PRIME MOVERS

This section provides information on the basic types of prime movers found in On-Set Generator applications, and then focuses on reciprocating internal combustion engines. Participants will gain an understanding of the two and four-stroke cycles that are the basis of engine operation. Further topics include spark-ignition (gasoline) and compression-ignited (diesel) engines and their internal components; fuel, lubrication, cooling and exhaust systems; engine ratings; mechanical to electrical power and fuel consumption calculations.

INTRODUCTION TO GENERATORS/ALTERNATORS

This module is an introduction to the general design and functions of rotating AC electric generators. Major topics covered include electrical types of electric generating systems; definitions and descriptions of the wound components of an AC generator, including discussions of generator fields and armatures; the generation and frequency of the AC voltage waveform; excitors and excitation support systems. The instructor will also cover types and criteria of AC generators; design, including discussions of armature design features; generator electrical balance and harmonics and the methods of connection of both three-phase and single-phase armatures. (2 Hrs)

STARTING SYSTEMS

This module provides an overview of electrical start systems; general electrical sizing parameters; environmental considerations, and battery technologies commonly deployed to start engines or turbinnes. Topics include: parameters required to size electrical start systems; the effect of environmental conditions on battery performance and life; features, benefits and modes of failure of traditional battery technologies; dual battery starting systems; the effect of environmental conditions on battery and battery technologies commonly deployed to start engines or turbinnes; and general electrical sizing parameters; environmental considerations. (2 Hrs)

INTRODUCTION TO AUTOMATIC VOLTAGE REGULATORS

This section of the program covers the basics of electrical system operation function of the voltage regulator, and its application and selection, for a synchronous generating system. It also includes a discussion of special regulator applications and the use of excitation accessories and controller devices for improved operation and protection. (2 Hrs)

LOAD BANK FUNDAMENTALS

Today’s generator sets are designed to meet the best in frequency control. Although not obsolete, mechanical governors have given way to either the electro-hydraulic or the all-electric governor, depending on the size of the set. In addition to covering basic governor design, this session also covers electronic load sharing and controller systems, and automatic synchronizing. Utility paralleling, with its special considerations, is also covered. (2 Hrs)

LOAD BANKS

Load Banks are a critical component for proper, reliable power system operation. This training session will expose the student to the types of load banks, their applications, and how a load bank tests a power source. This training module will also address the important topics of load bank safety and best practices. (2 Hrs)

GENERATOR SYSTEM INSTRUMENTATION

On Site Power Systems and their installation must meet various codes and standards. The module reviews the codes related to these systems. You will learn the background for these standards as well as requirements for when and where they are needed, how generators must be installed, tested, and maintained. Typical standards covered are IEEE and UL. (2 Hrs)

WHAT EXACTLY IS A CEU?

EGSA takes your education, and your career success, very seriously. That’s why we offer a Continuing Education Unit (CEU) Program for students of EGSA’s George Rowley School of On-Site Power Generation.

With our CEU program, you have a way to demonstrate what you learned while attending the EGSA George Rowley School. Likewise, your employer will have the satisfaction of knowing that this investment in training has been money well spent.

LEARNING OUTCOMES

“Learning Outcomes” for each portion of the school have been developed. Learning Outcomes are directly related to the test items, and they give you specific and detailed information about what you are expected to learn. You complete the test at your convenience and, when finished, mail it to EGSA.

WHERE CAN I LEARN MORE?

For complete details about the CEU Program when you attend a Rowley School, visit our website at EGSA.org where you can download EGSA’s CEU Learning Outcomes, program requirements and procedures. If you have specific question or need information, contact EGSA at EGSA (561) 750-5575 or e-mail us at CEU@EGSA.org.

*Changes in the School may result in a change to the number of CEUs awarded. While not likely, EGSA reserves the right to change the CEU content, sequencing and other aspects of the EGSA George Rowley School of On-Site Power Generation at any time and without notice.