SKM Power*Tools Standard 3-Day Training

Objectives

- To develop a working knowledge of the Power*Tools for Windows DAPPER, CAPTOR, A_FAULT, TMS, and Equipment Evaluation software study modules.
- Database Concepts, Default Data, Copy/Paste Data, Clone Components
- One-Line Diagrams, Copy/Paste, Annotation, Custom Symbols, Hide and Expand, UNDO, and Template Libraries
- Creation, customization and use of Datablocks and Datablock Reports
- Managing multiple scenarios with Scenario Manager and Data Visualizer
- Efficient management and use of Equipment Libraries
- Reporting Options and Customized Output Forms
- Import/Export Capabilities
- Merging Multiple Projects and Mult-user Access
- Custom Queries and User-Defined Fields

Prerequisites

Basic computer skills.

Students are urged to review:

IEEE Red Book Std 141-1993, chapter 4
IEEE Buff Book Std 242-2001, chapters 9, 10 & 11
IEEE Brown Book Std 399-1997, chapters 2, 6, 7, 9 & 15

Course Description

The course involves the discussion of the program interface. Management of multiple scenarios with scenario manager is covered. Demand Load, sizing, load flow, short circuit, load schedules, captor and motor starting calculation procedures are then reviewed. Other topics that will be covered are the efficient management and use of equipment libraries, reporting options and customized output forms, import/export capabilities, merging multiple projects, as well as custom queries and user-defined fields. Students will earn 2.55 CEUs for this course.

Target Audience

This course is intended for electric power engineers responsible for the design and analysis of three phase electrical distribution systems. No previous electrical distribution system analysis experience is required.

Demand Load

- Connected, Demand, and Design Load Analysis for Sizing
- Demand Load Library
- Input Data Requirements
- Output Report Overview

Sizing

- Feeder and Transformer Sizing Calculations
- Cable and Transformer Libraries
- Input Data Requirements
- Output Report Overview

Load Schedule

- Panel, MCC and Switchboard Schedule Representation
- Input Data Requirements
- Output Report Overview

Load Flow Studies

- Solution Techniques
- Sources of Supply Representation
- Transformer, Load and other components Representation
- Voltage Drop Snapshot of Motor Startup
- Input Data Requirements
- Output Report Overview

Fault Studies

- Solution Techniques: Comprehensive Fault Analysis, ANSI Fault Analysis
- Comparison of methodologies between Comprehensive and ANSI
- Contribution Sources Representations
- Input Data Requirements
- Output Report Overview

Motor Starting Studies

- Solution Methodology
- Motor Models
- Load Models
- Soft Starter and Reduced voltage starting Models
- Input Data Requirements
- Output Text and Graphical Data Overview

Captor

- Creation of Time-Current curves from existing projects, and from Scratch
- Customization of TCC Drawing Layouts and Libraries
- Using Forms to Print TCC
- Export of TCC drawing to third party application
- Input Data Requirements
- TCC Settings Report

Course 101 Standard 3-Day Training

Course Dates	Monday, February 13 through Wednesday, February 15; Monday, May 8 through Wednesday, May 10 Monday, August 7 through Wednesday, August 9; Monday, November 13 through Wednesday, November 15
Course Hours	7:30 AM to 5:00 PM
Course Fees	**$945 for Standard 3-Day.** Does not include hotel or travel costs. $1595 for Standard and Advanced, 5-days. Does not include hotel or travel costs.
Registration Fees include	PTW Training Manual, Use of 1 computer per 2 students, Continental breakfast each day from 7:00 AM to 7:30 AM, On-site lunches each day, dinner on Monday night.
Training Equipment	The training room is equipped with Dell computers with Pentium-4 2.8GHz or better processors, 512MB RAM, and 17" LCD flat panel displays. The class size is based on 2 students per computer.
Course Location	The Hilton Torrance-South Bay, 21333 Hawthorne Blvd. Torrance, CA 90503

For reservations call 1-800-445-8667. Be sure to ask for the SKM rate of $129. The Hilton Hotel is 10 miles south of Los Angeles International Airport (LAX), an approximate $30 cab fare, or an approximate $15 SuperShuttle fare. The Hilton Hotel is conveniently located 2.5 miles east of the beach and the Redondo Pier. Restaurants and shops are within walking distance from the hotel. Parking at the hotel is complementary.

SKM Power*Tools Advanced 2-Day Training

Objectives

- To develop a working knowledge of the Power*Tools for Windows Arc Flash, Equipment Evaluation, and HI_WAVE software study modules.
- To understand the Arc Flash standards and calculation steps.
- To obtain hands-on experience in Arc Flash Label creation and customization.
- To understand the step by step evaluations process and criteria for protective and non-protective devices.
- To understand the Harmonic standards, calculation steps, and modeling techniques.

Prerequisites

- Basic computer skills.
- Students are urged to review:
  IEEE Red Book Std 141-1993, chapter 4
  IEEE Buff Book Std 242-2001, chapters 9, 10 & 11
  IEEE Brown Book Std 399-1997, chapters 2, 7 & 15
  IEEE 1584a 2004, Guide for Performing Arc Flash Hazard Analysis
  NFPA 70E-2004 Standard for Electrical Safety in the Workplace
  IEEE 519 Recommended Practices and Requirements for Harmonic Control in Electrical Power Systems

Course Description

The course covers the overview of the Arc Flash and Harmonic standards and reviews the calculation and modeling procedures in Arc Flash, Equipment Evaluation, and HI_WAVE. Students will earn 1.7 CEUs for this course.

Target Audience

This course is intended for electric power engineers responsible for the design and analysis of three phase electrical distribution systems. No previous electrical distribution system analysis experience is required.

Arc Flash Hazard Analysis

- IEEE 1584 and NFPA 70E standards, NEC and OSHA requirements
- IEEE 1584 and NFPA 70E Calculation Procedures
- Relationship with Short Circuit and Protective Device Coordination studies
- Issues related to energy accumulation and multiple contributions
- Issues related to Induction Motor and Synchronous Machine decays
- Bus Report, Line Side and Load Side report options
- Arc Flash Labeling Requirements, Personal Protection Equipment
- Custom Labels and Work Permits
- Examples, and interpretation of PTW Arc Flash results

Equipment Evaluation

- Relationship with Short Circuit, and Equipment Sizing
- Input Data requirements, Interrupting Rating, Close-Latch Rating, and Test X/R
- Low voltage device evaluation based on ANSI, IEC and Comprehensive Fault results
- HV/MV device evaluation based on ANSI, IEC and Comprehensive Fault results
- Evaluation using bus fault current or worse case current through the device
- Evaluation Criteria – Pass, Fail, or Marginal
- Interpretation of PTW Equipment Evaluation results

HI_WAVE

- IEEE 519 Standard - Voltage and Current Distortion, Point of Common Coupling
- Harmonic production, measurement, and harmonic source library
- Load modeling, cable, transmission line and rotating machine modeling
- Phase shift transformer modeling and harmonic cancellation
- Effect of power factor correction capacitors and harmonic filter design
- Harmonic Impedance Frequency Scan, resonant points
- Harmonic Voltage and Current Distortion Waveforms and Spectrums
- Hand calculation examples, and interpretation of PTW HI_WAVE results

Course 201 Advanced 2-Day Training

Course Dates	Thursday, February 16 through Friday, February 17; Thursday, May 11 through Friday, May 12 Thursday, August 10 through Friday, August 11; Thursday, November 16 through Friday, November 17
Course Hours	7:30 AM to 5:00 PM
Course Fees	**$745 for Advanced 2-Day.** Does not include hotel or travel costs. $1595 for Standard and Advanced, 5-days. Does not include hotel or travel costs.
Registration Fees include	PTW Training Manual Use of 1 computer per 2 students Continental breakfast each day from 7:00 to 7:30 AM On-site lunches each day
Training Equipment	The training room is equipped with Dell computers with Pentium-4 2.8GHz or better processors, 512MB RAM, and 17" LCD flat panel displays. The class size is based on 2 students per computer.
Course Location & Accomodations	The Hilton Torrance-South Bay 21333 Hawthorne Blvd. Torrance, CA 90503

For reservations call 1-800-445-8667. Be sure to ask for the SKM rate of $129. The Hilton Hotel is 10 miles south of Los Angeles International Airport (LAX), an approximate $30 cab fare, or an approximate $15 SuperShuttle fare. The Hilton Hotel is conveniently located 2.5 miles east of the beach and the Redondo Pier. Restaurants and shops are within walking distance from the hotel. Parking at the hotel is complementary.

SKM Power*Tools Hands-On 2-Day Training

Objectives

- To develop a working knowledge of the Power*Tools for Windows Fault Analysis, Captor, Equipment Evaluation, and Arc Flash software study modules.
- Database Concepts, Default Data, Copy/Paste Data, Clone Components.
- One-Line Diagrams, Copy/Paste, Annotation, Custom Symbols, Hide, Expand, UNDO, and Template Libraries.
- Creation, customization and use of Datablocks and Datablock Reports
- Managing multiple scenarios with Scenario Manager and Data Visualizer
- Efficient management and use of Equipment Libraries
- Reporting Options and Customized Output Forms

Prerequisites

- Basic computer skills.
- Students are urged to review:
  IEEE Red Book Std 141-1993, chapter 4
  IEEE Buff Book Std 242-2001, chapters 9, 10 & 11
  IEEE Brown Book Std 399-1997, chapters 2, 7, & 15
  IEEE 1584a 2004, Guide for Performing Arc Flash Hazard Analysis
  NFPA 70E-2004 Standard for Electrical Safety in the Workplace

Course Description

The course involves the discussion of the program interface. Management of multiple scenarios with Scenario Manager and Data Visualizer are covered. Other topics that will be covered are the efficient management and use of equipment libraries, reporting options and customized output forms, and custom queries. Students will earn 1.6 CEUs for this seminar.

Target Audience

This course is intended for electric power engineers responsible for the design and analysis of three phase electrical distribution systems. No previous electrical distribution system analysis experience is required.

Fault Studies

- Solution Techniques: Comprehensive Fault Analysis, ANSI Fault Analysis
- Comparison of methodologies between Comprehensive and ANSI
- Contribution Sources Representations
- Input Data Requirements
- Output Report Overview

Captor

- Creation of Time-Current curves from new existing projects
- Customization of TCC Drawing Layouts and Libraries
- Using Forms to Print TCC drawings
- Export of TCC drawings to third party application
- Input Data Requirements
- TCC Settings Report

Equipment Evaluation

- Relationship between Short Circuit results and Equipment Sizing
- Input Data requirements, Interrupting Rating, Close-Latch Rating, and Test X/R
- Low voltage device evaluation based on ANSI, IEC and Comprehensive Fault results
- HV/MV device evaluation based on ANSI, IEC and Comprehensive Fault results
- Evaluation using bus fault current or worse case current through devices
- Evaluation Criteria – Pass, Fail, or Marginal
- Interpretation of PTW Equipment Evaluation results

Arc Flash Hazard Analysis

- IEEE 1584 and NFPA 70E standards, NEC and OSHA requirements
- IEEE 1584 and NFPA 70E Calculation Procedures
- Relationship between Short Circuit and Protective Device Coordination studies
- Issues related to energy accumulation and multiple contributions
- Issues related to Induction Motor and Synchronous Machine decays
- Bus Report, Line Side and Load Side report options
- Arc Flash Labeling Requirements, Personal Protection Equipment
- Custom Labels and Work Permits
- Examples and interpretation of PTW Arc Flash results

Course 102 — Hands-On 2-Day Training Course

Course Dates and Locations	Monday, March 6 and Tuesday, March 7; Houston, TX Monday, April 3 and Tuesday, April 4; Calgary, Canada Monday, June 12 and Tuesday, June 13; Denver, CO Monday, June 26 and Tuesday, June 27; Toronto, Canada Monday, August 21 and Tuesday, August 22; Orlando, FL Monday, September 18 and Tuesday, September 19; Houston, TX Monday, October 23 and Tuesday, October 24; St. Louis, MO
Course Hours	7:30 AM to 5:00 PM Monday through Tuesday
Course Fees	**$745 for PTW Hands-On 2-Day Training.** Does not include hotel or travel costs. **$1,395 for PTW Hands-On and Application 4-Day Training.** Does not include hotel or travel costs.
Registration Fees Include	All course materials Continental breakfast each day from 7:00 AM to 7:30 AM Lunch and refreshments during breaks
Training Equipment	Students are responsible for bringing their own computers. SKM will provide a training course package with the latest version of the PTW software two weeks prior to the class for installation with a software key

Power Systems Application 2-Day Training with PTW

Objectives

- Review of distribution system analysis topics, including short-circuit, protective device coordination, equipment evaluation and arc flash hazard analysis.
- Analysis of a sample electrical distribution system using the PTW software.
- Discussion of short-circuit, and coordination analysis results.
- Discussion of arc flash hazard analysis results and methods used to reduce the hazard to below 40 cal/cm^2.
- Provide practical examples of analysis from typical Industrial and Commercial power systems with explanations of study results and how they are presented in a final report.
- Discuss issues and examine study results and potential problem areas.
- Discuss compliance with various standards.

Prerequisites

- Basic computer skills
- SKM Power*Tools Standard 3-Day and Advanced 2-Day Training, OR Hands-On 2- Day Training, OR working knowledge of SKM PTW
- Students are urged to review:
  IEEE Red Book Std 141-1993, chapter 4
  IEEE Buff Book Std 242-2001, chapters 9, 10 & 11
  IEEE 1584a 2004, Guide for Performing Arc Flash Hazard Analysis
  NFPA 70E-2004 Standard for Electrical Safety in the Workplace

Course Description

The course involves the application of the Power*Tools program to analyze a sample electrical distribution system. Short-circuit, protective device coordination, equipment evaluation and arc flash hazard analysis will be reviewed and then performed using the software. Students will earn 1.6 CEUs for this 2-day course.

Target Audience

This course is intended for electric power engineers responsible for the design and analysis of three phase electrical distribution systems. A basic understanding of electrical distribution system analysis is required.

Typical Industrial and Commercial Power System Example

- Review of distribution system analysis topics including short-circuit, protective device coordination, equipment evaluation and arc flash hazard analysis.
- Discussion of compliance with various standards and requirements
- Input data requirement
- Discussion of considerations when selecting equipment
- Output data requirement
- Examination and interpretation of PTW study results and potential problem areas in the power system
- Discussion of equipment evaluation results
- Discussion of arc flash hazard analysis results and methods used to reduce the hazard to below 40 cal/cm^2
- Discussion of final presentation of study reports
- Discussion of methods and procedures on completing a typical study

Hands-On Lab - Analysis of a Sample Electrical Distribution System in PTW

- Equipment datasheet explanations
- Input data requirement - Per unit method, Comprehensive Fault and ANSI method, 3P, SLG, LL, and LLG Faults, Interrupting Rating, Close-Latch Rating, and Test X/R
- Relationship between Short Circuit results and Equipment Sizing
- Interpretation of PTW Equipment Evaluation results, Pass, Fail, or Marginal Evaluation Criteria
- Relationship between Short Circuit results, Protective Device Coordination, and Arc Flash studies
- Interpretation of PTW Arc Flash results and applying various techniques to reduce arc flash hazard to below 40 cal/cm^2
- Arc Flash Labels, Work Permits, and legal issues

Course 202 Power Systems Application 2-Day Training Course

Course Dates and Locations	Wednesday, March 8 and Thursday, March 9; Houston, TX Wednesday, April 5 and Thursday, April 6; Calgary, Canada Monday, May 15 and Tuesday, May 16; Torrance, CA Wednesday, June 14 and Thursday, June 15; Denver, CO Wednesday, June 28 and Thursday, June 29; Toronto, Canada Wednesday, August 23 and Thursday, August 24; Orlando, FL Wednesday, September 20 and Thursday, September 21; Houston, TX Wednesday, October 25 and Thursday, October 26; St. Louis, MO
Course Hours	7:30 AM to 5:00 PM
Course Fees	**$745 for Application 2-Day Training.** Does not include hotel or travel costs **$1,395 for PTW Hands-On and Application 4-Day Training.** Does not include hotel or travel costs
Registration Fees Include	All course materials Continental breakfast each day from 7:00 AM to 7:30 AM Lunch and refreshments at breaks daily
Training Equipment	Students are responsible for bringing their own computers. SKM will provide a training course package with the latest version of the PTW software two weeks prior to the class for installation with a software key

SKM Power*Tools Training Course 2006 Calendar

February-June Schedule

Course #	Course Name	Cost	February	March	April	May	June
101	Standard 3-Day Training	$945	13, 14, 15 Torrance, CA			8, 9, 10 Torrance, CA	
201	Advanced 2-Day Training	$745	16, 17 Torrance, CA			11,12 Torrance, CA	
101 & 201	Standard and Advanced 5-Day Training	$1,595	13, 14, 15, 16, 17 Torrance, CA			8, 9, 10, 11, 12 Torrance, CA	
102	Hands-On 2-Day Training	$745		6, 7 Houston, TX	3, 4 Calgary, Canada		12, 13 Denver, CO 26, 27 Toronto, Canada
202	Application 2-Day Training	$745		8, 9 Houston, TX	5, 6 Calgary, Canada	15, 16 Torrance, CA	14, 15 Denver, CO 28, 29 Toronto, Canada
102 & 202	Hands-On and Application Training	$1,395		6, 7, 8, 9 Houston, TX	3, 4, 5, 6 Calgary, Canada		12, 13, 14, 15 Denver, CO 26, 27, 28, 29 Toronto, Canada

July-November Schedule

Course #	Course Name	Cost	July	August	September	October	November
101	Standard 3-Day Training	$945		7, 8, 9 Torrance, CA			13, 14, 15 Torrance, CA
201	Advanced 2-Day Training	$745		10, 11 Torrance, CA			16, 17 Torrance, CA
101 & 201	Standard and Advanced Training	$1,595		7, 8, 9, 10, 11 Torrance, CA			13, 14, 15, 16, 17 Torrance, CA
102	Hands-On 2-Day Training	$745		21, 22 Orlando, FL	18, 19 Houston, TX	23, 24 St. Louis, MO	
202	Application 2-Day Training	$745		23, 24 Orlando, FL	20, 21 Houston, TX	25, 26 St. Louis, MO	
102 & 202	Hands-On and Application Training	$1,395		21, 22, 23, 24 Orlando, FL	18, 19, 20, 21 Houston, TX	23, 24, 25, 26 St. Louis, MO	

Registration Policy

The registration deadline is four weeks prior to the date of the seminar. Reservations for hotel accommodations and transportation are the responsibility of the attendee.

To register for a course, complete and fax the registration form on the next page of this brochure to 310-698-4708. To sign up via our website, please go to http://www.skm.com/classes/index.php3 click the course you wish to attend, then complete and submit the registration form available on-line.

A confirmation of your registration will be forwarded to you, along with hotel information. We reserve the right to cancel the course and refund the fees if advanced registration requirements are not met.

Cancellation Policy

21+ days before class, no charge. 2 - 20 days before class, $300 charge. Less than 2 days before class, no refund.

SKM Power*Tools Training Course 2006 Registration

Registration Form

To register for any of the SKM Power*Tools For Windows Training Courses, please complete this registration form in full.
Please allow 2 business days for hotel information and course registration confirmation to be sent to you.

Contact Information

Name _____

Company Name _____

Your Title _____

Phone Number _____

Fax Number _____

Email address _____

Address 1 _____

Address 2 _____

City _____

State/Prov _____

Country _____

Postal Code _____

Course Information

Course # _____

Course Title _____

Course Date and Location _____

PTW Software Experience

Please select your PTW Software experience:

❑ New User ❑ Novice

❑ Intermediate ❑ Advanced

Method of Payment

❑ Credit Card ❑ Check ❑ Purchase Order

Card Type ❑ Master Card ❑ Visa

Card Number _____

Expiration Date _____

Name on Card _____

Authorized Signature _____

Purchase Order

❑ P.O. Number _____