

Middle East & Africa Variable Frequency Drive (Vfd) Market - Growth, Trends, Covid-19 Impact, and Forecasts (2023 - 2028)

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Report description:

The Middle East & Africa Variable Frequency Drive (VFD) Market is expected to register a CAGR of 4.87% during the forecast period (2022-2027). The Middle East is one of the prominent markets for variable frequency drives. Several advantages offered by VFDs, such as intelligent motor control, energy savings, and reduction of the peak-current drawn, stand to be some of the major reasons for the high penetration of these drives in various end-user industries of the region. Not only energy efficiency but the popularity of VFDs can also be attributed to their capacity to increase motor life and further reduce motor maintenance by allowing distributed use across the lifecycle, relieving it from constant use under the same parameters.

Key Highlights

Rapid technological advancement has led to higher acceptability of the drives in several industries. The advances focus on high reliability and reduced energy costs, potentially reducing the per square foot energy by 30-40% when equipped with motor-driven systems in commercial buildings. Additionally, the advanced and modern drives integrate the networking and diagnostic capabilities into better performance and increased productivity. Intelligent motor control and reduction of peak-current drawn are some of the major reasons to choose a VFD as the controller in every motor-driven system.

Water scarcity is one of the major problems in the region. This is due to various factors such as climate change leading to droughts and floods, low water quality, and poor water management in conflict and violence. One of the popular ways to supplement insufficient water supply is to separate salt from seawater, called desalination. The Middle East & North Africa accounts for nearly half of the world's desalination capacity, as per the World Bank, making it the largest desalination market. Many desalinated plants in the region, such as in the UAE, are built on the independent water and power producer model. Kuwait has also planned to build eight facilities capable of desalinating seawater by 2025 to meet the growing water needs. These investments will also propel the demand for VFDs as they offer a reliable and cost-efficient solution to ensure precise control of torque and speed of rotating machines (such as pumps, etc.) in desalinated plants.

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To ensure efficient and reliable pumping, in June 2021, Saline Water Conversion Corporation's (SWCC) water treatment plant in Jubail, Saudi Arabia, announced that it would use ABB's digitally enabled-ACS2000 medium voltage variable speed drives (VSD) to reduce energy consumption and lower their total cost of ownership. The plant, which would have a daily output capacity of 400,000 m³/day of clean water, would be one of the largest projects in the region, designed to meet the future water needs of Riyadh and other cities such as Dammam, Khobar, and Jubail.

For heating, ventilation, and air-conditioning systems used in the commercial and industrial sector, the Variable Frequency Drives find wide usage as they can handle the variable load in several components, like chillers. The VFD helps allow peak capacity to meet the high demands of peak loads in constant flow HVAC systems and then slowly control the energy by decreasing the need for the load.

On the flip side, adding VFDs to existing motors gives rise to several technical problems, creating barriers to adoption amongst several industry players. After integrating the VFD with an existing motor, the motor shaft speed decreases, which causes decreased cooling from the safe-driven fan. The primary issue the engineers are experiencing in using a VFD is bearing failure. Many engineers have reported a reduced lifecycle of the bearings in the motors controlled by modern VFDs. The bearing is seen arcing from the bearing race to the bearing itself, creating a tracking within the bearing, which leads to an unexpected failure. The regular failure of the bearings increases their maintenance costs. VFD produces harmonic current from the output of the inverter. These harmonics can harm the motor itself and, unless properly mitigated, resonate across the larger electrical power system. These harmonics cause over-heating and torque oscillations in the rotor, leading to mechanical resonance and vibration. This eventually leads to a shortening of the motor life. These factors, when coupled with the high equipment and maintenance cost, can restrain the studied market's growth.

MEA Variable Frequency Drive (VFD) Market Trends

The Oil and Gas Segment is Expected to Drive the Market's Growth

The Middle Eastern region is a significant oil-producing region in the world. According to the Organization of the Petroleum Exporting Countries, Saudi Arabia possesses around 17% of the world's proven petroleum reserves. The oil and gas sector accounts for about 50% of gross domestic product and about 70% of export earnings. Apart from petroleum, the Kingdom's other natural resources include natural gas, iron ore, gold, and copper. Further, according to Energy Information Administration, Saudi Arabia holds 15% of the world's proven oil reserves. It is the largest exporter of crude oil in the world and holds the world's largest crude oil production capacity at approximately 12 million barrels per day, including capacity from the Neutral Zone that is shared with Kuwait. Saudi Arabia is the largest crude oil producer in OPEC and the second-largest total petroleum liquids producer in the world after the United States. The extensive oil production calls for efficient VFDs for the seamless functioning of the sector. In the oil and gas sector, low voltage drives are used mainly in upstream applications, such as hydraulic fracturing skids and offshore rigs and FPSOs (Floating Production Storage and Offloading). Medium voltage drives are used mainly for power applications in midstream and LNG subsectors, like for natural gas compression and liquefaction and to operate larger pumps. Strengthening offshore oil and gas operations is expected to increase demand for low voltage drives over the forecast period. ? In the recent time, owing to the fluctuations in the oil market caused by an oversupply of crude oil in the global market and low prices, several countries in the region, especially Middle-East have been increasing their investments in the manufacturing sector and Industry 4.0 concepts to reduce their dependency on the oil and gas sector.?

Further, the landscape of the Middle East oil & gas industry in the past few years has mirrored global trends and has experienced both challenges and changes. Investment across the region has become more diverse, and new avenues are being discovered, such as LNG and more complex offshore projects. As per the Arab Petroleum Investments Corporation (APICORP), a multilateral development financial institution, the overall planned and committed investments in the MENA region will exceed USD 805 billion from 2021 to 2025, a USD 13 billion increase from the USD 792 billion estimates in previous year's five-year outlook.

The investment upsurge in the coming years will be driven by new drilling contracts, licensing awards, and future bid rounds, thus,

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likely to spur the VFD industry growth. For instance, recently, Zadois has been looking to increase production from the field from 750,000 b/d to around 1 million b/d by 2024 by drilling additional wells using extended-reach drilling and maximum reservoir contact well technologies.

Increasing Investments in Various End-user Industries is Expected to Boost the Market Growth

The regional companies are investing to increase production capacity, which may drive the studied market. For Instance, in March 2022, Saudi Arabia's state oil giant, Aramco, announced to increase spending by approximately 50% this 2022 as it reported a tripling in 2021 profits, despite demands from the West to increase output amid high prices. Last year, Saudi Aramco benefited from a more than 50% increase in oil prices, as demand outpaced supply due to rising COVID-19 immunization rates and loosening restrictions. Aramco has stated that it plans to increase capital expenditures (CAPEX) to USD 40-50 billion this year, with further rise likely until the middle of the decade.

The country adopts international standards while treating sewage. Additionally, the advent of new treatment plants due to the ongoing trend of sewage treatment is expected to drive the demand for VFDs. Water scarcity is one of the major problems in the region.

The UAE Water Security Strategy 2036 was unveiled in September 2017 by the Ministry of Energy and Infrastructure to ensure sustainable access to water in both standard and emergencies, in accordance with local regulations, World Health Organization standards, and the UAE's vision of prosperity and sustainability. The strategy's overall goals aimed to reduce the total demand for water resources by 21%, raise the water productivity index to USD 110 per cubic meter, reduce water scarcity by three degrees, boost treated water reuse to 95%, and expand national water storage capacity to two days.

Variable frequency drives are also an attractive energy management investment for the infrastructure sector. For Instance, according to King Abdullah Petroleum Studies and Research Center, in the UAE, buildings consume almost 90% of the total electricity used in the country, mostly in Dubai and Abu Dhabi. Most of the newly constructed UAE buildings must comply with certain energy efficiency requirements under the mandatory regulations of the building rating systems applied in Abu Dhabi and Dubai (such as the Green Building Regulations). Thus, to improve the energy efficiency of the building, DEWA (Dubai Electricity and Water Authority) created Etihad Energy Services (EES) in 2013. The primary goal of the EES is to achieve 1.7 TWh in energy savings from building retrofits by 2030.

In May 2022, The Saudi Arabian Ministry of Industry and Mineral Resources announced plans to seek USD 32 billion in mining and minerals investments. The country wants to assist the development of nine mining projects for midstream minerals and metals as part of the plan to boost mineral exports. According to Saudi Arabia's Minister of Industry and Mineral Resources, Bandar bin al-Khorayef, the government is now constructing a steel plate plant worth more than USD 4 billion and a USD 2 billion factories for electric car battery input of this investment plan.

MEA Variable Frequency Drive (VFD) Market Competitor Analysis

The Middle East & Africa Variable Frequency Drive (VFD) Market is a moderately fragmented market with significant players like Rockwell Automation, Inc., Siemens AG, Schneider Electric SE, ABB Ltd., etc. The players in the market are striving to enhance their supply chain and partner ecosystem to offer VFDs at an economical price. The market players are innovating new products and processes to cater to the evolving market.

April 2021 - TotalFORCEtechnology, which enables more precise speed and torque control, diagnostic information for tracking system health, and automatic changes to keep operations operating smoothly, was added to Rockwell Automation's Allen-Bradley PowerFlex6000T medium voltage drives.

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January 2022 - TMEIC has been researching and producing high-capacity, unique power electronic converter solutions for various applications. One of these is a medium voltage variable frequency AC drive (MV VFD) with an IGBT front end converter and multi-level PWM sinusoidal output that works with existing medium voltage induction motors to achieve variable speed operation and saves a significant amount of energy in centrifugal fans, pumps, and compressors in a variety of industries.

Additional Benefits:

The market estimate (ME) sheet in Excel format

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