

COURSE OVERVIEW EE0136-4D
Advanced ABB VSD Controllers

Course Title
 Advanced ABB VSD Controllers

Course Reference
 EE0136-4D

Course Duration/Credits
 Four days/2.4 CEUs/24 PDHs

Course Date/Venue



Session(s)	Date	Venue
1	January 15-18, 2024	Boardroom 1, Elite Byblos Hotel Al Barsha, Sheikh Zayed Road, Dubai, UAE
2	March 04-07, 2024	Ajman Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE
3	June 10-13, 2024	Al Aziziya Hall, The Proud Hotel Al Khobar, Al Khobar, KSA
4	September 09-12, 2024	Club B Meeting Room, Ramada Plaza by Wyndham Istanbul City Center, Istanbul, Turkey

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.



It is estimated that electrical drives and other rotating equipment consume about 50% of the total electrical energy consumed in the world today. The cost of maintaining electrical motors can be a significant amount in the budget item of manufacturing, oil, gas, petrochemical and power industries. This course gives you a thorough understanding of electrical motor's working, maintenance and failure modes and gives you the tools to maintain and troubleshoot electrical motors and variable speed drives.



This course is designed to provide delegates with an advanced overview of ABB VSDS controllers. It covers the importance and functions of variable speed drives (VSDs) including induction motors physical construction, motors physical equivalent circuit and VFD physical construction, components of ABB VSD, power electronics and test power electrics.

The course will also illustrate the electrical construction, operating principles of the ABB VSD, steps in receiving a new ABB VSD unit, checking before powering, loading the ABB VSD, ABB VSD operation, identifying the problems associated in the operation and troubleshooting procedures of the ABB VSD and maintenance.

Course Objectives

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

- Apply and gain an advanced knowledge on ABB VSD controllers
- Recognize the importance and functions of Variable Speed Drives (VSDs)
- Explain induction motors physical construction, motors physical equivalent circuit and VFD physical construction
- Identify and differentiate the components of ABB VSD, power electronics and test power electrics
- Employ the electrical construction and the operating principles of the ABB VSD
- Carryout the proper steps in receiving a new ABB VSD unit and checking before powering and loading the ABB VSD
- Operate ABB VSD properly and identify the problems associated in the operation
- Implement the troubleshooting procedures of the ABB VSD and maintenance

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, sample video clips of the instructor’s actual lectures & practical sessions during the course conveniently saved in a **Tablet PC**.

Who Should Attend

This course provides an advanced overview of ABB VSD controllers for engineers and other technical personnel who are in charge of selection, application, operation, diagnostic testing, protection, control, troubleshooting or maintenance of motors and variable speed drives.

Course Fee

Abu Dhabi	US\$ 4,500 per Delegate + VAT . This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day
Dubai	US\$ 4,500 per Delegate + VAT . This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.
Al Khobar	US\$ 4,500 per Delegate + VAT . This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.
Istanbul	US\$ 5,000 per Delegate + VAT . This rate includes Participants Pack (Folder, Manual, Hand-outs, etc.), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

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 accreditation by the following international accreditation organizations:

-  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 **2.4 CEUs** (Continuing Education Units) or **24 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.

-  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.

Accommodation

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

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:



Dr. Mike Tay, PhD, MSc, BSc, is a Senior Electrical, Instrumentation & Communications Engineer with over 40 years of extensive experience. His expertise widely covers Energy Industry, Global Warming, Hydroelectric & Geothermal Power, Biomass & Biogas, Four 'C's of the Energy Transition, Fifth Generation Heat, Protection Relay Maintenance, Application & Testing, System Analysis, Power System Faults, Protection Scheme Components, Current & Voltage Transformers, Power System Neutral Grounding, Feeder Overcurrent Protection, Electrical Protection Systems, Bus Protection, Motor Protection, Starting & Control, Transformer Protection, Generator Protection, Capacitor Protection, Numerical Relays, SCADA Security, ESD System Analysis & Control, Electrical & Instrumentation, Installation & Inspection, Custody Measurement, Loss Control for Petroleum Products, Process Control & Instrumentation, Fiber Optics Access Network Planning, Safety Instrumented System (SIS), Safety Integrity Level (SIL), PLC Design, Power System, Power Supply Design Management, Basic Electronics & Transformers, Diesel Generator, Electric Motors, Electrical Fundamentals, Basic Electricity and Electrical Codes. Further, he is also well-versed in Communications, Telecommunications, Mobile Protocols, 4G LTE, GSM/UMTS, CMDA2000, WIMAX Technology, HSPA+, Alarm Management System, Computer Architecture, Logic & Microprocessor Design, Embedded Systems Design plus Computer Networking with CISCO, Network Communication, Industrial Digital Communication, Designing Telecommunications Distribution System, Electrical Engineering, WiMAX Broadband Wireless System, TT Intranet & ADSL Network, TT Web & Voicemail, Off-site ATM Network, IT Maintenance, Say2000i, IP Phone, National Address & ID Automation, Electricity Distribution Network, Customs Network & Maintenance, LAN & WAN Network, UYAP Network, Network Routing Protocols, Multicast Protocols, Network Management Protocols, Mobile & Wireless Networks and Digital Signal Processing. Currently, he is the Technical Advisor of Izmir Altek.

During his career life, Dr. Tay worked with various companies such as the KOC Sistem, Meteksan Sistem, Altek BT, Yasar University, Dokuz Eylul University, METU and occupied significant positions like the Aegean Region Manager, Group Leader, Technical Services Manager, Field Engineer, Research Assistant, Instructor, Technical Advisor and the Dr. Instructor.

Dr. Tay has PhD, Master and Bachelor degrees in Electrical & Electronic Engineering from the Dokuz Eylul University and the Middle East Technical University (METU) respectively. Further, he is a Certified Instructor/Trainer, Technical Trainer (Australia), Trainer for Data-Communication System (England & Canada), a Certified Internal Verifier/Assessor/Trainer by the Institute of Leadership & Management (ILM), a Certified CISCO (CCSP, CCDA, CCNP, CCNA, CCNP) Specialist, a Certified CISCO IP Telephony Design Specialist, CISCO Rich Media Communications Specialist, CISCO Security Solutions & Design Specialist and Information Systems Security (INFOSEC) Professional. He has delivered and presented innumerable training courses and workshops worldwide.

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 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	<i>Registration & Coffee</i>
0800 – 0815	<i>Welcome & Introduction</i>
0815 – 0830	PRE-TEST
0830 – 0930	Introduction to ABB VSDs
0930 – 1030	Why Do We Need to Use VSDs
1030 – 1045	<i>Break</i>
1045 – 1130	Induction Motors Physical Construction
1130 – 1215	Induction Motors Equivalent Circuit
1215 – 1230	<i>Break</i>
1230 – 1330	VFD Physical Construction
1330 – 1420	Practical Session
1420 – 1430	Recap
1430	<i>Lunch & End of Day One</i>

Day 2

0730 – 0830	Identifying Components of ABB VSD
0830 – 0930	Power Electronics Components
0930 – 0945	<i>Break</i>
0945 – 1100	Testing Power Electronics Components
1100 – 1130	Electrical Construction of ABB VSD
1130 – 1215	Theory of Operation of ABB VSD
1215 – 1230	<i>Break</i>
1230 – 1420	Practical Session
1420 – 1430	Recap
1430	<i>Lunch & End of Day Two</i>

Day 3

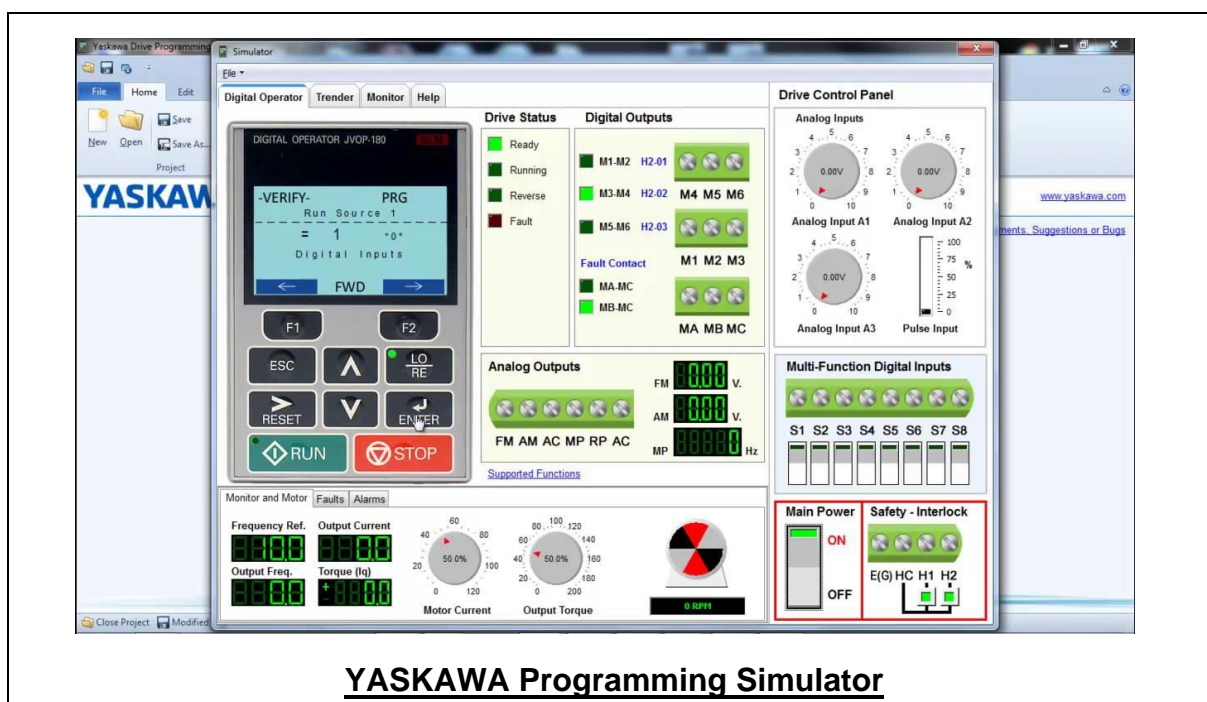
0730 – 0930	<i>Receiving a New ABB VSD Unit</i>
0930 – 1030	<i>Checks before Powering the ABB VSD</i>
1030 – 1045	<i>Break</i>
1045 – 1100	<i>Powering ABB VSD</i>
1100 – 1215	<i>Checks Before Loading the ABB VSD</i>
1215 – 1230	<i>Break</i>
1330 – 1420	<i>Practical Session</i>
1420 – 1430	<i>Recap</i>
1430	<i>Lunch & End of Day Three</i>

Day 4

0730 – 0830	<i>Putting ABB VSD in Operation</i>
0830 - 0930	<i>Problems Associated with the Operation of ABB VSD</i>
0930 – 0945	<i>Break</i>
0945 – 1100	<i>Troubleshooting Procedures</i>
1100 – 1215	<i>Maintenance ABB VSD</i>
1215 – 1230	<i>Break</i>
1230 – 1345	<i>Practical Session</i>
1345 – 1400	<i>Course Conclusion</i>
1400 – 1415	<i>POST-TEST</i>
1415 – 1430	<i>Presentation of Course Certificates</i>
1430	<i>Lunch & End of Course</i>

Simulators (Hands-on Practical Sessions)

Practical session 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 the simulator “Yaskawa Programming Simulator”.



Course Coordinator

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