

DESIGN AND COMMISSIONING VARIABLE SPEED DRIVE - VSD

“Optimizing Motor Performance and Energy Efficiency through Precision VSD Integration”

Schedule

Date	Venue	Fees (Face-to-Face)
27 - 29 Jan 2026	Dubai, UAE	USD 2495 per delegate

Introduction

Variable Speed Drives (VSDs) are essential for improving motor performance, reducing energy consumption, and optimizing control across industries. However, successful implementation depends on proper system design, configuration, and commissioning to avoid costly inefficiencies, failures, or downtime.

This three-day technical course delivers the knowledge and hands-on skills necessary to select, design, install, and commission VSDs for industrial and commercial applications. Participants will explore power electronics fundamentals, motor compatibility, harmonics, wiring practices, and fault diagnosis to ensure safe, efficient operation from day one.

Objectives

By the end of this course, participants will be able to:

- Understand the principles and operation of Variable Speed Drives.
- Select appropriate VSDs based on load, application, and motor characteristics.
- Design control circuits and cabling for VSD integration.
- Configure VSD parameters for startup, acceleration, braking, and safety.
- Detect and correct installation, grounding, and harmonic issues.
- Commission and troubleshoot VSD systems to ensure optimal performance.

Why Attend

- Gain critical knowledge to safely design and integrate VSD systems.
- Reduce energy waste and improve process control through speed regulation.
- Prevent common installation errors and system failures.
- Learn how to interface VSDs with automation and control systems.
- Build technical confidence in selecting and commissioning drives for any industrial setting.

Target Audience

This program is designed for:

- Electrical engineers and technicians
- Plant maintenance and operations personnel
- Automation and controls engineers
- Energy efficiency and commissioning professionals
- System integrators and field service engineers

Individual Benefits

Key competencies that will be developed include:

- VSD system design and integration
- Hands-on commissioning and parameter tuning
- Troubleshooting drive and motor faults
- Motor protection and performance optimization
- Electrical safety and regulatory compliance

Organizational Benefits

Upon completing the training course, participants will demonstrate:

- More reliable and energy-efficient motor systems
- Improved startup and commissioning timelines
- Reduced maintenance and operational downtime
- Safer and more compliant VSD installations
- Lower energy costs through load-matching and process optimization

Instructional Methodology

The course follows a blended learning approach combining theory with practice:

- Engineering Lectures – Core VSD concepts and component functions
- Hands-On Demonstrations – Drive setup, wiring, and testing
- Case Studies – Industry-based commissioning and fault scenarios
- Group Exercises – Sizing, parameter setting, and diagnostics
- Worksheets – Drive specification forms, installation checklists, and tuning guides
- Q&A – Direct support from experienced drive specialists

COURSE OUTLINE

MAWA EVENTS

Address: No. 857, Block A2, Leisure Commerce Square - No 9., 46150 Petaling Jaya, Selangor, Malaysia

Phone: +601116373203 | **Email:** info@mawaevents.net



Course Outline

Detailed 3-Day Course Outline

Training Hours: 7:30 AM – 3:30 PM Daily Format: 3–4 Learning Modules | Coffee breaks: 09:30 & 11:15 | Lunch Buffet: 01:00 – 02:00

Day 1: VSD Fundamentals and Application Design

- **Module 1: Introduction to VSD Operation and Types (07:30 - 09:30)**
 - V/f control, sensor less vector, closed-loop vector
 - Drive topologies and applications
 - Benefits and limitations
- **Module 2: Motor Compatibility and Load Types (09:45 - 11:15)**
 - Motor selection: synchronous, induction, PM motors
 - Load characteristics: constant torque vs variable torque
 - Motor derating and cooling considerations
- **Module 3: Drive Selection and Sizing (11:30 - 01:00)**
 - Calculating power, current, and overload ratings
 - Drive-to-motor matching
 - Protective features and enclosure types
- **Module 4: Practical - Drive Selection Based on Load Profile (02:00 - 03:30)**
 - Team-based exercise using catalogues and load specs

Day 2: Installation, Configuration, and Safety

- **Module 5: Electrical Installation and Cabling Practices (07:30 - 09:30)**
 - Cable lengths, shielding, EMC, and grounding
 - Wiring control and power terminals
 - Short-circuit protection and fusing
- **Module 6: Drive Programming and Parameter Setup (09:45 - 11:15)**
 - Acceleration/deceleration ramps
 - Voltage/frequency settings
 - Motor autotuning and PID setup
- **Module 7: Braking and Energy Management (11:30 - 01:00)**
 - Dynamic braking resistors and regenerative braking
 - Drive efficiency and load balancing
 - Bypass and soft-start comparisons
- **Module 8: Live Simulation - Parameter Configuration and Startup (02:00 - 03:30)**
 - Simulated setup using sample drive software and templates

Day 3: Commissioning, Troubleshooting & Optimization

- **Module 9: Drive Commissioning Best Practices (07:30 - 09:30)**
 - Pre-startup checklist
 - Initial testing and verification
 - Recording baseline performance
- **Module 10: Fault Detection and Troubleshooting (09:45 - 11:15)**
 - Common errors: overcurrent, ground fault, overload
 - Diagnostic menus and fault logs
 - Systematic fault-finding approach
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Module 11: Harmonics, Power Quality & Compliance (11:30 - 01:00)

- Harmonic generation and mitigation
- Filters and compliance with IEEE 519
- Safety grounding and EMC compliance

Module 12: Final Workshop - System Review and Action Plan (02:00 - 03:30)

- Team review of design + commissioning checklist
- Final Q&A and wrap-up

Certification

Participants who complete the program will receive a Certificate of Completion in **Design and Commissioning Variable Speed Drive (VSD)**, recognizing their practical competence in selecting, configuring, and implementing VSDs for energy-efficient and high-performance industrial systems.

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TEL:

+601116373203

EMAIL:

info@mawaevents.net

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