March 14, 2016

**Basic Electrical Safety 4 Hour Course**

Energy Management Corporation proposes to offer the following course as a public service to professionals involved in the design and maintenance of public and private electrical power systems.  The course will can act as an introduction or a review of basic electrical safety concepts with the goal of preventing injury as well as complying with current government and industry safety standards including NFPA 70E and OSHA.

**Learning Objectives:**

Understanding:

1.     The fundamentals of electrical power and energy

2.     The harmful effects of electricity on the human body

3.     How to identify electrical hazards

4.     Proper work practices

5.     Proper use of tools and instruments

6.     Current safety standards and compliance with Local, State, and Federal requirements

7.     Selection of personal protective equipment (PPE) and safety warning signs

**Course Outline:**

* **Fundamentals of Electrical Power & Energy**
	+ Fundamentals of electrical circuits
	+ Normal, short circuit, and arcing currents
	+ Grounding & bonding
	+ Circuit protective devices
	+ Interrupting ratings & protective coordination
	+ GFCI & ground fault protection
	+ Arc fault interrupter
	+ Surge protective devices
* **Why Do Accidents Occur:**
	+ Statistics
	+ Electrical injuries
	+ Worker training
	+ Can accidents be prevented?
* **Common Electrical Hazards**
	+ How to identify electrical hazards
	+ Overhead and energized conductors
	+ Unsafe equipment
	+ Batteries & battery rooms
	+ Grounding hazards
	+ Overloaded circuits
	+ Fuse replacements
* **Safety Related Work Practices**
	+ Energized vs. de-energized
	+ Proper use of tools & instruments
		- Multimeters (voltmeters, ammeters, ohmmeters)
		- Infrared cameras
		- Phase meters
		- Receptacle testers
	+ One-hand rule
	+ Second person rule
	+ Plug strip safety
	+ Lockout/tagout
	+ Personal protective equipment (PPE)
	+ Fire extinguishers
* **Codes & Standards, Record-Keeping, and Procedures**
	+ NFPA 70E, standard for electrical safety in the workplace
	+ OSHA safety standards
	+ Safety program
	+ Qualified vs. unqualified
	+ Job pre-planning / work permits
	+ Safety meetings
	+ Arc flash protection
	+ Required documents
	+ Forms & procedures
	+ First aid/CPR

**Questions & Review**

**Schedule of Classes:**

* Program will be taught in one 4-hour session at local hotels, universities, and other meeting areas. All participant course materials will be provided. CEU certificates will be provided to those who complete the final test and required paperwork.

**Instructors:**

Craig N Hartman

BSEE, University of Utah, 1980

Professional Engineer License #E11313, State of California

Professional Engineer License #24114, State of Colorado

Professional Engineer License #189022-2202, State of Utah

25+ years of experience in Power Generation & Distribution, Power Quality, Industrial Control, and Engineering Management including:

* Westinghouse Electric: Project & Application Engineer
* Mitsubishi Electric: Drives & PLC Specialist
* Geneva Steel Corporation: Director of Engineering
* EMC: VP of Operations & Engineering

Dion Lovan

25+ years of experience with motors, motor controls, and electrical testing

National Electrical Testing Association (NETA) Level 3 Certified Test Technician - since 1985

Certified Substation Specialist - since 1985

Certified Automatic Transfer switch Specialist (ASCO) - since 1986

IBEW Local 11 Wireman - 2001-2005

BATT Safety Certified - since 1995

Generac MPS Certified - since 2007

EMC: Senior Field Service Engineer & Testing Specialist

Wayne Turnbow

30+ years of experience in variable frequency drive service, repair and fabrication

Variable Frequency Drive specialist experienced with most drive manufacturers

17 years of experience in engineering and design

Cutler Hammer SV9000 & CP9000 VFD certified

EMC: VP of Sales

Other guest instructors, specializing in the areas noted above and under the direction of Mr. Hartman, may be utilized during the presentations.