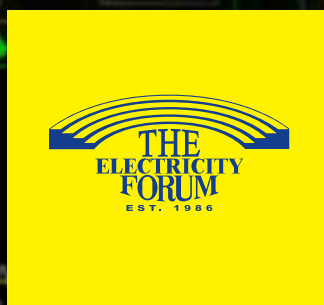


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ELECTRICAL TESTING AND COMMISSIONING

www.electricityforum.com/electrical-training/electrical-testing-and-commissioning



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BONUS FEATURES

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2-DAY COURSE

\$799

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WHY YOU SHOULD TAKE THIS COURSE

This Electrical Testing and Commissioning Training course covers practices and procedures that are essential to the safe start up of any electrical system for the first time, regardless of its size, type or industry.

Electrical Testing and Commissioning is a very special occurrence and poses some unique challenges to electrical personnel. Inexperience and poor planning will inevitably result in prolonged delays in the start up which can lead to costly productivity losses. This course provides invaluable information to anyone who wishes to know and understand the role of Electrical testing, troubleshooting and commissioning of electric power systems.

The importance of planning and preparation for the project, from engineering to testing, troubleshooting and commissioning

and eventual start up, will be emphasized. This course deals with safety considerations and testing and start-up procedures for all the components of any electrical system. The course leader will also offer useful guidelines on what to do when things go wrong during this phase of a project. This course provides guidelines to anyone who wishes to know and understand the role of commissioning in a project, whatever its size. The importance of planning and preparation for the project, from engineering to commissioning and start up, will be emphasized. This course includes the safety considerations in maintenance and testing procedures for all the components of any electrical system.

AGENDA - DAY 1

DAY ONE

Management of Start Up & Commissioning Projects

- Kick-off meeting/project management meeting with the client and prime contractor
- Establish clear understanding of the directive priorities
- Understanding that priorities WILL change based on project phase

Turnover Packages

- Redline drawings and colour coding knowledge
- Re-CAD if it's contractual
- Drawing clouds for future possibilities

Terminology

- RFI, NCR, TDR, IFI, IFC, etc...

Objectives

- Completions to turnover
- Potentially training client staff on operations after turnover

Specifications

- IEEE, CSA, ULC and client standards which in most cases exceed all

Documentation

- Daily update on all drawings and programming cut sheets

Drawing control, field mark ups and "as built"

- Always have both hard and soft copies...preferably in document control dept. and usb...if there is no paperwork, then it didn't happen

Test sheet document control

- Keeping track of completed tasks via spread sheet or Gantt chart

- Communication with client
- Oscilloscope records to laptop

Deficiency tracking

- Spread sheet
- Communication with client project manager

DAY TWO

Large Area System Commissioning

Ensuring the system is working completely

- Motor burn in
 - Load test minimum 75% of full load
 - Fault and alarm forcing via DCS or SCADA
- Using electrical drawings & flow-sheets

Sensing Devices

- Loop check

Isolating devices and isolating points

- Force the trip and clear it from DCS or SCADA
- De-energize and test point to point to loop check all circuits back to the controller if an issue arises

Transformer Commissioning

General Construction, Operation & Safety

- Morning safety meeting
- PERMITS, JSA, FLRA and workface discussion to let others know what you are doing
- NOMEX III
- Overhead awareness
- Fall arrest harness
- Gloves
- CLEAR safety Glasses
- Speed limits

COURSE INSTRUCTOR

TIM SCHWAB

Electricity Forum Testing & Troubleshooting Consultant

Field Assembly and Vacuum Filling of Power Transformers

- Handling Transformer Oil, Tap-changers
- Transformer Protective Devices, Bushings, auxiliary devices alarms & trips
- Dry type transformers: inspection, acceptance tests
- Liquid type transformer: inspection, and acceptance tests
- Routine transformer tests: AC high potential testing, polarity test, induced potential test, polarization index test, and DC winding resistance tests
- Transformer Oil test, On Power and Off Power Expectation.
- Breakdown voltage test

**Circuit Breaker and Switchgear Commissioning
General Construction, Operation & Safety**

- Find the feeder and ensure lockout/zero energy state with YOUR lock on the lock box
- Hot-stick
- Work with operations on the actuation of the auxillary contacts to close the breaker and/or vacuum bottles with zero line side voltage

Metal Clad Switchgear construction and safety features

- Kirk key interlock or similar
- ARC rating labeling, bolted doors, and window with exterior visual disconnect indication that stabs are out

**Commissioning Switchgear
600V Breaker construction and safety features**

- Mechanical disconnect, fusing and overload relay if available

Capacitors

Multimeter on low voltage or applied 120VAC with clamp on ammeter if medium voltage

Current Transformers

- Turns ratio impedance test

Instrument Transformers, Test switches, Metering and Relaying Devices

- Work with DCS to trigger various alarms and faults

Insulation resistance measurement test

- DC or AC hi-pot testing
- Power factor or dielectric loss test
- Circuit breaker contact resistance test

Commissioning Control Systems and Instrumentation

- Field devices
- Input and outputs
- Program verification
- Power up and start-up
- Sensors
- PLC and PAC Based Systems
- Distributed Control Systems
- SCADA

Commissioning Motors and Drive Systems

- Motor checks and testing
- Wiring & cable Run
- VFD checkout and start-up
- Filters
- Servo Systems

Substation Equipment Commissioning

- Plant Start Up Procedures
- Pre-energization checklists
- First energization procedures
- Phase rotation and other measured system parameter
- Safety considerations
- Load checks
- Documentation
- Final acceptance

COURSE TIMETABLE

BOTH DAYS	Lunch: 12:00 noon
Start: 8:00 a.m.	Finish: 4:30 p.m.
Coffee Break: 10:00 a.m.	

INTERESTED IN ONSITE ELECTRICAL TRAINING?

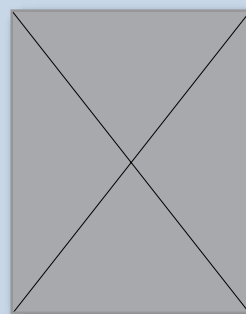
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REGISTRATION FEES

The registration fee to attend this course is \$799.00 + Tax. The fee includes course material, a FREE magazine subscription, a \$100 coupon towards any future 2018/2019 Electricity Forum event (restrictions apply), refreshments. NOTE: LUNCH IS PROVIDED WITH THIS COURSE.

WHEN & WHERE

(Please check the date/location where you want to attend the course)

**ELECTRICAL TESTING AND COMMISSIONING COURSE
LOCATIONS:**

- Mississauga, ON - Nov 1-2, 2018**
Hampton Inn and Suites Toronto Airport
3279 Caroga Drive
Tel: 905-671-4730
- Ottawa, ON - Nov 19-20, 2018**
Radisson Hotel Ottawa Parliament Hill
402 Queen Street
Tel: 613-236-1133
- Winnipeg, MB - Nov 26-27, 2018**
Sandman Hotel & Suites Winnipeg Airport
1750 Sargent Ave.
Tel: 204-775-7263
- Edmonton, AB - Nov 28-29, 2018**
Sawridge Inn Edmonton South
4235 Gateway Blvd NW
Tel: 780-438-1222
- Richmond, BC - Dec 3-4, 2018**
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