

ABB Marine Academy course description

H890 – Fundamentals of plant automation and basic knowledge of vessel processes

Course goal

The goal of this course is to provide students with fundamentals of industrial automation and knowledge of basic Physics laws involved.

Learning objectives

After this course, students will be able to understand the philosophy of an automation system, review most common electrical laws for practical applications and use efficiently diagnostic tools such as the Multimeter and oscilloscope.

Contents

- Basic knowledge of physics laws: Ohm, Ampère, Hertz.
- Grounding, zero voltage reference.
- Multimeter utilization for mA, V and Hz measurements, signal converters.
- Digital & Analog & Pulse signals, range, resolution.
- Probes: PT100, TC, micro switches & limit switches, Transmitters
- Orders and feedbacks to/from field (Pump start/stop example)
- Devices: valves, motor, PID regulator
- Microprocessors basic theory, Control logic structure, programming structure, concept of "sequence", contact logic "Ladder"
- Input/Output theory
- Binary system, Bool law, Bool math, hex system (principles)
- PMS & Distribution concepts



Methods

Lectures and Workshop held in classroom.

Student profile

Not experienced Automation engineers, new crew technical personnel.

Prerequisites

No particular prerequisite is required. Students graduated at basic technical schools electric-electronic oriented are preferable.

Duration

3 days

Venue

Genoa, Italy
Rotterdam, The Netherlands

Additional information

Minimum 6, maximum 8 participants.

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Course outline

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Day 1

- Introduction
- Understanding of Ohm, Ampère and Hertz laws
- Most common field sensors and probes
- Exercises

Day 2

- Usage of Multimeter and Oscilloscope
- Concept of PLC and HMI
- PID controllers and regulators
- Exercises

Day 3

- Microprocessors and I/O theory
- Basics of programming
- PMS & complex systems
- Exams & Diplomas