

# **HOT LINE MAINTENANCE PRACTICES, TRAINING & SAFETY AUSPECTS**

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Director**

**National Power Training Institute  
(Ministry of Power, Govt. of India)**

# National Power Training Institute (NPTI)

**NPTI is the world's leading integrated power training institute under Ministry of Power, Govt. of India.**

**NPTI is operating on all India basis (since more than 50 years) through its 11 Training Institutes located at New Delhi, Bengaluru, Nagpur, Neyveli, Durgapur, Guwahati, Nangal, Alappuzha (Kerala), Shivpuri (MP) with its Corporate Office at Faridabad.**

**NPTI is one of the premier Institute in the World having latest state of art infrastructure including six numbers Multifunctional Simulators under one umbrella**

# Hot Line Training Centre (HLTC)

- HLTC is a Specialized training institute of NPTI (established in 1958) imparting training on Hot Line Maintenance of High Voltage Lines & Switch Yards, enabling power personnel to carry out maintenance works without taking power shut down and resulting no power interruption.

**HLTC Campus is spread over in an area of 57 acres located adjacent to 220 kV Sub Station KPTCL/ 400 kV Sub Station PGCIL at 26 km, Kanakpura Main Road, Bangalore**

# HLTC- Infra-structure

**66 kV to 400 kV Transmission Lines (Experimental)  
with Transmission Tower for Cold Line & Hot Line/  
Live Line Maintenance Training & Practices  
(with option to be charged with 11 kV Voltage)**



# **HLTC- Infra-structure Transmission Lines**

**66 kV & 110 kV Transmission  
Line (Experimental)**

**for Hot Line & Cold Line  
Maintenance Training &  
Practices with option to charge  
with 11 kV voltage)**



# **HLTC- Infra-structure Transmission Lines**

**220 kV Transmission Line  
(Experimental)**

**for Hot Line & Cold Line  
Maintenance Training &  
Practices with option to charge  
with 11 kV voltage)**



# **HLTC- Infra-structure Transmission Lines**

## **400 kV Transmission Line (Experimental)**

**for Hot Line & Cold Line  
Maintenance Training &  
Practices with option to charge  
with 11 kV voltage)**



# HLTC- Infra-structure

- **200kV Switch Yard (Experimental)**
- **with 2 Bays equipped with Current Transformer CT, Potential Transformer PT, SF6 Circuit Breaker etc) for Cold Line Maintenance Training & Practice**
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# HLTC- Infra-structure

## 220 kV Switch Yard (Experimental)





# HLTC- Infra-structure

**11 kV & 33 kV Distribution Lines (Experimental)  
with Poles and lattice Structure for Hot Line  
Maintenance Training & Practices (with option to  
charge with 11 kV voltage)**

# **HLTC- Infra-structure Distribution Lines**

## **11 kV Distribution Line (Experimental)**

**for Hot Line Maintenance  
Training & Practices (to be  
charged with 11 kV Voltage)**

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# **HLTC- Infra-structure Distribution Lines**

## **33 kV Distribution Line (Experimental)**

**for Hot Line & Cold Line  
Maintenance Training & Practices  
( with option to be charged with 11  
kV Voltage)**



# **HLTC- Infra-structure**

## **Hot Line Tools Vehicle Hangar**



# HLTC- Infra-structure Insulated Imported Tools

- **Insulated Imported Tools for carrying out Hot Line Operations on Transmission lines up to 400 kV using Hot Stick Method (HSM) and Bare Hand Method(BHM)**
  
- **Insulated Epoxy Glass Rods with Metal Fittings**
- **Insulated Epoxy Glass Ladders with Metal Fittings**
- **Insulated Epoxy Glass Scaffolding,**
- **Epoxy Glass Hot Line Chair,**
- **Epoxy Glass Hot Line Cycle**
- **Hot Line Suit ( Nomex and Stainless Steel)**

# HLTC- Infra-structure Insulated Imported Tools

- **Insulated Imported Tools for carrying out Hot Line Operations on Distribution lines 11 kV & 33 kV using Rubber Gloves Method (RGM)**
- **Rubber Gloves,**
- **Rubber Blankets,**
- **Jumper Cables,**
- **Conductor Covers,**
- **Cross Arm Cover,**
- **Pole Cover,**
- **Insulated Epoxy Glass Rods with Metal Fittings &**
- **Insulated Epoxy Glass Ladders with Metal Fittings**

# HLTC- Infra-structure Detector & Machines

- **Machine-Detector for carrying out Hot Line Operations on Transmission lines up to 400 kV**
  
- **Hot Line Insulator Washing Machine,**
- **Punctured Insulated Detection Equipment,**
- **Thermo Vision Camera etc.**

# Hot Line Training Centre

- **Trainees' Hostel with Guest Rooms, Separate Kitchen and Dining Hall, Conference Hall along with entertainment & recreational facilities.**
- **Bus for transportation of trainees to operation site at KPTCL and PGCIL for live line maintenance practice**
- **Ambulance in case of emergencies during training in additions to conventional vehicles.**
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## **Trainees Hostel & Guest Rooms**



# Trainee and Guest Canteen



## Bus for Transportation of trainees



# Hot Line Maintenance Training & Practice

## 11kV Wire Tong Method Operation



# Hot Line Maintenance Training & Practice

11kV Side Arm  
Method operation



# Hot Line Maintenance Training & Practice

## 11kV Dead End Operation



# Hot Line Maintenance Training & Practice

## 33kV Tension String Replacement



# Hot Line Maintenance Training & Practice

**33kV Bye pass  
Jumpering Work**



# **Hot Line Maintenance Training & Practice**

## **Hot Stick Method (HSM)**

**66kV Suspension  
String Replacement**



# Hot Line Maintenance Training & Practice

## Hot Stick Method (HSM)

**66kV Tension String  
Replacement**



# Hot Line Maintenance Training & Practice

## Hot Stick Method (HSM)

220kV Tension  
String Replacement



# Hot Line Maintenance Training & Practice

## Hot Stick Method (HSM)

220kV Suspension  
String Replacement



# Hot Line Maintenance Training & Practice

## Hot Stick Method (HSM)

220kV “V” String  
Replacement



# **Live Line Maintenance Techniques(LLMT)**

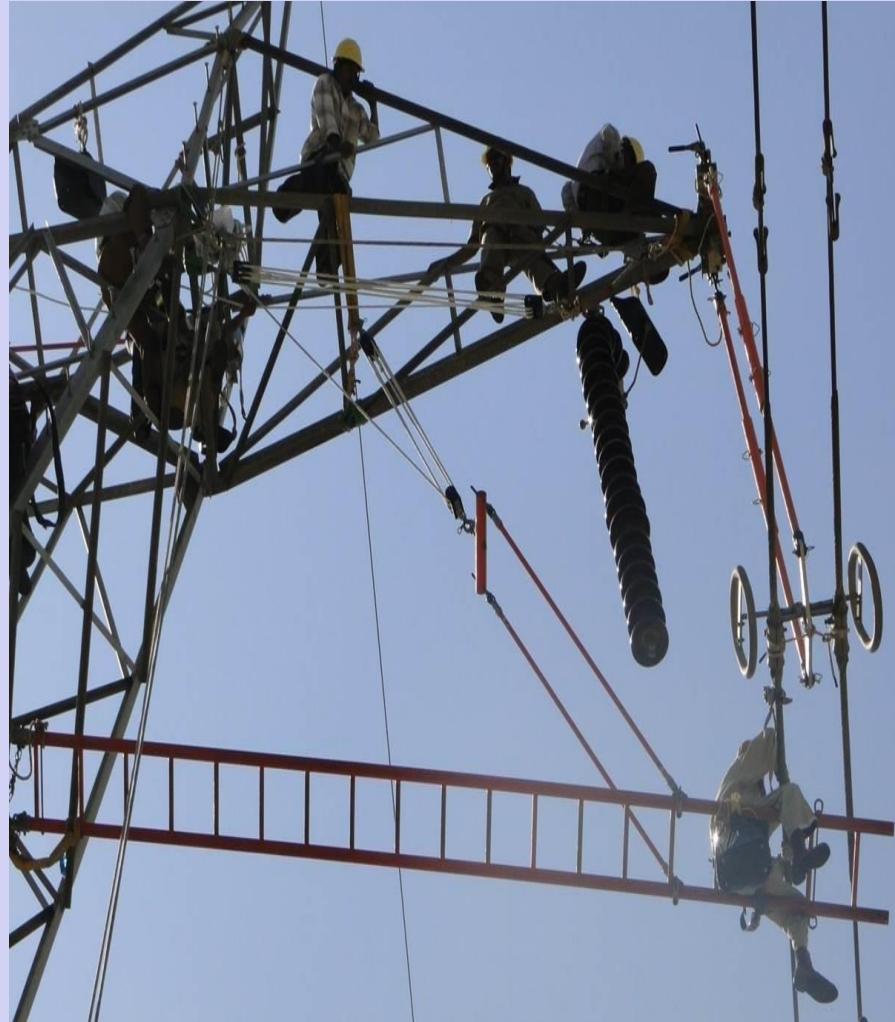
## **Using**

### **Bare Hand Method (BHM)**

- 400kV Suspension
- 400kV Tension String
- 400kV V String

# Hot Line Maintenance Training & Practice

**400kV Suspension Insulator  
String Replacement  
Operation**



# Hot Line Maintenance Training & Practice

**400kV Tension Insulator  
String Replacement  
Operation**



# Hot Line Maintenance Training & Practice

**400kV “V” String  
Insulator Replacement  
Operation**



# Hot Line Maintenance Training & Practice

## Bare Hand Method

**400kV Conductor Repair Work**



# **Hot Line Maintenance Training & Practice**

## **Covering the Live conductor Using Conductor Guards to Carry out Live Work**



# **Hot Line Maintenance Training & Practice**

## **A lineman wearing equipment for hot glove work**



# Hot Line Maintenance Training & Practice

## Untie and retie conductors



# **Hot Line Maintenance Training & Practice**

## **Lineman Fixing a PG clamp**



# **Hot Line Maintenance Training & Practice**

## **Replacement of Pole and Cross Arm**



# **Hot Line Maintenance Training & Practice**

## **Displace conductors – crane boom-mounted auxiliary arm and mast**



# Hot Line Maintenance Training & Practice

## Insulator Replacement Using Insulated Bucket



# **Hot Line Maintenance Training & Practice**

## **Fitting of a line splice**



# Tree Trimming



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# Hot Line Training Centre



# Bare Hand Operation



# Hot Line Training Centre

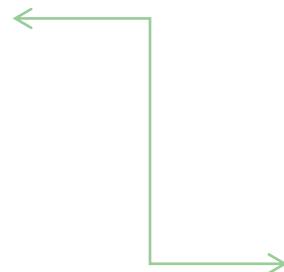
## LLMT USING BARE HAND METHOD



# IMPORTANCE OF HOT LINE MAINTENANCE

Previous days  
un affordable

Now a  
Days It is  
becoming  
Essential



## DIRECT BENEFITS OF LLMT

- Maintenance work carried out without interruption of power flow.
- Financial saving.
- More safety
- No accidents
- Customer happy



# Hot Line Training Centre

## CONTACT DETAILS

### NATIONAL POWER TRAINING INSTITUTE

(An ISO 9001:2015 &14001:2015 Organization)  
Under Ministry of Power, Govt. of India)

### HOT LINE TRAINING CENTRE

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