+44 20 8123 2220
info@marketpublishers.com

Current Transducer Market – Global Industry Size, Share, Trends, Opportunity, and Forecast, 2018-2028 Segmented By Technology (Open Loop and Closed Loop), By Application (Inverter & Converter, UPS & SMPS, Battery Management, Motor Drive and Others), By End User (Industrial, Renewable, Automotive, Residential, Commercial and Others), By Region, Competition

https://marketpublishers.com/r/C80FB97C5338EN.html
Date: October 2023
Pages: 188
Price: US$ 4,900.00 (Single User License)
ID: C80FB97C5338EN

Abstracts

The Global Current Transducer Market reached a size of USD 472.95 million in 2022 and is projected to grow to USD 591.82 billion by 2028, with a CAGR of 3.91% through 2028. There has been an increase in the adoption of power management systems in data centers to enhance efficiency and speed while reducing power consumption, driving current transducer market demand. The concept of the current transducer market is integrated with backup power systems like inverters and UPS systems, providing battery protection during charging and increasing efficiency, which boosts their demand in data centers. Additionally, stringent government regulations on data center power consumption control also contribute to significant market growth.

Key Market Drivers

Increasing Demand for Energy Efficiency

Current transducers provide real-time monitoring of electrical currents in various applications. By accurately measuring and analyzing current data, businesses can identify energy inefficiencies and implement optimization strategies to reduce wastage

and improve energy usage. In industrial settings, such as manufacturing plants and factories, energy efficiency is a critical concern to minimize operational costs and environmental impact. Current transducers aid in monitoring electrical loads, identifying energy-intensive processes, and optimizing equipment performance for enhanced energy efficiency. For power generation facilities, including conventional power plants and renewable energy sources, precise current sensing is essential for efficient electricity production. Monitoring current flows assists operators in optimizing power generation and grid integration. As the world transitions towards smart grids, energy efficiency emerges as a paramount priority. Current transducers facilitate real-time monitoring of power flows, load balancing, and demand response management, resulting in more efficient and reliable power distribution. The integration of current transducers with Internet of Things (IoT) platforms enables intelligent energy management. IoT-enabled current sensing solutions provide real-time data and insights that support informed energy usage decisions.

Increasing Industrialization and Infrastructure Development

The global current transducer market is significantly influenced by increasing industrialization and infrastructure development worldwide. The expansion of industries and infrastructure creates a surging demand for electrical monitoring and control systems, thus driving the adoption of current transducers. Industrialization leads to the establishment of new factories, plants, and industrial facilities, necessitating precise current monitoring for equipment performance, safety, and maintenance. Current transducers play a critical role in providing real-time current measurements, enabling industries to effectively monitor electrical loads and ensure efficient operations. As countries invest in infrastructure development, including power plants, renewable energy facilities, transportation systems, and smart cities, the demand for current transducers continues to rise. These projects require accurate current sensing solutions to optimize energy usage, monitor electrical systems, and ensure reliable power distribution. Moreover, as countries modernize their power grids to smart grids, the demand for current transducers grows even further. Smart grids rely on precise current measurements for real-time monitoring and management of power flows, supporting energy efficiency and grid stability.

Growth of Electric Vehicles

Electric vehicles (EVs) play a significant role in the global current transducer, driven by the growing adoption of electric mobility and the need for precise current sensing in EV charging and battery management systems. The widespread use of electric vehicles

+44 20 8123 2220
info@marketpublishers.com

has resulted in a substantial surge in demand for EV charging infrastructure. Current transducers serve as essential components in EV charging stations, enabling accurate monitoring of charging currents to ensure safe and efficient charging processes. Moreover, electric vehicles heavily rely on sophisticated battery management systems (BMS) to oversee and regulate battery charging and discharging. Within BMS, current transducers assume a critical role by providing real-time current measurements, facilitating efficient battery management that extends battery life and ensures optimal performance. Precise and accurate current sensing is crucial for electric vehicles, enabling effective power flow management during charging and discharging cycles. With reliable current measurements, current transducers ensure that the battery operates within safe limits while maintaining optimal energy efficiency. Additionally, the adoption of electric buses and commercial vehicles continues to rise as part of efforts to reduce emissions in urban areas. These vehicles also rely on current transducers to monitor charging processes and power consumption, thereby facilitating efficient operation.

Key Market Challenges

Miniaturization and Cost-Effectiveness

As technology continues to advance and devices become increasingly compact, there is a growing demand for smaller and space-efficient current transducers. The miniaturization of these components is particularly crucial in applications with limited space, such as modern electronics, portable devices, and automotive systems. However, it is important to consider that miniaturization can lead to higher power densities and subsequent heat buildup. Therefore, efficient heat dissipation becomes paramount in order to maintain device reliability and optimal performance. Cost is a critical factor that significantly influences the adoption of current transducers in various applications. The design and manufacturing of smaller components with complex electrical and mechanical properties can be intricate and costly. Additionally, the use of high-quality materials is indispensable for accurate current sensing, albeit at a higher cost. The challenge lies in finding cost-effective alternatives that do not compromise performance. Investing in research and development (R&D) is essential to create innovative and cost-effective solutions. However, it is important to acknowledge that R&D costs can be significant, necessitating substantial investments. Furthermore, streamlining the manufacturing process to reduce production costs can be challenging, particularly when faced with the intricacies associated with miniaturization, which may involve more complex assembly processes.

+44 20 8123 2220
info@marketpublishers.com

Smart Grid Development

Smart grids necessitate highly precise and reliable current measurement data to optimize energy distribution and ensure grid stability. The current transducers employed in these systems must deliver accurate measurements even in dynamic and fluctuating conditions. Maintaining long-term accuracy and performance under varying environmental circumstances is of paramount importance for the successful implementation of smart grids. Smart grids encompass diverse energy sources and loads with distinct current requirements. Current transducers must possess the capability to accurately sense a wide range of currents, spanning from low-level currents in residential settings to high currents in industrial or renewable energy applications. Ensuring a broad dynamic range while preserving accuracy can present challenges. Interoperability and standardization are critical to seamlessly integrate various components within a smart grid. Current transducers must adhere to industry standards and be compatible with different communication protocols and data formats utilized in smart grid systems. Addressing this challenge necessitates close collaboration among manufacturers, utilities, and regulatory bodies to ensure smooth integration. Smart grid implementations often span large geographic areas, requiring a significant number of current transducers. Reducing the cost of current transducers without compromising accuracy and reliability is vital for widespread adoption. Scalability is a crucial aspect to meet the diverse needs of varying smart grid projects. Upgrading existing power grids to smart grids involves retrofitting current transducers into legacy systems, which can present challenges such as compatibility issues, space constraints, and integration with legacy components during the grid modernization process.

Key Market Trends

Demand for High-Precision and Accurate Sensing

Accurate current measurements are of utmost importance in optimizing energy consumption and enhancing overall system efficiency. In industries such as power generation, manufacturing, and data centers, precise current sensing plays a vital role in identifying energy wastage and facilitating the implementation of energy-saving strategies. With the growing adoption of renewable energy sources like solar and wind power, precise current sensing becomes critical for monitoring and controlling the generated power. The integration of renewable energy into the grid necessitates accurate measurements to ensure a stable and reliable power supply. High-precision current transducers are employed for power quality monitoring in commercial and

industrial settings. By precisely measuring current harmonics, power factor, and other power quality parameters, businesses can identify and address issues related to voltage fluctuations and electrical disturbances. In the rapidly expanding electric vehicle market, accurate current measurements are essential for monitoring the battery pack's charging and discharging processes. This information is crucial for battery management systems to optimize charging efficiency and extend battery life.

Segmental Insights

Technology Insights

Open Loop segment is expected to dominate the market during the forecast period. Open-loop current transducers offer non-intrusive current sensing capabilities, eliminating the need for physical contact with the current-carrying conductor. This feature is advantageous in applications where interrupting the electrical circuit for measurement is not feasible or cost-effective. Open-loop transducers provide galvanic isolation between the primary current path and the sensing electronics, enhancing safety and safeguarding sensitive electronic components from potential electrical hazards. Open-loop transducers, particularly those based on Rogowski coils, offer installation flexibility. The coils can be easily wrapped around conductors of varying shapes and sizes, making them suitable for retrofitting into existing systems and different current-carrying configurations. Open-loop current transducers are increasingly utilized in electric vehicle charging stations to accurately measure the current flow during charging processes. The flexibility of Rogowski coils and the safety benefits of galvanic isolation make them well-suited for EV charging infrastructure.

Applications Insights

Motor Drive segment is expected to dominate the market during the forecast period. Motor drives, also referred to as motor control systems or motor controllers, are electronic devices utilized for regulating the speed, torque, and direction of electric motors in various applications. Current transducers perform a crucial role in motor drives by providing precise current measurements, which are vital for the control and protection of electric motors. Within motor drives, current transducers are employed to gauge the electrical current flowing through the motor windings. This current data is of utmost importance for accurate motor control and protection, ensuring the motor operates within safe limits and optimizing its performance. Motor drives are extensively employed across a wide range of industries, including industrial automation, automotive, HVAC (Heating, Ventilation, and Air Conditioning), consumer electronics, robotics, and

+44 20 8123 2220
info@marketpublishers.com

more. Current transducers play an integral role in motor drives within these applications, guaranteeing efficient and reliable motor operation. Variable frequency drives, also known as VFDs or AC drives, are widely used motor drives for controlling AC induction motors. Current transducers in VFDs provide real-time feedback on motor currents, facilitating the drive to adjust motor speed and torque as required.

Regional Insights

North America is expected to dominate the market during the forecast period. The advanced industrial and technological infrastructure, coupled with the presence of key market players, contributes significantly to the growth of the region's market. The market is experiencing steady growth due to the rising demand for precise current sensing solutions across various industries. North America serves as a major hub for industrial automation, with sectors such as manufacturing, automotive, aerospace, and robotics driving the demand for current transducers. Accurate current sensing plays a vital role in monitoring and controlling equipment performance in automated systems. Moreover, the region has witnessed notable growth in the adoption of renewable energy sources like solar and wind power, where current transducers play a crucial role in monitoring power generation and facilitating grid integration, thereby supporting the expansion of renewable energy. The increasing popularity of electric vehicles in North America has created substantial demand for current transducers used in EV charging infrastructure and battery management systems. Furthermore, North America has been investing in smart grid technologies to enhance energy efficiency and grid resilience, with current transducers serving as essential components for real-time monitoring and management of power flows.

Key Market Players

Asea Brown Boveri Ltd.

American Aerospace Controls Inc.

Hobut (Howard Butler Ltd)

Johnson Controls, Inc.

Neilsen-Kuljian Technologies, Inc.

Ohio Semitronics, Inc.

+44 20 8123 2220
info@marketpublishers.com

Siemens AG

Texas Instruments Incorporated

Topstek Inc.

Veris Industries LLC

Report Scope:

In this report, the Global Current Transducer Market has been segmented into the following categories, in addition to the industry trends which have also been detailed below:

Global Current Transducer Market, By Technology:

Open Loop

Closed Loop

Global Current Transducer Market, By Application:

Inverter & Converter

UPS & SMPS

Battery Management

Motor Drive

Others

Global Current Transducer Market, By End User:

Industrial

Renewable

+44 20 8123 2220
info@marketpublishers.com

- Automotive
- Residential
- Commercial
- Others

Global Current Transducer Market, By Region:

- North America
- Europe
- South America
- Middle East & Africa
- Asia Pacific

Competitive Landscape

Company Profiles: Detailed analysis of the major companies present in the Global Current Transducer Market.

Available Customizations:

Global Current Transducer Market report with the given market data, Tech Sci Research offers customizations according to a company's specific needs. The following customization options are available for the report:

Company Information

- Detailed analysis and profiling of additional market players (up to five).

+44 20 8123 2220
info@marketpublishers.com

Contents

+44 20 8123 2220
info@marketpublishers.com

8. NORTH AMERICA CURRENT TRANSDUCER MARKET OUTLOOK

9. EUROPE CURRENT TRANSDUCER MARKET OUTLOOK

+44 20 8123 2220
info@marketpublishers.com

+44 20 8123 2220
info@marketpublishers.com

10. SOUTH AMERICA CURRENT TRANSDUCER MARKET OUTLOOK

11. MIDDLE EAST & AFRICA CURRENT TRANSDUCER MARKET OUTLOOK

+44 20 8123 2220
info@marketpublishers.com

12. ASIA PACIFIC CURRENT TRANSDUCER MARKET OUTLOOK

+44 20 8123 2220
info@marketpublishers.com

13. MARKET DYNAMICS

+44 20 8123 2220
info@marketpublishers.com

14. MARKET TRENDS AND DEVELOPMENTS

15. COMPANY PROFILES

+44 20 8123 2220
info@marketpublishers.com

+44 20 8123 2220
info@marketpublishers.com

I would like to order

Product name: Current Transducer Market – Global Industry Size, Share, Trends, Opportunity, and Forecast, 2018-2028 Segmented By Technology (Open Loop and Closed Loop), By Application (Inverter & Converter, UPS & SMPS, Battery Management, Motor Drive and Others), By End User (Industrial, Renewable, Automotive, Residential, Commercial and Others), By Region, Competition

Product link: https://marketpublishers.com/r/C80FB97C5338EN.html

Price: US$ 4,900.00 (Single User License / Electronic Delivery)

If you want to order Corporate License or Hard Copy, please, contact our Customer Service:
info@marketpublishers.com

Payment

To pay by Credit Card (Visa, MasterCard, American Express, PayPal), please, click button on product page https://marketpublishers.com/r/C80FB97C5338EN.html

To pay by Wire Transfer, please, fill in your contact details in the form below:

First name:
Last name:
Email:
Company:
Address:
City:
Zip code:
Country:
Tel:
Fax:
Your message:

**All fields are required

Custumer signature _____

Please, note that by ordering from marketpublishers.com you are agreeing to our Terms & Conditions at https://marketpublishers.com/docs/terms.html

+44 20 8123 2220
info@marketpublishers.com

To place an order via fax simply print this form, fill in the information below and fax the completed form to +44 20 7900 3970