

GIS and AIS hybrid substation





Overview

What is a hybrid substation?

A hybrid is an advanced electrical substation that combines both conventional air-insulated switchgear (AIS) and gas-insulated switchgear (GIS) technologies to optimize performance, space utilization and cost efficiency. These substations integrate the benefits of both AIS and GIS, allowing for flexibility in design and operation.

What is a hybrid GIS system?

Hybrid GIS designs, combining elements of AIS and GIS, have emerged as a promising solution to address cost and environmental concerns. These hybrid substations use compact GIS modules for critical high-voltage components while incorporating AIS for lower-voltage sections, striking a balance between space efficiency and reduced reliance on SF6 gas.

How do I choose between AIS vs GIS substations?

Choosing between AIS vs GIS substations is not always as straightforward as it seems in textbooks. A detailed analysis presented in CIGRE's reference work on high-voltage substations suggests that mixed-technology switchgear should be the first choice, followed by gas-insulated systems, and lastly air-insulated systems.

Should you build an AIS substation?

Building an AIS substation is a cheaper solution, due to its simpler structure, the lack of the need for specialized insulating gases, and the lack of investment in leak protection. It's important to remember that SF6 gas has the highest global warming potential (GWP) of all known gases, so maintaining the highest safety standards is essential.



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Hybrid substations represent a smart middle path between conventional AIS and advanced GIS. They are especially valuable in urban centers, renewable projects, and ...

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GIS and AIS substation - comparison

Another factor that distinguishes AIS from GIS is the cost of substation construction and subsequent operation. Building an AIS substation is a cheaper solution, due to its simpler ...

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[Hybrid Switchgear: The Best of Both Worlds for Modern ...](#)

Enter Hybrid Switchgear. This innovative technology represents an intelligent evolution in substation design, bridging the gap between AIS and GIS to offer a compelling, ...



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GIS VERSUS NON-GIS

The overall weight of a GIS substation is about 30% of an AIS substation. This is due to the big amount of steel used for the AIS compared with the aluminium of a GIS.

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Compare AIS vs GIS substations, their pros, cons, and selection factors. Learn why theory differs from practice in switchgear technology.

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