

GIS ELK-3/550 First Responder

Level 2 Field Service Engineer Training

TRAINING CENTER CHINA – COURSE DESCRIPTION

PREPARED BY ZhiWu Wu	STATUS Approved	SECURITY LEVEL Internal		
APPROVED BY Sam-QingZhong Shen	APPROVAL DATE 2022-12-28			
OWNER Head of Training Function	DOCUMENT KIND Agenda			
TITLE GIS ELK-3/550 First Responder Training				
OWNING ORGANIZATION 2657-Service CN	DOCUMENT ID	REV. B	LANG. en	PAGE 1/4

Course goal:

This is the recommended course for LSC with a small installed Base (IB) and/or a customer service agreement in place where fast reaction time is needed of GIS type ELK-3/550kV.

Main learning objectives:

- ❖ Understand the functions of all GIS components of ELK-3/550kV
- ❖ Known about all relevant documents (drawings, instructions, protocols) to perform an installation
- ❖ Troubleshooting of HMB-8 operating mechanism
- ❖ SF₆-Gas handling and measuring with analyzer
- ❖ Gas monitoring devices exchange and test
- ❖ Flange treatment (outdoor GIS)
- ❖ Failure reporting

Prerequisites:

- ❖ SF₆-Gas-handling course with certificate
- ❖ Heavy load course with certificate
- ❖ Good English skills (written and spoken)
- ❖ Ability to read wiring diagrams is required
- ❖ On-site experience on GIS Installation and/or Commissioning
- ❖ Attended the local required Health & Safety Training
- ❖ First aid course with certificate
- ❖ Own PSE
- ❖ Computer with admin rights

Topics:

- ❖ Circuit-breaker and breaker operating mechanism
- ❖ Disconnecter, earthing switch, fast acting earthing switch
- ❖ Statically components like connecting elements, bus-bars
- ❖ Lateral dismantling elements, compensators
- ❖ SF₆-gas to-air bushing

- ❖ Surge arrester
- ❖ Site assembly instructions

Assembly steps and procedures:

- ❖ Overview and detailed drawings of assembly units, packing list and layouts
- ❖ Positioning and alignment of Bays
- ❖ Coupling and alignment of bays
- ❖ Secondary systems commissioning
- ❖ Isolator and earth switch testing
- ❖ Protocols and Reports

This is a theoretical and practical training course.

Certification:

A certificate will be issued if the certification requirements are fulfilled as described in the Global PGHV- GIS certification process (2GHE004183)

Duration:

8 days

Enrolments:

Send your request to

cn-hvtraining@hitachienergy.com

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Day	Subject	Location
	Welcome / Introduction to Hitachi Energy China <ul style="list-style-type: none"> ❖ Training Introduction / Presentation ❖ Safety Induction ❖ Certification Process ❖ Hitachi Energy China GIS-Product Portfolio 	
	Electromagnetic induction when working on high voltage switchgear	
	Introduction to all main components of the product	
1	Product overview and components <ul style="list-style-type: none"> ❖ Circuit-breaker ❖ Circuit-breaker operating mechanisms ❖ Comparison “single line diagram” and “products” (x-ray view) ❖ Circuit breaker arcing chamber ❖ “HMB-operation mechanism” components and function ❖ Disconnecter / Earthing Switch component and function incl. mechanism ❖ Fast Earthing Switch components and function incl. drive mechanism ❖ Transversal/lateral dismantling modules, compensators, elbow elements, ❖ Insulators ❖ Cable termination (transformer and cable housing) ❖ Current and voltage transformers, ❖ Bushings ❖ Density monitors and sensors working principle 	Classroom
	Introduction to all main components of the product (continuation)	
2	<ul style="list-style-type: none"> ❖ Disconnecter (DS), earthing switch (ES) operating mechanism ❖ Fast earthing switch (FAES) operating mechanism ❖ Schematics diagram for CB, ES and DS operating mechanism/drive BAC / BAE <ul style="list-style-type: none"> ❖ Control card exchange ❖ Troubleshooting / control unit LEDs 	Classroom
	SF₆-Gas	
3	<ul style="list-style-type: none"> ❖ SF₆-gas properties ❖ SF₆-gas handling (no SF₆-gas certificate) ❖ SF₆-gas limit values and measuring with SF₆-gas analyzer ❖ Leak detection 	Classroom

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Day	Subject	Location
4	Density monitor	Classroom
	❖ Exchange and on-site testing of density monitors	
	HMB-8, troubleshooting	
	❖ Handling of interlocking device ❖ Oil handling and filling ❖ Check of pump motor carbon brushes Manual charging with mobile charging unit	
5	HMB-8, troubleshooting	Classroom & Training field
	❖ Handling of interlocking device	
	❖ Oil handling and filling	
	❖ Check of pump motor carbon brushes	
	Manual charging with mobile charging unit	
	Week Review	
	Q and A session	
6	On-Site visit of a Substation	Training field
	❖ Identify components according to single line and gas diagram	
7	Flange treatment	Classroom Training field
	❖ Correct flange treatment and retreatment for outdoor GIS	
	CORRECT FAILURE REPORTING / TROUBLESHOOTING	
	Final Q and A session	
	Hand-over of certificates (if examination was passed)	
	❖ End of training	

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