

# ROBOTICS TREND REPORT 01

## POWER ELECTRONICS EDITION

05/2026

Imprint:  
Silicon Alps Cluster GmbH, Europastraße 12, 9524 Villach  
P: +43 4242 42416  
Mail: [office@silicon-alps.at](mailto:office@silicon-alps.at)  
Web: [www.silicon-alps.at](http://www.silicon-alps.at)  
LinkedIn: @Silicon Alps Cluster

District Court Villach  
FN 457350 z / AUT 71301405

Content: Silicon Alps Cluster GmbH  
Input: Benjamin Rammel | SILICON ALPS Cluster  
Layout & Design: Viktoria Stallinger | SILICON ALPS Cluster  
Disclaimer: AI-generated with HeadlineHunter,  
powered by Neptun Data Processing GmbH

Print: PRINTKULTUR - HTU GmbH



NEUES DENKEN. NEUES FÖRDERN.



# AI Trend Report



## Power Electronics | Robotics

From April 11<sup>th</sup>, 2026 to May 11<sup>th</sup>, 2026

### Content

- ▶ Trend & Polarity Map
- ▶ Trend 1: Advances in Motor Control and Power Electronics
- ▶ Trend 2: Advancements in GaN Power Electronics Technology
- ▶ Trend 3: Robotics Technology and Industry Trends

Generated by

**Benjamin Rammel**

with trustworthy AI and reliable data from HeadlineHunter.

### Report in Numbers

**301**

Headlines Crawled

**18,046**

Words Processed

**110**

Sources

**10**

Languages

**TRUSTED AI**

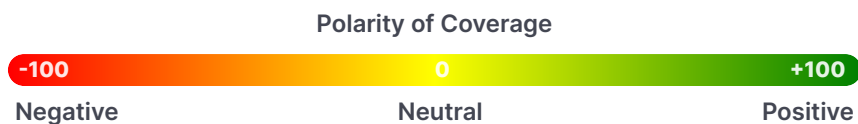
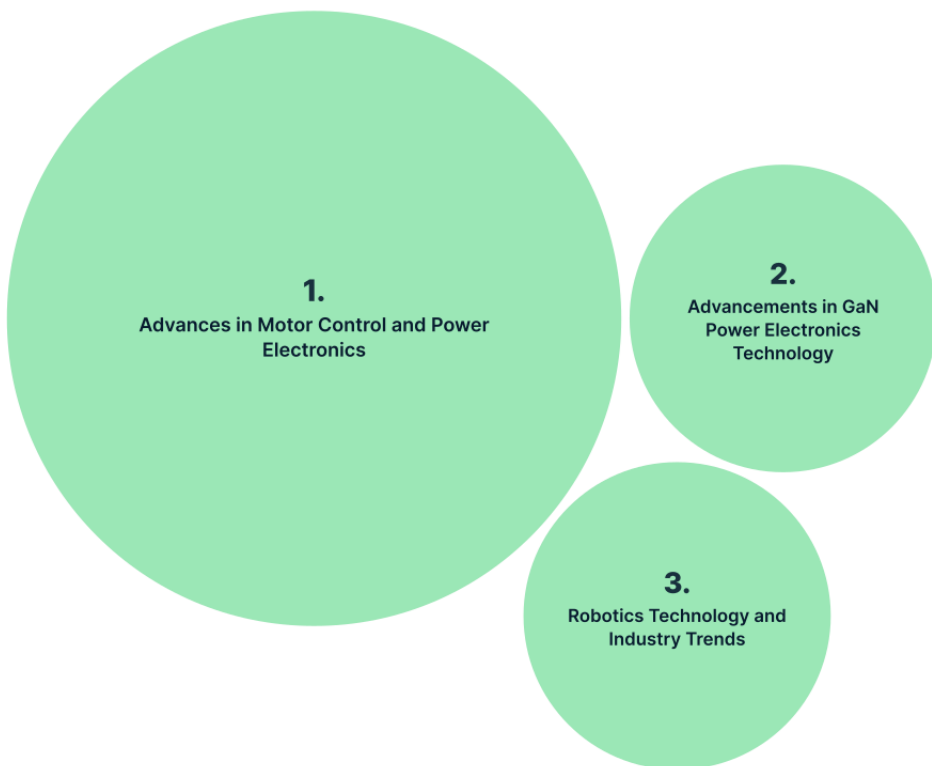
### Executive Summary

The convergence of advanced power electronics and artificial intelligence is accelerating the development of sophisticated robotics and automation systems. This synergy is fueling significant market growth and creating new opportunities across multiple industries.

Key developments include the adoption of Gallium Nitride (GaN) for more efficient and compact power systems, alongside the integration of AI for precision motor control. These innovations are enabling the creation of advanced humanoid robots and more intelligent industrial automation.

While strategic partnerships and technological breakthroughs are driving the industry forward, significant challenges remain, including high costs and infrastructure bottlenecks like an outdated power grid. Overcoming these hurdles will be critical to realizing the full potential of next-generation robotics and electrification.

# Trend Map



TRUSTED AI

## Media Trends for "Power Electronics | Robotics"

April 11<sup>th</sup>, 2026 – May 11<sup>th</sup>, 2026

### 1. Advances in Motor Control and...

AI-driven innovations are enhancing motor control to meet growing demand for efficiency and precision in robotics and electrification.



### 2. Advancements in GaN Power Elec...

Gallium Nitride (GaN) power electronics are driving efficiency gains in demanding applications like robotics, AI data centers, and electric vehicles.



### 3. Robotics Technology and Industry...

Innovations in AI and power electronics, fueled by strategic partnerships, are accelerating the development of intelligent and efficient robots.



# Advances in Motor Control and Power Electronics

## Summary

- ▶ **DC Motor Innovation:** The market for DC motors, including brushed, brushless, and frameless variants, is expanding significantly. This growth is fueled by rising demand in industrial automation, robotics, and electric mobility. Companies are innovating with compact and efficient designs. [1][3][4][5]
- ▶ **AI in Control:** Advanced AI is transforming motor control beyond traditional methods. Transformer models and reinforcement learning are used to improve precision, robustness, and real-time performance. These intelligent controllers are being applied in complex robotics and mechatronics. [2][6][7]
- ▶ **Power Electronics Growth:** The global power electronics market is projected to see substantial growth through 2035. This includes key components like power semiconductors, capacitors, and intelligent gate drivers. The expansion is driven by widespread electrification and efficient power management. [8][9][10]

## Risks & Chances

### Risks

- ▶ **Supply chain disruption**
- ▶ **Infrastructure bottlenecks**
- ▶ **Technical complexity**

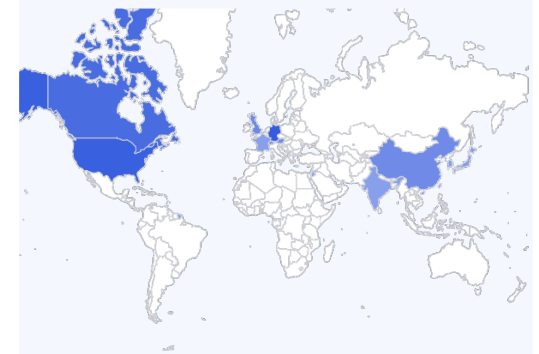
### Chances

- ▶ **Market expansion**
- ▶ **AI-driven control**
- ▶ **Increased efficiency**

## Impact

### Countries

The news mainly comes from Germany and the United States, with Canada also being a significant source.



## Sentiment

Negative

Neutral

Positive

**Positive Reporting:** The market for power electronics and various motor types is experiencing robust growth, driven by automation, robotics, and vehicle electrification. Innovations in control systems, including AI and hybrid models, are significantly improving motor performance, efficiency, and precision for these applications. [1][2]

**Negative Reporting:** Traditional motor control methods are reported to have performance limitations, such as instability and inefficiency, when dealing with the complex demands of modern robotics. The infrastructure for electrification also presents challenges, with high-power AV charging creating significant grid and cost issues. [11][12]

### People and Organizations

United States

### Top Sources

briefingwire.com

ieee.org

mdpi.com

itmedia.co.jp

globenewswire.com

linkedin.com

# Advances in Motor Control and Power Electronics

## In Numbers

**85**

Headlines

**34**

Sources

**4**

Languages

## Topic

briefingwire.com 

### DC Motor Control Device Market: Advancing Precision Motion Control with Efficient Speed Regulation a

The DC Motor Control Device Market is experiencing steady growth driven by increasing demand for automation, robotics, and electric mobility solutions

ieee.org 

### Research on Lightweight Transformer for Hybrid Force-Position Control of Flexible Manipulators

To address the challenges of insufficient robustness of traditional algorithms for hybrid force-position control of flexible manipulators and the poor real-time performance of standard Transformer models, this paper designs a lightweight Trans...

briefingwire.com 

### Driving Efficiency: Expanding Horizons of the Electric DC Motor Industry

Electric DC motors power diverse industries with efficiency, reliability, and adaptability, supporting automation, EV growth, and energy-conscious operations globally.

briefingwire.com 

### Frameless Brushless DC Motor Market: Enabling Compact, High-Efficiency Motion Solutions

Frameless Brushless DC Motor Market is experiencing significant growth, driven by rising demand for compact, high-efficiency, and customizable motor solutions across robotics, industrial automation, medical devices, aerospace, and electric...

ieee.org 

### A Comparative Assessment of Power Converter Control Strategies: From Linear Control to Machine Learning Ap-...

This article fills a gap by presenting the first experimental benchmarking study that compares the state-of-the-art model-free reinforcement learning (MFRL) controller with a widely adopted proportional integral (PI) controller with space vector...

mdpi.com 

### Control Strategies for DC Motor Systems Driving Nonlinear Loads in Mechatronic Applications

DC motors are widely used in mechatronic systems; however, their performance degrades significantly in the presence of nonlinear mechanical loads, parameter variations and sensing uncertainties. This paper proposes three control strategies...

briefingwire.com 

### Capacitor For Power Electronic Market Size and Share Report Industry 2035

The global Capacitor For Power Electronic Market is projected to reach around \$55.05 Billion by 2035, growing from \$32.94 Billion in 2025 and about \$31.29 Billion in 2024, reflecting a compound annual growth rate (CAGR) of about 5.27% during...

 More Headlines at <https://app.headlinehunter.ai>



# Advancements in GaN Power Electronics Technology

## Summary

- ▶ **GaN in Robotics:** Gallium Nitride (GaN) technology is driving innovation in robotics. Companies are releasing integrated GaN power stages and motor drive inverters. These components are specifically designed for humanoid robots, drones, and other compact platforms. [2][5][6]
- ▶ **Expanding GaN Applications:** GaN power devices are expanding beyond consumer electronics into demanding sectors. They are being adopted in AI data centers, electric vehicles, and industrial systems. This growth is fueled by GaN's efficiency and performance over silicon MOSFETs. [1][3][7]
- ▶ **Industry-Led Innovation:** Key industry players are advancing GaN technology through new products and events. Texas Instruments is developing 800V power for AI, while EPC and Infineon are showcasing solutions for robotics and data centers at industry forums and conferences. [1][8][9]

## Risks & Chances

### Risks

- ▶ **Thermal Management**
- ▶ **System Complexity**
- ▶ **Grid Modernization Lag**

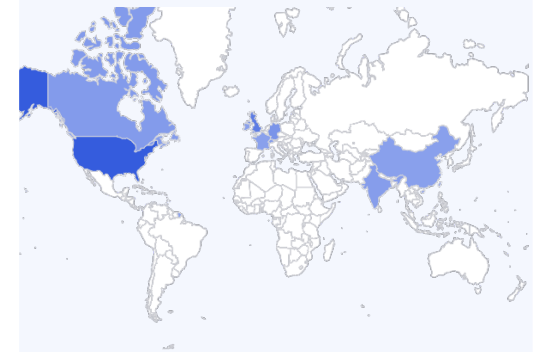
### Chances

- ▶ **Robotics Advancement**
- ▶ **Improved Efficiency**
- ▶ **AI Infrastructure**

## Impact

### Countries

News on this topic originates predominantly from the United States, with a significant number of articles also coming from the United Kingdom.



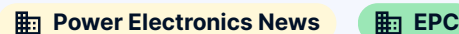
## Sentiment



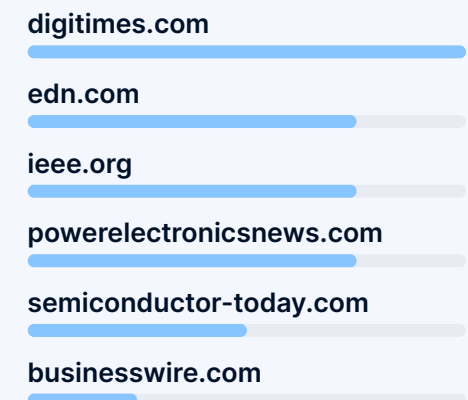
**Positive Reporting:** The articles highlight significant advancements and growing adoption of Gallium Nitride (GaN) technology, particularly for enhancing efficiency in robotics, AI data centers, and power conversion systems. New product launches are frequently reported as key enablers for innovation in these fields. [1][2][3][4]

**Negative Reporting:** The primary challenges reported relate to infrastructure and technical limitations. The US power grid is described as outdated and unable to keep pace with modern power electronics, while thermal management in high-density systems like AI servers remains a significant hurdle. [10][11]

## People and Organizations



## Top Sources



# Advancements in GaN Power Electronics Technology

## In Numbers

53

Headlines

27

Sources

3

Languages

## Topic

[digitimes.com](https://www.digitimes.com)


### Texas Instruments VP makes the case for 800V power and GaN in AI data centers

Texas Instruments (TI) plans to showcase its 800V power architecture-based AI data center solutions at Computex 2026, featuring applications in humanoid robots, automotive, and edge AI. Ahead of the event, TI executives have been engaging...

[edn.com](https://www.edn.com)


### GaN ICs drive robotics and motion control - EDN

Four 100-V GaN power-stage ICs from EPC are optimized for motor drives in humanoid robots, drones, and battery-powered platforms.

[ieee.org](https://www.ieee.org)


### Plenty of Room at the Bottom and Top: Future Perspectives on GaN Power Devices and Applications

GaN power devices have achieved commercial success primarily in the 30-900 V range, particularly in consumer electronics. Yet, to borrow from Richard Feynman's famous remark, there remains plenty of room at both the "bottom" and the "top"...

[businesswire.com](https://www.businesswire.com)

### EPC Expands the Offering of 100 V Integrated GaN Power Stages Optimized for Motor Drives With Improved Control...

EL SEGUNDO, Calif.--(BUSINESS WIRE)--Efficient Power Conversion (EPC), a leader in enhancement-mode gallium nitride (eGaN ) power devices, has introduced a new generation of 100 V integrated GaN power-stage ICs - EPC23108, EPC23109,...

[semiconductor-today.com](https://www.semiconductor-today.com)


### EPC adds 3-phase BLDC motor drive inverter evaluation board for humanoid robot joint applications

Integrated GaN power stage with onboard control, sensing and communication delivers up to 20ARMS in a 32mm circular design

[eetindia.co.in](https://www.eetindia.co.in)


### GaN's Technological Superiority: How EPC is Winning Against MOSFETs in Power Conversion

GaN technology is increasingly positioning itself as a viable replacement for silicon in modern power conversion systems. The post GaN's Technological Superiority: How EPC is Winning Against MOSFETs in Power Conversion appeared first on EE...

[linkedin.com](https://www.linkedin.com)

### The annual Infineon Wide-Bandgap Developer Forum is back for another exciting edition, on 17 March 2026!

The annual Infineon Wide-Bandgap Developer Forum is back for another exciting edition, on 17 March 2026! Wide-bandgap technologies continue to be at the forefront of power semiconductors, with its ability to deliver fast, energy-efficient...

 More Headlines at <https://app.headlinehunter.ai>



# Robotics Technology and Industry Trends

## Summary

- ▶ **Humanoid Robot Development:** The development of humanoid robots is accelerating through strategic industry partnerships. Companies like Schaeffler, Infineon, and NVIDIA are collaborating on key components like high-performance actuators. These robots are being tested in various sectors. [1][2][5]
- ▶ **Advanced Power Components:** Innovations in power electronics are enabling more advanced and efficient robots. Key developments include integrated joint actuators, fast-charging battery systems, and wireless power transfer. Energy efficiency is a critical design focus for future automation. [6][7][8]
- ▶ **AI-Driven Robotics:** AI is transforming robotics from pre-programmed machines into intelligent systems. Companies are using AI trainers and real-world data to teach robots complex tasks. This "Physical AI" allows robots to perceive, reason, and operate in dynamic environments. [9][10][11]

## Risks & Chances

### Risks

- ▶ **High Cost**
- ▶ **Energy Consumption**
- ▶ **Adoption Barriers**

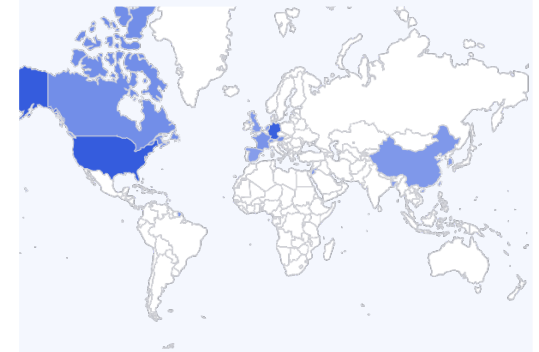
### Chances

- ▶ **AI Integration**
- ▶ **Component Innovation**
- ▶ **Market Expansion**

## Impact

### Countries

News coverage on this topic is predominantly sourced from the United States and Germany.



## Sentiment

Negative

Neutral

Positive

**Positive Reporting:** The industry is experiencing significant growth through strategic partnerships, such as those between Schaeffler and Hexagon Robotics or Infineon and NVIDIA, to advance humanoid robotics. These collaborations are accelerating innovation in AI, power systems, and components, attracting substantial funding. [1][2][3][4]

**Negative Reporting:** Significant barriers to mass adoption are reported, with the high cost of advanced machines making humanoid robots currently too expensive for the mass market. Furthermore, accelerating robotics adoption is creating new constraints, as energy consumption emerges as a critical concern for future development. [7][12][13]

### People and Organizations

 **Schaeffler**

### Top Sources

[roboticsandautomationnews.com](https://roboticsandautomationnews.com)

[powerelectronicsnews.com](https://powerelectronicsnews.com)

[highways.today](https://highways.today)

[silicon-saxony.de](https://silicon-saxony.de)

[blick.ch](https://blick.ch)

[openpr.com](https://openpr.com)

# Robotics Technology and Industry Trends

## In Numbers

**51**

Headlines

**43**

Sources

**6**

Languages

## Topic

[roboticsandautomationnews.com](https://roboticsandautomationnews.com) 

### Schaeffler agrees partnership with Hexagon Robotics to develop humanoid robotics

Schaeffler, an industrial motion technology company, has agreed a strategic technology partnership in the field of humanoid robotics with the Swiss company Hexagon Robotics. The cooperation centers...

[powerelectronicsnews.com](https://powerelectronicsnews.com) 

### Infineon and NVIDIA Join Forces to Advance Humanoid Robotics with High-Performance Motor Control Solutions

Infineon's solutions drive advancements in humanoid robotics, enabling safe and secure sensing, movement, action, and connectivity. The post Infineon and NVIDIA Join Forces to Advance Humanoid Robotics with High-Performance Motor Control...

[highways.today](https://highways.today) 

### Nyobolt Fast Charging Technology Powering Autonomous Infrastructure Nyobolt Fast Charging Technology Powering...

Nyobolt Fast Charging Technology Powering Autonomous Infrastructure Artificial intelligence may dominate headlines through software breakthroughs and Nyobolt has secured \$60 million in funding to accelerate ultra-fast charging and high-power...

[blick.ch](https://blick.ch) 

### Will humanoid robots save the automotive industry?

Tesla, Hyundai, and other automakers are betting that building robots will soon become their core business. Can they succeed? And should German manufacturers also jump on this bandwagon?

[openpr.com](https://openpr.com) 

### Global Integrated Joint Actuator Market Annual Research Report 2026

I Definition An Integrated Joint Actuator refers to a highly compact robotic joint drive system that integrates a motor gearbox driver encoder and control unit into a single module Its core characteristic is the consolidation of the traditional distributed...

[roboticsandautomationnews.com](https://roboticsandautomationnews.com) 

### Energy-efficient robotics: Designing greener automation systems for a power-constrained future

As robotics adoption accelerates across manufacturing, logistics, and infrastructure, energy consumption is emerging as a critical constraint. What was once a secondary engineering consideration is...

[stocktitan.net](https://stocktitan.net) 

### 6X More Power, 40% Lighter: Symbotic's Warehouse Robots Get Revolutionary Battery Upgrade from Nyobolt

Symbotic partners with Nyobolt for enhanced robot batteries offering 6X energy capacity, 40% weight reduction, and 10X longer lifecycle vs Li-ion. Retrofit-compatible with existing SymBot systems.

[More Headlines at https://app.headlinehunter.ai](https://app.headlinehunter.ai)



**Villach**

Europastraße 12  
9524 Villach, Kärnten  
04242 42416

[office@silicon-alps.at](mailto:office@silicon-alps.at)

**Graz**

Inffeldgasse 33  
8010 Graz, Steiermark

[www.silicon-alps.at](http://www.silicon-alps.at)

