COURSE OVERVIEW IE0298
CCC Anti-Surge for Control

Course Title
CCC Anti-Surge for Control

Course Date/Venue
Please see page 3

Course Reference
IE0298

Course Duration/Credits
Five days/3.0 CEUs/30 PDHs

Course Description

This practical and highly-interactive course includes various practical sessions and exercises. Theory learnt will be applied using our state-of-the-art simulators.

This course is designed to provide participants with a detailed and up-to-date overview of CCC Anti-Surge for Control. It covers the principles of compression, phenomenon of surge and significance of anti-surge control; the CCC's anti-surge solutions including the hardware, software, and other components of CCC anti-surge control system; the surge control lines and performance curves; the guided instructions on the installation of controllers, sensors and related hardware; the step-by-step guide on setting up the software, configuring control parameters, and understanding the user interface; and the techniques and best practices for tuning the control system for optimum performance.

During this interactive course, participants will learn to set-up alarms, use built-in diagnostic tools and integrate CCC with plant DCS/SCADA systems; ensure seamless communication between the CCC system and the plant's main control systems; addressing frequent issues faced in anti-surge control and their resolution; the additional features and functionalities for enhanced control and monitoring; and the best practices for maintaining the system and when/how to upgrade.

Course Objectives

Upon the successful completion of this course, each participant will be able to:-

- Apply and gain systematic techniques on CCC Anti-Surge for Control
- Discuss the principles of compression, the phenomenon of surge and the significance of anti-surge control
- Identify CCC's anti-surge solutions including the hardware, software, and other components of CCC anti-surge control system
- Recognize surge control lines and performance curves as well as the guided instructions on the installation of controllers, sensors and related hardware
- Illustrate the step-by-step guide on setting up the software, configuring control parameters, and understanding the user interface
- Employ techniques and best practices for tuning the control system for optimum performance
- Set-up alarms, use built-in diagnostic tools and integrate CCC with plant DCS/SCADA systems
- Ensure seamless communication between the CCC system and the plant's main control systems
- Address frequent issues faced in anti-surge control and their resolution
- Explore additional features and functionalities for enhanced control and monitoring
- Implement best practices for maintaining the system and when/how to upgrade

Exclusive Smart Training Kit - H-STK®

*Participants of this course will receive the exclusive "Haward Smart Training Kit" (**H-STK®**). The **H-STK®** consists of a comprehensive set of technical content which includes **electronic version** of the course materials conveniently saved in a **Tablet PC**.*

Who Should Attend

This course provides all significant aspects and consideration of CCC anti-surge for control for process control engineers, process operators, maintenance engineers and technicians, instrumentation and control technicians, plant managers and supervisors, reliability engineers, process safety engineers, rotating equipment engineers, control system designers and those who are involved in the operation, maintenance, and control of centrifugal compressors to prevent surge, which is a critical issue in such systems.

Training Methodology

All our Courses are including **Hands-on Practical Sessions** using equipment, State-of-the-Art Simulators, Drawings, Case Studies, Videos and Exercises. The courses include the following training methodologies as a percentage of the total tuition hours:-

30% Lectures
20% Practical Workshops & Work Presentations
30% Hands-on Practical Exercises & Case Studies
20% Simulators (Hardware & Software) & Videos

In an unlikely event, the course instructor may modify the above training methodology before or during the course for technical reasons.

Course Date/Venue

Session(s)	Date	Venue
1	June 30-July 04, 2025	Fujairah Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE
2	August 17-21, 2025	Tamra Meeting Room, Al Bandar Rotana Creek, Dubai, UAE
3	October 20-24, 2025	Fujairah Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE
4	December 21-25, 2025	Tamra Meeting Room, Al Bandar Rotana Creek, Dubai, UAE

Course Fee

US$ 5,500 per Delegate + **VAT**. This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Accommodation

Accommodation is not included in the course fees. However, any accommodation required can be arranged at the time of booking.

Course Certificate(s)

Internationally recognized certificates will be issued to all participants of the course who completed a minimum of 80% of the total tuition hours.

Certificate Accreditations

Certificates are accredited by the following international accreditation organizations: -

- British Accreditation Council (BAC)

  Haward Technology is accredited by the **British Accreditation Council** for **Independent Further and Higher Education** as an **International Centre**. BAC is the British accrediting body responsible for setting standards within independent further and higher education sector in the UK and overseas. As a BAC-accredited international centre, Haward Technology meets all of the international higher education criteria and standards set by BAC.

- The International Accreditors for Continuing Education and Training (IACET - USA)

Haward Technology is an Authorized Training Provider by the International Accreditors for Continuing Education and Training (IACET), 2201 Cooperative Way, Suite 600, Herndon, VA 20171, USA. In obtaining this authority, Haward Technology has demonstrated that it complies with the **ANSI/IACET 2018-1 Standard** which is widely recognized as the standard of good practice internationally. As a result of our Authorized Provider membership status, Haward Technology is authorized to offer IACET CEUs for its programs that qualify under the **ANSI/IACET 2018-1 Standard**.

Haward Technology's courses meet the professional certification and continuing education requirements for participants seeking **Continuing Education Units** (CEUs) in accordance with the rules & regulations of the International Accreditors for Continuing Education & Training (IACET). IACET is an international authority that evaluates programs according to strict, research-based criteria and guidelines. The CEU is an internationally accepted uniform unit of measurement in qualified courses of continuing education.

Haward Technology Middle East will award **3.0 CEUs** (Continuing Education Units) or **30 PDHs** (Professional Development Hours) for participants who completed the total tuition hours of this program. One CEU is equivalent to ten Professional Development Hours (PDHs) or ten contact hours of the participation in and completion of Haward Technology programs. A permanent record of a participant's involvement and awarding of CEU will be maintained by Haward Technology. Haward Technology will provide a copy of the participant's CEU and PDH Transcript of Records upon request.

Course Instructor(s)

This course will be conducted by the following instructor(s). However, we have the right to change the course instructor(s) prior to the course date and inform participants accordingly:

Mr. Sydney Thoresson, PE, BSc, is a **Senior Electrical & Instrumentation Engineer** with over **40 years** of extensive experience within the **Petrochemical**, **Utilities**, **Oil**, **Gas** and **Power** industries. His specialization highly evolves in **Process Control Instrumentation**, **Process Instrumentation & Control**, **Process Control**, **Instrumentation**, **Troubleshooting** & Problem Solving, Process **Instrumentation** and Control Techniques, **Instrumentation** for Process Optimization and Control, Process Automation and **Instrumentation** Systems Integration, Troubleshooting in Process Control Systems**,** Process Control & Safeguarding, **Troubleshooting Instrumentation** and Control Systems, GC Processes **Troubleshooting** and Control Systems, Practical **Troubleshooting** and Repair of Electronic Circuits**,** Process Control, **Troubleshooting** & **Problem Solving.** Process Control (**PCI**) & Safeguarding, **Control Loop & Valve Tuning**, **Controller Maintenance** Procedures, High Integrity Protection Systems (**HIPS**), **Instrument Calibration & Maintenance**, **Instrumented Safety Systems**, **Compressor Control & Protection**, **Control Systems**, Programmable Logic Controllers (**PLC**), **SCADA System**, **PLC & SCADA** - Automation & Process Control, **PLC & SCADA** Systems Application, Technical **DCS/SCADA**, **PLC-SIMATIC S7 300/400**: Configuration, Programming and Troubleshooting, **PLC, Telemetry and SCADA** Technologies, Cyber Security of Industrial Control System (**PLC, DCS, SCADA & IED**), Basics of **Instrumentation Control System, DCS**, **Distributed Control System** - Operations & Techniques, Distributed Control System (**DCS**) Principles, Applications, Selection & Troubleshooting, Distributed Control Systems (**DCS**) especially in **Honeywell DCS**, **H&B DCS**, **Modicon, Siemens**, **Telemecanique**, **Wonderware** and **Adrioit,** Safety Instrumented Systems (**SIS**), Safety Integrity Level (**SIL**), Emergency Shutdown (**ESD**), **Emergency Shutdown** System, Variable Frequency Drive (**VFD**), **Process Control & Safeguarding**, **Field Instrumentation**, **Instrumented Protective Devices** Maintenance & Testing, Instrumented Protective Function (**IPF**), **Refining & Rotating Equipment**, **Equipment Operations**, **Short Circuit Calculation**, **Voltage Drop Calculation**, **Lighting Calculation**, **Hazardous Area Classification**, **Intrinsic Safety**, **Liquid & Gas Flowmetering**, **Custody Measurement**, **Ultrasonic Flowmetering**, **Loss Control**, **Gas Measurement**, **Flowmetering & Custody Measurement**, **Multiphase Flowmetering**, **Measurement and Control**, **Mass Measuring System Batching** (**Philips**), Arc Furnace Automation-Ferro Alloys, Walking Beam Furnace, Blast Furnace, Billet Casting Station, Cement Kiln Automation, Factory Automation and Quality Assurance Accreditation (**ISO 9000** and **Standard BS 5750**). Further, he is also well-versed in **Electrical Safety**, **Electrical Hazards Assessment**, **Electrical Equipment**, **Personal Protective Equipment**, Log-Out & Tag-Out (**LOTO**), **ALARP & LOPA** Methods, Confined Workspaces, Power **Quality**, Power **Network**, Power **Distribution**, **Distribution Systems**, **Power Systems Control**, **Power Systems Security**, Power **Electronics**, Electrical **Substations**, **UPS** & **Battery System**, **Earthing & Grounding**, Power **Generation**, **Protective Systems**, **Electrical Generators**, **Power** & **Distribution Transformers**, **Electrical Motors**, **Switchgears**, **Transformers**, **AC** & **DC Drives**, **Variable Speed Drives** & **Generators** and **Generator Protection**. He is currently the **Projects Manager** wherein he manages projects in the field of electrical and automation engineering and in-charge of various process hazard analysis, fault task analysis, FMEA and HAZOP study.

During Mr. Thoresson's career life, he has gained his thorough and practical experience through various challenging positions and dedication as the **Contracts & Projects Manager**, **Managing Director**, **Technical Director**, **Divisional Manager**, **Plant Automation Engineer**, **Senior Consulting Engineer**, **Senior Systems Engineer**, **Electrical & Instrumentation Engineer**, **Consulting Engineer**, **Service Engineer** and **Section Leader** from several international companies such as **Philips**, **FEDMIS**, **AEG**, **DAVY International**, **BOSCH**, **Billiton** and **Endress/Hauser**.

Mr. Thoresson is a **Registered Professional Engineering Technologist** and has a **Bachelor's** degree in **Electrical & Electronics Engineering** and a **National Diploma** in **Radio Engineering**. Further, he is a **Certified Instructor/Trainer**, a **Certified Internal Verifier/Assessor/Trainer** by the **Institute of Leadership & Management** (**ILM**) and an active member of the International Society of Automation (**ISA**) and the Society for Automation, Instrumentation, Measurement and Control (**SAIMC**). He has further delivered numerous trainings, courses, seminars, conferences and workshops worldwide.

Course Program

The following program is planned for this course. However, the course instructor(s) may modify this program before or during the course for technical reasons with no prior notice to participants. Nevertheless, the course objectives will always be met:

Day 1

0730 – 0800	*Registration & Coffee*
0800 – 0815	*Welcome & Introduction*
0815 – 0830	***PRE-TEST***
0830 – 0930	***Introduction & Course Objectives*** *Overview, Expectations and Goals of the Training*
0930 – 0945	*Break*
0945 – 1100	***Basics of Compression & Surge*** *The Principles of Compression and the Phenomenon of Surge*
1100 – 1215	***Basics of Compression & Surge (cont'd)*** *The Principles of Compression and the Phenomenon of Surge (cont'd)*
1215 – 1230	*Break*
1230 – 1420	***Significance of Anti-Surge Control*** *Why Anti-Surge Control is Essential and the Potential Risks Associated with Surge*
1420 – 1430	***Recap***
1430	*Lunch & End of Day One*

Day 2

0730 – 0930	***CCC's Anti-Surge Solutions*** *CCC's Offerings in the Domain of Anti-Surge Control*
0930 – 0945	*Break*
0945 – 1100	***Components of CCC Anti-Surge Control System*** *Hardware, Software and other Components of the System*
1100 – 1230	***Components of CCC Anti-Surge Control System (cont'd)*** *Hardware, Software and other Components of the System (cont'd)*
1230 – 1245	*Break*
1245 – 1420	***Surge Control Lines & Performance Curves*** *Performance Curves and How to Determine the Surge Control Line*
1420 – 1430	***Recap***
1430	*Lunch & End of Day Two*

Day 3

0730 – 0930	***Installation of CCC Anti-Surge Hardware*** *Guided Instructions on the Installation of Controllers, Sensors and Related Hardware*
0930 – 0945	*Break*
0945 – 1100	***Configuring the Anti-Surge Control Software*** *Step-By-Step Guide on Setting Up the Software, Configuring Control Parameters and Understanding the User Interface*
1100 – 1230	***Configuring the Anti-Surge Control Software (cont'd)*** *Step-By-Step Guide on Setting Up the Software, Configuring Control Parameters and Understanding the User Interface (cont'd)*

1230 – 1245	*Break*
1245 – 1420	***Tuning & Calibration*** *Techniques and Best Practices for Tuning the Control System for Optimum Performance*
1420 – 1430	***Recap***
1430	*Lunch & End of Day Three*

Day 4

0730 – 0930	***Alarm Management & Diagnostics*** *Setting up Alarms, Understanding their Significance and Using Built-In Diagnostic Tools*
0930 – 0945	*Break*
0945 – 1100	***Integration with Plant DCS/SCADA Systems*** *Ensuring Seamless Communication Between the CCC System and the Plant's Main Control Systems*
1100 – 1230	***Integration with Plant DCS/SCADA Systems (cont'd)*** *Ensuring Seamless Communication Between the CCC System and the Plant's Main Control Systems (cont'd)*
1230 – 1245	*Break*
1245 – 1420	***Common Troubleshooting Scenarios*** *Addressing Frequent Issues Faced in Anti-Surge Control and Their Resolution*
1420 – 1430	***Recap***
1430	*Lunch & End of Day Four*

Day 5

0730 – 0830	***Advanced Features of CCC Anti-Surge System*** *Exploring Additional Features and Functionalities for Enhanced Control and Monitoring*
0930 – 0945	*Break*
0945 – 1100	***Maintenance & Upgrades*** *Best Practices for Maintaining the System and When/How to Upgrade*
1100 – 1230	***Maintenance & Upgrades (cont'd)*** *Best Practices for Maintaining the System and When/How to Upgrade (cont'd)*
1230 – 1245	*Break*
1245 - 1345	***Case Study Analysis*** *Discussion on Real-World Scenarios Where CCC Anti-Surge Control Played a Crucial role • Analyzing Challenges, Solutions, and Outcomes*
1345 – 1400	***Course Conclusion***
1400 – 1415	***POST-TEST***
1415 – 1430	*Presentation of Course Certificates*
1430	*Lunch & End of Course*

Simulator (Hands-on Practical Sessions)

Practical sessions will be organized during the course for delegates to practice the theory learnt. Delegates will be provided with an opportunity to carryout various exercises using one of our state-of-the-art simulators "Allen Bradley SLC 500", "AB Micrologix 1000 (Digital or Analog)", "AB SLC5/03", "AB WS5610 PLC", "Siemens S7-1200", Siemens S7-400" "Siemens SIMATIC S7-300", "Siemens S7-200" "GE Fanuc Series 90-30 PLC", "Siemens SIMATIC Step 7 Professional Software", and "HMI SCADA".

Allen Bradley SLC 500 Simulator

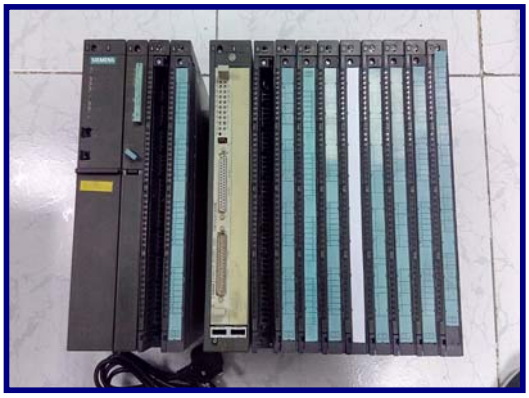
Allen Bradley Micrologix 1000 Simulator (Digital)

Allen Bradley Micrologix 1000 Simulator (Analog)

Allen Bradley SLC 5/03

Allen Bradley WS5610 PLC Simulator PLC5

Siemens S7-1200 Simulator

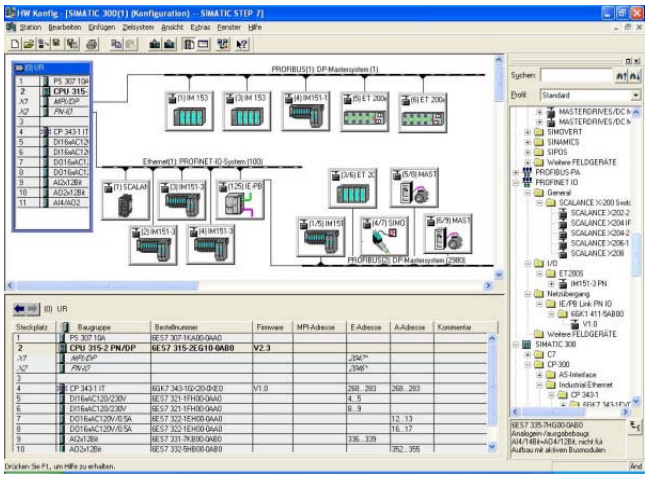


Siemens S7-400 Simulator

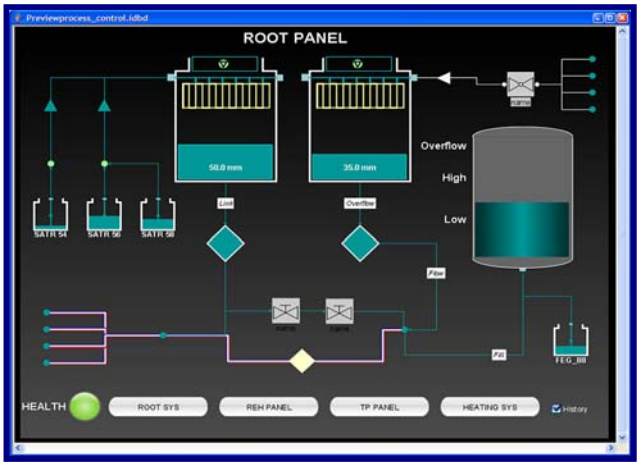
Siemens SIMATIC S7-300

Siemens S7-200 Simulator

GE Fanuc Series 90-30 PLC Simulator



Siemens SIMATIC Step 7
Professional Software



HMI SCADA

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