

Comprehensive LTC Maintenance Training

*On-Load Tap Changer Classes at Waukesha Training Centers,
Regional Locations or at YOUR Site!*



Leading electricity providers know it takes more than field technicians and a dispatch center to properly maintain critical power system assets that make up their transmission and distribution systems. To be effective, your team needs to acquire knowledge and product-specific skills to allow them to accurately troubleshoot and repair this equipment.

Recognizing the demand in the electric power industry for a structured program that teaches these critical skills, we developed a comprehensive series of maintenance training courses.

Program Offering

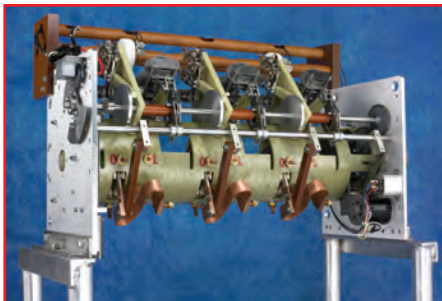
We offer a series of Load Tap Changer (LTC) maintenance courses to teach the unwritten knowledge and skills that can only be obtained through years of hands-on experience. Our comprehensive training programs run full circle—from operational concepts and recommended maintenance practices to model-specific assembly techniques and OEM design changes. Course offerings target critical skill sets needed for substation engineers, field crews and apprentices to be effective:

- Theory of LTC Operation and LTC Designs
- Common Modes of Failure
- LTC Inspection Preparations
- Parts Identification
- Internal Parts Inspection, Removal and Installation
- Contact Wear Patterns
- Identification of Improper Operation
- Unit Timing and Calibration
- OEM Design Changes
- Vacuum Bottle Monitoring Circuits

LTC Courses Offered

- GE LRT-200 Series
- FPE TC-525, TC-546
- Reinhausen Type RMV-II
- Waukesha® UZD®
- GE LRT-68/72
- Siemens-Allis TLS/TLF
- GE LRT-65/83
- Siemens-Allis TLH-20/21
- Westinghouse UTT, UTT-A, UTT-B
- McGraw 550 Series
- GE LRT-38/48
- ABB UZ-Type

Additional information is available that outlines what each class covers; contact us for these detailed class brochures on specific LTCs.



GE LRT200-2 Training Unit



Course Structure

Training courses are either two or three days in length and can be held at one of our training centers, off-site at regional locations across the U.S./Canada or at a customer's

Customer  **Configurable**

site. For customer on-site training, our training team coordinates shipment of required training equipment and conducts courses at the customer's facility, eliminating the need for customer travel.

Each student receives a course manual with easy-to-use field reference guides along with many pages of technical resources. Our qualified instructors teach each course; these industry-recognized experts provide many years of experience to properly train your maintenance team.

To be sure participants maximize their experience and hands-on learning, we limit class sizes to 15 students.

FAQs

Do you have training models?

Absolutely. We have training models on all of the LTCs for which we provide training. These models were once fully functioning in the field, were totally refurbished and are available for classes throughout the U.S. and Canada.

Do you provide training manuals?

Yes, we provide training manuals that are yours to keep. Our staff has compiled the information from personal experience as well as utility-recognized experts on specific makes and models.

Continued Development

Waukesha Training continuously develops course offerings to serve the industry. We also work closely with customers to develop specialized training courses to fit their internal development programs, including annual recertification programs.

Training Calendar

Contact Waukesha at 800-338-5526 for scheduled courses throughout the U.S./Canada and available dates for training classes at your facility.

These Specially Designed Training Classes Provide Technicians with the Knowledge NEEDED to Maintain and Increase Reliability of LTCs!

Experience dictates that load tap changer parts and components are NOT cheap; their cost is a necessary one, however, to properly maintain system reliability. When an LTC fails, owners generally look at two things: 1) How much will it cost for the repair, and 2) How much time will it take to get the job done and put the unit back into service. One thing often overlooked, however, is HOW LONG WILL THE REPAIRS LAST.

With the information in these classes, not only can trained technicians do the work, they can do the work BETTER so the repairs last longer. In addition to helping reduce maintenance costs for replacement parts over the life of the unit, better repairs also increase system reliability.



McGraw Edison 550 Series

THINK ABOUT THIS

- ▶ How do I know if the reversing neutral stationary contact is in adjustment
- ▶ What three things MUST be checked prior to removing an "A" frame



- ▶ What are the 13 things that need to be checked to assure the unit is in neutral
- ▶ Why do some 550 units require 3 hand crank revolutions per tap and some require six
- ▶ How do I properly install stationary contacts to eliminate premature contact wear

These answers and more will be found in the McGraw 550 series training class.

LTC Maintenance Tip

Performing maintenance on an LTC should always include inspection of the Geneva Gear for laminate separation.



Waukesha Electric Systems UZD

HAVE YOU EVER

- ▶ Wondered how the UZD operates
- ▶ Updated the reversing switch
- ▶ Tested the resistor for circuit integrity
- ▶ Tried to adjust the flywheel brake of the Spring Drive mechanism
- ▶ Thought about the torque values of components of the UZD

These answers and more will be found in the UZD training class.

Siemens-Allis TLH-20 & TLH-21



WHY

- ▶ Do you need a 1/4" diameter tool to set the angle of the reversing switch contacts
- ▶ Does the latch of the quick break mechanism need to be adjusted properly
- ▶ Do you need to know the difference between a standard and an isolated reversing switch
- ▶ Do you need to properly seat and adjust the main moveable arcing contacts
- ▶ Should the two springs of the quick break mechanism be in adjustment/operating properly

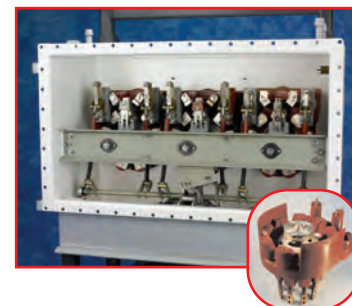
This information and more will lead you to properly maintain your LTC.

Federal Pacific TC-546 & TC-525

DO YOU NEED TO KNOW

- ▶ How to time the unit properly
- ▶ What is involved in upgrading the unit and how to do the upgrade
- ▶ How and why to add shunts to the diverter switch
- ▶ What to do if the push rods are not closing the diverter switch
- ▶ How to use the "SPECIAL TOOLS" designed for proper setup

You will leave the class with this information and more.



General Electric LRT-200 & LRT200-2

DO YOU KNOW

- ▶ The difference between the LRT-200 and the LRT-200-2
- ▶ How and when to adjust the bypass switch
- ▶ How to time the vacuum interrupters
- ▶ How to check and adjust the sequence of operation
- ▶ How the protective system works

You will know this and more upon completion of the class.

FOR MORE INFORMATION
call 800-338-5526
e-mail info@waukesha.spx.com

Westinghouse UTT, UTT-A, UTT-A70, UTT-B & Reinhausen RMT-1

DO YOU WANT TO LEARN

- ▶ What to do if the arc chute is worn on one end
- ▶ Why it is beneficial to upgrade your UTT unit to a UTT-B
- ▶ What the advantage is of the Reinhausen RMT-1 reversing switch
- ▶ Differences between UTT series units and how to identify the unit you have
- ▶ How to properly set transfer switch adjustments of the UTT Series tap changer

Information in this class will assist you in maintenance and inspection of these units.

