

Global Cold Cathode (Penning) Vacuum Gauge Market 2026 by Manufacturers, Regions, Type and Application, Forecast to 2032

<https://marketpublishers.com/r/GBE5A4A92CDFEN.html>

Date: February 2026

Pages: 143

Price: US\$ 3,480.00 (Single User License)

ID: GBE5A4A92CDFEN

Abstracts

According to our (Global Info Research) latest study, the global Cold Cathode (Penning) Vacuum Gauge market size was valued at US\$ 329 million in 2025 and is forecast to a readjusted size of US\$ 445 million by 2032 with a CAGR of 4.0% during review period.

In 2025, global Cold Cathode (Penning) Vacuum Gauge production reached approximately 133 k units with an average global market price of around US\$ 2400 per unit, and a gross profit margin of approximately 20%-40%. Cold Cathode (Penning) Vacuum Gauges are ionization vacuum measurement devices used for high and ultra-high vacuum ranges. They create a discharge between electrodes in a magnetic field, ionizing residual gas molecules without a heated filament. The resulting ion current correlates with pressure, enabling measurement typically from about 10^{-4} to 10^{-7} mbar depending on design. Because there is no hot filament, Penning gauges offer long life and better tolerance to oxygen and sudden pressure bursts compared with hot cathode gauges. They are widely used in semiconductor vacuum tools, coating systems, accelerators, vacuum furnaces, and research chambers. Key requirements include stable ignition, low drift, contamination resistance, and compatibility with controllers and vacuum fittings.

The industrial chain of Cold Cathode (Penning) Vacuum Gauges includes upstream components such as stainless steel housings, ceramic insulators, permanent magnets, electrodes, seals (O-rings/metal gaskets), high-voltage power modules, signal conditioning electronics, connectors, and vacuum flanges. Midstream manufacturing covers precision machining, ceramic-to-metal sealing, electrode assembly, magnet alignment, leak testing, calibration, and burn-in. Downstream users include semiconductor equipment OEMs, vacuum system integrators, coating and heat-

treatment plants, research labs, and industrial vacuum maintenance providers. Services include calibration, controller integration, spare parts supply, and technical support.

This report is a detailed and comprehensive analysis for global Cold Cathode (Penning) Vacuum Gauge market. Both quantitative and qualitative analyses are presented by manufacturers, by region & country, by Type and by Application. As the market is constantly changing, this report explores the competition, supply and demand trends, as well as key factors that contribute to its changing demands across many markets. Company profiles and product examples of selected competitors, along with market share estimates of some of the selected leaders for the year 2025, are provided.

Key Features:

Global Cold Cathode (Penning) Vacuum Gauge market size and forecasts, in consumption value (\$ Million), sales quantity (K Units), and average selling prices (US\$/Unit), 2021-2032

Global Cold Cathode (Penning) Vacuum Gauge market size and forecasts by region and country, in consumption value (\$ Million), sales quantity (K Units), and average selling prices (US\$/Unit), 2021-2032

Global Cold Cathode (Penning) Vacuum Gauge market size and forecasts, by Type and by Application, in consumption value (\$ Million), sales quantity (K Units), and average selling prices (US\$/Unit), 2021-2032

Global Cold Cathode (Penning) Vacuum Gauge market shares of main players, shipments in revenue (\$ Million), sales quantity (K Units), and ASP (US\$/Unit), 2021-2026

The Primary Objectives in This Report Are:

- To determine the size of the total market opportunity of global and key countries
- To assess the growth potential for Cold Cathode (Penning) Vacuum Gauge
- To forecast future growth in each product and end-use market
- To assess competitive factors affecting the marketplace

This report profiles key players in the global Cold Cathode (Penning) Vacuum Gauge market based on the following parameters - company overview, sales quantity, revenue, price, gross margin, product portfolio, geographical presence, and key developments.

Key companies covered as a part of this study include Leybold, Pfeiffer Vacuum, INFICON, MKS Instruments, Edwards Vacuum, Fredericks, ULVAC, KVC, JEOL, Ultrahivac, etc.

This report also provides key insights about market drivers, restraints, opportunities, new product launches or approvals.

Market Segmentation

Cold Cathode (Penning) Vacuum Gauge market is split by Type and by Application. For the period 2021-2032, the growth among segments provides accurate calculations and forecasts for consumption value by Type, and by Application in terms of volume and value. This analysis can help you expand your business by targeting qualified niche markets.

Market segment by Type

Analog Type

Digital Type

Others

Market segment by Working Principle

Active Type

Passive Type

Market segment by Application

Semiconductors

Scientific Research

Others

Major players covered

Leybold

Pfeiffer Vacuum

INFICON

MKS Instruments

Edwards Vacuum

Fredericks

ULVAC

KVC

JEOL

Ultrahivac

Thulir Vacuum Technologies

Thyracont Vacuum Instruments

HOMEYU

Aosong

GUOGUANG ELECTRIC

Chengdu Zhenghua Electronic Instrument

Shanghai Cixi Instruments

Market segment by region, regional analysis covers
North America (United States, Canada, and Mexico)

Europe (Germany, France, United Kingdom, Russia, Italy, and Rest of Europe)
Asia-Pacific (China, Japan, Korea, India, Southeast Asia, and Australia)
South America (Brazil, Argentina, Colombia, and Rest of South America)
Middle East & Africa (Saudi Arabia, UAE, Egypt, South Africa, and Rest of Middle East & Africa)

The content of the study subjects, includes a total of 15 chapters:

Chapter 1, to describe Cold Cathode (Penning) Vacuum Gauge product scope, market overview, market estimation caveats and base year.

Chapter 2, to profile the top manufacturers of Cold Cathode (Penning) Vacuum Gauge, with price, sales quantity, revenue, and global market share of Cold Cathode (Penning) Vacuum Gauge from 2021 to 2026.

Chapter 3, the Cold Cathode (Penning) Vacuum Gauge competitive situation, sales quantity, revenue, and global market share of top manufacturers are analyzed emphatically by landscape contrast.

Chapter 4, the Cold Cathode (Penning) Vacuum Gauge breakdown data are shown at the regional level, to show the sales quantity, consumption value, and growth by regions, from 2021 to 2032.

Chapter 5 and 6, to segment the sales by Type and by Application, with sales market share and growth rate by Type, by Application, from 2021 to 2032.

Chapter 7, 8, 9, 10 and 11, to break the sales data at the country level, with sales quantity, consumption value, and market share for key countries in the world, from 2021 to 2026. and Cold Cathode (Penning) Vacuum Gauge market forecast, by regions, by Type, and by Application, with sales and revenue, from 2027 to 2032.

Chapter 12, market dynamics, drivers, restraints, trends, and Porters Five Forces analysis.

Chapter 13, the key raw materials and key suppliers, and industry chain of Cold Cathode (Penning) Vacuum Gauge.

Chapter 14 and 15, to describe Cold Cathode (Penning) Vacuum Gauge sales channel, distributors, customers, research findings and conclusion.

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