



## IPCS002 – easYgen-3000

### **DESCRIPTION:**

This 5-day course provides an in-depth introduction to generator control and power system management using the easYgen-3000 control system platform. It is intended for power system designers, application engineers and service technicians who will specify, program and/or commission the easYgen-3000.

The course covers a wide range of easYgen-3000 applications, from simple stand-by operation to multiple generators in complex distribution systems, and includes instruction on applying the Woodward LS-5 circuit breaker controllers in conjunction with the easYgen-3400/3500 controls.

The course consists of both classroom lecture sessions and hands-on training in Woodward's diesel engine lab. It begins with an overview of the features and functionality of the easYgen-3000 and progresses through device configuration via Woodward ToolKit programming software, application and operation modes, communication, use of the LogicsManager and AnalogManager functions, PID controller function, and complex system management using the LS-5 circuit breaker controllers. Throughout the course the instructor will reinforce students' knowledge of power management fundamentals such as:

- Speed and voltage control, droop and isochronous load sharing, PID control.
- Synchronizing and proportional load sharing of electrical generators.
- Soft loading/unloading, baseload, process control, import/export control, VAR/PF control.

Students will program actual easYgen-3000 controls using Woodward ToolKit programming software, and practice hands-on PID tuning and troubleshooting on a system of paralleled diesel generators.

### **CLASS OBJECTIVES:**

*Upon successful completion of this course, the student will:*

- Know the capabilities of the different easYgen-3000 models, as well as complementary peripheral devices and third-party modules, and be able to specify the correct devices for a given application.
- Navigate the menu structure and configure the easYgen-3000 for a variety of applications.
- Use the LogicsManager and AnalogManager functions to broaden the logical programming capabilities of the easYgen-3000.
- Troubleshoot common alarms/errors and tune the easYgen PID controllers for optimal system performance using the ToolKit trending functions.
- Demonstrate a firm understanding of power management fundamentals.

### **LOCATION AND AREA HOTELS:**

The easYgen-3000 course is presented at Woodward's Drake Office, located at 1000 East Drake Rd, Fort Collins, CO 80525.

Fort Collins is situated in the foothills of the Rocky Mountains about an hour north of Denver. It is home to many tech-industry businesses as well as Colorado State University, and has all the amenities expected of a growing, tech-driven college town- including a vibrant "Old Town" district with many restaurants and shops. Rocky Mountain National Park and the town of Estes Park are within an hour's drive and can make for a memorable evening of scenic exploration after class.

The Hilton Fort Collins at 425 W Prospect Road (970-482-2626) is the closest hotel to our headquarters and offers special rates for Woodward guests.

## **SCHEDULE AND REQUIRED MATERIALS:**

The class schedule is as follows (all times are Mountain time zone):

Monday: 1:00 pm to around 4:00 pm

Tuesday-Thursday: 8:15 am to around 4:00 pm

Friday: 8:15 am to around 1:00 pm

Please plan to arrive at least 30 minutes early on Monday and go to the main lobby to obtain your visitor pass. Foreign nationals must notify us in advance and provide a copy of your passport, as we require special identification and a Woodward escort through ITAR-controlled areas of our facility.

Travel time from Fort Collins to Denver International Airport by car is about one hour (or longer with traffic), so when booking your flights please allow at least 3 hours arrival/departure time from when class begins/ends. If flight schedules require that you leave early on Friday, please let the instructor know so we can try to fit you in the Thursday lab session.

Coffee, juice, water and donuts or muffins are provided in the morning and afternoon; lunch is provided by Woodward in our cafeteria (usually from 11:30 to 12:30).

The classroom lectures are conducted with groups of 2 sharing an easYgen controller, so at least 1 laptop is required per group for configuring via ToolKit. Your laptop must have Microsoft NETFrameworks version 3 or greater installed (see Microsoft Downloads for this update). Connection to the easYgen is via RS232 serial port. If your laptop does not have a RS232 serial port a USB-to-serial adapter is required; please obtain a USB-to-serial adapter and install all associated drivers in advance.