

### Course Overview

Medium voltage ASDs (MV Adjustable Speed Drives) and motors are widely applied to plant rotating machinery like compressors, pumps, fans, extruders, mills, kilns, etc., ranging from a few horsepower (HP) to tens of thousands of horsepower. Safe, reliable and successful application of these ASDs and motors require a system level approach.

The TMEIC Medium Voltage Systems School is an information-packed one-day series of practical sessions covering the selection, specification, and application of industrial MV equipment. Project engineers, equipment specifiers and technical stake holders will learn key application concepts for MV large motors, adjustable speed AC drives, and related MV power systems and distribution equipment that support the motor and drive installation. Instructors are TMEIC application engineers and industry experts with many years' experience in MV drives, motors and integrated system applications in various industries.

The focus for the course will be application topics that can be used right away to specify, evaluate, procure and install a successful MV motor and drive system. The dimensions of the course will be medium voltage (>2.3kV) and motor power ranging from 500HP thru 100,000 HP.

In addition to classroom presentations, attendees are encouraged to bring their own real-world application issues for group discussion. Five (5) Professional Development Hours [PDH] will be documented for those interested in applying their participation to maintaining their professional accreditation.

### Preliminary Agenda

Time	Topic
7:45 AM-8:30 AM	Light Breakfast
8:30 AM-8:45 AM	Safety Moment, Group Introductions, TMEIC Overview
8:45 AM – 11:30 AM	Medium Voltage Induction & Synchronous Motors <ul style="list-style-type: none"> <li>- Motor basics and terminology</li> <li>- Motor standards and third party approvals</li> <li>- Application in hazardous locations and testing</li> <li>- Q &amp; A</li> <li>- Options/accessories</li> <li>- Enclosures</li> <li>- Induction vs. synchronous motors</li> </ul>
11:30 AM – 12:15 PM	Lunch
12:15 PM – 4:00 PM	Medium Voltage adjustable speed drives (ASD) <ul style="list-style-type: none"> <li>- Basic electrical circuits, nomenclature, terminology</li> <li>- Starting large electric motors</li> <li>- Fundamentals of an ASD, how it works, and benefits</li> <li>- Using ASDs for starting large motors</li> <li>- ASD application overview, protection and cooling methods</li> <li>- Applying ASDs and motors as a single package</li> <li>- Tips for integrating ASDs in an electrical building</li> <li>- Cables and grounding</li> <li>- Specifying ASDs</li> <li>- Q &amp; A</li> </ul>
4:00 PM – 4:30 PM	Optional ASD or motor related topics as requested by the class.
4:30 PM	School adjourns

### **What you WILL NOT Receive:**

- A commercial about TMEIC
- Sales Pitches to sell TMEIC motor and ADS solutions
- TMEIC Product Overview
- Commissioning and Troubleshooting specific TMEIC products

### **What you WILL Receive:**

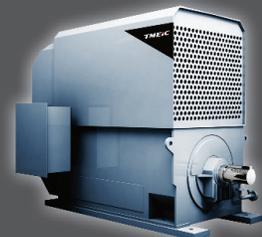
- Technical content containing almost 200 slides
- Relevant technical articles and papers
- Tips, rules of thumb and shortcuts to specify, evaluate, procure and install any MV ASD & Motor
- Real application stories

### **Here's what previous attendees say about the school:**

- “ General, non-product specific, knowledge, and cost benefit analysis for different options. The presenters had excellent knowledge of the subject matter.”
- “ Overall a good understanding of motor selection, what to avoid, application, VFD selection and application.”
- “ It was technical and not sales oriented. Very high density application information with real life examples. Great training!”

### **Answers to the most common questions and more:**

- When would I specify a Synchronous motor over an Induction motor?
- What is the relationship between Torque, Voltage, Power Factor and Efficiency?
- How can I start a load with very high inertia?
- How can I better protect my motor?
- What type of bearing and enclosure should I choose for fixed-speed, and/or variable-speed operating scenarios?
- What are the most common types of motor accessories and their costs?
- What's so special about an API541 motor?
- What is an ASD and how does it work? I need a 15 minute “ASD for Dummies” crash course.
- How can I use an ASD for starting a motor and/or transfer to the utility line?
- When can an ASD be used to save my electricity bill and the hefty demand charge?
- What are the break points between Air and Water Cooled ASDs?
- What does Active Front End and Diode Front End ASD mean?
- How does the ASD mitigate line side harmonics?
- What are the considerations for applying an ASD to an existing fixed-speed motor?
- What should I keep in mind when evaluating a direct-on-line vs. soft starter vs. ASD motor starting strategy?
- Should I buy the motor and ASD as a single package, or can I separate the scope?
- How are ASDs designed to eliminate water leaks in the system?
- What is the difference between a voltage source inverter and current source inverter?
- What are the common points of failure in an ASD and how to mitigate them?
- Do's and Don't's of specifying ASDs and motors
- What cables should I use with my MV ASD
- What is the distance limitation between the motor and ASD
- And more



Classes are taught by TMEIC applications engineers and industry experts who bring practical industry experience to their presentations.

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**TMEiC**  
*We drive industry*