

2017 Seminar Schedule

Electric motor testing, monitoring and analysis

Courses (SKF Fort Collins facility only)	Dates Available	Price
Level I Dynamic Motor Monitoring	February 21-24, 2017 July 11-14, 2017	\$2,695
Level I Static Motor Testing	March 14-17, 2017 October 17-20, 2017	\$2,695
Level II Static Motor Testing	April 4-7, 2017	\$2,695
Level II Dynamic Motor Monitoring Prerequisite Level I Dynamic Motor Monitoring	May 9-12, 2017 September 19-22, 2017	\$2,795
2017 Electric Motor Testing User Group Meeting, Salem, Mass.	June 5-7, 2017	\$2,795

Level I Dynamic Motor Monitoring

Course Content

This seminar expands upon concepts learned in the introductory course. It provides an in-depth look at the technical theory and concepts associated with dynamic motor monitoring and diagnostics.

Upon successful completion of this seminar, students will have an in-depth working knowledge of dynamic motor monitoring methods, be able to collect relevant, quality data, and be able to analyze most motor failure modes using the EXP4000. The final day and a half will be dedicated to hands-on operation of the EXP4000 in a laboratory environment. A final written and practical exam is required

for qualification. Seminar price includes course workbook, lodging and most meals.

Course Topics

- Dynamic motor monitoring theory
 - Power condition parameters
 - Motor performance/condition
 - Energy efficiency development
 - Torque waveform development

Software training

- Creation and management of databases
- Creation and editing electrical test models

- Test acquisition setup
- Data collection
- Basic data interpretation and analysis

Intro to DC online analysis

- Basic DC motor theory and concepts
- Ensuring proper connections
- Software functionality
- Basic DC analysis

Course objectives

- Develop a general understanding of AC motor theory as it relates to online operation

Level I Static Motor Testing

Course Content

This seminar expands upon concepts taught in the introductory course. Attendees learn technical theory and concepts of testing electrical insulation in motors. Test methods are discussed in detail, and students analyze results from complex fault modes. Course covers methods to reduce downtime, perform advanced troubleshooting, and motor quality control. Hands-on use of test equipment is included in the course.

The goal of this course is to have students leave with in-depth working knowledge of static motor testing methods. Students are taught to collect quality data and analyze complex motor failure modes. A final written and practical exam is required for passage of this course. Seminar price includes course workbook, lodging and most meals.

Course Topics

- Static high voltage motor testing theory
- Insulation systems
- Failure modes and mechanisms
- Test methods
- ANSI/IEEE/EASA/NEMA testing standards
- Recommended test voltages/sequences
- Analysis of results

Software training

- Creating databases, motors, and test ID's
- Data collection parameters
- Establishing and understanding pass/fail criteria
- Data interpretation

Non-three phase motor testing

- DC motors
- Synchronous motors
- Wound rotor motors
- Non-rotating equipment

Course objectives

- Develop an in-depth understanding of the static testers and any software interfaces applicable to the product.
- Develop an understanding of motor testing applications
- Develop an in-depth understanding of electrical insulation theory as it pertains to high voltage motor testing
- Develop working knowledge of operation of instrumentation and associated hardware

Level II Static Motor Testing Diagnostics

Course content

This course builds on the knowledge obtained from previous static level I course work. It also builds on knowledge gained from significant field experience with static motor test equipment.

This course covers detailed diagnosis of data through the use of actual motor test data and the Baker AWA-IV static motor analyzer and Surveyor DX desktop software applications. Case studies of electrical testing and theoretical instruction are included.

Upon completion students should have in-depth working knowledge of static motor testing analysis methods and the associated electric motor failure modes. Seminar price includes course workbook, lodging and most meals.

Course Topics

Static Testing Data Analysis

- RLC circuit analysis
- Rotor Influence Check
- Insulation Resistance
- Leakage current
- High potential Testing
- Surge wave analysis
- PP/LL EAR
- PD on surge data interpretation

Advanced Static Testing methods

- DC Motors
- Field coils
- Low impedance coils
- Comparative analysis

Baker AWA / Surveyor DX Desktop software

- Data trending
- Advanced data analysis tools
- External software tools

Course objectives

- Develop an in-depth understanding of static motor testing equipment and associated data analysis tools.
- Gain an extensive understanding of static motor test parameters and thresholds.
- Develop an understanding of electrical insulation and circuit theory and how it pertains to static insulation evaluation.
- Demonstrate how specific electric motor failure modes present in the static testing data.

Level II Dynamic Motor Monitoring

Course content

This invitation-only course builds upon previous course work and field experience with dynamic motor monitoring equipment. Students will learn advanced diagnosis of data through case studies, data analysis of past problems, and hands-on live motor acquisition and analysis in a laboratory environment. Seminar price includes workbook, lodging and most meals.

Course Topics

Dynamic Motor Monitoring Theory

- Level I dynamic monitoring course review, including basic DC analysis
- Power condition

- Motor performance/condition
- Basic energy efficiency assessments
- Transient analysis fundamentals
- Waveform analysis fundamentals

Software Training

- Level I software review
- Data collection techniques
- Intermediate waveform interpretation and analysis
- Intermediate spectrum interpretation and analysis

Case Studies

- AC case study analysis
- DC case study analysis

Course objectives

- Instill a solid understanding of dynamic motor monitoring applications.
- Acquire fundamental knowledge of how electric motor theory relates to dynamic motor monitoring
- Exercise hands-on training and develop working knowledge of instrument connections and operation
- Instill practical working knowledge of the EXP4000 for diagnoses of potential problems and various motor system-related phenomena

2017 Electric Motor Testing User Group, Salem, Mass. June 5-7

Why attend

Learn new technologies and techniques to improve your motor maintenance knowledge and skill set. Session tracks over the three-day meeting include topics such as dynamic monitoring, surge analysis, trending, hands-on testing and partial discharge (PD) as a PdM tool. Get valuable peer-to-peer networking time as well as case studies and discussions on the latest motor testing technology developments.

Meeting will be held the Salem Waterfront Hotel and Marina in Salem, Massachusetts. Attend the meet-and-greet the evening of Sunday, June 4. Main sessions begin Monday morning and wrap up on Wednesday afternoon. Price includes four nights of lodging and most meals.

To register, contact Jenny Ray in SKF's Fort Collins office at jenny.ray@skf.com, or call 970-282-6090.

<http://www.skf.com/emcm>

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