



# LTB Installation & Pre-Commissioning Training

## Level 3

LTB-L3-LTBD1\_E1 with BLK222\_FSA1& MD-Training Agenda

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OWNER Head of Training Function	DOCUMENT KIND Agenda			
TITLE LTB-L3-LTB D1/E1 with BLK_FSA1 & MD - Training Agenda				
OWNING ORGANIZATION SE-Ludvika-2657-Field Service Hitachi Energy	DOCUMENT ID 2GHE000592	REV. A	LANG. en	PAGE 1/4

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**Course goal:**

The course aims at how to perform installation and commissioning, basic troubleshooting, basic analytics and basic repairs.

**Main learning objectives:**

- ❖ Comprehend the critical elements of erection commissioning, troubleshooting, operation and maintenance of HV circuit breakers.
- ❖ Understand design principles and critical elements.

**Prerequisites:**

- ❖ Basic knowledge of power systems

**Topics:**

- ❖ On-site health and safety practices
- ❖ Product description & functionality
- ❖ Installation & Gas handling
- ❖ Circuit diagram & Connection points
- ❖ Pre-commissioning & Basic troubleshooting
- ❖ Maintenance schedule
- ❖ Operating mechanism basic repairs
- ❖ Circuit breaker Installation
- ❖ Circuit breaker basic repairs and adjustments
- ❖ Pre-commissioning & Basic troubleshooting / Analytics.

**Assembly steps and procedures:**

- ❖ Unpacking and inspection of material
- ❖ Installation of steel structure
- ❖ Installation of circuit breaker and operating mechanism
- ❖ Adjustments after installation
- ❖ Pressurizing Circuit breaker
- ❖ Basic troubleshooting
- ❖ Pre-commissioning test.

**This is a theoretical and practical training course.**

LTBD1\_E1 with BLK222\_FSA1& MD

**Certification:**

Follows the Hitachi Energy guidelines for certification according to respective certification policy.

Confirmation of attendance will be issued on training completion.

**Duration:**

5 days

**Enrollments:**

Send your request to

[se-ltb-Training@hitachienergy.com](mailto:se-ltb-Training@hitachienergy.com)

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Day	Subject	Location
1	<b>Welcome / Introduction to Hitachi Energy Sweden LTB Product Portfolio.</b> <ul style="list-style-type: none"> <li>❖ Training Introduction / Presentation (Presentation (Short introduction of the presenter, attendees, the curriculum, training and specific circuit breaker type).</li> <li>❖ Safety Induction (The participant should be acquainted and understand local and site-specific rules &amp; legislation and comply with them).</li> <li>❖ Certification Process</li> <li>❖ Hitachi Energy Sweden LTB Product Portfolio</li> </ul>	Classroom
	<b>Product overview and components</b> <ul style="list-style-type: none"> <li>❖ Description of circuit breaker parts, puffer type and its function including auxiliary equipment, such as density monitors, corona rings or pre-insertion resistors</li> <li>❖ Description of operating mechanism common parts and its function.</li> <li>❖ SF6-Gas handling and the impact of the greenhouse effect.</li> <li>❖ Maintenance intervals and procedures for maintenance category A &amp; B.</li> <li>❖ Circuit diagram fundamentals.</li> </ul>	
2	<b>Documentation</b>	Classroom
	<b>Unpacking and inspection of material</b> <ul style="list-style-type: none"> <li>❖ How to transport CB's and operating mechanisms, for example transport pressure and uncharged springs.</li> <li>❖ How to inspect the circuit breaker and operating mechanism after delivery to site and before installation</li> <li>❖ Check that all parts (bolts, corona rings, etc.) are delivered as per order.</li> <li>❖ Storage conditions for the Circuit breaker, operating mechanism and spare parts.</li> </ul>	
3	<b>Installation of steel structure</b> <ul style="list-style-type: none"> <li>❖ Checklist for installation</li> <li>❖ How to install steel structure and tolerances. Tips and tricks of installation</li> <li>❖ How to lift and install the circuit breaker on top of the steel structure and connect eventual rod system after lifting.</li> <li>❖ How to install density switches and other equipment.</li> </ul>	Classroom
	<b>Adjustments after installation</b> <ul style="list-style-type: none"> <li>❖ How to adjust rod system, joint screw and to align the circuit breaker in contact position.</li> <li>❖ How to adjust eventual rods in installation.</li> </ul>	

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Day	Subject	Location
4	<b>Pressurizing Circuit Breaker</b>	Training center
	<ul style="list-style-type: none"> <li>❖ How to connect filling equipment to pressurize circuit breaker and to correct pressure.</li> <li>❖ Basic troubleshooting (Mechanical and electrical)</li> </ul>	
5	<b>Pre-commissioning</b>	Training center
	<ul style="list-style-type: none"> <li>❖ Inspection of installation according to product manual (Gas pressure, alignment etc.)</li> <li>❖ Introduction to testing equipment for pre-commissioning test</li> <li>❖ Pre-commissioning test according to product manual and standards.</li> </ul>	
	<b>Week Review</b>	
	<b>Q and A session</b>	

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