

AMC ENGINEERING COLLEGE
DEPARTMENT OF ELECTRICAL AND ELECTRONICS
ENGINEERING

REPORT ON INDUSTRIAL VISIT TO HOT LINE TRAINING
CENTRE (HLTC) BENGALURU ON 27TH OCTOBER 2021

UNDER THE GUIDANCE OF:

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High Voltage Training Centre (HLTC) located at Bangalore, is the oldest Institute under National Power Training Institute (NPTI). Being one of the 9 units in India, the personnel are trained to conduct maintenance works on Transmission Lines and Switch Yards without power interruption. Participants here are from various states across India.



Located at Kanakpura Road, Bengaluru, HLTC is spread across nearly 57 acres wide campus with all amenities – the main office, Guest house, hostel, canteen, Tools Hanger, Training Yard consisting of Transmission Lines from 11kV to 400kV and 220kV Switch Yard and many more. Being a centre with high risk factors, first aid and fire safety measures are given utmost importance. Before starting any course, the trainees are first taught about all the risk factors in the campus and the safety measures to be taken during an emergency. A signature of all trainees will be taken on an agreement about these risk factors before starting with any course.

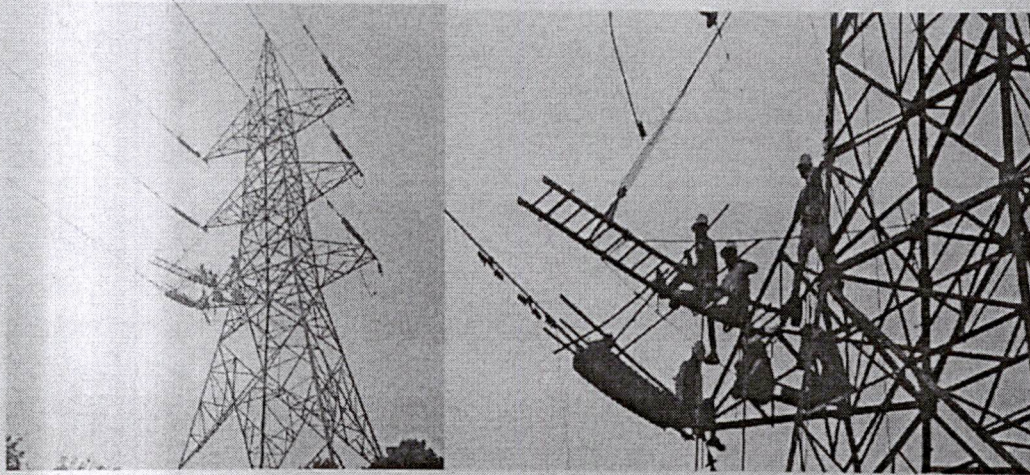
Many central government and interstate electrical boards have worked with HLTC. Naming few from the list are SAARC, BJCEL, TAPS, KCEB are few of them. Internationally, HLTC has also worked with various countries naming Sri Lanka, Afghanistan, Bangladesh.

The training for maintenance work on transmission lines is provided under various courses which last for a duration of 1 week to 11 weeks. The courses offered as follows:

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- Live Line Maintenance Techniques (LLMT) using Hot Stick Method (HSM) up to 220kV
- Live Line Maintenance Techniques (LLMT) using Bare Hand Method (BHM) up to 400kV
- Switch Yard Maintenance
- Live Line Insulator Washing
- Live Line Testing of Punctured Insulator Detection (PID)
- Capsule Course for Executives on Hot Line Activities
- Cold Line Maintenance Training up to 400kV

The Live Line Maintenance Techniques (LLMT) using Hot Stick Method (HSM) and Bare Hand Method (BHM) both are a 12-week course. These two courses teach the replacement of faulty insulator discs and string. Participants are first taught the HSM followed by BHM. In the Hot Stick Method, a group of 8 to 10 members do the replacement of a 220KV insulator string using a hot stick made up of epoxy glass metal fitting to a stick. In the Bare Hand Method, a man wearing a conductive suit, called as a hot man, reaches the live wire of 440KV to perform the maintenance work.



The Switch Yard Maintenance is a 4-week course which includes testing and replacement of jumper, nuts and bolts and switch yard maintenance using the scaffolding assembly. All this work is performed on a vertical ladder arrangement of a 220KV live bus. The Live Line Testing of Punctured Insulator Detection (PID) is a 1-week course which includes the graphical and analytical methods of detection using the PID kit. The Live Line Insulator Washing is a 1-week course where the trainees are taught washing of insulators in live wire

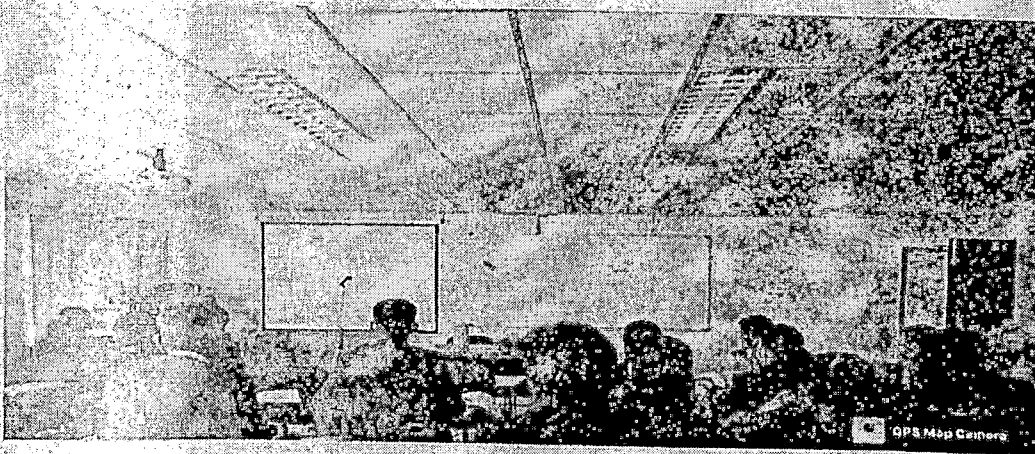
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using a high-pressure jet of demineralised water. The Capsule Course is for all executives, engineers, tech supervisors and line man for a duration of 1-week.

As a part of high-risk management, before starting the above courses, all the trainees are given a familiarization training programme for 1-week where the first aid and fire safety measures are taught.

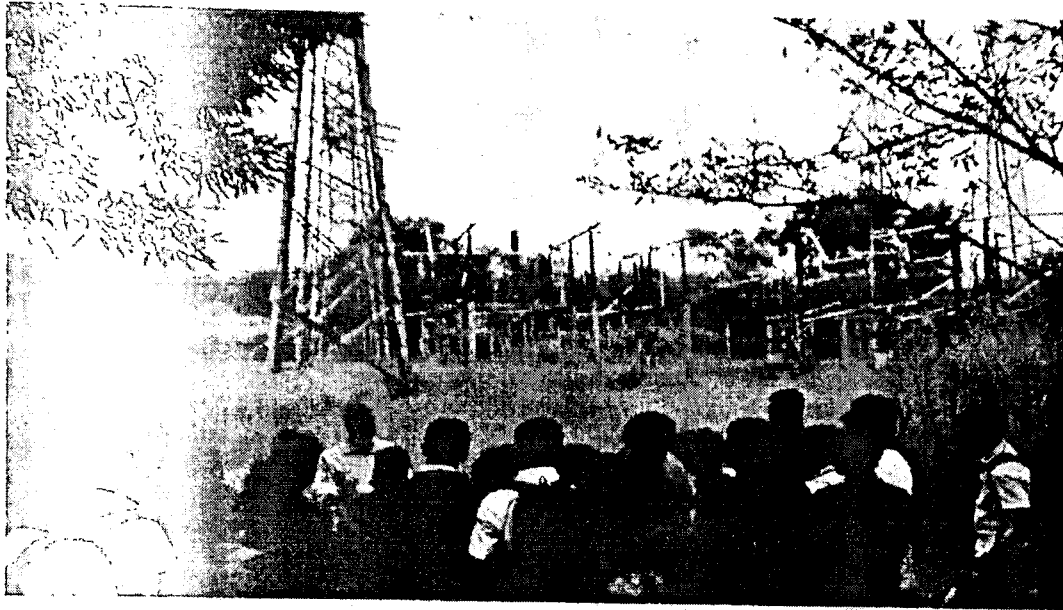
All the tools and equipment used at HLTC are imported from The United States of America. The tools are regularly tested for their work and efficiency. The hot stick used in Hot Stick Method of LLMT is made of epoxy glass which gives about 99% of insulation. The conductive used by hot-man is made up of 75% Nomex and 25% stainless steel. All other tools used in the maintenance work are mainly made up of epoxy.

Our industrial visit to the Hot Line Training Centre was a privileged encouragement. It was highly knowledgeable and exciting. The route to HLTC was filled with an amazing landscape of Bannerghatta Road. We started our journey from college at 9:30 a.m. and reached the campus around 10:00 a.m. We were welcomed by the director of the centre MR. Prakash and he took us to the activity room where he enlightened us about the entire centre. The detailed information given to us, amazed us. The 4-hour maintenance of transmission lines would result in a crore-loss to economy of the country. The risks and perks of being live line workers were explained briefly. There was a strong realisation in the classroom about the contribution of the live line workers to society. After spending around 45 minutes in the activity hall, we were sent to the field where the trainees were performing maintenance activities. We watched personnel remove one of the strings from the insulator discs and replacing it with another string using the Hot Stick method. Watching the interests of both the trainers and trainees boosted up our excitement for the other half of the industrial visit.



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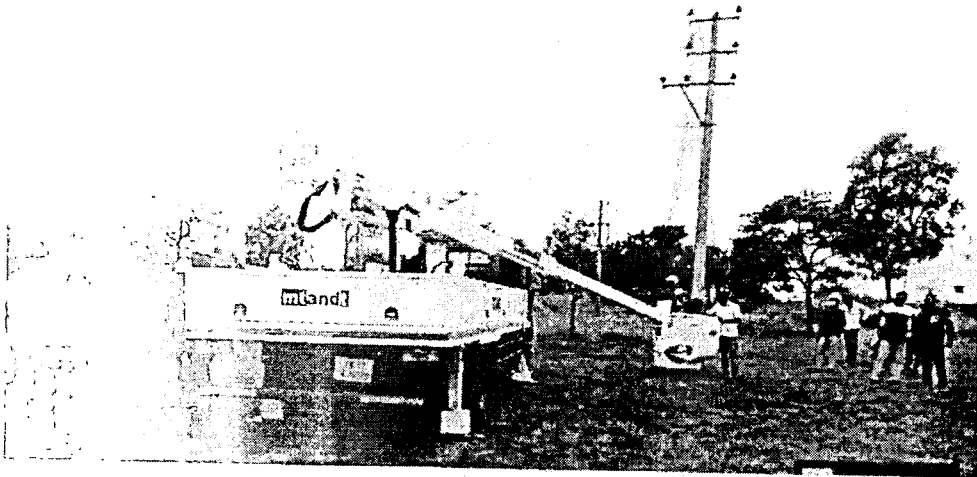
After having a good meal at the canteen, we witnessed a very rare sight of a new equipment in the campus. The machine was INSULATED AERIAL DISTRIBUTION VEHICLE (IADV) MODEL YBCK11. This machine costed lumpsum amount of 80 lakhs and it was imported from U.S. Personnel use it to reach the distribution wire and test for any faults or proper cleanings of the wire holders. We were shown a dummy substation which costed around 20 crores to set up. It was used to train the trainees.



We got a opportunity to have a small chat with one of the learners who hail from Madhya Pradesh. The state government had offered him to take this training. He mentioned us about the procedure he got selected and the risk factors. He also mentioned about the stipend he is getting and the job opportunity ahead. The dedication towards his job in spite of all the risks were highlighted and it motivated us.


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The technical day ended as we finished witnessing the working of INSULATED AERIAL DISTRIBUTION VEHICLE MOUNTED BUCKET. Acknowledging our teachers Prof.Kethumandal C and Prof.Himangkana. B sincerely helped us throughout the industrial visit. They made sure we covered all the technical knowledge in the given period of time. The industrial visit to HLTTC was indeed a fruitful experience and helpful to our future endeavors.



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