maintain electrical equipment while it is energized and meet the standards required for qualified personnel as defined in NFPA 70E.

OSHA 10-HOUR FOR THE ELECTRICAL INDUSTRY*

10 HOURS – OSHA10

The purpose of this multi-day session is to provide a safer working environment and protect electrical workers by keeping them up-to-date on standards, regulations and best safety practices. This 10-hour program is OSHA's basic safety outreach class and is designed to introduce workers to a variety of general industry guidelines and requirements. This class focuses particularly on electrical hazard identification, avoidance, control and prevention through the incorporation of the AFT1004 course. Upon completion of the course, participants will receive an OSHA 10 hour card.



Training and Seminars

WHAT YOU WILL LEARN

SAS TRAININGS COVER A VARIETY OF TOPICS

- How to keep one-lines up to date
- What is involved in performing an engineering study
- The advantages to a study over using the NFPA 70E tables
- Gain knowledge on how mitigation can reduce your HRC levels to 0-2
- When existing labels need to be replaced
- How long an engineering study is valid
- What to consider when adding a circuit or service entrance
- Certification for training to comply with Safety/ PDH/ CEU verification
- How to perform an assessment in accordance with the latest codes and standards



REGIONAL SEMINARS

Seminars can be hosted at your location, at another local facility of your choosing or at one of the following Honeywell training centers:

Albuquerque, NM*

Colorado Springs, CO

Kansas City, MO

Poway, CA*

Savannah, TX*

Allentown, PA

Columbia, MD

Memphis, TN

Redmond, WA

South Bend, IN*

Anniston, AL

Fombell, PA

Minneapolis, MN

Renton, WA*

Torrance, CA*

Bolingbrook, IL*

Fresno, CA*

Morristown, NJ

Rocky Mount, NC

Tucson, AZ*

Cincinnati, OH*

Greer, SC

Phoenix, AZ*

San Diego, CA*

Urbana, OH*

Clearwater, FL

Houston, TX*

Plymouth, MN

Sarasota, FL

* Seminars are also available in Spanish at these locations.

THE SOLUTION IS PREVENTION

Contact your Salisbury representative or an authorized distributor to learn more about what SAS can do for you.

Get a free quote and learn more about electrical safety:

www.arcsafety.com | 888-429-0389

SALISBURY

by Honeywell

Honeywell Safety Products

101 E. Crossroads Pkwy, Ste A

Bolingbrook, IL 60440 USA

Phone: 1-630-343-3800

Fax: 1-630-343-3838

www.salisburybyhoneywell.com

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