

Load-Tap Changer (LTC) Classes with SPX Transformer Solutions



McGraw Edison
550 Series



General Electric
LRT-200-2



Westinghouse UTT,
UTT-A, UTT-B



Waukesha® UZD®



Federal Pacific
TC Series

OTHER MODELS AVAILABLE

NEW

Schedule for 2019!

Visit the SPX Transformer Solutions' website at www.waukeshacomponents.com for information on the installation of LTC contact kits and upgrades as well as Transformer Health Products® and Reverse Engineering.

TOPICS COVERED IN THE LTC CLASSES:

- Operational Theory of On-Load Tap Changers
- Differences Between Reactance and Resistance LTCs
- Vacuum LTCs
- Timing and Calibration of LTC Functions
- Sequence of Operation
- Neutral Position and Its Importance
- Isolated and Standard Reversing Switches
- Contact Alignment
- Unit Troubleshooting and Maintenance
- Contact Installation

These specially designed, comprehensive LTC maintenance training classes will provide your technicians with the knowledge they need to maintain and increase the reliability of the LTCs on **YOUR** system!

Let's Face It...

Load tap changer components are not cheap; their cost is a necessary evil to properly maintain your system's reliability. Owners generally look at two things:

- 1) How much will it cost for the repair
- 2) How much time will it take to get the job done and put the unit back into service.

One thing often *not* looked at is **HOW LONG WILL THE REPAIRS LAST?**

With the information in these classes, you will find that not only can your technicians do the work, but they can do the work better so the repair will last longer. This will assist in the reduction of your maintenance costs for replacement parts in the long run and increase the reliability of your system.

You CAN Make a Difference!

Can you name three things that LTCs can't stand? Think about it.

- 1) Dirty oil
- 2) Moisture in the oil
- 3) Premature contact wear (misaligned contacts)

Measures can be taken to reduce the chances of each of these problems happening in your LTC. By reducing the chances, your LTCs can last longer.

Don't let this happen to you!
But if it does. . . We can help fix it.

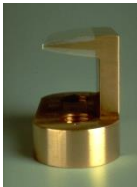


Contact Selection

Contact replacement in the LTC oil compartment is something that all LTCs need from time to time. If the contacts are not installed properly, they will not last as long as they should. In these classes, you will not only learn the proper way to install and align the contacts, but you will also learn that contacts can be made from several different kinds of materials along with the pros/cons of each.

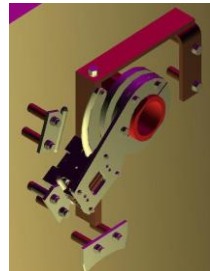
Do you buy contacts made from the best materials?

Case studies have shown that the use of ELR® inlay material in conjunction with upgrades to the LTC compartment can increase time between maintenance intervals. The addition of oil filtration systems on arcing tap changers to keep the oil clean can effect the overall operation and maintenance of an LTC.



Remember...clean oil reduces the filming effect in LTCs.

Upgrading contacts in the LTC's oil compartment is an option that you may want to explore. Take a look at this upgraded reversing switch for the Westinghouse UTT Series. What is the difference? Come to a class on the UTT Series, and you will find out!



Want to learn more about how to maintain the LTCs on your system?

Give us a call at 800-338-5526 to see what we can do for you. We can schedule classes at the Waukesha® Training site, regional locations, Waukesha® transformer plants or at **YOUR** facility. We can offer expert consulting to get your LTCs out of the past and updated to assist in extending your maintenance intervals.

Pricing Information

We offer a series of Load Tap Changer (LTC) maintenance courses to teach the unwritten knowledge and skills that can only be attained 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/upgrades. All of our LTC training courses are 80% hands-on. We provide full-size training models to allow students to obtain experience in the class that matches real life experience found in the field. Up to four LTCs can be included in one class.

LTC Courses Offered

- General Electric LRT-200-2
- ABB UZE
- Waukesha® UZD®
- Federal Pacific TC-546 & TC-525
- Reinhausen RMV-II
- Siemens-Allis TLH-20/21
- Westinghouse UTT, UTT-A, UTT-B
- McGraw Edison 550, 550B, 550C Series
- General Electric LRT-65/83
- General Electric LRT-68/72
- General Electric LRT-38/48
- Siemens-Allis TLS / TLF

Condition Assessments Available Upon Request

- Let us assist you with problem resolution on your unit(s)
- Our experts are known throughout the industry
- We work with YOUR TECHNICIANS to resolve YOUR ISSUES

CUSTOMER SITE AND REGIONAL CLASS PRICE (PER SEAT)		
	MINIMUM	MAXIMUM
One LTC (2 Day Class) ~ \$1,455*	10	15
Two LTC (3 Day Class) ~ \$1,909*	10	15
Three LTC (4 Day Class) ~ \$2,364*	15	20
Four LTC (5 Day Class) ~ \$3,045*	15	20

**Pricing for classes held in the continental U.S.A.; for pricing outside the continental United States, please call 800-338-5526. Training manuals included. Freight cost relating to training equipment may not be included.*

WAUKESHA® TRAINING SITE / DALLAS CLASS PRICE (PER SEAT)		
	MINIMUM	MAXIMUM
One LTC (2 Day Class) ~ \$1,229*	1	20
Two LTC (3 Day Class) ~ \$1,682*	1	20
Three LTC (4 Day Class) ~ \$2,136*	1	20
Four LTC (5 Day Class) ~ \$2,590*	1	20

All training classes in Dallas will start on Tuesdays. Monday will be considered a travel day.

**Training manuals included.*

Classes can be conducted on your training unit or in your substation by special request; please contact our office at 800-338-5526 to discuss this option.

2019 Class Schedule

All classes in Dallas will start on Tuesdays; Monday is a travel day.

FIRST QUARTER

January

Wk #	Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1	2	3	4	5
	6	7	8	9	10	11	12
	13	14	15	16	17	18	19
	20	21	22	23	24	25	26
	27	28	29	30	31	1	

February

Wk #	Sun	Mon	Tue	Wed	Thu	Fri	Sat
						1	2
	3	4	5	6	7	8	9
	10	11	12	13	14	15	16
	17	18	19	20	21	22	23
	24	25	26	27	28		

March

Wk #	Sun	Mon	Tue	Wed	Thu	Fri	Sat
						1	2
	3	4	5	6	7	8	9
	10	11	12	13	14	15	16
	17	18	19	20	21	22	23
	24	25	26	27	28	29	30

SECOND QUARTER

April

Wk #	Sun	Mon	Tue	Wed	Thu	Fri	Sat
	31	1	2	3	4	5	6
	7	8	9	10	11	12	13
	14	15	16	17	18	19	20
	21	22	23	24	25	26	27
	28	29	30				

May

Wk #	Sun	Mon	Tue	Wed	Thu	Fri	Sat
				1	2	3	4
	5	6	7	8	9	10	11
	12	13	14	15	16	17	18
	19	20	21	22	23	24	25
	26	27	28	29	30	31	

June

Wk #	Sun	Mon	Tue	Wed	Thu	Fri	Sat
							1
	2	3	4	5	6	7	8
	9	10	11	12	13	14	15
	16	17	18	19	20	21	22
	23	24	25	26	27	28	29

THIRD QUARTER

July

Wk #	Sun	Mon	Tue	Wed	Thu	Fri	Sat
	30	1	2	3	4	5	6
	7	8	9	10	11	12	13
	14	15	16	17	18	19	20
	21	22	23	24	25	26	27
	28	29	30	31			

August

Wk #	Sun	Mon	Tue	Wed	Thu	Fri	Sat
					1	2	3
	4	5	6	7	8	9	10
	11	12	13	14	15	16	17
	18	19	20	21	22	23	24
	25	26	27	28	29	30	31

September

Wk #	Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1	2	3	4	5	6	7
	8	9	10	11	12	13	14
	15	16	17	18	19	20	21
	22	23	24	25	26	27	28
	29	30					

FOURTH QUARTER

October

Wk #	Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1	2	3	4	5
	6	7	8	9	10	11	12
	13	14	15	16	17	18	19
	20	21	22	23	24	25	26
	27	28	29	30	31		

November

Wk #	Sun	Mon	Tue	Wed	Thu	Fri	Sat
						1	2
	3	4	5	6	7	8	9
	10	11	12	13	14	15	16
	17	18	19	20	21	22	23
	24	25	26	27	28	29	30

December

Wk #	Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1	2	3	4	5	6	7
	8	9	10	11	12	13	14
	15	16	17	18	19	20	21
	22	23	24	25	26	27	28
	29	30	31				

Units Covered in Waukesha® Training Monthly LTC Class

	UZD	RMV	FPE	LRT	550	UTT	TLH	LR83	UZE	TLS/TLF	8/72
January	X				X	X					
February		X	X	X							
March					X		X		X		
April	X			X		X					
May		X			X		X				
June			X			X					X

Units Covered in Waukesha® Training Monthly LTC Class

	UZD	RMV	FPE	LRT	550	UTT	TLH	LR83	UZE	TLS/TLF	LR68/72
July	X	X				X					
August			X		X		X				
September	X			X						X	
October		X			X				X		
November	X		X	X							
December		X			X	X					

■ Holiday

■ Waukesha® Training LTC Class

■ Customer Site Class

Available Dates

Registration Form for Regional and SPX Transformer Solutions Training Site LTC Classes

Monthly LTC Class Offerings at Waukesha® Training Site											
	UZD	RMV	FPE	LRT	550	UTT	TLH	LR83	UZE	TLS/ TLF	LRT 68/72
January	X				X	X					
February		X	X	X							
March					X		X		X		
April	X			X		X					
May		X			X		X				
June			X		X						X
July	X	X				X					
August			X		X		X				
September	X		X							X	
October		X			X				X		
November	X		X	X							
December		X			X	X					

Registration Instructions

- 1) Print a copy of the form below
- 2) Fill out the form completely
- 3) Submit the form by one of the following methods:
 - **E-MAIL:** lisa.richter@spx.com
 - **FAX:** 214-637-1157
 - **MAIL:** SPX Transformer Solutions, Inc.
ATTN: Lisa Richter, Training Coordinator
9011 Governors Row
Dallas, Texas 75247

NOTES:

- All fees due prior to start of class
- Make checks payable to SPX Transformer Solutions, Inc.
- VISA, MC & AMEX accepted
- **All classes in Dallas will start on Tuesdays; Monday is a travel day**

	Student #1	Student #2	Student #3	Student #4	Student #5
Month to Attend Class:					
Models in Class:					
Name:					
Title:					
Organization:					
Address:					
City:					
State:					
Zip Code:					
Telephone:					
Fax:					
E-mail:					