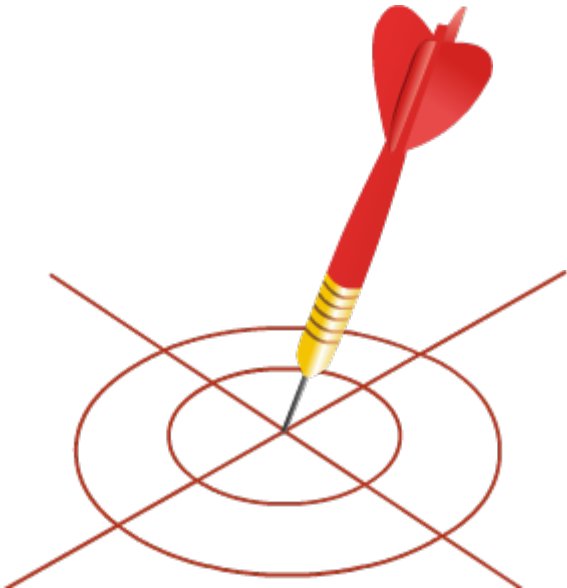

Welcome to the Session on
Three-Phase Energy Meter Installation

Learning Objectives

By the end of this session you will be able to:

- Explain the release of new three-phase connection to an industry for a load of 60 kW
- Explain the installation process of a new three-phase LTCT energy meter
- Explain the process of energisation of the three-phase service line to consumer through the LTCT energy meter



Introduction

Lineman, Mr. Bheem

Technician, Mr. Devendra

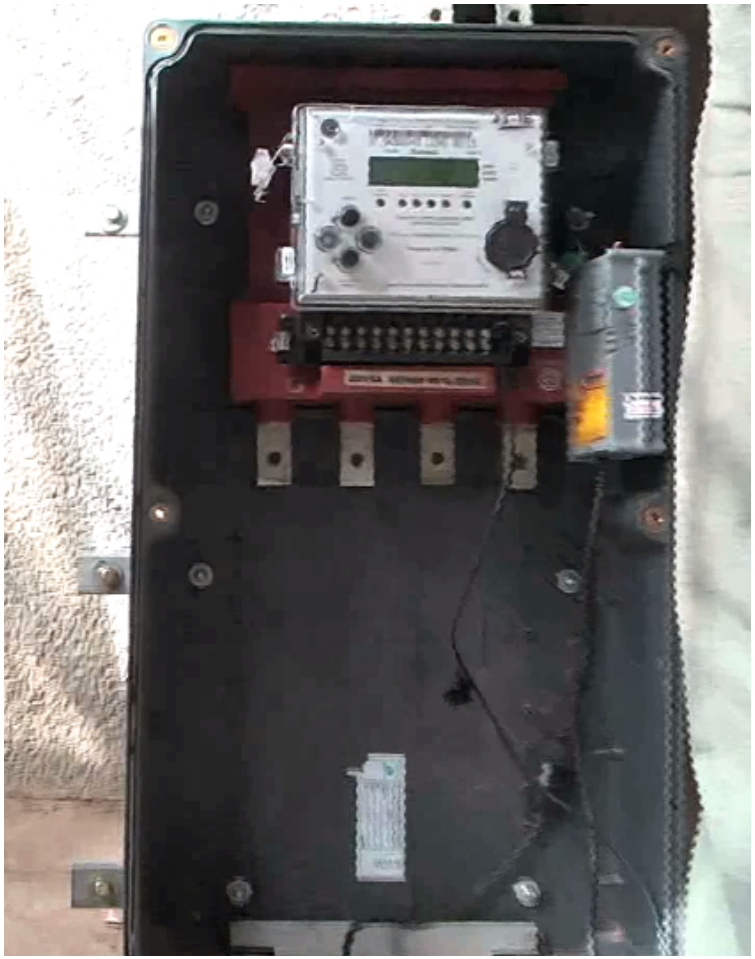
Supervisor, Mr. Sonpal

Site Engineer, Mr. Arvind Seth

Meter installer, Mr. Satish

Helper, Mr. Kamal

Three-Phase Energy Meter Installation



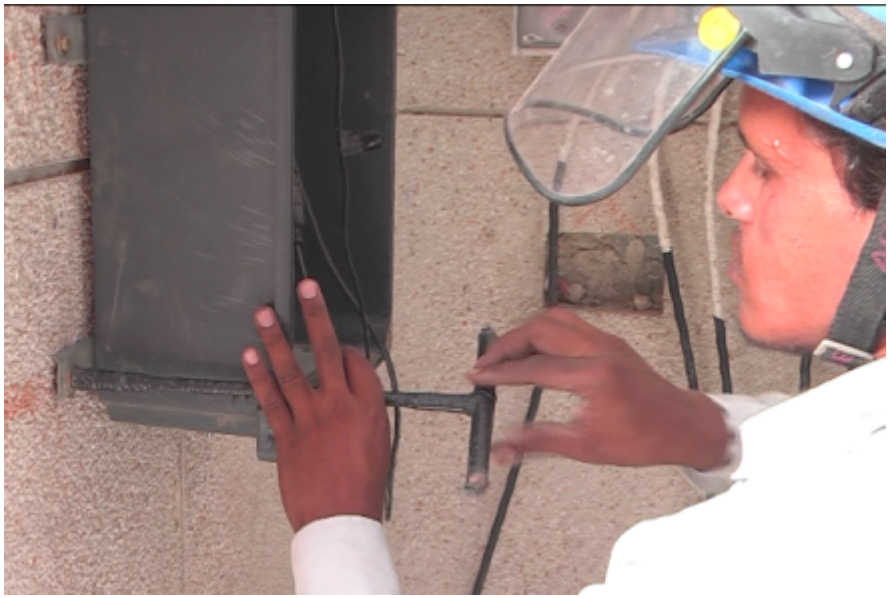
Three-phase meter that has to be installed

Three-Phase Energy Meter Installation

Mounting of meter box

Grouting holes

Three-Phase Energy Meter Installation



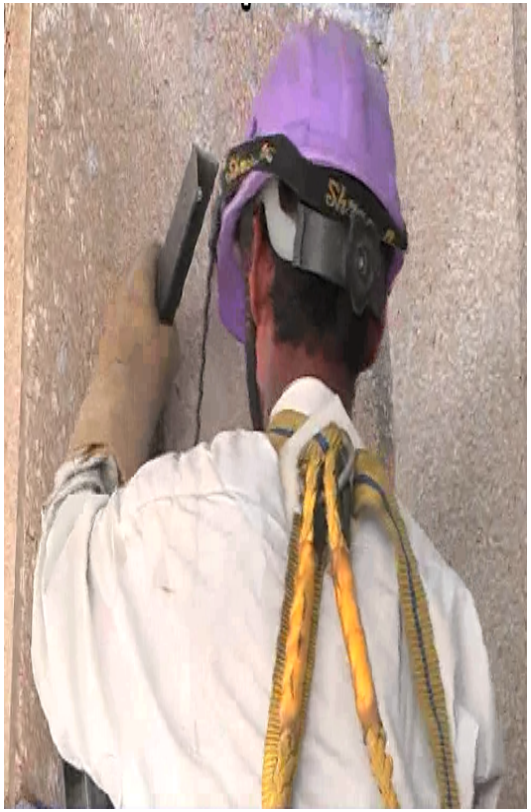
Tightening the fasteners

Lineman wears safety belt to protect from falling

Three-Phase Energy Meter Installation

Drilling to fix the angle bracket

Three-Phase Energy Meter Installation



Fixing the angle bracket

Piercing the fasteners of angle bracket with hammer

Tightening the bolts with box spanner

Three-Phase Energy Meter Installation

Angle bracket is fixed

Fixation of shackle insulator on angle bracket

Meter box is properly positioned

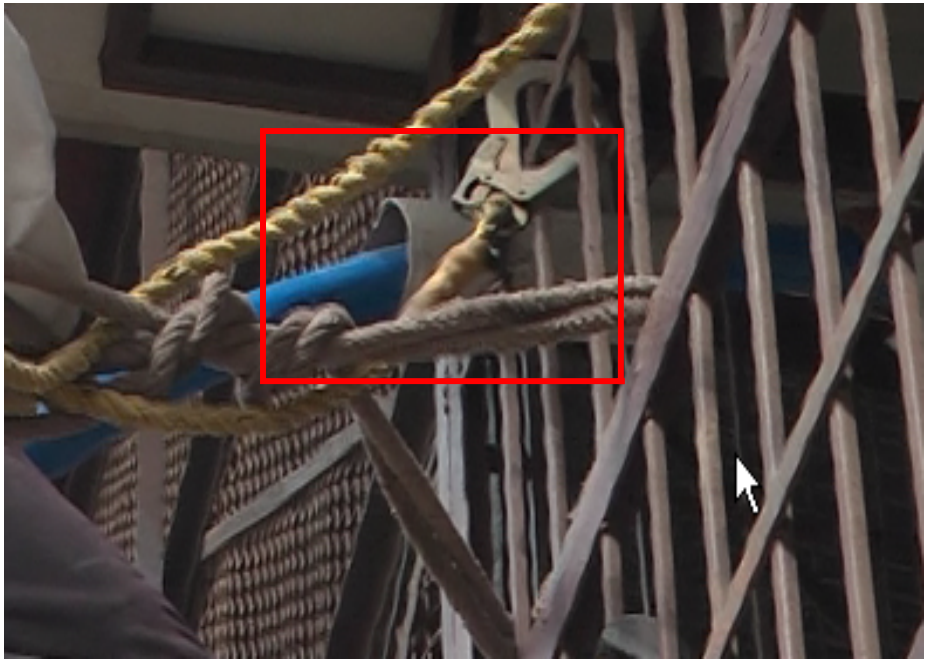
Cable Laying Process

The ladder is set up

Tying the ladder with rope

Cable with the PVC pipe

Cable Laying Process



Inserting the cable through the iron shade

Cable drawing from outside the fence

Cable Laying Process

Measuring the cable

Fixing the cable in the meter

Cable Laying Process

Separation of armoured wires

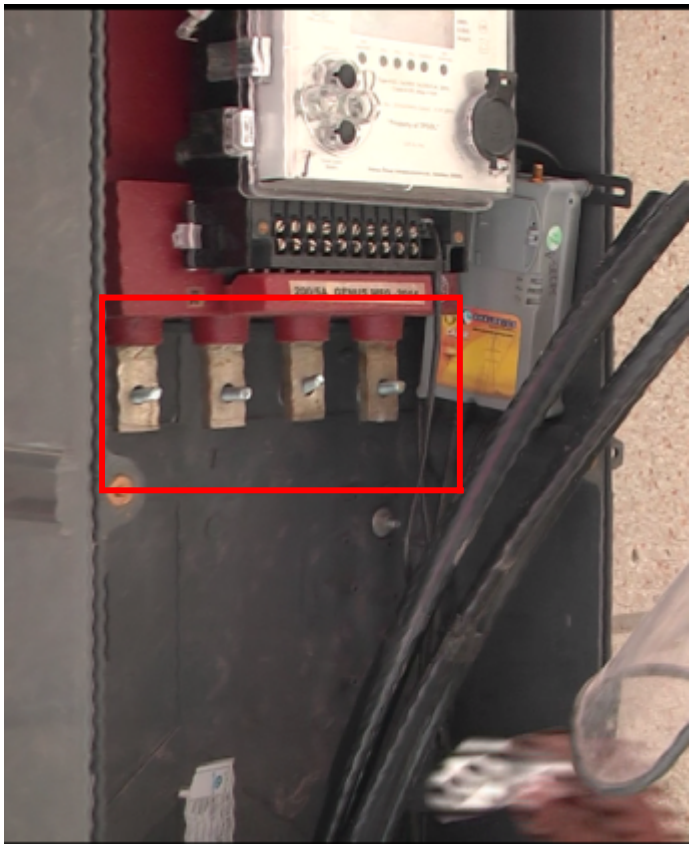
GI wires of the armouring of cable

Cable Laying Process

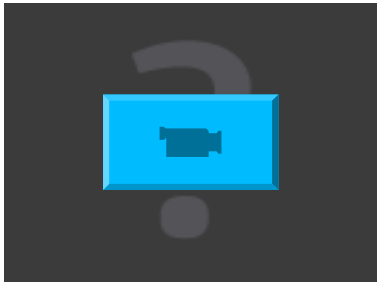
Tightening the GI wire

The GI wire is used as catenaries to guard the cable

Process of Joining the Phase and Neutral Leads



4 terminals



Crimping the thimbles

Process of Joining the Phase and Neutral Leads

Excess length of cable lead is cut

150 sq. mm thimble is fixed on the cable lead

The cable lead is punched with the crimping tool

Process of Joining the Phase and Neutral Leads

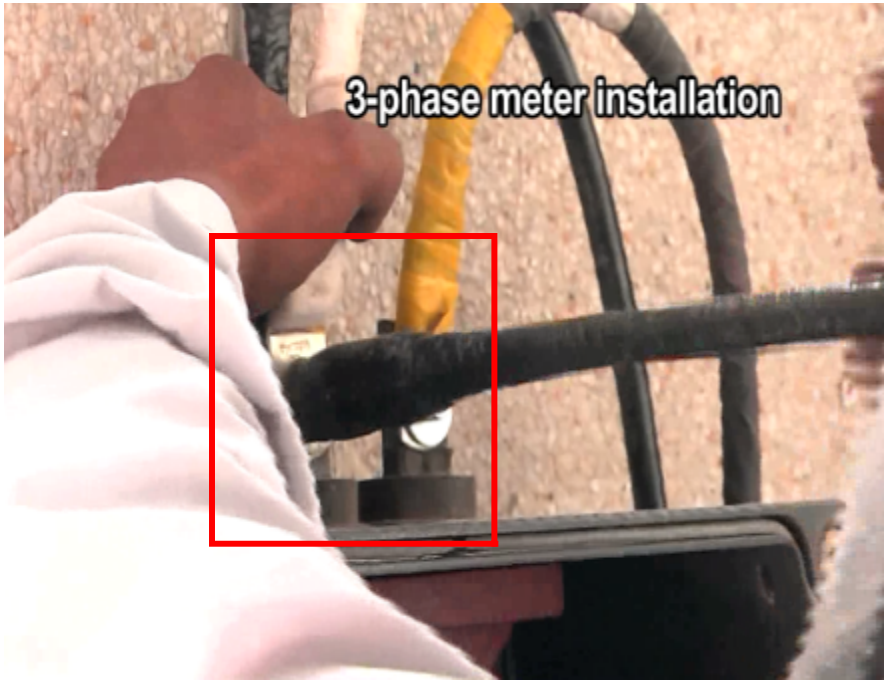
Thimble is covered with insulation tape

Fixed on the terminal

Process of Joining the Phase and Neutral Leads

Four cable leads are fixed with thimble and connected to meter terminals

Connection of Outgoing Terminals



Connecting outgoing terminals

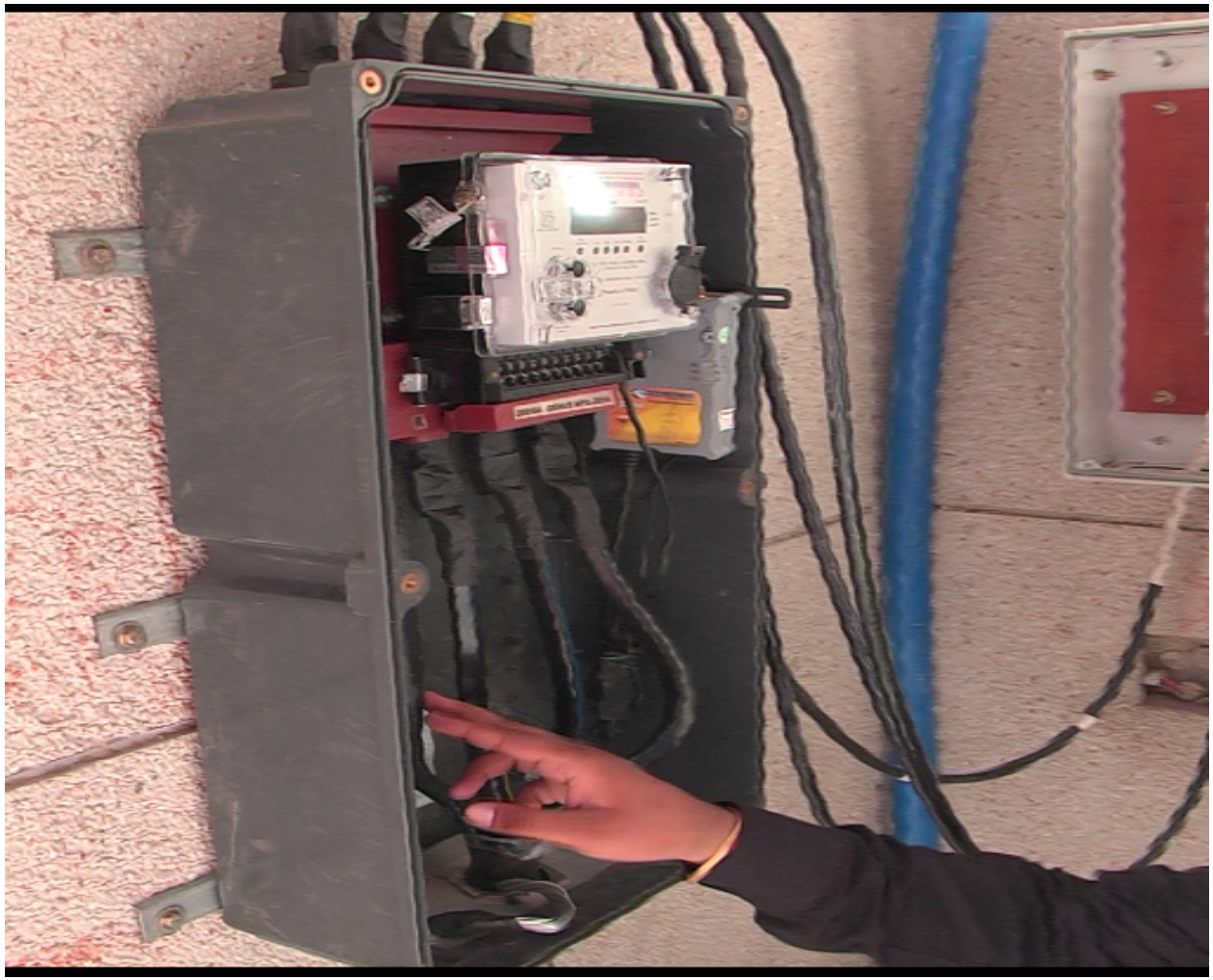
Tightening the thimbles

Connection of Outgoing Terminals

4 terminals are connected

Covering with insulation tape

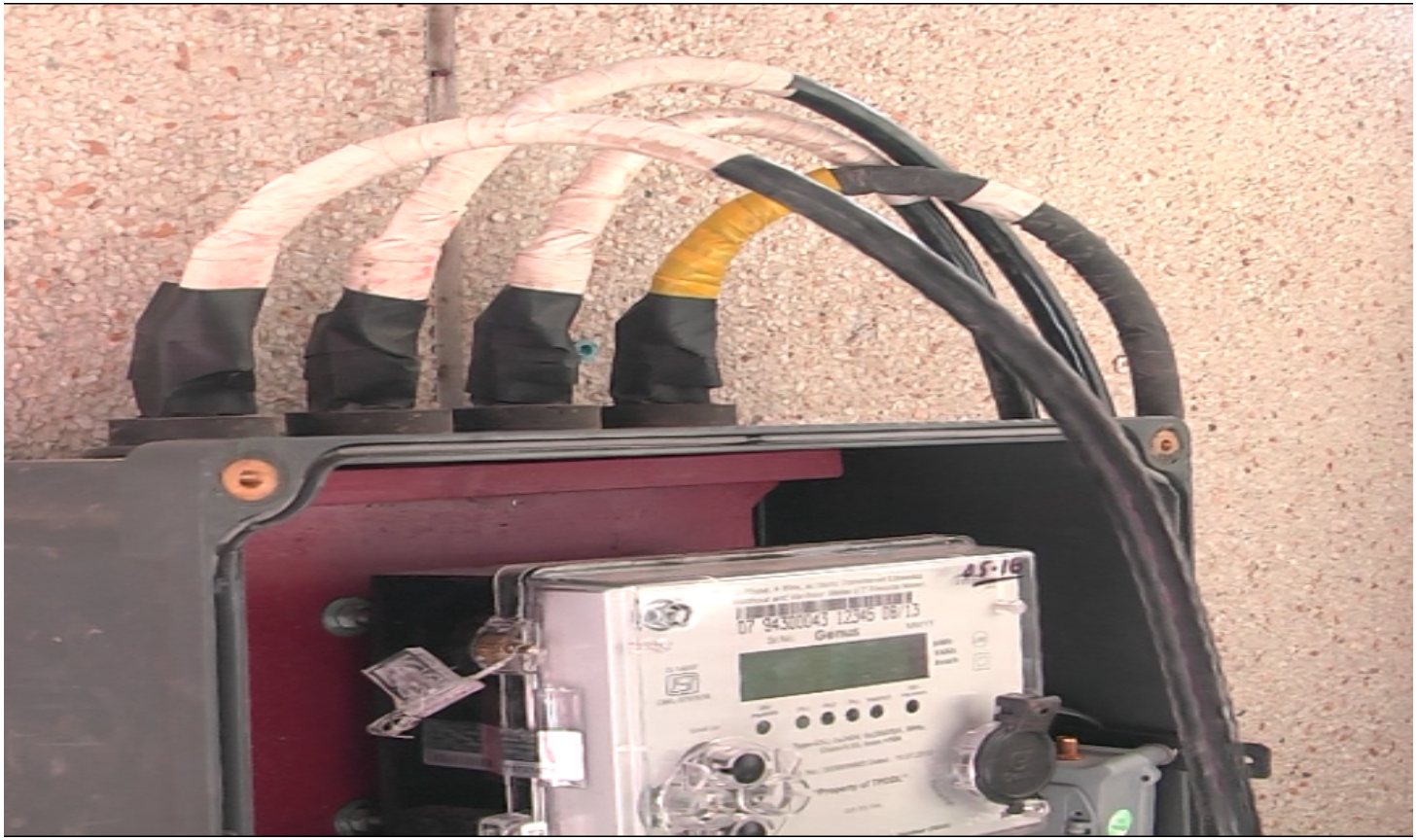
Connection of Outgoing Terminals



3-phase meter connections of LTCT energy meter are done

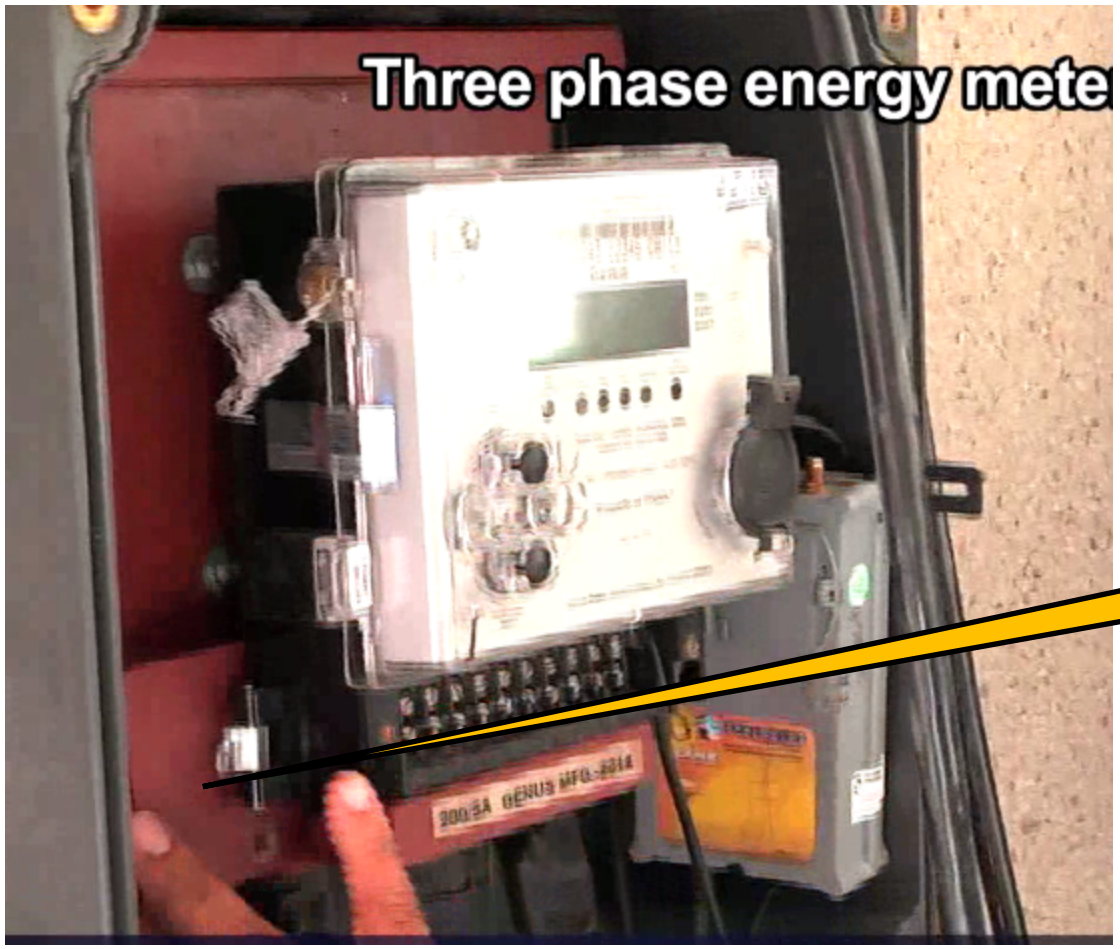
Connection of Outgoing Terminals

Connection of Outgoing Terminals



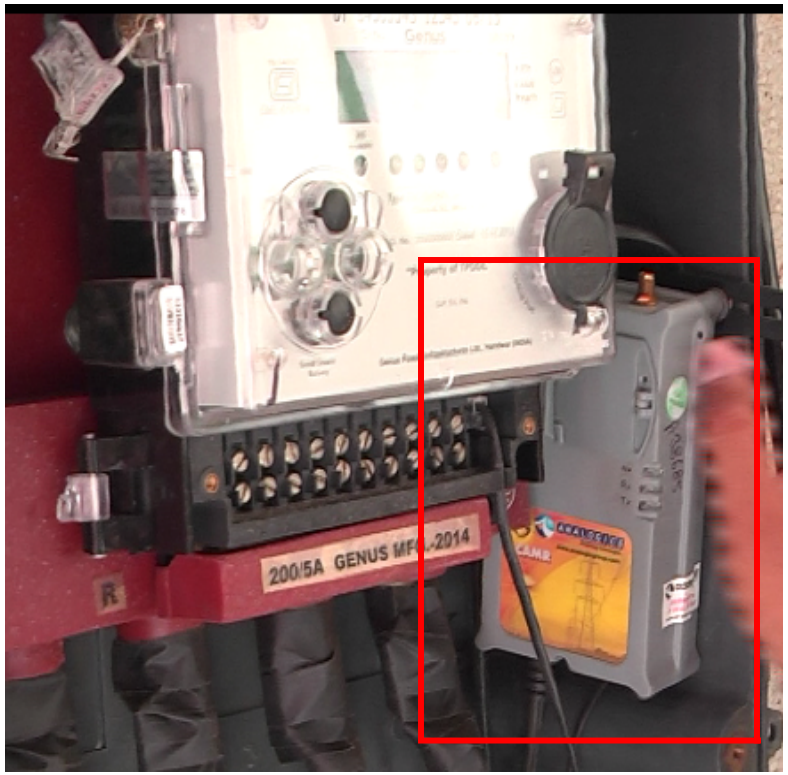
Output terminals are connected and taped to prevent entry of insects

Description of LTC Energy Meter



LTCT energy meter

Description of LTCT Energy Meter



Modem - Used to send and receive meter reading data

Armour of the cable is earthed in the base of LTCT meter

Outdoor Process for Cable Connection on Pole

Lineman pulling the cable

Cable drawing process at Double Pole (DP) structure

Outdoor Process for Cable Connection on Pole

The cable is drawn from consumer's premises and laid over DP structure

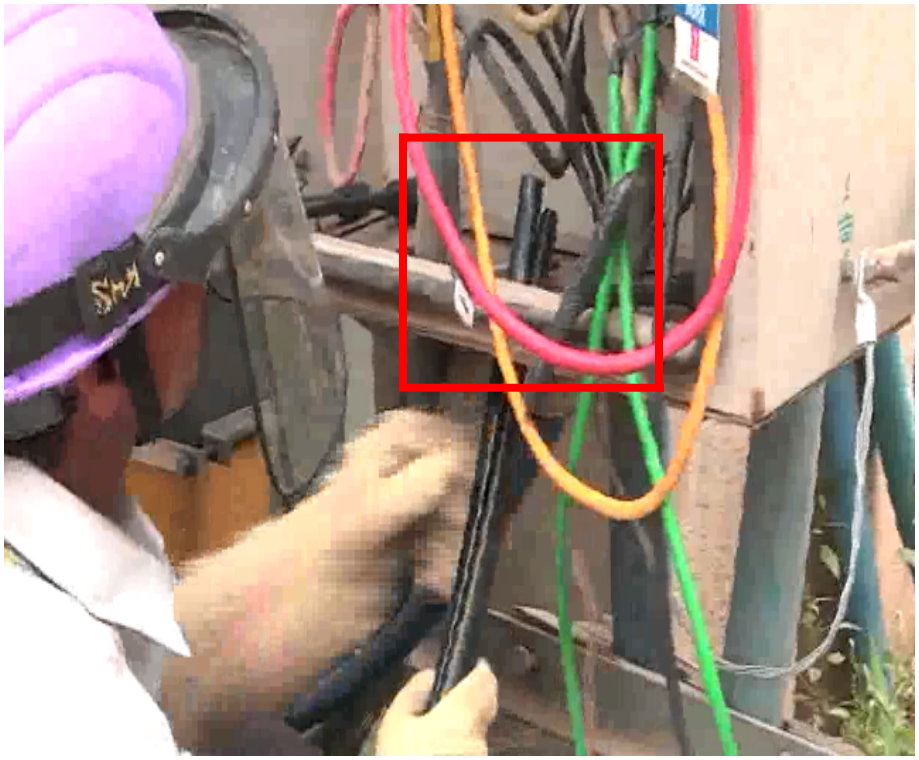
Outdoor Process for Cable Connection on Pole

Meter is drawn till the source end

Giving connection at the source end

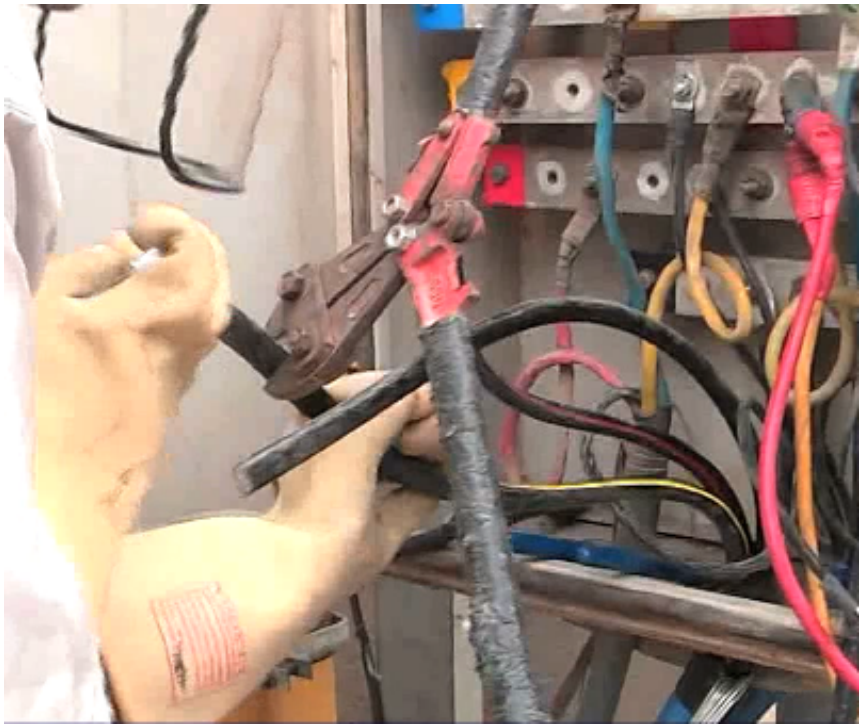
Outdoor Process for Cable Connection on Pole

Three-phase MCCB of transformer

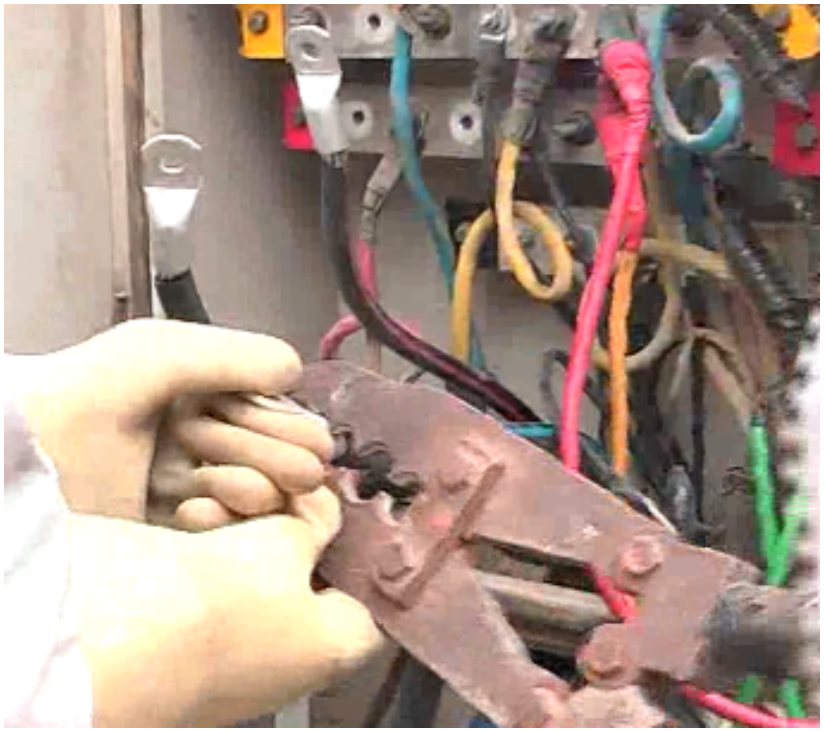


Inserting the cable ends in bus chambers of MCCB

Outdoor Process for Cable Connection on Pole



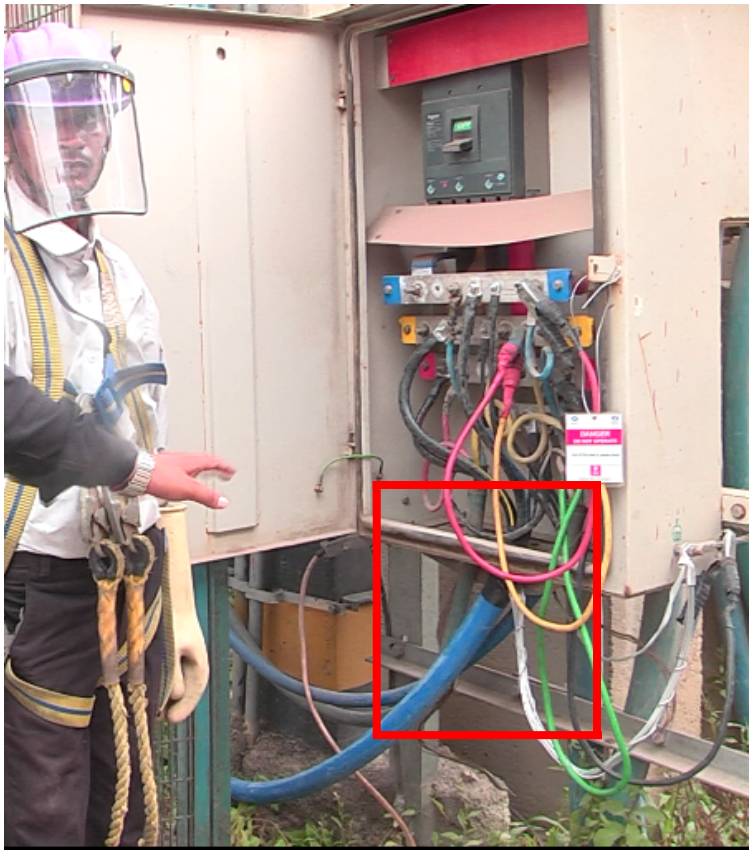
Excess length of the cable lead is cut



Crimping of thimbles

Outdoor Process for Cable Connection on Pole

Covering the thimbles with insulation tape



Cable is connected at the source end of MCCB box

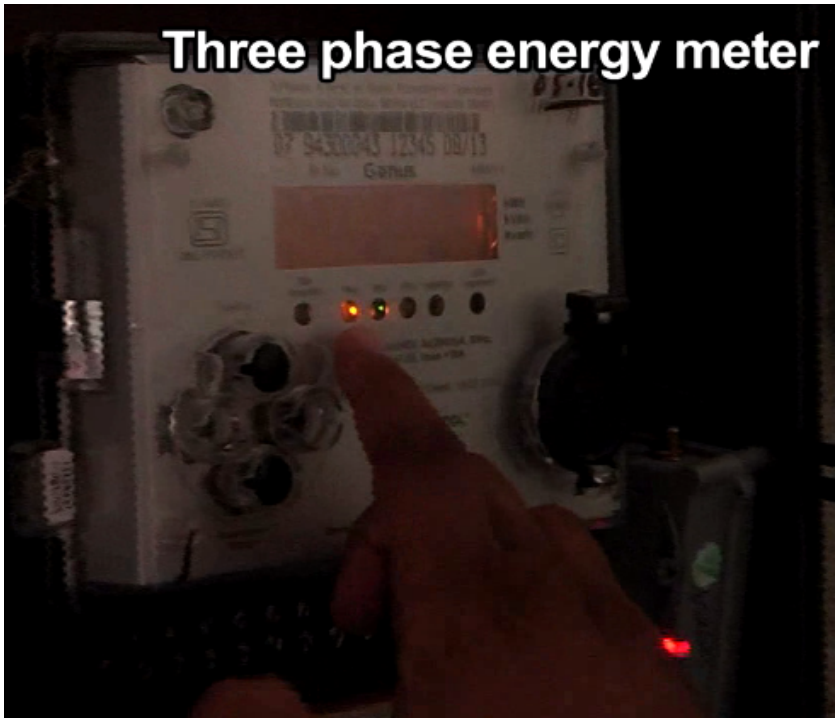
Steps Involved in Energising the Meter

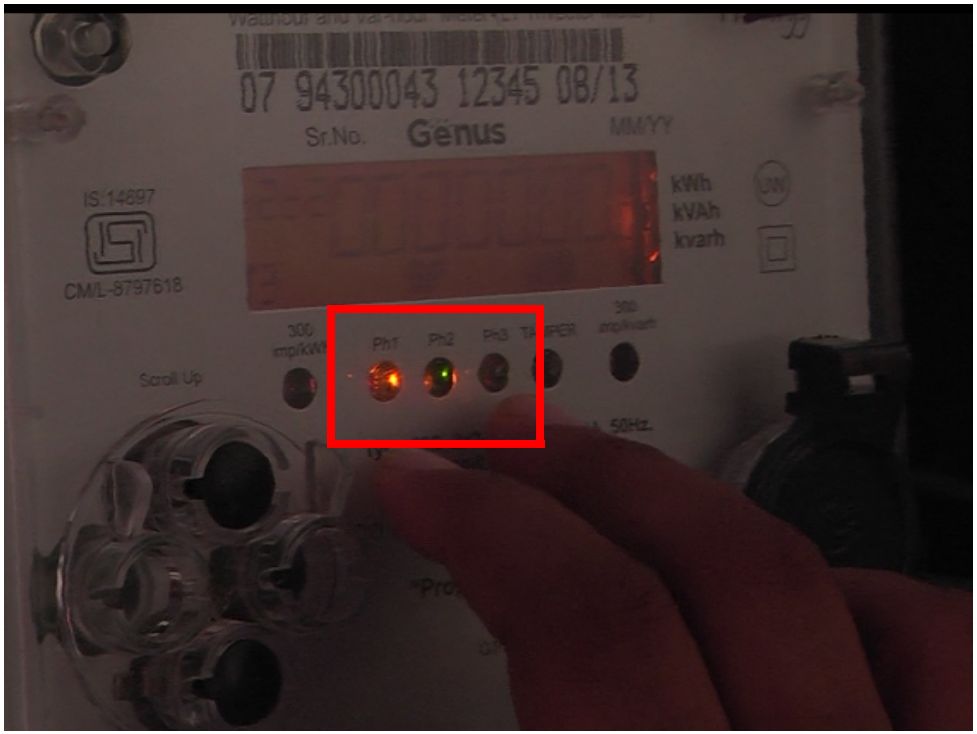
Cancel the PTW (Permit to Work) first

Send the PTW to ZSO (Zonal Shift Officer)

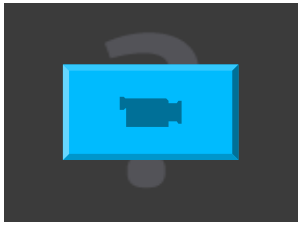
Check for power supply energised to the newly installed meter

How to Check Meter Functioning?





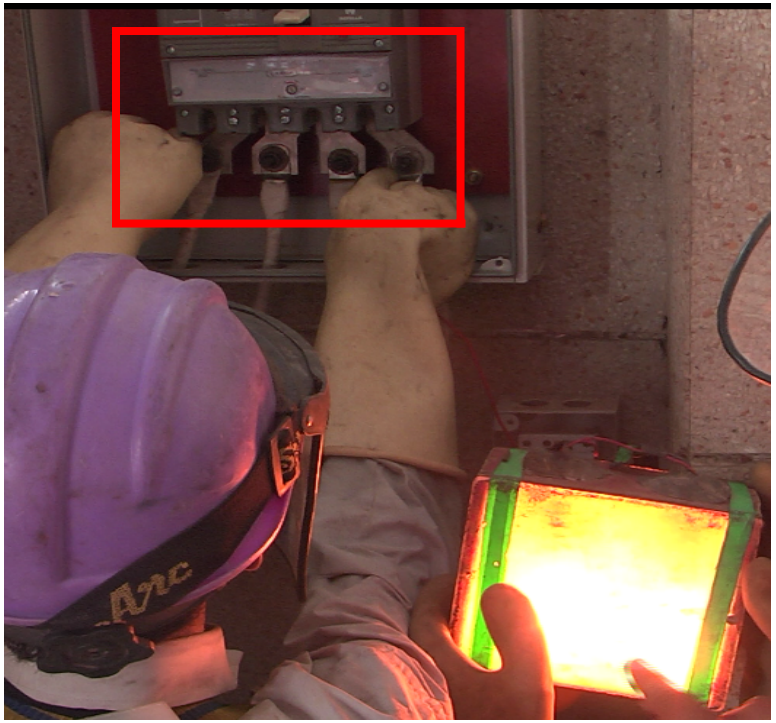
Meter is energised as the display is visible



All three phases are glowing

How to Check Meter Functioning?

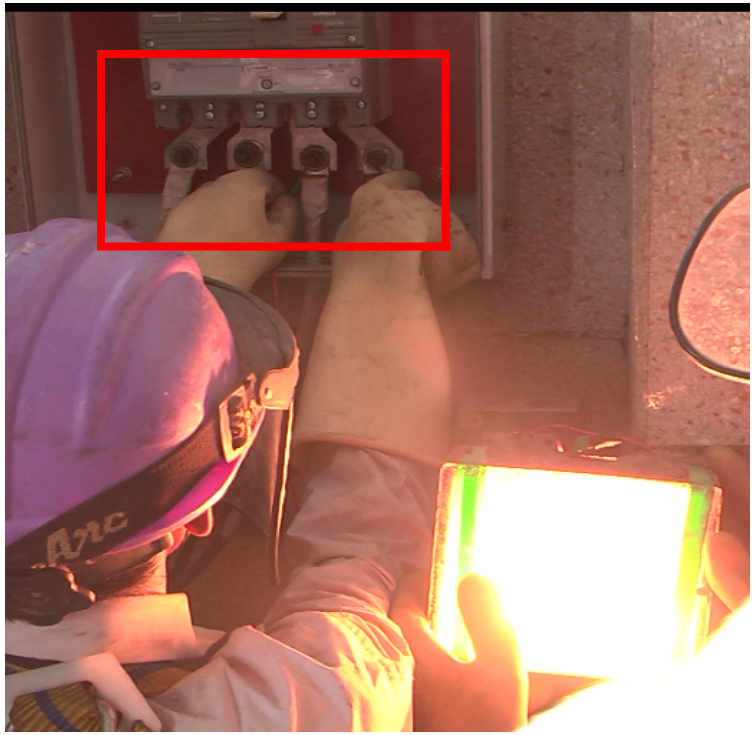
Phase 1 glowing



Phase 2 glowing

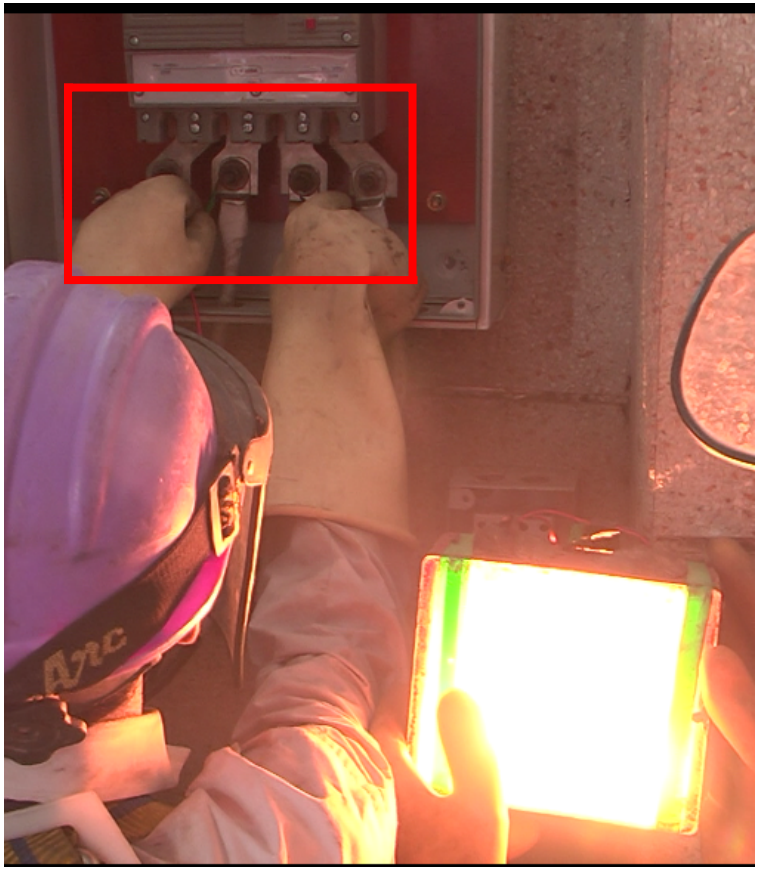
How to Check Meter Functioning?

Phase 3 glowing



Phase-to-phase checking of sequence 1

How to Check Meter Functioning?



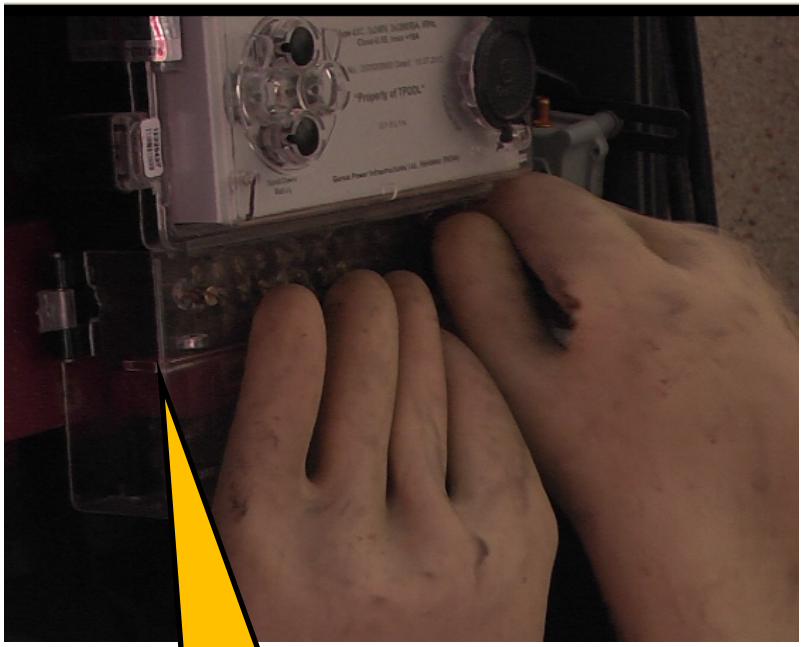
Phase-to-phase checking of sequence 2

Phase-to-phase checking of sequence 3

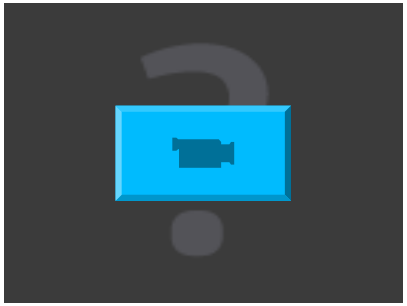
How to Check Meter Functioning?

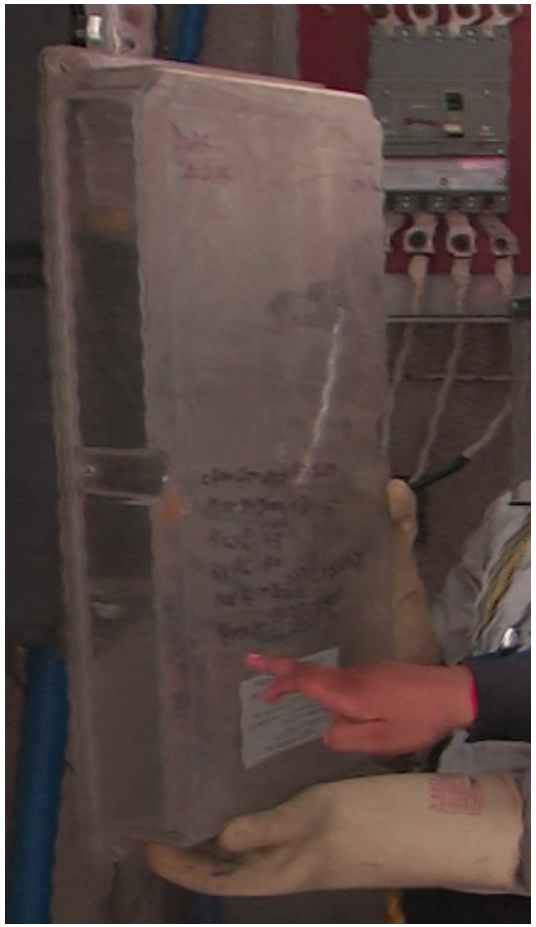
Checking of other phase to phase with test lamp

Sealing of the Meter



Terminal cover



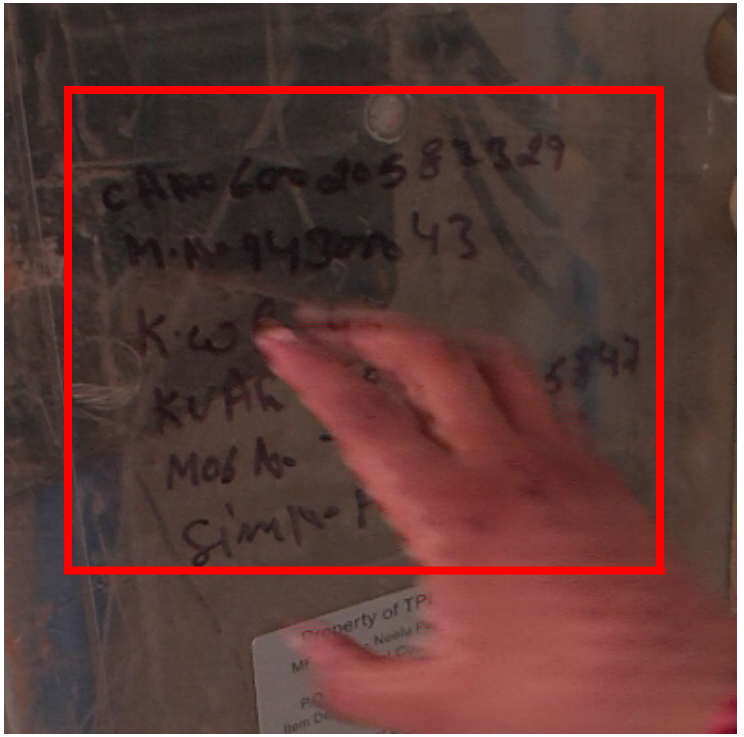


Meter box cover

Sealing of the Meter

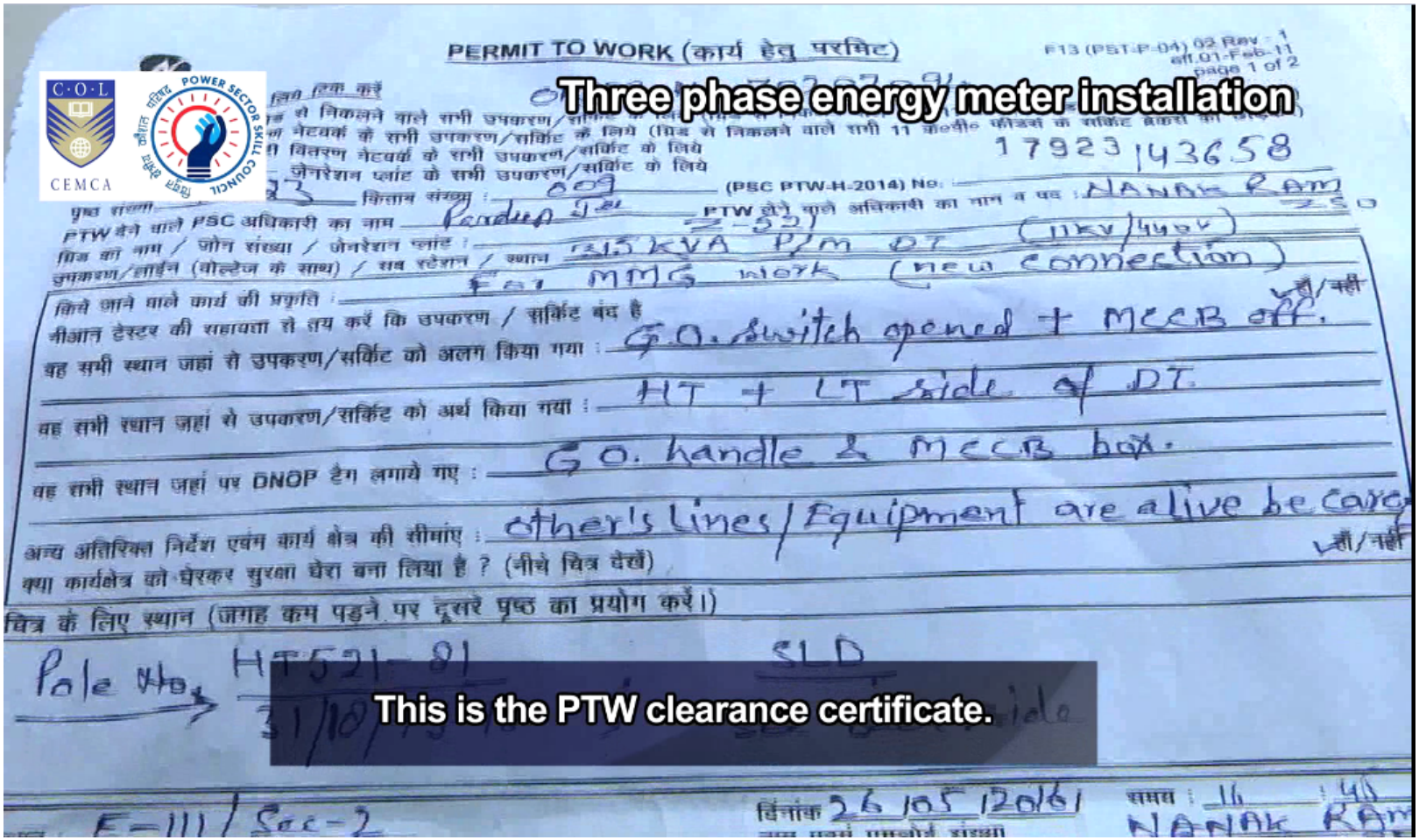
Display of date

Display of load



Details of meter particulars

PTW Clearance Certificate



PTW Clearance Certificate

Key Learning Outcomes

- The support on which the angle rests is known as angle bracket
- The shackle insulator is fixed in the extended end of angle bracket
- The GI wires of armouring of cable provides mechanical protection as well as earthing connection or path
- The phase and neutral terminal leads of four cables are fixed with thimbles and are connected to meter terminals
- The phase sequences of LTCT energy meter are red, Y, blue and neutral

Key Learning Outcomes

- The cable drawn from consumer's premises is connected to the LT main, the three-phase MCCB of transformer
- To ensure proper functioning of the meter, a few checks need to be done
- Test lamp is connected to the three phases, earthing phases and phase-to-phase to check if the lines are energised
- The meter is sealed with meter terminal cover after the meter is energised
- Meter box cover has the details of installation date, load, CV number and so on