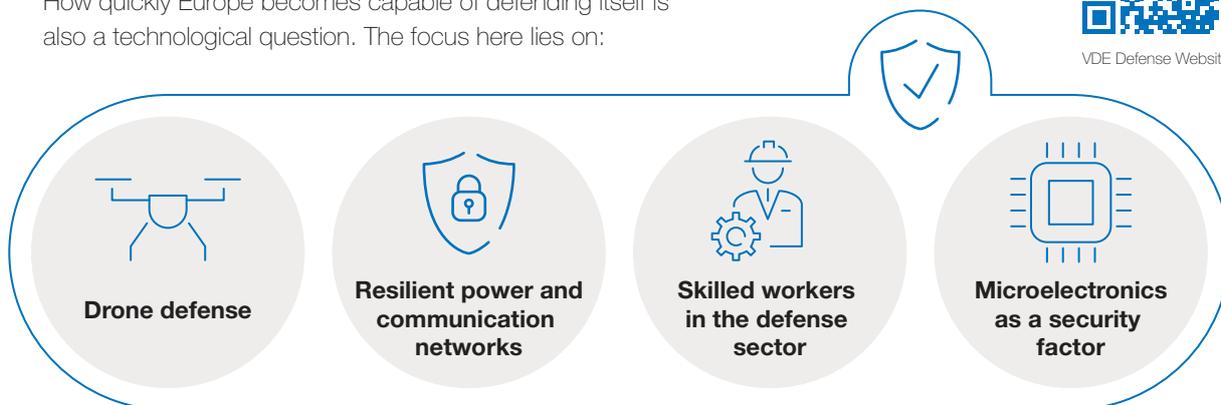


New division at VDE: VDE Defense

How quickly Europe becomes capable of defending itself is also a technological question. The focus here lies on:



VDE Defense Website



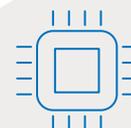
Drone defense



Resilient power and communication networks



Skilled workers in the defense sector



Microelectronics as a security factor

VDE Policy Brief

Edition 4/2025

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Resilience as a security factor

Germany has become NATO's logistical hub in Europe. This comes with responsibility. A key issue concerns power and communication networks – their resilience is an integral part of security policy. Healthcare must also be considered.

Power supply and communication technologies are highly interdependent. For example, in the energy sector, digital control technologies rely on stable communication links, which in turn require a secure power supply. These far-reaching interdependencies are becoming increasingly important: Instead of fewer large power plants, hundreds of thousands of decentralized renewable energy installations will stabilize the electricity system in the future – controlled via digital communication networks that are potentially vulnerable to cyberattacks.

Polymakers have responded: the Federal Ministry for Economic Affairs and Energy's system stability roadmap sets the technical guidelines for a stable power system by 2035. This also considers the acute threats that have existed since spring 2022. VDE plays a central role in implementing system stability: more than half of the roadmap measures are coordinated or co-designed by VDE.

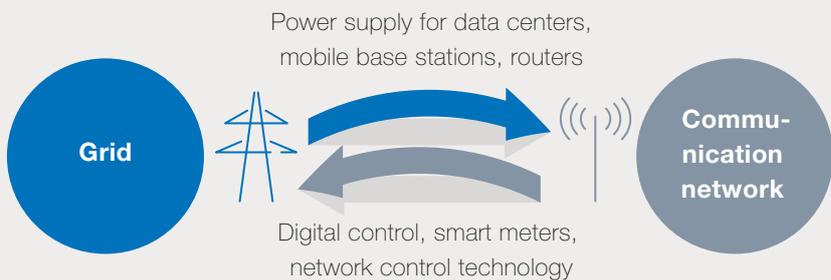
Greater resilience doesn't happen automatically. It must be politically demanded, technically implemented, and practiced organizationally. Only then can Germany reliably fulfill its security policy role – including within the framework of the NATO defense alliance.

The tasks are:

- **Coordinate decentralized actors:** information from PV systems, storage facilities, and charging infrastructure must be available in real time so that grid operators can detect and stabilize system states early on.
- **Design resilient communication systems:** control and data networks must remain functional even during power outages – through emergency power supplies, physically protected data centers, and the highest cybersecurity standards.

Interdependence of power and communication

No power, no communication – no communication, no network stability.



- **Expand grid reserves and black start capability:** the transition to renewables requires additional grid buffers and clearly defined restart strategies after widespread disruptions.
- **Strengthening skills and awareness:** network operators, authorities, and security agencies need binding training standards on system stability, cyber resilience, and crisis response.
- **Ensuring resilience in the healthcare sector:** to avoid bottlenecks, policymakers should invest in the training of biomedical engineering specialists, diversify supply chains, and establish intelligent warehousing systems for critical medical devices.

-  **VDE FNN website**
System stability roadmap
-  **VDE FNN position**
Adopting connection network codes
-  **VDE DGBMT position**
German society for biomedical engineering within VDE
-  **VDE website**
Review of the EFTS 2024
-  **Article from VDE Policy Brief 2/2025**
System stability: preventing future blackouts
-  **Article from VDE Policy Brief 1/2024**
Electricity and communication networks: strengthening resilience

Reducing Europe's dependence

China's export restrictions on rare earths reveal Europe's dramatic dependencies – comparable to the supply bottlenecks during the coronavirus pandemic. The result was the EU Chips Act. Today, policymakers must once again act decisively regarding microelectronics, a key technology at the heart of global power politics.

Microchips form the basis for defense and security, energy supply, and communication. They are an essential part of our resilience. Without microchips, there is no reliable drone defense, no air defense – civilian or military. It is all the more concerning that Europe's share of global semiconductor production has fallen from 20 percent to under 8 percent in two decades – contrary to political objectives. Dangerous gaps exist in strategic areas such as logic and power semiconductors. It is clear: Europe must master key technological competencies itself in order to act with economic and political sovereignty.

Technological sovereignty does not mean isolation. It is the ability to understand, develop, and independently deploy key technologies. This requires strategic partnerships with sites that share our values – and at the same time a clear strengthening of core European competencies. Clusters like Silicon Saxony and research initiatives in quantum and power electronics demonstrate that excellence still exists – it must be secured for the long term and transferred into a robust industrial ecosystem.

This leads to the following conclusions for political action:

- **Implement the EU Chips Act 2.0:** the European Commission should launch a second funding phase specifically addressing technological gaps in design, manufacturing, and advanced packaging. National microelectronics strategies must also address these issues. Defense aspects must be incorporated.
- **Align national funding programs:** national funding programs must be concentrated on high-tech sites and complemented by industrial policy measures. Furthermore, research, startups, and industry need to be more closely integrated.
- **Promote quantum technologies:** a global race for quantum technologies has begun. Leading nations in this area will have access to extremely powerful computers, secure networks, and much more. Germany needs supported initiatives to translate its undisputed expertise in basic research into products.

MST Congress sets trends

At the end of October, around 500 participants from politics, business, and science met at the 11th MicroSystemTechnology Congress put on by VDE and the Federal Ministry of Education and Research (BMB-FTR). The focus was on the role of microelectronics in global supply chains, the transfer of research into marketable products, and the promotion of young talent. At the congress, the winners of INVENT a CHIP and COSIMA were also honored. With competitions for school and university students, VDE, together with the BMFTR, strengthens microelectronics skills at an early stage.



- **Expand raw material sovereignty:** supply chains for rare earth elements must be diversified, recycling rates increased, and alternative materials promoted.
- **Strengthen international technology and skilled worker alliances:** cooperation with partner countries should be expanded to ensure knowledge transfer and security of supply.



VDE position paper

Hidden Electronics IV



VDE position paper

Quantum technologies



VDE website

Review of the MicroSystemTechnology Congress 2025



VDE website

Review of the EFTS 2025



Article from VDE Policy Brief 1/2025

Microelectronics: establishing technological sovereignty

DKE standard for plug-in solar devices

A benchmark for enhanced security – worldwide

More and more people are installing plug-in solar devices, often also called balcony power plants. Market success was long hampered by unclear technical regulations and safety-critical gray areas. The DKE, the standards organization supported by VDE, has now defined a reliable framework for the first time worldwide – one that will guarantee enhanced safety for private electricity generation in Germany, Europe, and around the globe.

The product standard was developed under time pressure. The energy transition is imminent, and policymakers wanted the rapid expansion of simple, quickly installed mini-PV systems. At the same time, risks of electric shock, impermissible feed-in, and overloading of the building's electrical system had to be eliminated. The DKE has now achieved its objectives.

Intensive standardization process as a basis for acceptance

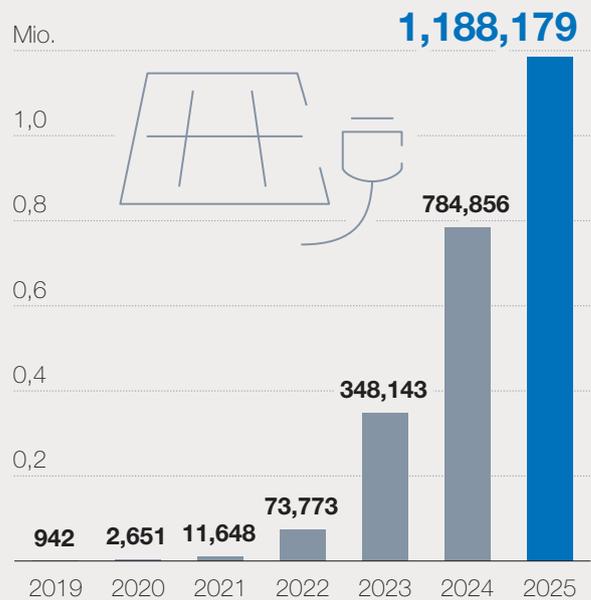
The path to the standard was characterized by broad participation and intensive technical discussions for the DKE. Over 1,000 objections were addressed, and an amicable solution was reached through a mediation process. With its publication in December 2025, a finalized document is now available that provides manufacturers, testing institutions, and market participants with precise specifications – from permissible connection types to new power limits for inverters and PV modules.

EU Commission sees "best practice" in the process and standard

With this product standard, Germany and VDE are taking on a pioneering role: numerous countries are waiting for clear references in order to develop their own regulations. The EU Commission is so enthusiastic about VDE's standard that it recommends it for the whole of Europe. The international standards committee IEC/TC 82 has also expressed interest in incorporating key parts of VDE's standard into international standardization. This will give the standard significance far beyond the domestic market. What is particularly important is that this advantage strengthens domestic manufacturers – especially those who contributed to the coordination process – in global competition.

Balcony PV boom continues

Registered balcony power plants



Source: market master data register, as of November 23, 2025

The product standard guarantees safety and strengthens confidence in a technology that plays an increasingly important role in the decentralized energy system. At the same time, it marks the beginning of further work: plug-in solar devices with energy storage are not yet included. The responsible DKE working group is currently preparing a separate section of the standard.



VDE press release

Balcony power plants: VDE guarantees safety



VDE FNN FAQ

Connecting plug-in solar devices correctly



Article from Policy Brief 2/2024

Balcony power plants: VDE provides safety



Article from Policy Brief 3/2023

Photovoltaics expansion: VDE guarantees safety

E-Mobility as an opportunity

Germany's automotive industry is under immense pressure. Some dramatic developments are emerging for the economy and the labor market. It is imperative that industry, science, and politics now agree on future concepts and master the turnaround of this key industry. VDE is a key partner in this endeavor.

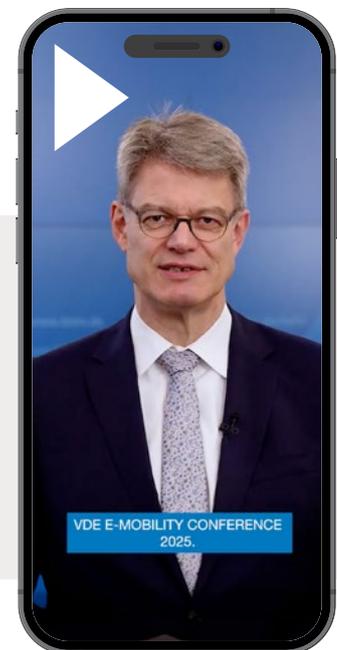
The 4th VDE E-MOBILITY CONFERENCE 2025 brought together all relevant stakeholders in e-mobility in November. The quality and speed of expansion of the charging infrastructure, grid connection, battery technology, and cyber-security will determine whether Germany has a future as a production site for cars and trucks. It is essential to integrate technical and political decisions more closely and in a more targeted manner. VDE's E-MOBILITY CONFERENCE – which reflects the entire electromobility ecosystem and brings together more than 150 experts – has provided the framework for this for years. The patronage of Federal Minister of Transport Patrick Schnieder underscores the importance of this format.

Groundbreaking study published

At the conference, VDE also presented its new study, "A future laden with energy." Key message: electromobility is already far more than just an alternative form of propulsion. It is a central lever for industrial value creation and the energy transition. And Germany has the expertise to continue to succeed on into the future. Key recommendations for action are:

- **Expand charging infrastructure:** a comprehensive charging infrastructure is the backbone of electromobility. Private investments should not be hampered by bureaucratic hurdles.
- **Facilitate simple charging:** charging must be uncomplicated and cost-effective for all user groups. Unified access to charging infrastructure, including price transparency and plug-and-charge standards, must be enshrined in law.
- **Mandatory use of standards:** many interfaces between vehicles, charging infrastructure, and IT systems are still not interoperable. This is necessary to open up new business models and increase acceptance.

- **Accelerate system integration:** electromobility will only realize its benefits for the energy transition with clear price signals and digital measurement and controllability. This requires market-oriented price incentives and a digital infrastructure.
- **Enable bidirectional charging:** in the future, electric cars will not only store electricity but also feed it back into the grid when needed. To do so, we must support pilot projects, clarify legal uncertainties, and continue to develop and coordinate technical charging standards at the European level.
- **Strengthen battery research:** domestic battery technologies must become more competitive. National and European research initiatives for solid-state batteries and efficient manufacturing are needed, as well as strategic collaborations with international pioneers.



Welcome address by Federal Minister of Transport Patrick Schnieder

Patron of VDE's
E-MOBILITY
CONFERENCE 2025



VDE study

Electromobility as a site advantage



VDE website

Review of the 4th VDE E-MOBILITY CONFERENCE



Article from VDE Policy Brief 3/2024

Electromobility: clarify key issues now

VDE – the technology organization



Your contact

Markus B. Jaeger

VDE Global Head of Political Affairs

VDE Verband der Elektrotechnik
Elektronik Informationstechnik e.V.
Bismarckstraße 33
10625 Berlin

Cell +49 171 7631986
markusb.jaeger@vde.com

Contact details as vCard:



Publisher

VDE Verband der Elektrotechnik
Elektronik Informationstechnik e.V.
Merianstraße 28
63069 Offenbach am Main

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Facts and figures

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	Employees	worldwide 2,000
	Honorary experts and members	100,000
	Sites	worldwide over 60
	Research and funding projects	over 175
	Events per year	over 1,600
	Product inspections per year	25,000
	Electrical products bearing VDE's certification mark	billions
	Norms and standards	3,500