COURSE OVERVIEW IE0579

Petroleum Custody Transfer in Marine Transportation

Course Title
Petroleum Custody Transfer in Marine Transportation

Course Reference
IE0579

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

Course Date/Venue

Session(s)	Date	Venue
1	May 19-23, 2025	Glasshouse Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE
2	August 24-28, 2025	Tamra Meeting Room, Al Bandar Rotana Creek, Dubai, UAE
3	October 13-17, 2025	Glasshouse 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 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 Petroleum Custody Transfer in Marine Transportation. It covers the importance of custody transfer, regulatory frameworks and standards; the marine transportation systems, key regulations and industry standards and measurement techniques and systems; the documentation and record keeping as well as safety and risk management in marine custody transfer; the flow metering technologies, volume measurement systems, mass measurement systems and custody transfer equipment; and the automated control systems for accurate transfer, pre-transfer preparations and transfer procedures and best practices.

During this interactive course, participants will learn the volume and mass transfer calculations, marine loading and unloading operations and quality control in custody transfer; the post-transfer documentation and reporting and dispute resolution in custody transfer; the legal and contractual aspects, handling measurement discrepancies and the challenges in custody transfer operations; the technology and innovation in custody transfer covering the latest innovations in custody transfer technologies and the role of AI and machine learning in improving operations; the future trends in marine transportation systems; enhancing automation for better accuracy and efficiency; and the best practices and continuous improvement.

Course Objectives

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

- Apply and gain an in-depth knowledge on petroleum custody transfer in marine transportation
- Discuss the importance of custody transfer, regulatory frameworks and standards
- Recognize marine transportation systems, key regulations and industry standards and measurement techniques and systems
- Carryout documentation and record keeping as well as safety and risk management in marine custody transfer
- Discuss flow metering technologies, volume measurement systems, mass measurement systems and custody transfer equipment
- Apply automated control systems for accurate transfer, pre-transfer preparations and transfer procedures and best practices
- Employ volume and mass transfer calculations, marine loading and unloading operations and quality control in custody transfer
- Carryout post-transfer documentation and reporting and dispute resolution in custody transfer
- Discuss legal and contractual aspects, handle measurement discrepancies and identify the challenges in custody transfer operations
- Explain the technology and innovation in custody transfer covering the latest innovations in custody transfer technologies and the role of AI and machine learning in improving operations
- Interpret the future trends in marine transportation systems, enhance automation for better accuracy and efficiency and apply best practices and continuous improvement

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 an overview of all significant aspects and considerations of petroleum custody transfer in marine transportation for instrumentation engineers, electrical and automation engineers, process and facilities engineers, measurement and instrumentation specialists and other technical staff.

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 Certificate(s)
Internationally recognized certificates will be issued to all participants of the course 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 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 Instructor

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

Mr. Barry Pretorius is a **Senior Instrumentation Engineer** with almost **45** years of extensive experience within the **Oil**, **Gas**, **Petrochemical**, **Refinery** & **Power** industries. His expertise widely covers in the areas of Distributed Control System (**DCS**), **DCS** Operations & Techniques, **Plant Control** and Protection Systems, **Process Control & Instrumentation**, **Cascade Control Loops**, **Split-Range Control Loops**, **Capacity Control** & Other Advanced Control Schemes, **Safety Instrumented Systems**, **Plant Automation** Operations & Maintenance, Programmable Logic Controller (**PLC**), **Siemens PLC** Simatic S7-400/S7-300/S7-200, **PLC & SCADA** for Automation & Process Control, **Artificial Intelligence**, **Allen Bradley PLC** Programing and Hardware Trouble Shooting, Schneider **SCADA System**, **Wonder Ware**, **Emerson**, **Honeywell**, **Honeywell** Safety Manager PLC, **Yokogawa**, Advanced **DCS Yokogawa**, **Endress & Hauser**, Field Commissioning and Start up Testing Pre Operations, System Factory Acceptance Test (**FAT**), FactoryLink ECS, Modicon 484, Rockwell Automation, System Site Acceptance Test (**SAT**), **SCADA HMI & PLC** Control Logic, **Cyber Security** Practitioner, **Cyber Security** of Industrial Control System, **IT Cyber Security** Best Practices, **Cybersecurity** Fundamentals, **Ethical Hacking & Penetration Testing**, **Cybersecurity** Risk Management, **Cybersecurity** Threat Intelligence, **OT Whitelisting** for Better Industrial Control System Defense, **NESA** Standard and Compliance Workshop, **OT**, **Cyber Attacks** Awareness - Malware/Ransom Ware / Virus /Trojan/ Philsing, **Information Security Manager**, **Security System** Installation and Maintenance, Implementation, Systems Testing, Commissioning and Startup, **Foxboro DCS & Triconics**, **SIS** Systems, Advanced **DC Drives**, Motion Control, **Hydraulics**, **Pneumatics and Control Systems** Engineering, **Electrical & Automation Control Systems**, **HV/MV Switchgear**, **LV & MV** Switchgears & Circuit Breakers, **High Voltage Electrical Safety**, **LV & HV Electrical System**, **HV Equipment** Inspection & Maintenance, **LV Distribution Switchgear & Equipment**, **Electrical Safety**, **Electrical** Maintenance, **Transformers**, **Medium & High Voltage Equipment**, **Circuit Breakers**, **Cable & Overhead Line** Troubleshooting & Maintenance, **Electrical Drawing & Schematics**, **Voltage Distribution**, **Power Distribution**, **Filters**, **Automation System**, **Electrical Variable Speed Drives**, **Power** Systems, **Power Generation**, **Diesel Generators**, **Power Stations**, Uninterruptible Power Systems (**UPS**), **Battery Chargers**, **AC & DC Transmission**, **CCTV** Installation, **Data & Fire Alarm** System, **Evacuation** Systems and **Electrical Motors & Variable Speed Drives**, & Control of Electrical and Electronic devices.

During Mr. Pretorius's career life, he has gained his practical experience through several significant positions and dedication as the **Senior Technical Analyst, Team Leader, Pre-operations Startup Engineer, Automation System's Software Manager, Automation System's Senior Project Engineer, PLC Specialist, Site Manager, Senior Project & Commissioning Engineer, Technical Director, Project Engineer, Radio Technician**, **A T E Technician** and **Senior Instructor/Trainer** from various companies like the ADNOC Sour Gas, Ras Al Khair Aluminum Smelter, Johnson Matthey Pty. Ltd, Craigcor Engineering, Unitronics South Africa Pty (Ltd), Bridgestone/Firestone South Africa Pty (Ltd) and South African Defense Force.

Mr. Pretorius's has a Higher Diploma in **Electrical Engineering Heavy Current**. Further, he is a **Certified Instructor/Trainer** and delivered numerous trainings, courses, workshops, seminars and conferences internationally.

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	***Overview of Custody Transfer*** *Definition & Importance of Custody Transfer • Role in Marine Transportation • Regulatory Frameworks & Standards • Key Stakeholders in Custody Transfer*
0930 – 0945	*Break*
0945 – 1030	***Marine Transportation Systems*** *Overview of Marine Transportation for Petroleum • Types of Vessels Used in Custody Transfer • Different Modes of Transportation: Tankers versus Pipelines • Infrastructure Considerations (Ports, Terminals)*
1030 – 1130	***Key Regulations & Industry Standards*** *International Maritime Organization (IMO) Regulations • API & ISO Standards in Custody Transfer • National Regulations & Compliance (e.g., USCG, Transport Canada) • Industry-Specific Best Practices*
1130 – 1230	***Measurement Techniques & Systems*** *Flow Meters & Their Applications • Volume & Mass Measurement • Pressure & Temperature Monitoring • Real-Time Data Acquisition Systems*
1230 – 1245	*Break*
1245 – 1330	***Documentation & Record Keeping*** *Essential Documents in Custody Transfer • Electronic versus Paper-Based Records • Audit Trails & Regulatory Requirements • Managing Documentation for Transparency*
1330 – 1420	***Safety & Risk Management in Marine Custody Transfer*** *Safety Protocols During Transfer • Risk Assessments & Hazard Identification • Emergency Response Procedures • Health, Safety & Environmental (HSE) Considerations*
1420 – 1430	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1430	*Lunch & End of Day One*

Day 2

0730 – 0830	***Flow Metering Technologies*** *Types of Flow Meters (e.g., Turbine, Ultrasonic, Magnetic) • Installation & Calibration • Performance Testing & Validation • Troubleshooting & Error Handling*
0830 – 0930	***Volume Measurement Systems*** *Calculation of Volume During Marine Transfer • Using Temperature & Pressure for Volume Correction • Volume Compensation for Different Conditions • Calibration of Volume Measurement Systems*
0930 – 0945	*Break*
0945 – 1045	***Mass Measurement Systems*** *Methods for Determining Mass of Petroleum • Use of Density Meters • Importance of Accurate Density Measurements • Mass Flow Controllers in Marine Transportation*

1045 – 1200	***Custody Transfer Equipment*** *Pumps, Hoses & Valves Used in Custody Transfer • Equipment Maintenance & Calibration • Safety Features of Custody Transfer Systems • Technological Advancements in Custody Transfer Equipment*
1200 – 1215	*Break*
1215 – 1330	***Automation in Custody Transfer*** *Role of Automation in Marine Operations • Data Collection & Processing Systems • Automated Control Systems for Accurate Transfer • Benefits & Challenges of Automation*
1330 – 1420	***Inspection & Certification of Equipment*** *Inspection Schedules & Certification Bodies • Role of Third-Party Inspectors • Understanding Certificates of Calibration • Legal Implications of Improper Certifications*
1420 – 1430	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1430	*Lunch & End of Day Two*

Day 3

0730 – 0830	***Pre-Transfer Preparations*** *Planning & Coordination for Custody Transfer • Crew & Equipment Readiness • Communication Protocols Between Parties • Verifying Transfer Documentation*
0830 – 0930	***Transfer Procedures & Best Practices*** *Step-by-Step Guide to the Transfer Process • Key Personnel Involved During the Operation • Monitoring the Transfer & Ensuring Accuracy • Troubleshooting Common Issues During Transfer*
0930 - 0945	*Break*
0945 – 1130	***Volume & Mass Transfer Calculations*** *Determining Total Quantity Transferred • Using Flow Rates, Pressure & Temperature for Calculations • Impact of Environmental Factors on Measurements • Methods to Ensure Measurement Accuracy During Transfer*
1130 - 1230	***Marine Loading & Unloading Operations*** *Processes Involved in Loading Petroleum onto Ships • Procedures for Unloading at the Receiving Terminal • Safety Considerations During Loading & Unloading • Understanding Custody Transfer During the Full Cycle*
1230 - 1245	*Break*
1245 - 1330	***Quality Control in Custody Transfer*** *Ensuring Product Quality During Marine Transportation • Role of Sampling & Testing • Managing Contamination Risks • Addressing Disputes Over Quality During Transfer*
1330 - 1420	***Post-Transfer Documentation & Reporting*** *Recording & Verifying the Final Quantities • Reporting & Communication with Stakeholders • Handling Discrepancies in Reported Quantities • Auditing & Inspection of Post-Transfer Documents*
1420 – 1430	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1430	*Lunch & End of Day Three*

Day 4

0730 – 0930	***Dispute Resolution in Custody Transfer*** *Common Causes of Disputes (e.g., Measurement Discrepancies) • Protocols for Resolving Disputes • Role of Third-Party Mediators & Inspectors • Case Studies of Resolved Disputes*
0930 - 0945	*Break*
0945 – 1130	***Legal & Contractual Aspects*** *Understanding Contractual Obligations • Role of Legal Documentation in Custody Transfer • Dispute Clauses in Marine Transfer Contracts • Handling Breach of Contract Situations*
1130 - 1230	***Handling Measurement Discrepancies*** *Identifying Causes of Measurement Discrepancies • Methods to Prevent & Correct Errors • The Role of Calibration in Minimizing Discrepancies • Handling Disagreements Over Measurement Results*
1230 - 1245	*Break*
1245 - 1420	***Challenges in Custody Transfer Operations*** *Impact of Weather & Environmental Conditions • Challenges Related to Infrastructure & Equipment • Human Error & Its Role in Transfer Accuracy • Technological Limitations in Current Systems*
1420 – 1430	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1430	*Lunch & End of Day Four*

Day 5

0730 – 0930	***Technology & Innovation in Custody Transfer*** *Latest Innovations in Custody Transfer Technologies • The Role of AI & Machine Learning in Improving Operations • Future Trends in Marine Transportation Systems • Enhancing Automation for Better Accuracy & Efficiency*
0930 - 0945	*Break*
0945 – 1100	***Best Practices & Continuous Improvement*** *Importance of Regular Reviews & Improvements • Developing a Culture of Safety & Efficiency • Training & Development for Operational Staff • Future of Marine Custody Transfer Operations*
1100 – 1200	***Case Study on Custody Transfer Disputes*** *Review of Real-World Case Studies • Analysis of Disputes & Resolutions • Lessons Learned from Past Challenges • Best Practices Drawn from Industry Examples*
1200 - 1215	*Break*
1215 – 1345	***Simulation & Role-Play Exercise*** *Interactive Simulation of Custody Transfer Scenarios • Hands-on Experience in Handling Typical Transfer Operations • Participants Role-Playing Different Positions in the Transfer • Reviewing & Assessing the Simulation Outcomes*
1345 – 1400	***Course Conclusion*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Course Topics that were Covered During the Course*
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", "HMI SCADA" and "PLCLogix 5000 Software".

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

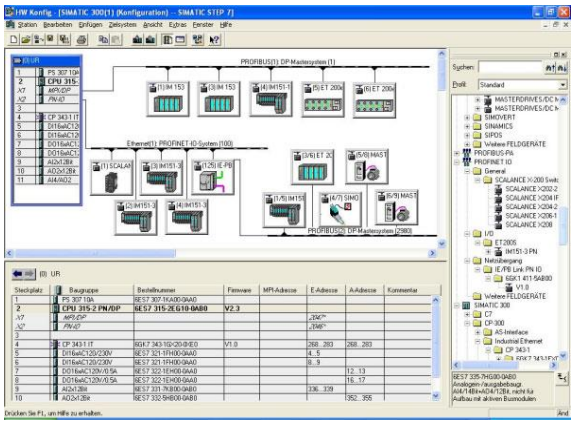
Siemens S7-1200 Simulator

Siemens S7-400 Simulator

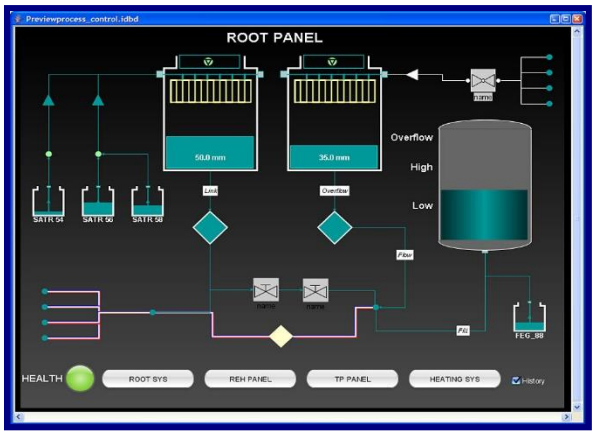
Siemens SIMATIC S7-300

Siemens S7-200 Simulator

GE Fanuc Series 90-30 PLC Simulator



Siemens SIMATIC Step 7 Professional Software



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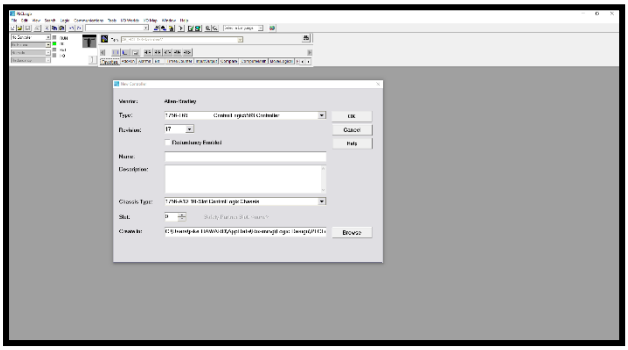

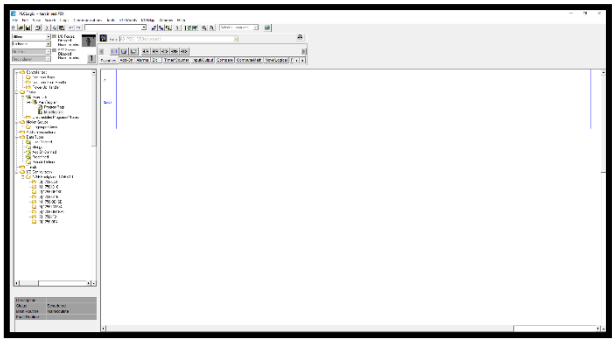

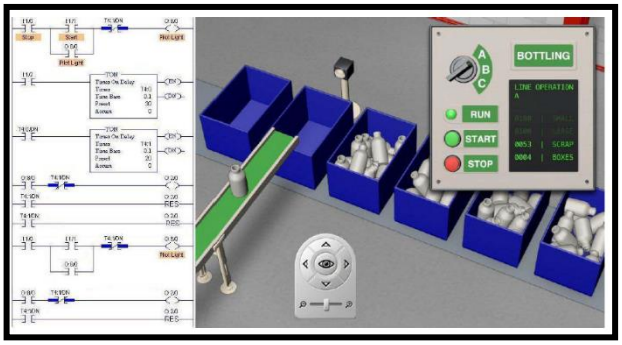

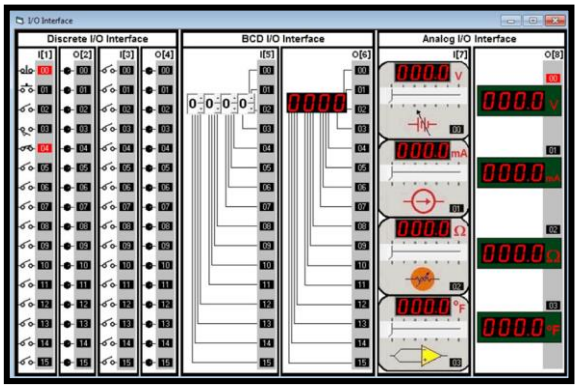

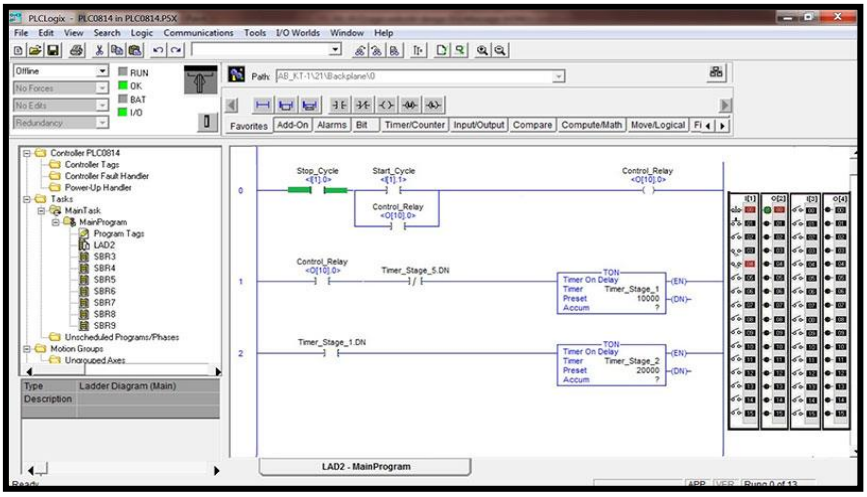

PLCLogix 5000 Software

Course Coordinator

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