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# Global External Braking Resistor Supply, Demand and Key Producers, 2026-2032

https://marketpublishers.com/r/G4443A870842EN.html
Date: June 2026
Pages: 137
Price: US$ 4,480.00 (Single User License)
ID: G4443A870842EN

## Abstracts

The global External Braking Resistor market size is expected to reach $ 4588 million by 2032, rising at a market growth of 7.2% CAGR during the forecast period (2026-2032).

External braking resistors are power-dissipating components installed externally to servo drives, variable frequency drives (VFDs), elevator drives, hoisting equipment, marine electric propulsion systems, drilling rig winches, industrial transmission systems, and automation equipment. Their function is to absorb the regenerative energy generated on the drive system's DC bus during motor deceleration, the lowering of heavy loads, back-driving by inertial loads, or frequent start-stop cycles. By converting this excess electrical energy into thermal energy for dissipation, they prevent DC bus overvoltage, drive system alarms and shutdowns, and loss of braking control. In 2025, global sales volume for external braking resistors is projected to reach approximately 8.6 million units, with an average unit price of approximately $322.80. The capacity utilization rate is estimated at around 74.9%, while the industry's average gross margin is expected to be approximately 28.6%. Upstream enterprises primarily consist of suppliers of resistance alloy wire, metal oxide film materials, ceramic substrates, insulation materials, aluminum casings, stainless steel enclosures, heat sinks, thermal interface materials, terminals, wiring harnesses, thermal switches, sheet metal parts, and automated winding equipment. The midstream sector comprises manufacturers of external braking resistors, power resistors, industrial electrical components, braking unit accessories, and customized resistor modules. The downstream sector includes manufacturers of variable frequency drives, servo drives, elevators, cranes, marine equipment, drilling rigs, construction machinery, wind power equipment, and industrial robots, as well as automation line integrators and equipment maintenance service providers. Regarding the product cost structure, resistance alloy materials account for approximately 24.2%; ceramic, insulation, and thermal materials account for about

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14.5%; aluminum casings, stainless steel enclosures, and heat dissipation structures account for roughly 19.6%; terminals, wiring harnesses, and connectors account for approximately 8.4%; winding, encapsulation, welding, and assembly processing account for about 16.2%; power testing, dielectric strength testing, aging testing, and quality control account for approximately 7.8%; packaging and logistics account for about 3.9%; and R&D, design, certification, and after-sales warranty services account for approximately 5.4%. The list of downstream applications includes variable frequency drive braking, servo motor deceleration braking, energy absorption in elevator traction systems, braking during crane lowering operations, braking for marine propulsion and deck machinery, drilling rig winch braking, emergency stop protection for industrial robots, high-speed start-stop operations in logistics conveyor lines, load absorption in test rigs, pitch drive protection in wind power systems, and the maintenance and replacement of aging drive systems. The list of downstream clients includes Siemens, ABB, Schneider Electric, Yaskawa Electric, Mitsubishi Electric, Inovance Technology, Delta Electronics, Invt, Veichi Electric, Otis, Kone, Schindler, XCMG, Sany Heavy Industry, Zoomlion, marine equipment manufacturers, oil drilling rig enterprises, industrial robot manufacturers, automation equipment integrators, and maintenance departments within manufacturing facilities. In terms of market demand and business opportunities, policy-driven factors stem from industrial equipment safety standards, regulatory oversight of special equipment, smart manufacturing initiatives, equipment renewal programs, energy-saving retrofits, the localization of high-end equipment, and factory safety production requirements. Technology-driven factors arise from innovations in high-power-density resistive materials, low-temperature-rise heat dissipation structures, forced-air cooling modules, thermal protection switches, modular mounting systems, quick-connect terminals, and custom designs tailored to match specific drive parameters. Changes in customer expectations are reflected in heightened demands for braking stability, ease of installation, extended service life, miniaturization, low failure rates, reduced maintenance costs, and enhanced operational continuity. Consequently, business opportunities for external braking resistors are concentrated in areas such as complementary accessories for servo drives and variable frequency drives, the modernization of elevator and hoisting equipment, electrical drive upgrades for marine vessels and drilling rigs, high-speed start-stop applications in automated production lines, the replacement and maintenance of existing equipment, and the adoption of high-power modular braking resistors as substitutes for standard discrete resistors.

As industrial equipment operating cycles accelerate, load inertia increases, and the electrification of drive systems advances, the role of external braking resistors is evolving from that of a mere ancillary component to a critical element ensuring the

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safety and stability of transmission systems. While servo drives and variable frequency drives are capable of handling a portion of regenerative energy through their built-in braking units, external resistors remain subject to strong, inelastic demand in scenarios involving high-frequency braking or heavy-load lowering—such as in elevators, cranes, drilling rigs, marine vessels, robotics, logistics conveyor lines, and large-scale test benches—as they offer greater power headroom and superior thermal dissipation capabilities. When making procurement decisions, downstream customers place a heightened focus on factors such as resistance value matching, rated power, short-term overload capacity, temperature rise curves, insulation class, ingress protection (IP) ratings, mounting methods, and long-term reliability; consequently, products distinguished solely by low price points find limited acceptance in applications where high reliability is paramount. Although the competitive landscape within the industry is relatively mature, products featuring high power density, compact form factors, air-cooling capabilities, integrated thermal protection, and customizable mounting structures continue to command significant added value—particularly within the marine, drilling, rail transit, wind power, elevator, and heavy lifting equipment sectors—where customers demonstrate a clear preference for proven, stable solutions. In the future, corporate competition will center primarily on material heat resistance, thermal dissipation path design, packaging reliability, modular integration, rapid customization capabilities, and collaborative development synergies with drive system manufacturers. Given that external braking resistors are frequently driven by the demand for equipment upgrades, automation retrofits, and aftermarket maintenance services, the structure of incoming orders tends to be relatively fragmented yet characterized by strong continuity. Overall, while this product category constitutes a mature segment of industrial electrical components, it is expected to sustain steady demand—propelled by advancements in industrial automation, electrified equipment, high-safety braking systems, and the modernization of existing equipment fleets; consequently, companies possessing robust power design expertise, consistent product quality, and extensive experience in industrial system integration are best positioned to secure long-term orders.

This report studies the global External Braking Resistor production, demand, key manufacturers, and key regions.

This report is a detailed and comprehensive analysis of the world market for External Braking Resistor and provides market size (US$ million) and Year-over-Year (YoY) Growth, considering 2025 as the base year. This report explores demand trends and competition, as well as details the characteristics of External Braking Resistor that contribute to its increasing demand across many markets.

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Highlights and key features of the study
Global External Braking Resistor total production and demand, 2021-2032, (K Units)
Global External Braking Resistor total production value, 2021-2032, (USD Million)
Global External Braking Resistor production by region & country, production, value, CAGR, 2021-2032, (USD Million) & (K Units), (based on production site)
Global External Braking Resistor consumption by region & country, CAGR, 2021-2032 & (K Units)
U.S. VS China: External Braking Resistor domestic production, consumption, key domestic manufacturers and share
Global External Braking Resistor production by manufacturer, production, price, value and market share 2021-2026, (USD Million) & (K Units)
Global External Braking Resistor production by Type, production, value, CAGR, 2021-2032, (USD Million) & (K Units)
Global External Braking Resistor production by Application, production, value, CAGR, 2021-2032, (USD Million) & (K Units)

This report profiles key players in the global External Braking Resistor market based on the following parameters - company overview, production, value, price, gross margin, product portfolio, geographical presence, and key developments. Key companies covered as a part of this study include ZIEHL-ABEGG (DE), Fuji Electric (JP), Kollmorgen (US), Oriental Motor (JP), Panasonic (JP), NI (National Instruments) (US), Yaskawa (JP), Chiba Techno (JP), Maccon (DE), Sigmatek (AT), etc.

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

Stakeholders would have ease in decision-making through various strategy matrices used in analyzing the World External Braking Resistor market

Detailed Segmentation:

Each section contains quantitative market data including market by value (US$ Millions), volume (production, consumption) & (K Units) and average price (US$/Unit) by manufacturer, by Type, and by Application. Data is given for the years 2021-2032 by year with 2025 as the base year, 2026 as the estimate year, and 2027-2032 as the forecast year.

Global External Braking Resistor Market, By Region:

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United States

China

Europe

Japan

South Korea

ASEAN

India

Rest of World

Global External Braking Resistor Market, Segmentation by Type:

1200-2800W

2800-3600W

3600-7200W

Others

Global External Braking Resistor Market, Segmentation by Voltage:

?100V

100-500V

500-1000V

?1000V

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Global External Braking Resistor Market, Segmentation by Material:

Wire Wound Resistor

Ceramic Resistor

Thin Film Resistor

Other

Global External Braking Resistor Market, Segmentation by Application:

Construction Industry

Machinery

Automotives

Railway

Other

Companies Profiled:

ZIEHL-ABEGG (DE)

Fuji Electric (JP)

Kollmorgen (US)

Oriental Motor (JP)

Panasonic (JP)

NI (National Instruments) (US)

Yaskawa (JP)

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Chiba Techno (JP)

Maccon (DE)

Sigmatek (AT)

Suzuki Gokin (JP)

Schneider Electric (FR)

Aktif (TR)

Danfoss (DK)

Siemens (DE)

Guangdong Aotrou Electronic Technology (CN)

Jiangsu Burbund Electric (CN)

Key Questions Answered:
1. How big is the global External Braking Resistor market?
2. What is the demand of the global External Braking Resistor market?
3. What is the year over year growth of the global External Braking Resistor market?
4. What is the production and production value of the global External Braking Resistor market?
5. Who are the key producers in the global External Braking Resistor market?
6. What are the growth factors driving the market demand?

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## 8 MARKET ANALYSIS BY APPLICATION

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