Background
Westinghouse is a long-time supplier of Ovation® products and customized content for nuclear power plant I&C systems (instrumentation and control systems).

The world’s first AP1000® plants in Sanmen and Haiyang China utilize Emerson’s Ovation platform. In order to maintain the safe operation of these plants, reduce the risk of human errors, and support the development of a future AP1000 fleet in China, this AP1000 I&C System Development Training module is available for I&C engineers who may need to work at AP1000 nuclear power plants on control system engineering, site commissioning, system maintenance and other areas that require a general understanding of an Ovation System.

This training module offers an introduction to Ovation hardware and software components which will help I&C engineers to become familiar with the Ovation system. In addition, this module also provides training on several Ovation related applications which are used in AP1000 nuclear power plants. Applications discussed in this module include: PLS (Plant Control System), DDS (Data Display and Processing System), OCS (Operations and Control System), etc.

In addition, this training will also provide an overview introduction for PMS (Protection and Safety Monitoring System) with an emphasis on the PMS function and Westinghouse Common Q safety system platform which are used for safety system control. The Common Q platform is a single common platform designed with modular components including:

- ABB Advant® Controller 160 (AC160) with PM646A processor module input and output cards
- Power supply
- Flat panel display system (for operator’s module and maintenance/test panel)
- Advant fieldbus (AF100) communication

These major building blocks are combined to address the most utility needs for Class 1E applications, such as component replacements and complete system upgrades. Applying one solution to all safety system applications will significantly reduce utility operation and maintenance costs, including technical support, training and spare parts.

This course is intended for Engineers and I&C Technicians who require a general understanding of PMS function and the Common Q Platform hardware.

Description
The content of this module is based on Ovation 3.5X and the engineering experience gained from working on China AP1000 projects. The training materials are available in English and Chinese.

For the I&C engineers who wish to attend this training, some experience and working knowledge of the I&C field and related working experience is preferred. However, it is not a mandatory requirement to have experience in the Ovation Process and PMS systems.

The AP1000 I&C System Development Training Module encompass the following key sections:

- Introduction to Ovation
  - Architecture and Components
  - Ovation Application Program
  - Ovation System Configuration
  - Ovation Control Builder
  - Ovation Graphics Builder

- PMS Function and Hardware Overview
  - PMS System Description
  - PMS Functional Description
  - PMS Component Control
  - PMS Hardware
Benefits

This training will help I&C engineers working at AP1000 nuclear power plants to acquire the necessary Ovation and PMS knowledge which will help them to apply this knowledge to be able to deal with issues with the guidance from Westinghouse’s experts.

Experience

The Sanmen Unit 1 main control is online and operating. Certified reactor operators operate from the MCR to monitor and control plant processes. Westinghouse delivered all I&C systems, design documentation, engineering services, and mechanical equipment to support this milestone.