

Electrical Test Equipment - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts 2019 - 2029

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Report description:

The electrical and electronic test equipment market was valued at USD 13.81 billion in the previous year and is expected to register a CAGR of 4.29%, reaching USD 17.48 billion over the forecast period.

Key Highlights

- Electrical and electronic test equipment are tools used to measure, test, diagnose, and troubleshoot various aspects of electrical and electronic systems. These equipment help ensure the proper functioning, safety, and performance of electronic devices, circuits, and components. Test equipment helps simulate the real-time environment as closely as possible to verify the device under test (DUT).
- Testing equipment is as important as the device itself. All electronic equipment tends to wear out over time due to heating, moisture, shock, or vibration. This can lead to performance degradation. Therefore, every electronic testing facility must have the required equipment, whether a simple multimeter or a complex oscilloscope.
- The increasing need for accuracy and speed in designing, manufacturing, or repairing electronic products is one of the major factors driving the demand for electric and electronic test equipment across industries. The growth in adopting new and connected electronic devices and emerging advanced technologies, such as electric vehicles, autonomous driving, and 5G, is also fueling the demand in the market studied.
- For instance, the risk associated with battery-electric vehicles is catching fire due to thermal runaway, where damage to the battery leads to uncontrollable overheating. Moreover, many electric vehicles (EVs) that caught fire used more temperature-sensitive battery chemistry called NMC. To use a more temperature-sensitive battery, no design measures were taken to ensure that it's thermally cooled properly at the battery pack level. By employing rigorous electrical and electronic testing practices, manufacturers and engineers can optimize the performance and safety of electric vehicles.
- Moreover, the increasing deployment of autonomous driving will demand the use of test equipment to ensure that autonomous

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driving systems are reliable, safe, and capable of making split-second decisions in complex environments. These testing processes are essential to bring autonomous vehicles to the roads with high confidence in their performance and safety.

-Like other markets, the electrical and electronics test equipment market also has some challenges to overcome, and fierce price competition has been one of the key issues for original equipment manufacturers (OEMs). The majority of developing nations, such as India, have been very price-sensitive, which makes them keep the prices of testing services to be significantly low. This further leads to the presence of many old, refurbished, non-calibrated instruments operating in the market that provide inaccurate measurements. Moreover, resistance towards increased cost and new products is another issue as developing a new product needs huge capital, and when it comes to procurement, it has been observed that the customers are not willing to pay well for such equipment, and sometimes it is considered as the last priority item.

-The COVID-19 pandemic influenced the overall semiconductor manufacturing market from the demand and supply sides. In addition, the global lockdowns and closure of semiconductor plants also fueled the supply shortage. The effects were also reflected in the studied market. However, many of these effects were short-term. Precautions by governments worldwide to support automotive and semiconductor sectors helped revive industry growth.

Electrical Test Equipment Market Trends

Semiconductors and Computing to be the Largest End-user Industry

- The adoption of Automated Test Equipment (ATE) by semiconductor manufacturing firms to improve performance operational speed and reduce costs of semiconductor devices is anticipated to have a favorable impact on market growth.

- Semiconductor automated test equipment (ATE) is capable of testing a diverse array of electronic devices and systems, ranging from essential components such as resistors, capacitors, and inductors to complex integrated circuits (ICs), printed circuit boards (PCBs), and fully assembled electronic systems. ATE is extensively employed in the electronic manufacturing sector to examine electronic components and systems post-fabrication. Given the rising semiconductor industry, the demand for ATE is anticipated to escalate considerably.

- The semiconductor industry is experiencing a rapid expansion, with semiconductors serving as the fundamental components of contemporary technology. According to SIA, the global sales of semiconductors amounted to USD 124.5 billion in Q2 2023, marking a 4.7% rise from Q1 2023. Additionally, it foresees a 56% surge in the worldwide demand for semiconductor manufacturing capacity by 2030. Such futuristic developments are expected to create a significant need for Electronic testing equipment.

- The market is witnessing an increase in demand for rapid and significant improvements in chip power performance, efficiency, cost, area, and time to market due to the emergence of technologies such as the IoT, Big Data, and artificial intelligence (AI). This shift in customer demands and preferences is expected to be one of the critical drivers for the growth of the semiconductor testing equipment market.

- Furthermore, SIA officially supported the WSTS Spring 2023 worldwide semiconductor sales forecast in June 2023. The forecast predicts that the annual global sales will amount to USD 515.1 billion in 2023, a decrease from the 2022 sales total of USD 574.1 billion. In 2024, global sales are expected to reach USD 576.0 billion, which would be the highest-ever total in the industry. The escalating demand for chips, coupled with favorable government initiatives and rising demand for semiconductor chips, has led to an increase in semiconductor equipment spending, indicating a growing interest in establishing new foundries worldwide. Such increasing chip production is expected to drive the demand for electronic testing equipment.

Asia Pacific is Expected to Dominate the Market

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- The Asia-Pacific region significantly dominates the semiconductor and electronics industry, primarily driven by the extensive manufacturing base in China, Japan, South Korea, and India, which has also been rapidly maturing in the electronics industry final assembly.
- Large contractors, such as Foxconn Technology Group and Megatron Asia Pacific Ltd, are in the process of setting up plants in India. According to IBEF, India committed to reach USD 300 billion worth of electronics manufacturing and exports of USD 120 billion by 2025-26. In addition, the Union Budget 2023-24 has allocated INR 16,549 crore (USD 2 billion) for the Ministry of Electronics and Information Technology, which is about 40% more elevated annually.
- The region's increasing testing and inspection activities are expected to create a considerable demand for electrical test equipment. Previously, most regional firms conducted their testing and certification operations in-house. However, due to China's Compulsory Certification regulations, greater emphasis is now placed on the need for strict regulatory standards. This has led to increased outsourcing of testing services, thereby increasing the demand for test equipment among testing services companies.
- Apart from the consumer electronics industry, low-cost carriers dominate the region. Thus, the majority of the inspection and service activities are outsourced. Due to this, Singapore has emerged as a regional hub for maintenance and inspection services. Allied players operating from Singapore have maintained dominance in the region for over two decades. However, countries like Indonesia, Vietnam, and Thailand are challenging the country's dominance.
- Additionally, the region has been a base for multiple key players, including Yokogawa (Japan), Advantest Corp (Japan), Anritsu Corporation (Japan), Rigol Technologies (China), and ScienceTech Technologies (India). These companies, along with various other companies in the region, are continuously involved in product innovations, providing solutions across the industry applications.
- In August 2022, Advantest Corp. collaborated with the Rohde & Schwarz RTP high-performance oscilloscope for mass exhibition evaluation of high-speed SoC testers. In line with this partnership, the company aims to enhance the quality as per the latest requirements. Such initiatives by the regional companies are expected to promote market growth.
- Furthermore, multiple infrastructure projects, such as executing high voltage lines and power generation plants, are anticipated to drive the region's demand for electrical testing equipment. For instance, in August 2022, China's State Grid plans to fund more than 150 billion yuan (USD 22 billion) in UHV power transmission lines in the second half of 2022. The construction of 8 new UHV projects is planned to connect China's far western regions, where solar, wind, and hydropower plants are primarily located, to its major cities will further drive the market growth.

Electrical Test Equipment Industry Overview

The electrical and electronic test equipment market is characterized by a high degree of fragmentation, featuring key players like Fortive Corporation, Keysight Technologies Inc., Rohde & Schwarz GmbH & Co. KG, National Instruments Corporation, and Anritsu Corporation. Market participants are strategically leveraging partnerships and acquisitions to bolster their product portfolios and establish a sustainable competitive edge.

In August 2023, Yokogawa Test & Measurement Corporation, a subsidiary of Yokogawa Electric Corporation, introduced the DLM5000HD series of precision oscilloscopes. Positioned as an advanced iteration of the DLM5000 series, the DLM5000HD series broadens Yokogawa's oscilloscope offerings, encompassing models with 500 MHz and 350 MHz frequency bandwidths. These models offer enhanced resolution for precise waveform analysis and incorporate user-friendly features that streamline setup and operation.

In June 2023, Advantest Corporation unveiled its collaboration with Arizona State University (ASU) to establish a novel test engineering program in partnership with NXP. The program's curriculum, initially developed by ASU's Ira and Fulton Schools of Engineering faculty, has been enriched through laboratory experiments devised by Advantest. These experiments are administered jointly by Advantest and NXP, marking a significant educational milestone.

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