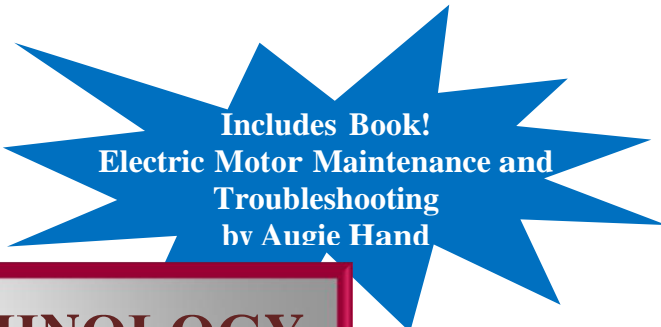




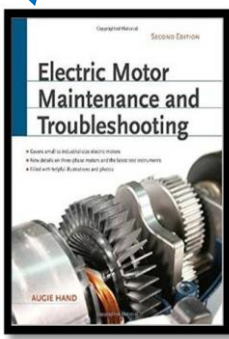
ADVANCED MOTORTECH LLC
 5237 PARK STREET NORTH
 SAINT PETERSBURG FL 33709-1011 USA
 ADVANCEDMOTORTECH.COM
 727-412-8200 ♦ SALES@ADVANCEDMOTORTECH.COM



Includes Book!
Electric Motor Maintenance and Troubleshooting
 by Augie Hand

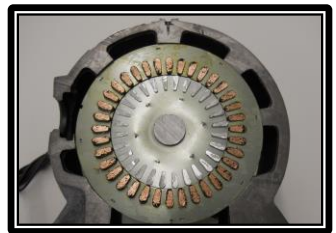
ELECTRIC MOTOR TECHNOLOGY FOR NON-ENGINEERS

FEBRUARY 19-20-21, 2020 IN ST LOUIS, MO



Learn practical understanding & essential concepts of electrical motor technology from the experts.
The only course of this kind available anywhere:

- ◆ Types of Motors, Similarities & Differences of Motors
- ◆ Key Electric Motor Terminology, Nameplate Data Meaning
- ◆ Basic Electric, Magnetic & Mechanical Operating Principles
- ◆ Functions of the Parts, What is Important & Why
- ◆ Motor User View of Motors & Selection Choices
- ◆ Realistic Energy Efficiency & Motor Economics
- ◆ Key Issues of Manufacturing, Installing, & Operating



Objectives and Benefits:

This course provides a foundation of technical and practical principles used for electric motor design, construction and operation. The focus is on topics important to sales, customer service, and business coordination of those involved with electric motors. The intended audience is non-engineers, or engineers not familiar with electric motors, who routinely work with providing or using electric motors.

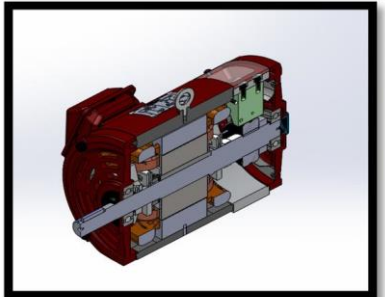
The purpose of this one-of-a-kind course is to present a solid understanding of the characteristics of electric motors to support activities important to sales persons, customer service staff, OEM manufacturers, purchasers, and users of electric motors.

Your expert instructor will help you understand the technology of electric motors and then delve into the ‘why’ and ‘what it means’ of the many principles, design details, materials used, and end-user issues. Instruction assumes no prior formal technical education. This course regularly gets great compliments.

We use a real-world, common sense approach to help demonstrate how key choices in terms of performance, quality and value affect the motor delivered to the customer. Primary focus will be on fractional and integral horsepower NEMA-frame induction machines, and include both random-wound and form-wound configurations. Other motor types will be discussed to illustrate their unique features and benefits. Most of the material is on topics and issues common to all motors, as well as most generators.

Those who will benefit:

- ◆ Motor Application Engineers, Sales Engineers, Distributor Staff
- ◆ Electrical Contractors & Motor Service Technicians
- ◆ Customer Service & Marketing Personnel at All Levels
- ◆ Engineers of All Types New to Electric Motors
- ◆ Suppliers to Motor Manufacturers
- ◆ Facility Engineers, Motor Users, & Purchasers of Electric Motors



*** Course Schedule ***

Day 1:

7:30-8:00 Registration

8:15 Session Begins

1. Fundamentals of Electric Motors

- ☑ Comparison of Motor Types
- ☑ Volts, Amps, Electromagnets
- ☑ Principle of Energy Conversion
- ☑ Meaning of Key Terminology
- ☑ Types of Motors, How They Differ
- ☑ Importance of NEMA MG1

2. Understanding Electric Power

- ☑ AC versus DC
- ☑ Single Phase versus Three Phases
- ☑ Why so Many Voltages?
- ☑ Wye versus Delta
- ☑ Series versus Parallel Circuits

3. Documentation & Info

Delivered with Motors

- ☑ Nameplates & Connection Diagrams
- ☑ Box Labels: What is Important
- ☑ Installation & Operating Manuals
- ☑ Safety Issues
- ☑ Terminals Marking

4. Construction & Operation

- ☑ Proper & Jargon Terminology
- ☑ Functions of the Electrical Parts
- ☑ Functions of the Mechanical Parts
- ☑ Energy & Losses
- ☑ Thermal and Heat Issues
- ☑ How Motor Performance Data is Used

5. Motor Component Details – What is Important & Why

- ☑ Laminations
- ☑ Windings & Insulations
- ☑ Rotors & Armatures
- ☑ Housing & Enclosure
- ☑ Bearings & Shaft, Other

16:45 Session Ends

Day 2:

8:15 Session Begins

6. How a Motor is Manufactured

- ☑ Punching & Stacking Laminations
- ☑ Winding Coils & Getting in the Slots
- ☑ Making the Shaft & Rotor
- ☑ Rotor Sub-Assembly
- ☑ Stator Sub-Assembly
- ☑ Assemble Complete Motor
- ☑ Testing & Finish

7. Motor Selection from the Customer Viewpoint

- ☑ What is the Application?
- ☑ Motor Specifications
- ☑ What are the Choices? Why?
- ☑ What the User 'Sees' Before Purchase
- ☑ What the User 'Sees' After Delivery

8. Energy Efficient Motors

- ☑ Motor Economics 101
- ☑ The Repair or Replace Decision
- ☑ What is Different?
- ☑ Standards for Motor Efficiency
- ☑ Evolution of Energy Efficient Motors
- ☑ New Legislation: It's the Law!
- ☑ On Testing for Motor Efficiency

9. Installation & Startup

- ☑ Important Mounting Features
- ☑ Alignment Issues
- ☑ Electrical Connections
- ☑ Shaft Attachments
- ☑ Check-Out, Running Tests

10. Adjustable Speed Drives

- ☑ Reasons to Use ASD's
- ☑ Basic Principles
- ☑ Effects on the Motor
- ☑ How ASD's are Selected
- ☑ Common Problems That Can Occur

16:45 Session Ends

Day 3:

8:15 Session Begins

11. Common Failure Causes

- ☑ Bearings & Shaft
- ☑ Cooling System, Leads, Coils
- ☑ Environment, Contamination & Physical Damage
- ☑ Vibration, Balance, Mounting
- ☑ Installation Errors

12. Motors with Special Features

- ☑ Vertical Pumps
- ☑ Explosion Proof Rating
- ☑ Starting Options
- ☑ Submersible Motors
- ☑ Gearmotors
- ☑ Hoist Motors

13. Small Motor Overview – Principles, Functions, Parts

- ☑ Single Phase Induction Motors
- ☑ Multispeed Fan Motors
- ☑ Shaded Pole Motors
- ☑ Power Tool & Appliance Motors
- ☑ Servomotors

14. Large Motor Overview

- ☑ Above NEMA Frame Sizes
- ☑ Higher Voltages Than 480 VAC
- ☑ Fabricated Frame Design Issues
- ☑ Weather Proof Enclosures
- ☑ Cooling Systems, Top Hat

15. New Technologies & New Trends in Manufacturing

- ☑ Copper Rotor Cage
- ☑ Fractional Slot Winding
- ☑ Permanent Magnet Motors
- ☑ High Speed, Extreme Efficiency
- ☑ Axial Flux, Transverse Flux
- ☑ Motor Management Systems

15:00 Closing & Adjourn

We'll keep you fresh!
Daily schedule includes:
Mid-morning break (10:00)
Lunch (12:00-13:15)
Afternoon break (15:30)

Onsite training is now available!
Send inquiries to
sales@advancedmotortech.com

Course content is subject to change. All issued material may not be covered.

Instructor:



Dr. Keith W. Klontz is President and CEO of Advanced MotorTech LLC, an engineering services company with emphasis on electric machine design. He holds BS & MS degrees in Electrical Engineering from the University of Illinois, Champaign-Urbana, and a PhD in Electrical Engineering from the University of Wisconsin-Madison. Dr. Klontz is a world-recognized expert and instructor in electric machine design and has over 50 years of hands-on experience with electric machine applications and design engineering, from concept to performance to repair and failure analysis. He has been involved in the research, development, prototyping, testing and training of very high performance machines from 5 Watts to 50 MW, with speeds ranging from angle positioning torque-motors to 90,000 rpm machines. Recent work includes design of extremely high efficiency PM and induction motors, very high power density machines, permanent magnet alternators, brushless d.c. traction motors, brush d.c. motors, and design for low cost

General Information

Tuition Fees Include:

- Extensive Training Manual (Full Color with Large Pictures)
- Book, "Electric Motor Maintenance and Troubleshooting" by Augie Hand
- Mid-Morning & Afternoon Break w/ Refreshments Each Day
- Lunch Each Day in Session
- Signed Certificate of Course Completion

Host Hotel Location:

Marriott St Louis Airport
10700 Pear Tree Lane
St. Louis, MO 63134 USA
Phone: +1 314-423-9700, Toll Free: +1 314-423-9700



Accommodations:

A **great reduced-rate block** of rooms has been reserved at the beautiful and very convenient **Marriott St Louis Airport Hotel** for reservations made **before Jan 15, 2020**. Just identify yourself as a participant in Advanced MotorTech training group to reserve a room at the reduced rate. Please make your own reservations.

Enrollment:

- Yes! Please enroll me in **Electric Motor Technology for Non-Engineers, February 19-21, 2020**

Fee: \$1925.00 (USD only) **Course No. EMT-2002**

Early Registration Fee: \$1800.00 (USD only); Payment received by January 15, 2020

(We reserve the right to not enroll anyone considered to be a competitor or unsuitable, at our sole discretion.)

PAYMENT: (Deadline: ***Payment must be received before start of course**)

- MasterCard Visa AMEX
- Cardholder Name _____
 - Card No. _____
 - Exp ____/____ Billing Zip _____ Security Code: _____

- Check enclosed* (payable to Advanced MotorTech, LLC Purchase Order*

- Bill my company* Purchase Order*

* Please note payment deadline above; no exceptions; subject to approved credit.

Name _____

Title _____

Company _____

Address _____

City _____ State _____ Zip _____

Phone () _____ Email _____

* Cancellations received earlier than 14 days before the course are subject to a 15% late cancellation fee. Cancellations made within 7- 13 days before the course starts are subject to a 50% cancellation fee. Cancellations made 6 or less days before the course starts are subject to the full fee, or credit towards a later course

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