

Will Saudi Arabia's smart grid meet the national electricity needs?

Considering the specifications of the Saudi Arabian national grid, three key aspects are considered for the realization of the smart grid to meet the national electricity needs: 1. Renewable Energy: the smart grid energy system should enable the KSA's renewable targets and allow flexibility to deploy such technologies in the grid network. 2.

How big is Saudi Arabia's national grid?

According to National Grid SA, Saudi Arabia's national grid has a peak demand capacity of 70.66 GW, as of November 2023. The grid encompasses 1,233 substations and spans 95,132 circuit kilometers of transmission lines, supporting a massive infrastructure capable of transmitting 355,982 gigawatt-hours (GWh) of electricity.

What will drive the Saudi Arabian power market?

Favorable government policies and worldwide diversification from oil and gas to cleaner energy sources such as solar, wind, and bioenergy are expected to drive the Saudi Arabian power market and support advancements in the Kingdom's renewable energy capacity.

How big is Saudi Arabia's power generation market?

According to Mordor Intelligence, the Saudi Arabia power generation market is expected to grow from 83 gigawatt in 2023 to 110.03 gigawatt by 2028, at a CAGR of 5.80% during the forecast period (2023-2028). The Ministry of Energy's spending on power and renewable energy projects is expected to reach \$293 billion by 2030.

Will Saudi Arabia create the world's first high-voltage smart grid?

In December, Saudi Arabian electric utility company and NEOM subsidiary ENOWA unveiled a blueprint for the world's first high-voltage smart grid.

Who owns power in Saudi Arabia?

Saudi Aramco: This majority government-owned company manages Saudi Arabia's oil and gas production, and is the primary supplier of feedstock for the country's power generation. Power and Water

# SAUDI ARABIA MSD POWER GRID SYSTEM



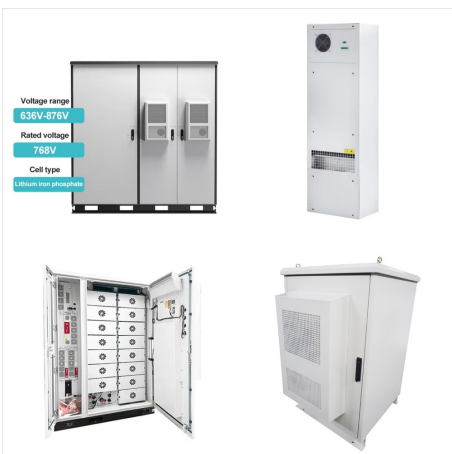
Utility Company: A government-owned entity that currently provides most of the power to the industrial cities of Jubail and Yanbu.



National Grid SA, carrying out the transmission of electricity and providing smart services that meet market developments and support the sustainable development of the national economy in order to achieve the vision of Saudi Arabia through a thriving economy aiming to maximize the achievable value of the energy sector. The



Saudi Arabia also plans to replace its outdated transmission and distribution infrastructure with smart grid technology, and to promote international grid connectivity. It is estimated that the country almost double its power generation capacity from 82 GW in 2018 to 160 GW by 2040.



The outage of the power in the grid can cause power loss to the distribution system. Therefore, the novel reliability valuation of the smart grid system is developed for exaggeration of the SPV, wind and BES utilities based on the grid incorporation in Saudi Arabia.

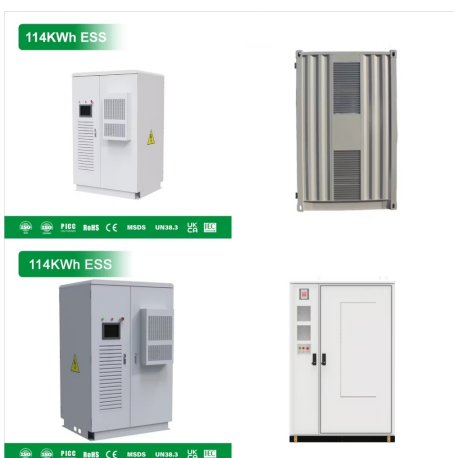
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Besides UAE, Saudi Arabia has also announced targets to achieve Net-Zero by 2060, followed by the aim to reduce carbon emissions by 278 MTPA by 2030 under Saudi Green Initiative (SGI); the agenda will be facilitated by achieving 50% of renewable energy penetration by decade-end. Under SGI, the first wave



This document is the Saudi Arabian Grid Code, which was electronically updated in February 2020. It was prepared by National Grid SA and contains 3 chapters that establish requirements for grid connections, transmission system ???



It provides the grid with the necessary functionalities to transform into a decentralized energy system, and integrate large-scale variable renewable energy sources with enhanced demand-side management. Saudi Arabia is among the countries with significant potential to generate electricity from renewable energy sources, especially solar.

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Grid SA focused on restoring power, working in silos and not systematically. The development of systematic and coordinated incident analyses will now enable National Grid SA to better identify the root-causes of unplanned outages and take the right decisions to avoid new or similar occurrences of grid disturbance,



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