

THE RESILIENCE CODE

Read more about resilience, EFTS 2026, and the VDE Summer Reception in Brussels starting on page 2.

“Europe needs to move from ‘Security by Design’ to ‘Resilience by Design’.”

Ansgar Hinz
VDE Chairman

“Be prepared! Russia is here – and it is a real threat.”

Galyna Rospopa
Director of Communications,
Lvivoblenergo

“We need the next generation of engineers to defend European values.”

Wolfgang Wien
Lieutenant General, German Military
Representative for NATO and the EU

VDE Policy Brief

Edition 3/2026

European Future Technology Summit 2026 – EFTS

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Creating European resilience

Europe is increasingly facing attacks on critical infrastructure and hybrid warfare from the Russian sphere of influence. That places an increased focus on the ability to maintain central services despite disruptions. This shaped the discussions at the EFTS in Brussels in early September. The key takeaway: resilience is a basic requirement for European sovereignty, democratic stability, and economic competitiveness.

The European Future Technology Summit (EFTS) organized by VDE and the European umbrella association, EUREL, has brought about exchanges between stakeholders in politics, industry, science, engineering, and security organizations for years now. In early September 2026, under the summit's motto "The Resilience Code," attendees explored ways for Europe to strengthen its resilience.

Security is a task for society as a whole

Lieutenant General Wolfgang Wien, German Military Representative for NATO and the EU, described the security policy framework. Russia's war is not just directed against Ukraine. The hybrid warfare also aims to undermine institutional trust in other European countries, and to impair governments' ability to act. Wien's message: resilience and security are not tasks that can be solved by governments or armies alone. They require involvement from every part of society - and especially from a strong generation of engineers.

A focus on civil systems

Stefan Schönauer from Hamburger Energienetzen cited the attack on Berlin's power network in January 2026 as an example of how quickly a power outage can become a challenge for society as a whole, encompassing health care, public safety, transit, and telecommunications. One thing is clear: network operators, public authorities, and emergency and security services all need to be able to coordinate their activities even in times of great uncertainty. Civil systems should maintain important functions independently rather than depending on military support.

Energy infrastructure as a strategic goal

Kristina Rimkunaite from the NATO Energy Security Centre of Excellence used Ukraine as an example of how energy infrastructure has become a central target in modern warfare. Since the start of the full-scale Russian invasion, power, gas, and heating networks have been systematically attacked. Restoring the damaged systems, as of today, would take at least ten years and around 77 billion euros. An important lesson for Europe: joint crisis drills for suppliers, public agencies, scientists, and the military can help identify and prevent crises before they occur.

EFTS 2026 – the highlights in a video



Communications are critical infrastructure

Galyna Rospopa from the Ukrainian utility company Lvivoblenergo and Marian Shvets from A-Solutions Development showed that citizens need precise, timely information about the cause, scope, and length of the disruption when there is a power outage. To do this, Ukrainian suppliers combine operational data systems with apps, chatbots, social media, and contact centers. Reliable communications reduce uncertainty, protect operational resources, and build trust. That makes them part of the critical infrastructure.

Three additional workshops highlighted the technological building blocks of resilient systems. Marc Bovenschulte from VDI/VDE Innovation + Technik showed how fragmented markets and slow technology transfer put the brakes on Europe's innovative capacity. Reiner Thomä from TU Ilmenau presented mobile communication networks as an option for future sensor systems, for instance to identify drones. Stefan Liesner from SL Naturenergie pointed out that decentralized production, combined heat and power, and intelligent energy management are important building blocks of robust energy systems.

Before the workshop phase, participants visited the European Commission and the European Parliament. With Member of European Parliament Hildegard Bentele, they mainly discussed critical raw materials - the Critical Raw Materials Act is meant to reduce dependencies and secure the supply of raw materials for key European technologies.

The five dimensions of resilience

1. **Societal resilience:** Democratic societies need to build trust, fight disinformation, and protect societal cohesion.
2. **Resilience of critical infrastructures:** Critical infrastructures need to withstand disruptions and be restored quickly after failures.
3. **Technological sovereignty:** Europe needs strategic capabilities in the areas of semiconductors, artificial intelligence, communication technologies, and other key technologies.
4. **Industrial resilience:** Innovation must be transferred to scalable production capacity and operational capabilities.
5. **Human resilience:** Engineers, researchers, operators, and citizens will always be the foundation of resilient systems.

What all of the presentations and workshops had in common: resilience does not mean an absence of vulnerability. It is the ability to predict risks, to withstand burdens, to adapt and recover quickly. The important thing is to build up critical infrastructures, technological capability, and social supports now. Europe needs resilience so it can remain free and capable to act even under pressure.



VDE Politics website

Detailed follow-up report on the EFTS 2026



Website

EUREL



Article from the VDE Policy Brief 3/2025

EFTS 2025: The next generation is ready

VDE Summer Reception 2026: From 'Security by Design' to 'Resilience by Design'."

At his keynote during the VDE Summer Reception in North Rhine-Westphalia's EU Representation, VDE Chairman Ansgar Hinz called for a paradigm shift: while the traditional security approach of "Security by Design" aims to prevent attacks, "Resilience by Design" assumes that disruptions can occur despite all the protective measures – and that systems will still need to maintain key functions and restore them quickly. Hinz combined this approach with technological sovereignty, future technologies and key technologies, as well as audits and certifications as the basis for building trust.

Micha Cornnick from the cabinet of the EU Commissioner for Defense and Aerospace Andrius Kubilius connected this with European defense policy. His keynote, "Defence Ready 2030," focused on industrial readiness. Deterrence, he said, requires not just capable armed forces, but also resilient industrial ecosystems that can quickly ramp up their production capacity in the event of a crisis.

Joint procurement, interoperability, and European production capacity thus become security factors. His message: "Deterrence is based on readiness – and readiness is based on industrial resilience."

The human face of resilience was demonstrated in the conversation between Markus B. Jaeger, Global Head of Political Affairs of VDE and Head of VDE Defense, and Galyna Rospopa. The Communications Director of the Ukrainian utility company Lvivoblenergo described how Ukrainian families and utility companies continue their day-to-day activities and maintain their supply despite missile and drone strikes. Their experience shows that resilience comes mainly from people who take responsibility and are still able to act even under extreme strain. Their message for Europe was brief: "Be prepared!" Resilience cannot emerge only during a crisis, but needs to be built up long before that.

Initiating a paradigm shift now for more resilience

Due to the energy transition, Germany's distribution networks are reaching their limits. A current study from VDE shows what a network of the future might look like. A very important side effect: more resilience and lower network fees. Policymakers are called upon to incentivize this concept.

Distribution networks are largely operated statically; the capacities and operating thresholds are often based on rarely-occurring maximum values. As a result, network resources are under-utilized, with billions flowing into development – while supply security is coming under pressure. Help can come from [the cellular concept by the Society for Energy Technology within VDE \(VDE ETG\)](#). The actual network status is continuously documented, and the available supply and reference outputs are determined dynamically.

The good news: the technical solutions are available. The cellular distribution network is not an abrupt systematic change, but an evolutionary further development of the existing power system. Key tasks are:

- **Digitalization:** network statuses need to be precise enough to allow for largely automated cellular operations. Measurement values, forecasts, and digital network twins must be combined so that decentralized cluster managers can make independent decisions, for instance at local network stations and substations.

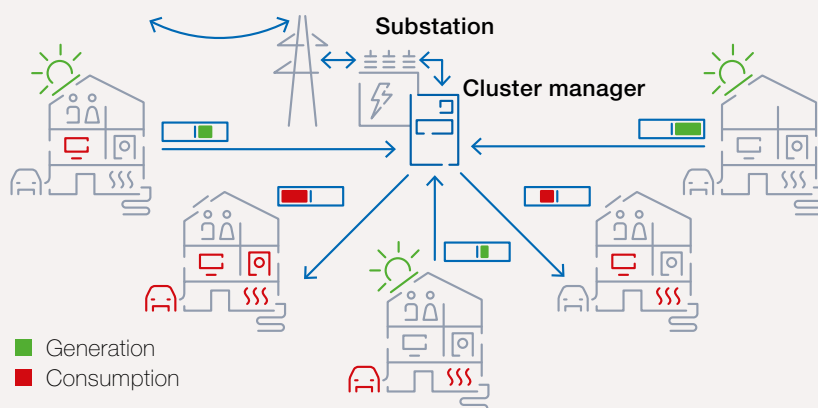
- **Standardization:** in the future, network operators will need to integrate millions of decentralized systems into automatic operations. That will require standardized interfaces, communication paths, control algorithms, and grid codes as well as coordinated activities between the actors.
- **Regulation:** dynamic network operations reveal their full benefits only when flexible supply and consumption can also be mapped in a meaningful regulatory and economic way.
- **Transformation:** the conversion must take place during ongoing operations. Protection concepts, network control stations, telecontrol technology, smart-meter infrastructure, and existing systems will need to be gradually further developed and connected to one another.

The cellular distribution network offers enormous opportunity. According to the study, the connection capacity of the existing network structures can be increased by a factor of three to five. Another aspect that is at least as important: the increased supply security. Since every cell can act autonomously, disruptions and overloads are limited to the local level. In addition, in the event of a blackout, clusters

can temporarily disconnect from the next-highest network. The importance of this aspect cannot be underestimated, especially in times of terrorist threats.

The cellular network

Generation and consumption are balanced out right where they are produced – for instance in residential buildings. Multiple cells are combined into clusters, and the current flows are coordinated automatically. The next-highest network level balances out overages and deficits only if more power is generated or needed locally. Conversely, the clusters also consider the status of the higher-level networks, and will discharge and stabilize them whenever possible.



 **VDE ETG Study**
The cellular distribution network

 **Article from Policy Brief 2/2026**
Managing low voltage

 **Article from Policy Brief 1/2026**
Curbing cost increases in distribution networks

 **Article from Policy Brief 3/2025**
Planning the energy transition

More than half are emigrating

Germany's electrical engineering and information technology degrees have an excellent worldwide reputation. Every year, they attract thousands of students from around the world. Germany is shaping the professional field – and that's a good thing. But the number of students dropping out is higher than the average, and very few graduates remain in the German job market. An undesirable development.

At the universities, international students make up 83 percent of the first-semester Master's students in electrical engineering and information technology. Given the shortage of skilled workers, the international attractiveness of Germany's teaching is good news. However, this group abandons its studies at an above-average rate, and talent is lost. In addition, of the international students who successfully complete a Master's, more than half leave Germany immediately afterward.

Meanwhile, the German government has invested a significant amount in their education – an average of 117,000 euros per degree – but only benefits from those who stay in the country.

The fact is: the increasing shortage of skilled workers is threatening competitive capability in countless future-oriented fields, from AI applications to the energy transition to defense. Thus it is in Germany's national interest for colleges and universities to primarily educate people who want to go on to have an

engineering career at domestic companies. Four approaches to help this succeed:

■ **Make the admissions criteria more specific.**

Because international students come into Master's programs with varying levels of previous knowledge, that creates more work for the instructors. Demonstrable criteria like core modules that can be completed for admission to the Master's program, a scientific Bachelor's thesis, or proof of practical experience could reduce this while also lowering the dropout rate.

■ **Reform the financing.** The financing key for universities is currently intended mainly for first-semester figures. Funding should be based more closely on academic success – which will reward universities that successfully help more students graduate without lowering the standards. At the same time, states need to see electrical engineering as an important key field of national interest, and provide corresponding basic financing.

■ **Allow tuition fees.** Moderate fees for non-EU international students, based on the model used in Baden-Württemberg, should not be taboo. The income could lead to better support for academic programs and job searches, for extensive reviews of the admission standards, or for building new international partnerships.

■ **Promote longer stays through language skills.**

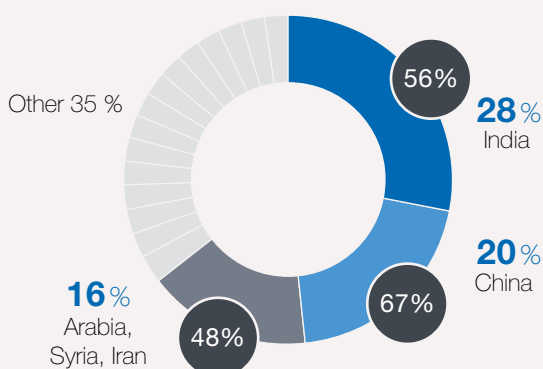
Lacking German skills make it hard for many graduates to enter the professional world. Given a free course offering during the semester, the cost for acquiring German skills should not be sanctioned when the regular period of study is exceeded.

Security risk and high return rate

Three of the most important countries of origin – China, Iran, and Syria – are considered states with particular security risks. The estimated return rate, about two-thirds, is highest for students from China. That puts twice as much pressure on the usable potential for defense and critical infrastructure, through security requirements as well as the return rate.

Share of international students and return rates

- Share of returnees to their region of origin



Source: VDE (Survey of electrotechnical departments; survey of university instructors in electrical engineering and information technology)



VDE Info

Universities: electrical engineering and information technology 2026



Article from VDE Policy Brief 2/2026

Shortage of skilled workers: the risk to technological sovereignty

Preventing parallel structures

The rollout of intelligent measurement systems (iMSys) is picking up steam. That includes private households. The systems are setting European-wide standards for cybersecurity and quality; they have been proven in practice and their development targets are being met. Nonetheless, the German government wants to introduce an additional technology version, the Smart Meter Light. From the perspective of VDE FNN, that poses a risk of expensive parallel structures.

Meanwhile, more than four million iMSys have been installed, primarily in small companies and single-family homes with high power consumption. In the next few years, the rollout will also increasingly include apartments in multi-unit buildings. As soon as an iMSys has been installed, all the other meters can be connected efficiently. Why has this important step not been taken yet? Because Germany has defined very high standards for cybersecurity, interoperability, and quality. That initially reduced the development speed. And yet – by 2034, three-fourths of all end customers should be connected to the grid via iMSys. That corresponds to the EU Commission's target.

Smart Meter Light = senseless parallel structures

It is completely incomprehensible that the German government is still pursuing the idea of the Smart Meter Light. In a discussion paper, VDE FNN analyzed potential technologies that could be used in the Smart Meter Light approach. The result: not one of them is ready for the German market or has

regulatory approval. And instead of creating the publicized simplification, it would likely cause the measurement structure to fragment into parallel system worlds.

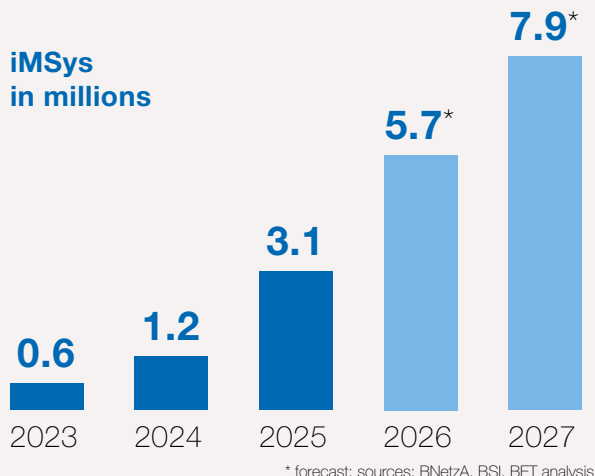
Building a new technology path...

- ...requires lengthy effort for standardization, norms, and development;
- ...ties up human and technical resources that are needed for the iMSys rollout;
- ...reduces scaling effects for the established iMSys technology and makes it more expensive to digitalize the energy system;
- ...prevents value creation in Germany – while the established iMSys and digital meters are produced and developed by medium-sized German enterprises, the Light products come mainly from Asia. That also brings up serious security concerns.

In VDE FNN's view, it is essential to confirm the existing rollout path for intelligent measurement systems as a basis for the further digitalization of the energy system, and to ensure investment and planning reliability for all participants.

iMSys rollout picks up steam

As of the end of 2025, a total of 3.1 million intelligent measurement systems (iMSys) had been installed. 1.1 million of these were required installations. The legally required rate of 20 percent was exceeded by 3.3 percentage points in this segment.



The digital measurement system of the future

In the future, private end customers will also benefit from dynamic electricity rates. For instance, if electricity is cheaper in the middle of the day because of high supply from photovoltaic systems, they could plan to run their washing machines or dishwashers then and save money. That requires exact measurement values, which will be recorded and transmitted via iMSys according to the Metering Point Operation Act.



VDE FNN Impuls

Rollout succeeds with existing smart-meter infrastructure



VDE FNN News

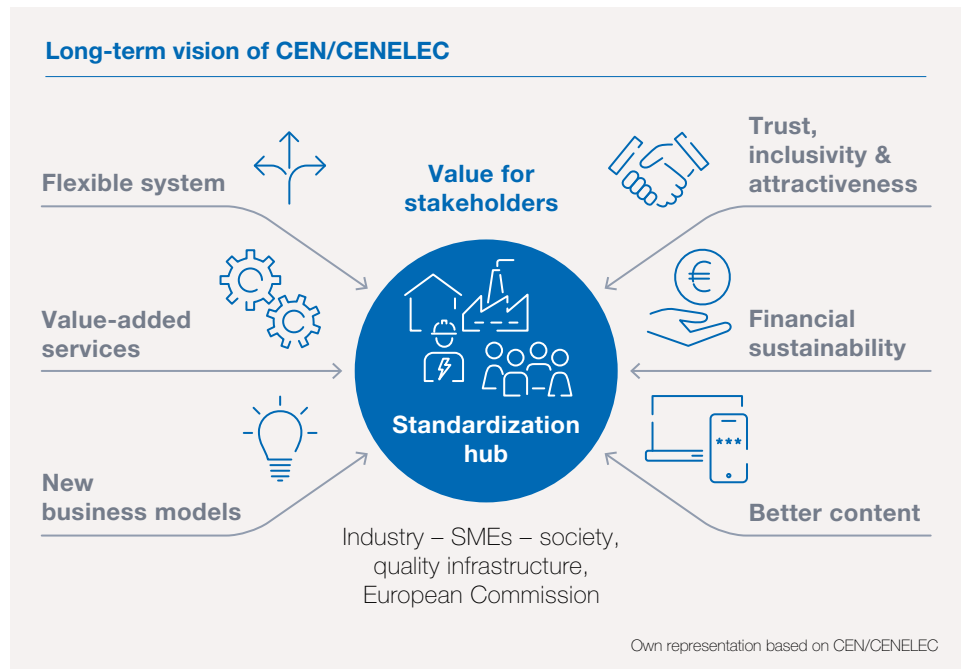
Why the accelerated rollout can succeed using the existing smart-meter infrastructure

Faster, more digital, more open

The EU Commission is currently revising the European standardization regulation. The important targets: produce standards even more quickly, promote digital solutions, optimally integrate innovation drivers. Europe's standardization organizations, CEN and CENELEC – supported particularly by the DKE – are accompanying this important process and defining a specific way to implement the targets.

Those who help define the world-wide standards also define the future markets and strengthen their own competitive capability. Europe's industry has been doing this side by side with the national and European standardization organizations, like the [DKE](#), for decades. To make sure it stays that way, the 43 members of CEN and CENELEC approved a transformation of their existing standardization structures in June 2026, with the "Cyprus Commitment." The central building block is the Standardization Hub. It focuses on three main goals:

- **Openness:** startups and SMEs are now important drivers of innovation. They contribute their diverse know-how to consortiums, forums, research and open-source ecosystems, which also work with corporations to develop new standards. The Hub will integrate these stakeholders more effectively into the European standardization processes.
- **Speed:** new ideas will be transferred into the European standardization process more quickly, according to specific criteria. Here, too, the Standardization Hub plays an important role. New content is reviewed here for preliminary approval, assuming a positive result. The established processes then apply on the path to the finalized standard. In this way, standards can be implemented more quickly in the places where the market and regulation need them.
- **Digitalization:** standards will become more digital. The goal is to develop SMART standards. The static PDF document will be converted to machine-readable content that the software can process directly. The DKE has been advancing this key issue for years now.



Protecting values, ensuring influence

The essential point: new content will continue to be reviewed and discussed in the technical committees of the standardization organizations – in other words, in the places where the greatest expertise is gathered and quality is ensured by consensus. The Standardization Hub will evolve into an integration and trust center, providing an opportunity to make political objectives a reality even more quickly, through recognized standards.

That creates a clear-cut task for politics: reforming the European standardization framework should strengthen this transformation, rather than creating parallel structures that weaken Europe's voice internationally.



CEN/CENELEC press release

CEN and CENELEC members sign the Cyprus Commitment



Article from VDE Policy Brief 1/2024

European harmonized standards

VDE – the technology organization

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Facts and figures

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	Sites	worldwide over 60
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	Product inspections per year	25,000
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