

Instrument Transformer - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts (2024 - 2029)

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Abstracts

The Instrument Transformer Market size is estimated at USD 4.95 billion in 2024, and is expected to reach USD 6.36 billion by 2029, growing at a CAGR of 5.13% during the forecast period (2024-2029).

Over the medium term, factors like expansion in the transmission and distribution network and growth in renewable power generation facilities are likely to drive the market.

On the other hand, the expansion of high voltage direct current (HVDC) networks is expected to hinder the market growth during the forecast period.

Nevertheless, the increasing integration of advanced technologies such as AI and IoT with instrument transformers is expected to create several opportunities for the market in the future.

Instrument Transformer Market Trends

Power Utility Sector Likely to Dominate the Market

The power utility industry includes the generation, transmission, and distribution of electrical energy. As power utility devices are vulnerable to damage from power quality fluctuations, instrument transformers are used in such systems mainly for measurement, protection of equipment, and providing energy to protective relays. In measurement applications, instrument transformers are used for revenue metering. They provide accurate and reliable current and voltage measurements for secondary

equipment such as meters, protection relays, bay computers, and other devices.

Instrument transformers are used in applications involving a wide range of voltages. For high-voltage applications, instrument transformers convert the currents and voltages of high voltage lines to values that are measurable by meters and protections. These transformers are mainly used for voltages over 72.5 kV to 1200 kV. They are used in transmission networks primarily as current transformers, voltage transformers, combined transformers, metering units, capacitor voltage transformers, power voltage transformers, instrument transformers for GIS applications, and line traps.

Going ahead, in the year 2022, the China's investments for completed power supply projects was USD 1,071.82 billion and investment in power grid project construction completed was USD 110.82 billion. Majority of investment got in wind energy projects, managing wind farm assets can be efficient by using the proper metering instrument and transformer to monitor produced and transmitted power. This, in turn, increases the use of instrument transformers across the country.

Moreover, medium-voltage instrument transformers operate primarily between 1 and 72.5 kV voltage ranges. These are mainly used in indoor applications, with the primary target of saving space. These transformers are placed in metal-enclosed cubicles, and the primary terminals are modified according to customer requirements. Low-voltage instrument transformers operate in voltage ranges below 1 kV and, hence, require limited insulation and are formed by sheets of paper or polymers. These are smaller in size and are primarily used in control and measurement panels.

In transmission and distribution systems, high-voltage instrument transformers are generally used. These devices are primarily used in high-voltage applications and form a critical part of HVAC systems. Due to this, the demand for these transformers is expected to be mainly driven by South America and Asia-Pacific, where most new large-scale HV transmission projects are under development.

In November 2022, the Power Grid Corporation of India Limited announced its plan to implement a transmission corridor worth about USD 2.43 billion to facilitate the transfer of surplus power from Raigarh in Chhattisgarh to the southern region. It is also part of the green energy corridor for transferring renewable energy from the southern states to the rest of India. New transmission projects in growing markets such as Asia-Pacific are expected to drive demand for instrument transformers during the forecast period.

Therefore, owing to the above factors, the power utility sector is expected to dominate the market during the forecast period.

Asia-Pacific Likely to Dominate the Market

The Asia-Pacific region accounted for a significant share of the instrument transformer market in 2020, owing to increasing power consumption, government initiatives to increase power generation capacity using renewable energy sources, and the expansion and enhancement of aging grid infrastructure. Countries such as India, China, Japan, Korea, and Australia are the key contributing nations in the region.

The Asia-Pacific region consumed 277.60 exajoules of primary energy in total in 2022, up more than two percent from the previous year. Further, power infrastructure grew significantly, with an electricity generation of 14546.4 TWh in 2022.

Many countries in the region are investing in developing their power grid infrastructure during the forecast period. In China, the total power consumption in 2022 was about 86,372 billion kilowatt-hours. It represented 3.6 percent growth from 2021.

To cater to the increasing power demand, in mid-2020, the Chinese government planned to invest nearly USD 900 billion in the next five years to develop the country's power grid infrastructure. In addition, according to the State Grid Corp. of China, the country's biggest power utility, investments in power grid infrastructure and related industries are expected to surpass USD 896 billion in 2021-2025, focusing on power transmission, electric vehicle chargers, and new digital infrastructure.

In February 2023, India's state-owned Power Grid Corporation announced that it had bagged five inter-state electricity transmission projects through competitive bidding. The company will establish the project's transmission system on a build, own, operate, and transfer (BOOT) basis. The first transmission network expansion project in Gujarat is associated with integrating renewable projects from the Khavda potential REzone to establish 765 kV D/C transmission lines passing through the state. The establishment of Khavda Pooling Station-2 in the Khavda RE Park project comprises the establishment of a new 765/400 kV GIS. In turn, this kind of project will culminate in the utilization of isolation transformers to minimize power surges.

Therefore, owing to the above factors, the Asia-Pacific region is expected to dominate

the instrument transformer market during the forecast period.

Instrument Transformer Industry Overview

The instrument transformer market is semi-consolidated. Some of the key players in the market (in no particular order) include ABB Ltd, Siemens Energy AG, General Electric Company, Schneider Electric SE, and Artech Group, among others.

In November 2023, Siemens announced an investment of USD 150 million in a new high-tech manufacturing plant in Dallas-Fort Worth to support power American data centers and critical infrastructure. This plant is going to deliver state-of-the-art, efficient, and reliable electrical equipment. It is going to facilitate accelerated growth of United States data centers, which is being driven by the exponential adoption of generative AI. It will also ensure the secure operation of critical infrastructure. This investment explicitly helps long-term customers in the data center sector, where demand is expected to grow by about 10% annually through 2030.

Additional Benefits:

The market estimate (ME) sheet in Excel format

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Contents

1 INTRODUCTION

- 1.1 Scope of the Study
- 1.2 Market Definition
- 1.3 Study Assumptions

2 EXECUTIVE SUMMARY

3 RESEARCH METHODOLOGY

4 MARKET OVERVIEW

- 4.1 Introduction
- 4.2 Market Size and Demand Forecast, in USD, till 2028
- 4.3 Recent Trends and Developments
- 4.4 Government Policies and Regulations
- 4.5 Market Dynamics
 - 4.5.1 Drivers
 - 4.5.1.1 Substantial Investments and Efforts to Modernize the T&D Grid
 - 4.5.2 Restraints
 - 4.5.2.1 Expansion of High Voltage Direct Current (HVDC) Networks
- 4.6 Supply Chain Analysis
- 4.7 Porter's Five Forces Analysis
 - 4.7.1 Bargaining Power of Suppliers
 - 4.7.2 Bargaining Power of Consumers
 - 4.7.3 Threat of New Entrants
 - 4.7.4 Threat of Substitute Products and Services
 - 4.7.5 Intensity of Competitive Rivalry

5 MARKET SEGMENTATION

- 5.1 Type
 - 5.1.1 Current Transformer
 - 5.1.2 Potential Transformer
 - 5.1.3 Combined Transformer
- 5.2 End User
 - 5.2.1 Power Utilities

- 5.2.2 Industrial Sector
- 5.2.3 Other End Users
- 5.3 Geography
 - 5.3.1 North America
 - 5.3.1.1 United States
 - 5.3.1.2 Canada
 - 5.3.1.3 Mexico
 - 5.3.2 Europe
 - 5.3.2.1 Germany
 - 5.3.2.2 France
 - 5.3.2.3 Spain
 - 5.3.2.4 United Kingdom
 - 5.3.2.5 Rest of Europe
 - 5.3.3 Asia-Pacific
 - 5.3.3.1 China
 - 5.3.3.2 India
 - 5.3.3.3 Japan
 - 5.3.3.4 South Korea
 - 5.3.3.5 Rest of Asia-Pacific
 - 5.3.4 South America
 - 5.3.4.1 Brazil
 - 5.3.4.2 Argentina
 - 5.3.4.3 Rest of South America
 - 5.3.5 Middle East and Africa
 - 5.3.5.1 Saudi Arabia
 - 5.3.5.2 United Arab Emirates
 - 5.3.5.3 South Africa
 - 5.3.5.4 Rest of Middle East and Africa

6 COMPETITIVE LANDSCAPE

- 6.1 Mergers and Acquisitions, Joint Ventures, Collaborations, and Agreements
- 6.2 Strategies Adopted by Leading Players
- 6.3 Company Profiles
 - 6.3.1 ABB Ltd
 - 6.3.2 Siemens Energy AG
 - 6.3.3 General Electric Company
 - 6.3.4 Schneider Electric SE
 - 6.3.5 Artech Group

6.3.6 PFIFFNER Instrument Transformers Ltd

6.3.7 Crompton Greaves Ltd

6.3.8 Mitsubishi Electric Corporation

6.3.9 Nissin Electric Co. Ltd

6.3.10 Amran Inc.

7 MARKET OPPORTUNITIES AND FUTURE TRENDS

7.1 Increasing Integration of Advanced Technologies such as AI and IoT with Instrument Transformers

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