

# Detailed Report

Date of Submission : 23-03-2026 11:09

IDDUKI - 220KV tripped at 18-03-2026 15:26 and restored at 18-03-2026 15:26

Summary of Event (घटना का सारांश) : A Bus Bar Zone-2 protection operation occurred at the 220 kV switchyard of Idukki HEP, resulting in tripping of multiple feeders and one generating unit. The disturbance was initiated due to a flashover in the R-phase Line Potential Transformer (PT) of feeder 220kV Idukki kalamassery 2 feeder on 18-03-2026 at 15:26 hrs.

Time and Date of the event (घटना का समय और दिनांक) : 18-03-2026 15:26

Name of the Substation/Generating Station/Pooling Station affected (Along with Voltage level) : IDDUKI - 220KV

Event Category (श्रेणी के साथ इवेंट प्रकार) : GI-1

Location/Control Area (स्थान/नियंत्रण क्षेत्र) : KERALA

Configuration of Bus (HV/LV) . Along with details of Bus split Operation (if any) :

Bus Configuration Type : Double Bus with Bus coupler

Bus Coupler Status : NA

Bus 1 Connected Elements	Bus 2 Connected Elements	Bus 3 Connected Elements	Bus 4 Connected Elements
1. 220KV-IDDUKI-KALAMASSERY-1 2. 220KV-IDDUKI-NEW PALLOM-1 3. 220KV-IDDUKI-Pallivasal-1 4. 220KV-LOWER PERIYAR-IDDUKI-1	1. 220KV-IDDUKI-KALAMASSERY-2 2. 220KV-IDDUKI-KOTHAMANGALAM-1 3. 220KV-LOWER PERIYAR-IDDUKI-2		

**Station Connectivity / SLD  
during antecedent**

:

- **Bus:** Bus No. 2

- **Connected Elements:**

- Generator Unit #2
- 2IDKM feeder
- 2IDKL-2 feeder
- 2IDL-2 feeder

- **Bus:** Bus No. 1

- **Connected Elements:**

- Generator Unit #1
- Generator Unit #3
- Generator Unit #5
- 2IDPES feeder
- 2IDKL-1 feeder
- 2IDL-1 feeder
- 2IDNP-1 feeder
- 50MVA, 220/110kV Transformer

**Weather Conditions**

:

Normal

**Elements under outage prior to  
the event**

:

**Other Information (Antecedent  
Conditions)**

:

- At 15:26 hrs, R-phase Line PT of 2IDKL-2 flashed.
- Fault occurred before CT location (PT installed before CT).
- Bus Bar protection detected the fault.
- Zone-2 Bus Bar protection operated.
- Following elements tripped simultaneously:
  - 3 feeders (2IDKM, 2IDL-2, 2IDKL-2)
  - Generator Unit #2
- The **Line Potential Transformer (PT) of feeder 2IDKL-2 is located within the Bus Bar protection zone** at Idukki 220 kV switchyard. Hence, the flashover of the R-phase PT was correctly detected as an internal fault by the Bus Bar protection scheme, resulting in the operation of **Bus Bar Zone-2 protection** and tripping of all elements connected to Bus No. 2.

It is also submitted that **Idukki HEP is an old generating station**, where the existing

switchyard layout has PTs installed **ahead of the CTs**, placing them inherently within the protected zone of the Bus Bar scheme.

Due to **space constraints, existing layout limitations, and operational constraints, relocation or modification of PT placement is not feasible at present** without major switchyard reconfiguration.

**Renewable Energy Trip** : False

**Details of SPS Operation (if any):** : False

**Reason of tripping** : Fault Tripping

Type of Fault : LLG

phases inv : None, None

Auto Reclosure Operation : No

Fault Clearing Time (ms) : None

**Load and Generation Loss (लोड और जेनरेशन हानि)** :

Total Generation Loss (MW)	Total Load Loss(MW)
102 MW	0 MW

**Duration of interruption** :  
(रूकावट की अवधि)

**Details of Equipment Failure (if any during the event):** :

Equipment Type	Equipment Make
PT	M/s. SCT Ltd,

**List of elements tripped during the event** :  
1. 220KV-IDDUKI-KALAMASSERY-2  
2. 220KV-IDDUKI-KOTHAMANGALAM-1  
3. 220KV-LOWER PERIYAR-IDDUKI-2

**Station Connectivity/SLD during the event** :

**Analysis of the event** : A **Bus Bar Zone-2 protection operation** occurred at the 220 kV switchyard of Idukki HEP, resulting in tripping of multiple feeders and one generating unit. The disturbance was initiated due to

a **flashover in the R-phase Line Potential Transformer (PT)** of feeder **220kV Idukki kalamassery 2 feeder** on 18-03-2026 at 15:26 hrs. The **Line Potential Transformer (PT) of feeder 2IDKL-2** is **located within the Bus Bar protection zone** at Idukki 220 kV switchyard. Hence, the flashover of the R-phase PT was correctly detected as an internal fault by the Bus Bar protection scheme, resulting in the operation of **Bus Bar Zone-2 protection** and tripping of all elements connected to Bus No. 2.

It is also submitted that **Idukki HEP is an old generating station**, where the existing switchyard layout has PTs installed **ahead of the CTs**, placing them inherently within the protected zone of the Bus Bar scheme.

Due to **space constraints, existing layout limitations, and operational constraints, relocation or modification of PT placement is not feasible at present** without major switchyard reconfiguration.

220 kV Idukki - Kalamassery #2 ( 2IDKL#2 ) & 220 kV Idukki - Kothamangalam ( 2IDKM ) feeders are tripped at both ends at 15:26 hrs on 18.03.2026, along with Idukki unit # 2 machine. 220 kV Idukki - Lower Periyar #2 (2IDL#2) at Idukki end & 220 kV Idukki - Pallivasal Extension (2IDPES) at PES end are also tripped at the same time. No supply interruption. 220 kV PT flashing reported on 2IDKL feeder at Idukki end . 2IDL#2 feeder charged at 16:26 hrs, 2IDPES feeder charged at 16:29 hrs & 2IDKM feeder charged at 16:34 hrs.

The disturbance was primarily caused by the **failure of the Line PT**, and the subsequent Bus Bar protection operation was **correct and as per design philosophy**, considering the PT lies within the protection zone.

**Protection / Operational Issues observed** : Nil

Restoration Details	Sl. No	Element	Trip Time	Restoration Time	Remarks
	1	2IDKM	15:26	16:34	PT flash
	2	2IDL#2	15:26	16:26	PT flash
	3	2IDKL-2	15:26	20.03.2026, 01:57	PT replaced
	4	Generator Unit #2	15:26	16:06(Reserve Shutdown)	PT flash

**DR Time synchronization issues observed (सुरक्षा/ प्रचालन समस्या)** : False

**Remedial Measures Taken (सुधारात्मक सुझाव)** :

2IDL#2 feeder charged at 16:26 hrs, 2IDPES feeder charged at 16:29 hrs & 2IDKM feeder charged at 16:34 hrs.

**Relay/PLCC Operation Details** :

Control Panel Anunciation :

Main I Relay Indications :

VT fuse fail, Carrier send,

Main II Relay Indications :

IA=0A,IB=2.769A,IC=0.00A,VAN=31.29KV,VBN=5.129KV,VCN=14

Other Relay Indications :

Feeders / Generators associated with Bus #2 suddenly tripped at both moolamattom and corresponding substation end

PLCC Counter Increment I/T :

PLCC Counter Increment D/T :

Fault Current Value (kAmp) :

None

LA Counter :

Remarks :

All stations normalised. 2IDKL-2 PT Replaced on 20.03.2026, @ 01:57 feeder charged.

**Attachments** :