

**GOVERNMENT OF INDIA  
CENTRAL ELECTRICITY AUTHORITY  
(MINISTRY OF POWER)  
Distribution Planning & Technology Division,  
Room No. 622, 6th Floor, Sewa Bhawan  
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**PUBLIC NOTICE**

**विषय : जी.आई.एस. और हाइब्रिड जी.आई.एस. का स्पष्टीकरण।**

**Subject: Clarification of GIS and Hybrid GIS.**

It was brought to the notice of CEA that many Distribution utilities / Discoms are not clearly aware about GIS and Hybrid GIS at the time of tendering/awarding the works.

Accordingly, a Draft clarification was circulated by CEA and was put up on its website vide dated 27<sup>th</sup> July, 2023 for comments of stakeholders. In this regard, various comments are received and based on the comments, the draft clarification on GIS and Hybrid GIS has been modified. The same is attached herewith.

It is requested to send the comments/ suggestions on aforementioned modified draft note to Chief Engineer (DP&T), Sewa Bhawan (North Wing), Room No. 611, 6th Floor, R. K. Puram, New Delhi-110066 by post or through e-mail (cedpt-cea@gov.in) within fifteen (15) days.

Chief Engineer (DP&T), CEA Dt 01-09-2023

## **Modified Draft Note on the Clarification of GIS and Hybrid GIS**

As per clause 51(2) of CEA (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations, 2022, the 33/11 kV, 33/22 kV and 22/11 kV Sub-stations and Switching Stations shall be either air insulated or gas insulated or hybrid, as the case may be; Provided that in coastal areas substation shall be GIS.

A. **Gas Insulated Switchgear (GIS):** Switchgears where the primary insulation medium is a gas which is used at certain pressure for phase-to-phase and phase-to-ground insulation of all switchgears including bus-bars. (typically sulphur hexafluoride (SF<sub>6</sub>) is being used for the insulation presently, however, other insulating medium is also being prepared by the manufacturers in place of SF<sub>6</sub> gas).

B. **Mixed Technology (Hybrid GIS):** Mixed Technology Switchgear refers to the combination of different insulation technologies within the same switchgear assembly. It typically involves a combination of air-insulated (AIS) / gas-insulated (GIS) /solidly insulated compartments or modules within a single switchgear arrangement. For example: Breaker poles may be SF<sub>6</sub> gas insulated, and busbar is outside gas compartment in Air with solid insulation (may be with silicon coating, etc.).

### **Major Difference between GIS and Hybrid GIS:-**

<b>Compartment &amp; its insulation in both type of Switchgear</b>			
<b>Sr no</b>	<b>Compartment</b>	<b>GIS</b>	<b>Hybrid GIS</b>
<b>1</b>	Bus bar	gas compartment	Outside gas compartment
<b>2</b>	Circuit breaker module	gas compartment	gas compartment
<b>3</b>	Cable termination compartment	air compartment	air compartment
<b>4</b>	Low voltage compartment	air compartment	air compartment

It is important to note that the conducting parts in the switchgear in GIS and Hybrid GIS are touch-proof type under all the circumstances. Even if any of the compartments are air insulated, the live parts of these compartments should be insulated to be touch-proof type to minimize the possibility of faults due to inadvertent contacts and to ensure the safety of the operating personnel under all circumstances.

Based on the above, Discoms may choose the installation of AIS/GIS /Hybrid GIS switchgears in the Sub-stations as per requirement, however, they should ensure the difference between GIS and Hybrid GIS.