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HARTING's Technology Magazine

ELEC-TRIFIES ME!

Energy everywhere, networked, on demand: the opportunities of the All Electric Society

WHY THE FUTURE PICTURE OF THE AES IS CONCLUSIVE

Philip Harting

THE VISION OF AN ALL ELECTRIC AND CONNECTED SOCIETY

Vimal Mahendru, IEC

MOBILISING EVERYTHING: INNOVATION AND INVESTMENT

Holger Lösch, BDI

editorial

What holds the (data) world together at its core

THE ALL ELECTRIC SOCIETY:
A COHERENT VISION OF THE FUTURE

Dear readers,

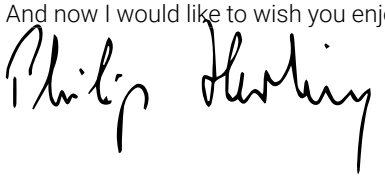
A crystal-clear yes, that's what you'll hear from me when it comes to the All Electric Society.

This is not the time for non-commitment, because non-commitment leads to endless discussions – which means that we lose time. Time that is necessary in the full sense of the word.

For me, the All Electric Society is a vision of the future that is coherent in itself. Extensive networking with convergent data platforms renders energy flows transparent and manageable, and the energy itself is generated by renewable sources. While the AES concept is coherent, there are naturally also areas that are still struggling with electrification, and there are bridging technologies in areas where there is no other way at present. But all in all, the AES makes me optimistic because we can now actively shape the future with vigour and passion.

Be sure to be part of it!

And now I would like to wish you enjoyable reading of our latest tec.news edition.



Philip Harting
Chairman of the Board,
HARTING Technology Group

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HARTING
Pushing Performance
Since 1945

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On the way from sector-based to open technologies

Sector coupling: Here is the solution

Connecting heat networks and transport for the energy transition

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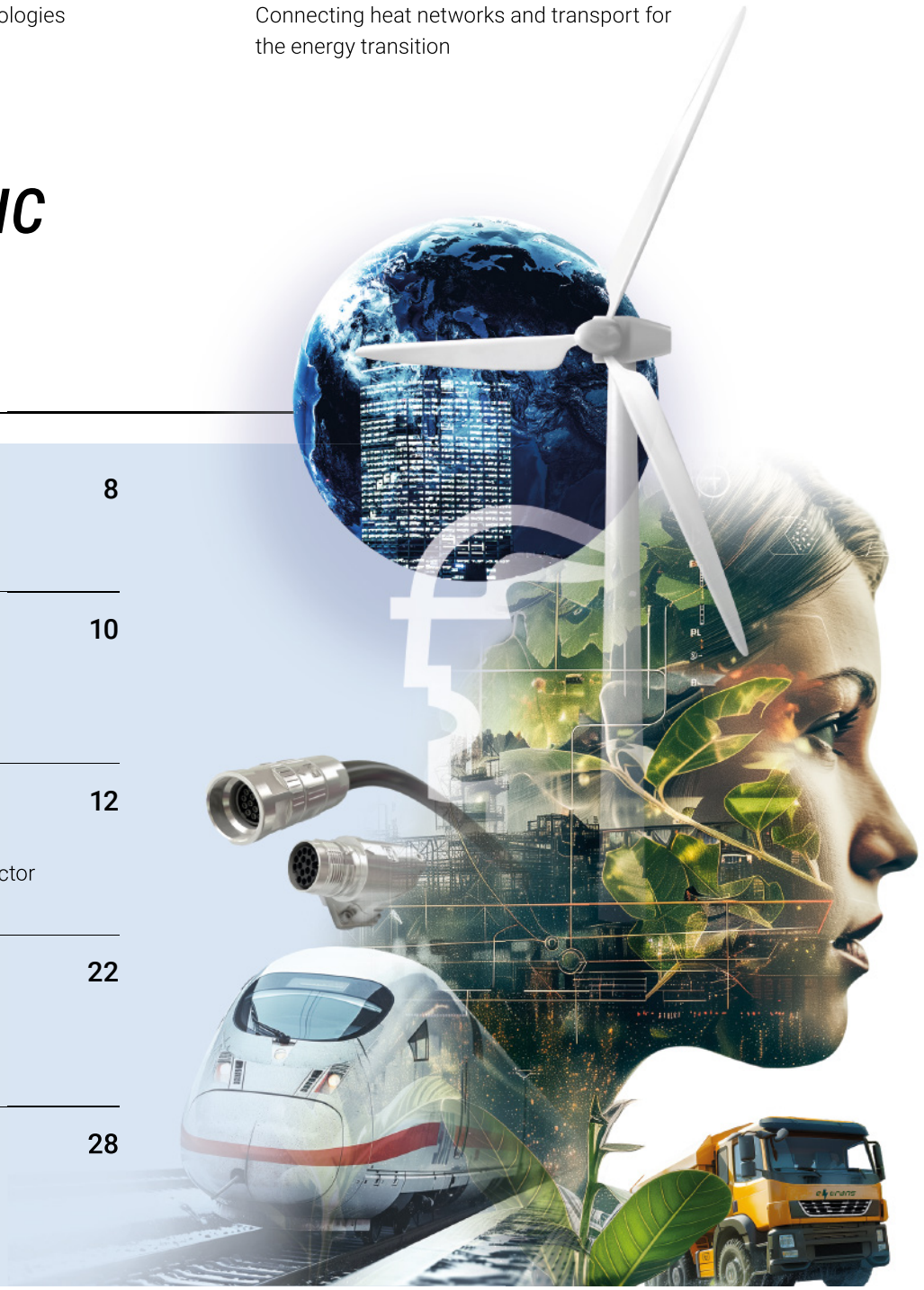
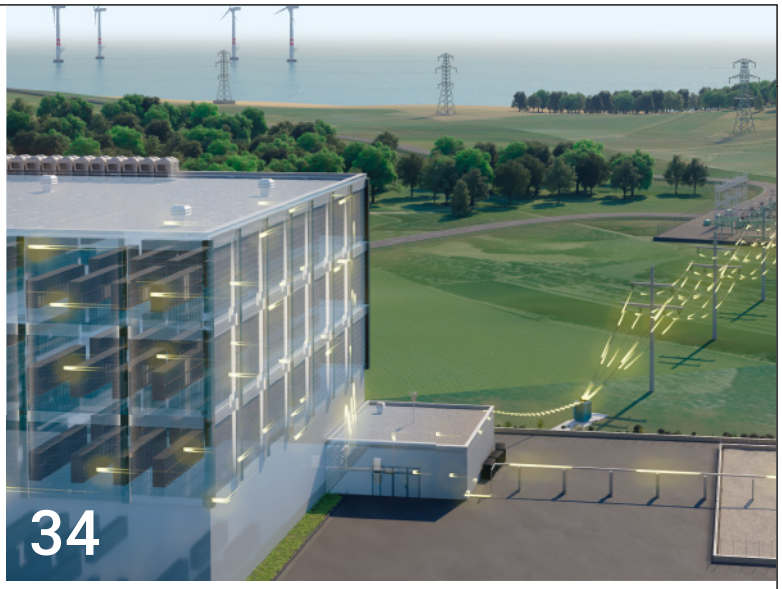


All direct & indirect Electric Society?

tec.news speaks with Holger Lösch, Deputy Managing Director of the Federation of German Industries (BDI)



Efficient powerrrr!

Costs down, availability up: coordinated connectivity from the network infrastructure to the printed circuit board

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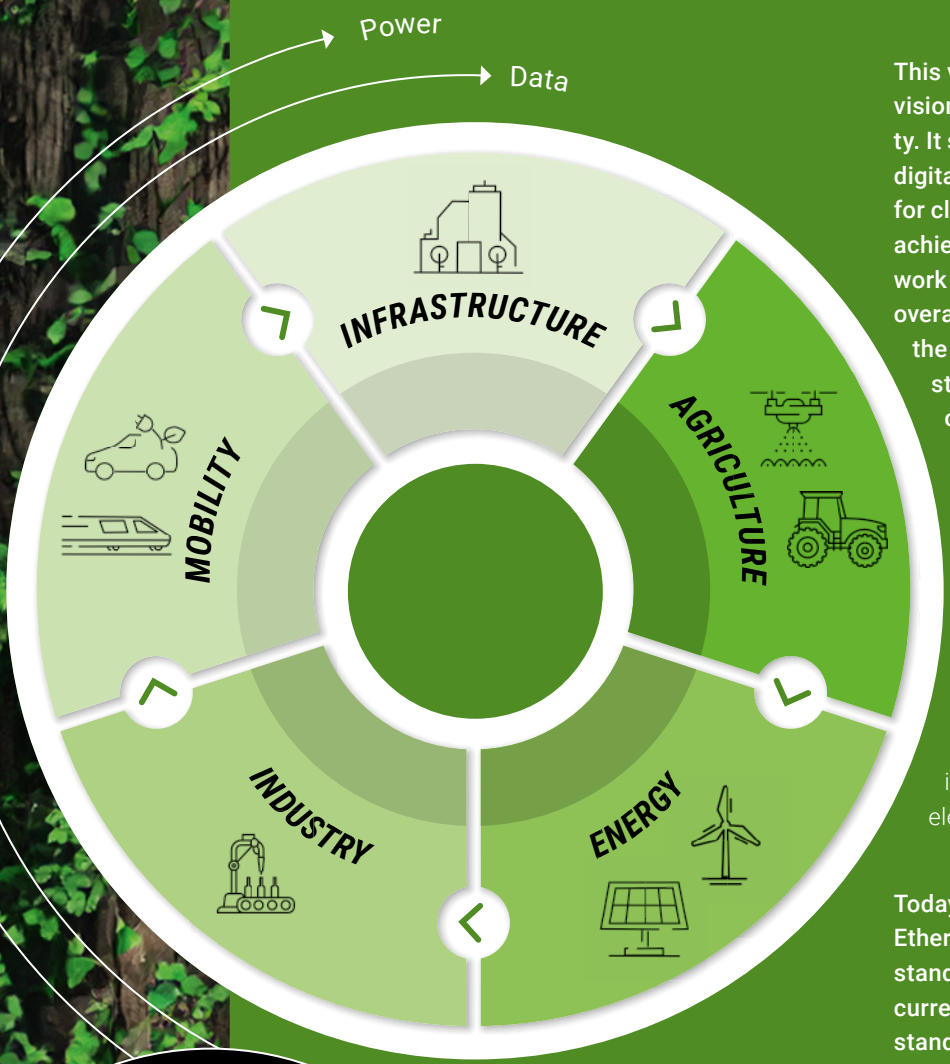
ALL ELECTRIC SOCIETY:

THE BIG PICTURE OF THE FUTURE

On the way from sector-based to open technologies

Philip Harting
CEO of the HARTING Technology Group



This vision casts a broad, encompassing vision of the future, the All Electric Society. It stands for a highly electrified and digitalised world in which the key criteria for climate neutrality are met. In order to achieve this, the relevant sectors must work together. HARTING has outlined an overall picture of these sectors in which the areas of energy, agriculture, infrastructure, mobility and industry have converged and interact.

Until now, these fields have partially formed separate ecosystems. In order for the sectors to converge, we need to accompany the transition from individual, sector-based to open technologies and the associated standards even more consistently. The links between the individual industries will be energy – in this case electricity – and data streams.

Today, technology standards such as Ethernet IEEE 802.3, the digital twin standard IDTA, ODCA for uniform direct current technology and the OPC UA for standardised data exchange are already offering significant leverage for sector coupling.

Individual economic success is based on a clear strategy. However, in view of the major challenges surrounding global warming, a comprehensive view is required. The All Electric Society can provide this framework – and HARTING can fulfil it with innovative products.

Social and technological developments are becoming increasingly interdependent: Decarbonisation, sustainability as well as extreme demographic changes are meeting technical megatrends such as AI, digital twins and modularity.

Given all the diverse challenges, a common goal is needed that all industries must work towards in the interests of a sustainable world.

All Electric Society (AES) = climate-neutral electrified, digitalised world

Since 1996, HARTING has been pursuing a vision that has become ever more topical: "We want to shape the future with technologies for people."

Drivers of progress: international standards and innovative product diversity.

The international standards provide an important orientation for our products. This does not, however, make individual requirements superfluous. Take connectors: Here, the environmental conditions within the sectors, such as submerge application scenarios, for example, remain the characteristic distinguishing features that we must take into account in our product development.

This opens up opportunities for innovative companies to expand their own portfolios, particularly in view of the All Electric Society. For HARTING, these are the connectors that are to an ever increasing degree becoming the lifelines between the sectors. And so, our vision is embarking on a new chapter of its evolution: Connecting the All Electric Society!

All Electric Society

and cabling solutions – does one have anything to do with the other?

Climate change, and with it advancing global warming, has not only set in, but is actually accelerating. There is now a consensus on this between science, politics, business and society. We must all contribute to halting this negative trend. The fact that the world's population is continuing to grow at the same time, thereby increasing the consumption of resources and energy, makes this challenge all the more daunting.

The United Nations' seventeen Sustainable Development Goals came into force in January 2016. The All Electric Society is one of the technological solutions geared to making the aspirations of the United Nations a reality. **Put in a nutshell, I would describe the All Electric Society as follows: Everything that can be electrified will be electrified. There are already enough examples of this: Electric automobiles are replacing the combustion engine, while heat pumps are replacing heating systems using fossil fuels.**

The energy required for this must be clean and green, being generated, for example, by wind and solar power, hydropower or biomass. This energy will then be transported via intelligent electricity grids and - where appropriate - also via hydrogen as a transport and storage medium. **The use of energy must be as efficient as conceivably possible and this is where so-called sector coupling enters the picture. Ideally, this represents an end-to-end physical electricity grid connection between individual sectors such as industry, transport and building infrastructure and their intelligent management.**

In addition to the purely physical networking of the electricity grid, the consumers, systems, etc. must be digitalised accordingly, meaning that they must be capable of communicating. This is the only way to request and transmit the required energy and the relevant status in real time.

A digital infrastructure must therefore also be created between the assets. When everything has been electrified, everything digitalised and everything networked, then we are talking about the All Electric Society. Its maximum expression is a vision that is also being thwarted by many national self-interests. Nevertheless, the basic idea remains the right one – and even if the process of electrifying, digitalising and networking is initially only started within one country and one sector.

"In order to move the big issues, we have to connect them in detail. We make our contribution – pluggable and with cables."

HARTING is also making a contribution to the UN Sustainable Development Goals and the All Electric Society. Plain and simple:

Connecting the All Electric Society!

The world is becoming more electric and this entails transmitting electricity consumers. For this purpose, meanwhile cables have been connected to consumers for a century. This can be executed directly by way of fixed connections or more conveniently and in a more modular way via plug connectors, with which we are supporting the All Electric Society. In addition to connectors themselves, we also offer complete cabling solutions for certain applications, such as robots. **Every electrified asset will also be digitised in future so that it can be networked on the data side.** We have a large portfolio of data connectors for this purpose and supply a corresponding pre-assembled range of cabling for all these interfaces. **Single Pair Ethernet is one technology for networking assets that currently does not have a data interface – and HARTING is also driving things forward here.**

In order to pursue the bigger picture goals, we have to connect the topics in detail, electrically and in terms of data.

HARTING is making its contributions here – pluggable as well as with cables.

Jörg Scheer
Managing Director
HARTING Customised Solutions

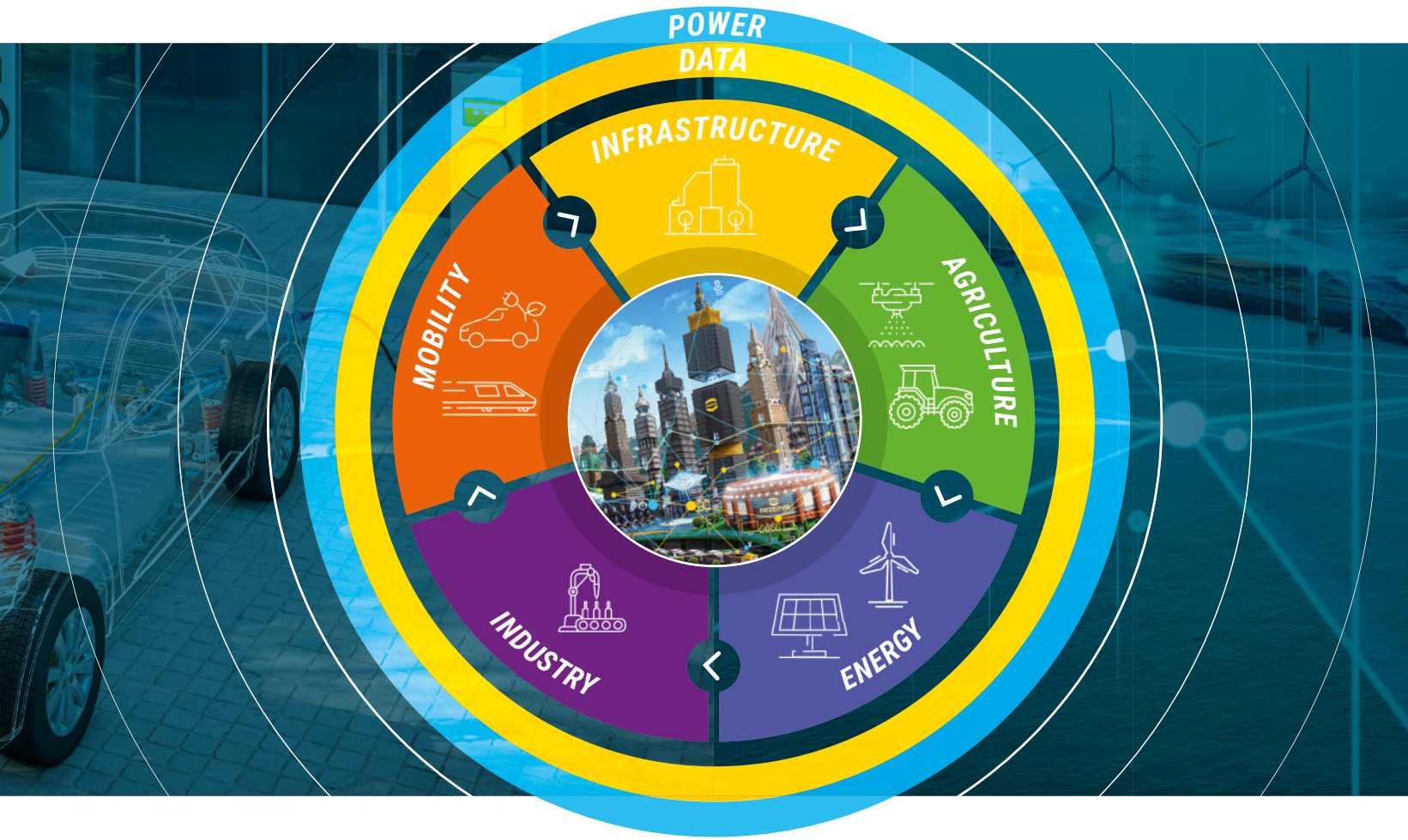
future technologies

EFFICIENT. INTELLIGENT. CONNECTED.

Why we need the All Electric Society and how it works

Typical AES: electrify everything that can be electrified.

Holistic cabling solutions, for example for robots.



future technologies

SECTOR COUPLING

HERE IS THE SOLUTION

Connecting heat networks and transport for the energy transition

How can the energy transition succeed?
Parts of industry and standardisation, including ZVEI, the Association for Electrical, Electronic & Information Technologies (VDE) and DKE, are advocating and campaigning for sector coupling in order to replace fossil fuels with renewable resources. Heat generation and transport are therefore to be linked in terms of data technology and energy. Sectors communicate directly with each other in order to achieve optimum energy efficiency. An interview with Norbert Gemmeke, Managing Director of HARTING Electric, about the role of connectors in this scenario.

tec.news: What technological challenges does sector coupling entail – and what role can connectors play in these solution scenarios?
Norbert Gemmeke: Norbert Gemmeke The only way to achieve CO_2 reductions is by relying on sustainable and therefore renewable energy efficiently. To achieve this, the energy, i.e. the electricity, must be optimally connected, regulated and controlled. Connectors for power and data are crucial here.

Sectors communicate with each other: for optimum energy efficiency.

use in energy storage systems (ESS), but also in machines, energy distributors and their applications in the mobility sector.

More control functions and the use of grid buffers and storage systems are required to balance out the dips and peaks in renewable generation. What does that mean for customers?
Two decisive directions must be considered here: Firstly, the energy involved. This must be provided rapidly, in a straightforward and securely scalable manner – and this can only be realised with plug connectors. On the other hand, control and regulation functions and therefore the data connectors in place will play a decisive role. The intelligent management of energy through the use of software and AI will be a crucial factor here.

standards/norms so that the transitions become seamless and smooth?
We are not only talking about massive volumes, but also about large amounts of energy and high connected loads.

Controlling huge amounts of electricity and data requires standards: in connectivity, ESS, distributors

The high-speed implementation of the AES can only be achieved through standards in connectors, ESS and distributors (hardware and software). This applies to both electricity and data.

On the way to the All-Electric Society (AES), HARTING has specifically identified the Energy, Mobility and Industry sectors. What can industrial production in particular contribute to replacing fossil fuels?
Direct current (DC) is playing a major role in all the areas mentioned. In industry, very high efficiency levels can be achieved through the direct use of wind and solar energy and by harnessing the braking energy of drives.

How can connectors help to support the use of electricity storage systems in industry and boost efficiency?
I would like to look at the bigger picture here: Consistent implementation of the AES will make the world considerably more electric. This requires higher current densities in the most compact of spaces and calls for higher current and voltage levels. On the one hand, this steps up the demands made on connectors. On the other hand, the connectors are becoming more universal and more uniform in terms of their electrical requirements, not only for

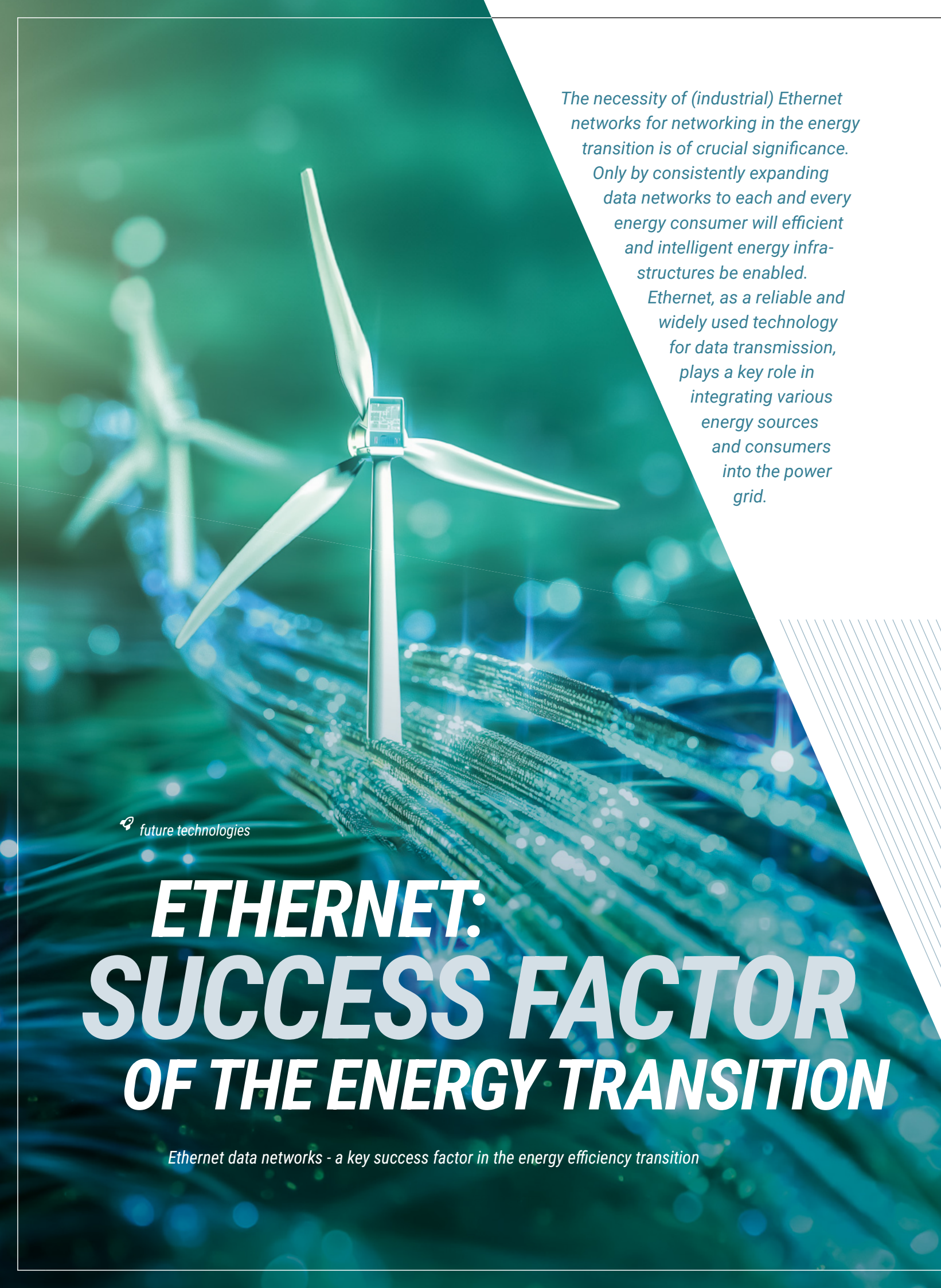
Above all, industry has an interest in a balanced, secure and favourable supply of electricity from renewable energies. Do we have the necessary infrastructure in place in the lifelines of industry to safely drive sector coupling?
At present, we do not yet have such an infrastructure – so this is a vital goal of the AES. The starting points have been set, but the ongoing expansion must still pick up a great deal of speed.

"Direct Current": direct use of wind and solar energy in the industry.

Coordination between the sectors entails the exchange of huge data volumes. The infrastructures involved must be able to communicate. From the point of view of a manufacturer of connection technology, what needs to happen in the area of

In industry, the modularisation of machines and systems helps to reduce downtimes and operating costs. Connectors support this process by way of their design and construction. Will modularity now also continue to advance in the other sectors – as in the transport, electricity and heat generation sectors?
Yes, definitely. On the one hand, more uniform requirements are being placed on contacts and mating faces. On the other hand, these demands also need to be made on cables and cable assemblies and fulfilled accordingly.

Norbert Gemmeke
Managing Director Global Business Unit HARTING Electric



The necessity of (industrial) Ethernet networks for networking in the energy transition is of crucial significance. Only by consistently expanding data networks to each and every energy consumer will efficient and intelligent energy infrastructures be enabled. Ethernet, as a reliable and widely used technology for data transmission, plays a key role in integrating various energy sources and consumers into the power grid.

future technologies

ETHERNET: SUCCESS FACTOR OF THE ENERGY TRANSITION

Ethernet data networks - a key success factor in the energy efficiency transition

The energy transition aims to move away from fossil fuels towards renewable energies. This means discontinuing the use of fossil fuels for transport, abandoning their combustion for heating and their conversion into electricity in power stations. This leads to a change in energy sources and consequently to the decentralisation of energy generation. Wind farms, solar power plants and other renewable sources are built where they are strategically favourable and efficient. This is where networking enters the picture.

Energy generation and consumption must be viewed holistically, which is only possible by interlinking all sectors of an all-electric society.

ELECTRICITY

Networking allows renewable energy sources to be connected with each other in order to share surplus energy and compensate for bottlenecks. This significantly improves the overall efficiency and reliability of the electricity grid. In addition, communication via Ethernet enables real-time monitoring and control of energy generation, allowing for optimum adaptation to current demand. Away from unnecessarily high, possible peak loads and towards the dynamic, demand-oriented production of energy according to current consumption.

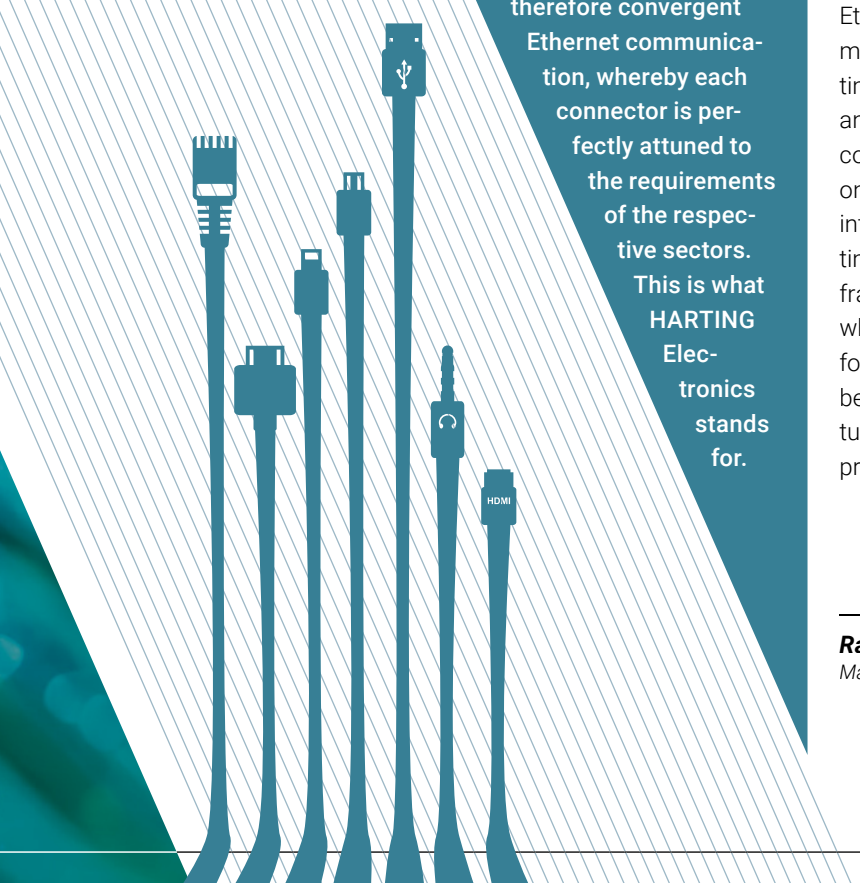
CONSUMERS

Ethernet also promotes the development of smart grids. By implementing intelligent technologies and communication systems, consumers will be able to manage their energy consumption more efficiently and distribute loads better. This will result in the better integration of electric vehicles, home storage systems and other energy-efficient technologies. The bottom line is that the major share of larger electrical consumers, both private and commercial, should become smart in future and be able to "coordinate" their consumption with energy suppliers.

THE INDUSTRIAL SECTOR

Networking is also crucial for the success of energy management systems in industrial companies. Ethernet-based solutions enable the comprehensive monitoring and analysis of energy consumption in real time, which in turn leads to better energy efficiency and lower costs. The energy requirement can be recorded and communicated very precisely, depending on the time of day and the ongoing production. By intelligently analysing the data over longer periods of time, algorithms can predict demand within a certain framework. This is particularly important in industry, which at 43% accounts for the largest single demand for electrical energy in Germany. If the transport sector becomes increasingly electrically powered in the future, this sector will also become very relevant for the precise coordination of demand and production.

Convergent networking based on Ethernet entails the use of Ethernet connectivity in all sectors. As described, these sectors involve widely diverging requirements, such as different environmental conditions and different topology requirements. This results in a range of different connectors for standardised and therefore convergent Ethernet communication, whereby each connector is perfectly attuned to the requirements of the respective sectors. This is what HARTING Electronics stands for.



Ralf Klein
Managing Director HARTING Electronics

MARVELLOUS MIX

The players of the All Electric Society meet at HANNOVER MESSE

HANNOVER MESSE 2024: Energizing a Sustainable Industry

At the end of April, the Hannover Messe will once again be welcoming leading international industrial companies. The exhibition is increasingly featuring as the starting point for sustainable visions of the future. This is evidenced by the motto, the partner country and the presence of the All Electric Society.

When the term industrial trade fair is brought up, Hannover Messe is the undisputed leading international event. This year's motto is "Energising a Sustainable Industry": More than 4,000 exhibitors from the mechanical engineering, electrical and digital industries as well as the energy sector will be on site and are committing to act as a networked industrial ecosystem. The paramount objective is achieving climate neutrality through sustainable industry.

Dr Jochen Köckler, Chairman of the Board of Management of Deutsche Messe AG, is aware of the thematic overlap with the All Electric Society, i.e. a future in which CO_2-neutral electricity is the central form of energy worldwide: "Energy efficiency is our top priority. Green energy must then meet various requirements: It must be permanently available for base loads, which is why energy management is an important issue. And the major topic of hydrogen will also be on the trade fair agenda and interacts with All Electric Society keyword. This is the foundation for us to achieve a sustainable industry."

According to Klöckler, in addition to the production of renewable energy, it is always essential to be able to actually utilise this energy. Sector coupling - i.e. linking the energy sector with the industry, transport and building sectors and then optimising them together – that is what is called for here. In Klöcker's words, sustainable industry "only works as a joint endeavour in the wonderful mix of corporations, SMEs and start-ups".

The relevant providers come from industries that are driving the megatrends of automation, digitalisation and electrification and the first two are no newcomers in Hanover. Trade fair board member Köckler emphasises the relevance of electrification above all: "What use is the best digitalisation in the cloud or in server centres and what use is the best automation if I don't have securely available energy?"

After automation and digitalisation: electrification as the third megatrend at HM24.

The goal must be achieving a competitive and sustainable industry. Electrification is a global project that can not only be driven forward by politicians, but also by companies such as HARTING.

According to the trade fair organisers, the unique integration of major IT players such as Microsoft, Google, Amazon Web Services and SAP will also make it possible to interlink the sectors in Hanover. With Siemens and Schneider Electric, we also have representatives who, according to Köckler, "combine OT and IT, which is also a USP for our trade fair".

Sector coupling? Monopolies do not help. Sustainable industry only works as a joint endeavour.

Automation and energy will be converging at the trade fair in Hall 11, where the "All Electric Society" is also being depicted. ZVEI, the German Electrical and Electronic Manufacturers' Association, was in charge of the project.

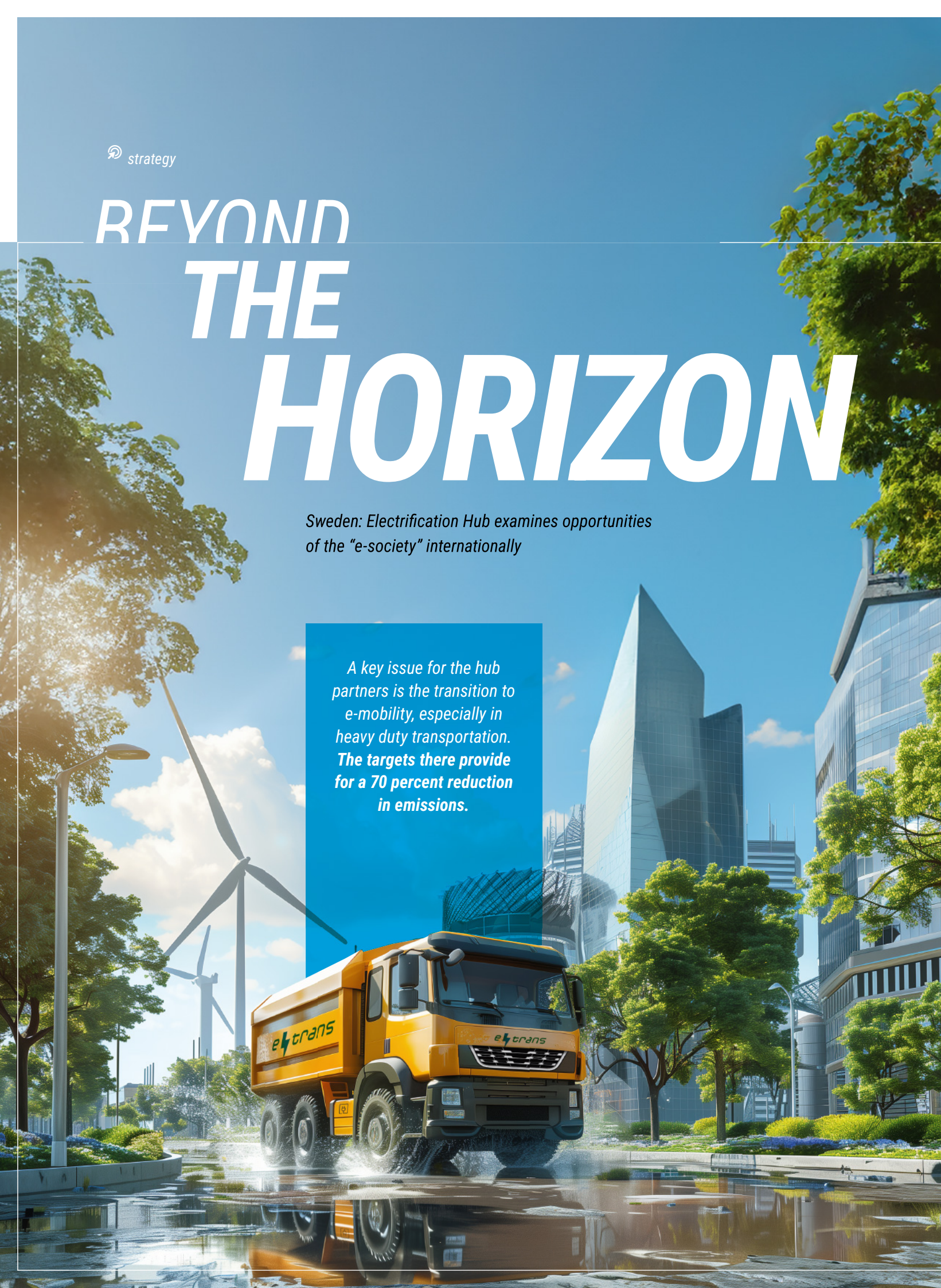
Köckler is also looking forward to the opening event with Federal Chancellor Olaf Scholz, EU Commission President Ursula von der Leyen and Jonas Gahr Støre, Prime Minister of this year's partner country Norway: "Politicians also want to decide together with the exhibitors on how to move forward. The aim is to keep industrial production in place in Europe." Moreover, Norway is also a country that is an energy producer and is currently trimming its industry for greater decarbonisation. This positions Norway as role model and partner that can help Germany in achieving greater energy autonomy.

Dr. Jochen Köckler
Chairman of the Board of Management of Deutsche Messe AG

BEYOND THE HORIZON

Sweden: Electrification Hub examines opportunities of the "e-society" internationally

A key issue for the hub partners is the transition to e-mobility, especially in heavy duty transportation. ***The targets there provide for a 70 percent reduction in emissions.***



https://www.electrificationhub.se

Electrification Hub: Electrification can also be learned on the greenfield

In Sweden, a cooperation platform is dedicated to electrification in terms of reducing emissions. However, the centralized power grids in the West also create obstacles, which is why the Electrification Hub at Mälardalen University is consciously looking beyond its own borders.

The development of the All Electric Society thrives on international and interdisciplinary projects. One example is the Electrification Hub at Mälardalen University in Sweden: The aim there is to pool expertise in order to drive forward electrification, the topic of energy and electromobility in the face of climate change.

"Above all, we are accelerating the transition to electrified mobility solutions. The focus is on heavy-duty transportation. This includes construction machinery, mining vehicles and trucks, for example," explains Mikael Hjorth, Head of the Hub.

In addition, the participants are also investigating energy networks right down to the individual components. The platform covers three areas: Firstly, the participants are looking at R&D projects and want to scale up the innovations there. There is also business development, which promotes innovative companies and start-ups in particular. To this end, the hub facilitates collaborations with larger companies. The third area comprises talent promotion and skills development. HARTING also supports the hub and is active here alongside well-known industrial companies such as Hitachi Energy, Volvo, ABB, Alstom and Northvolt.

The hub's horizon extends far beyond Sweden and shows its proximity to the All Electric Society. Looking at international projects such as in the US but also India, it becomes clear how big the differences are even in the start-up phase. While in Western societies, a kind of change management for greater sustainability is primarily undertaken, the conditions in less developed countries are completely different: there, it is possible to start on the green field, without hurdles such as existing central power grids. By looking at new solutions, we can be become more resilient and adapt to the growing electrification in transportation, in industry but also in housing and cities

Industrialised nations: Change Management.

"We are planning a workshop with participants from Rwanda, Africa. Autonomous energy production prevails there: Solar and wind are important, which is why people are not in the same way dependent on centralized power generation," reports Hjorth and adds: **"We should also learn from these countries how to build an electric society from the ground up."**
If an electrical grid were to be created from scratch today without any prior knowledge, it would likely be planned in a more decentralized way than the European grids are.

According to Hjorth, the discussions surrounding the use of alternating or direct current confirm that adapting existing systems would be technically complex and expensive. In microgrids, on the other hand, direct current approaches are very exciting and are have advantages preferred to alternating current on the greenfield. Many solutions for decarbonization are based on decentralized approaches. This makes it all the more important for such impulses to be recognized and taken up in Western countries.

Emerging countries: decentralised solutions from the drawing board.

Mikael Hjorth
Manager and Founder Electrification Hub Sweden

EVERYTHING THAT IS ELECTRIC MUST ALSO BE NETWORKED

The vision of an All Electric and Connected Society

As Vice President of the International Electrotechnical Commission, Vimal Mahendru also wants to drive the All Electric Society forward on the standardisation side. Different regional requirements are a challenge, but also lead to solutions that have a sustainable impact across regions.

Vimal Mahendru
Chairman of the IEC Standardisation Management Board (SMB) and Vice President of the IEC

Today, electrification - and connectivity! - also includes air transport and shipping.

tec.news: Is the "All Electric Society" (AES) a holistic approach that includes all sectors?
Vimal Mahendru: Vimal Mahendru: You are talking about an all-electric society. In my opinion, everything that is electric must also be networked. That is the fundamental reality of the 21st century. I would like to call the AES the "All Electric and Connected Society - AECS". There is so much data around us today. This is wealth of information, and thus, valuable for creating a better society.

What role does the International Electrotechnical Commission (IEC) Standardization Board, which you chair, play in this?
The IEC Standardization Board is managing all standardisation in this area. This also makes sense because applications that were not traditionally part of this are now being electrified. This applies to mobility, for example, which not only includes road transport, but also air transport and shipping. And here again, it's not just electrification, but also connectivity, that is making such transition even possible.

And what must the sources of electrification look like?
I come from India, where roughly two thirds of electricity is generated from fossil fuels. We have realised that it is more sustainable. It is safer to transport electrons rather than fossil fuels.

What are the framework conditions and the expected effects of the "All Electric Society"?
I prefer to talk about the basics. Imagine life on earth like a three-tier wedding cake: The bottom one is the largest layer. And that is our earth, the ecosystem with environment, air, water and life. Society is the second layer of the cake. And at the top of the smallest layer is the economic cycle, in which HARTING also works. This is where value is created, society is influenced and development takes place.

How do the levels influence each other?
We need to create harmony between these three levels. Only then will there be holistic development. The top level, where companies like HARTING want to develop further, needs a developing society. And for society to develop, the planet must be healthy. If I imagine a fully electric and connected society, then it seamlessly connects the three levels of this pie.

How is the term "All Electric Society" positioned globally? What regional differences can you identify?
I would like to cite India as an example. The country has the fourth largest electricity grid in the world. And yet per capita electricity consumption in India is negligible. It is only 1,100 kilowatt hours per person per year, which is a tenth of the per capita electricity consumption in industrialised countries. On the one hand, India is highly developed and is also exploring the moon, for example. On the other hand, the country is at a low level when it comes to utilising all this science and technology for the benefit of all the people in its society.

Not letting individual components fight for their local efficiency, but looking at the entire chain: that is system efficiency.

Back to the AES: What activities have already been initiated or are being planned at the IEC?
The IEC has already set up eight system committees. These are large committees with many horizontal ideas that come from different areas of society and technology. For example, there are systems committees for smart energy, smart cities, smart manufacturing and sustainable electrified transport. These topics span several technological areas, but have one thing in common: they contribute to a fully electric and connected society.

How are international standards created for this? What specific examples can you give us?
A concrete example can again be found in India: in 2013, more than 320 million Indians had no access to the electricity grid. Worldwide, the figure was as high as 1.5 billion people. The challenge lay in the infrastructure to be created with power plants, transmission lines, sub-stations and fuel-supply lines etc. I was head of the Indian Electrotechnical and Electronic Manufacturing Industry Association at the time and approached IEC for support. We approached the IEC, and that was the birth of a committee that I had the honour of chairing. Later, around 30 different national committees and around 50 experts were involved in the work. In 2022, the IEC finally published a standard for access to electricity via DC mini-grids.

For global society to develop, the planet must be healthy.

strategy

ALL DIRECT & INDIRECT ELECTRIC SOCIETY?

tec.news speaks with Holger Lösch, Deputy Managing Director of the Federation of German Industries (BDI)

tec.news: Industry is one of the key sectors of the AES. How relevant is electrification there?

Holger Lösch: In the course of decarbonisation, electrification is a strategy for many companies – and therefore both an opportunity and a challenge. Perhaps it would be better to speak of an "All Direct and Indirect Electric Society" – and we should also not ignore the option of carbon management. I am generally hoping for a rapidly expanding range of options for CO_2-reduction. There is no doubt that there will be a significantly higher degree of electrification and this will be the method of choice in many applications. However, we must succeed in ensuring the availability, stability and ultimately the economic viability of both the electrons and the molecules if we are to remain globally competitive. Direct electrification of the entire industry is not technologically and economically possible everywhere and immediately. Where it can be put to expedient use, it delivers rapid progress in innovation and efficiency gains.I see great opportunities on the global markets for the industry that develops these technologies.

What hurdles do you see on the way to a comprehensive CO_2 reduction?

On the one hand, we are talking about the greatest challenge that humanity has ever faced and emphasising the most comprehensive transformation that we have to implement. On the other hand, we are massively narrowing the technology paths – which is a total contradiction for me. If it is the greatest challenge, then I have to mobilise everything – innovation and investment. And I must not impose any bans on innovation or the future.

BDI represents the most diverse perspectives of the industrial sector. How do you reconcile the demands of these positions?

The associations provide impulses and work with companies to develop ideas on how political and social goals can be achieved in an economically viable way. At the same time, however, competitive capabilities must be guaranteed in all sectors. Consequently, the overall system must be sensibly balanced. Too little ambition is just as harmful as too much ambition. For industry, this means that the transformation must be realistically feasible for all those who want it, while at the same time creating strong enough incentives for innovation and investment.

Mobilise everything – innovation and investment!

Resilient and competitive restructuring: politics must also deliver.

Keyword sector coupling: Where does this approach currently stand?

We need to find the most efficient solutions possible in the inextricably linked sectors of energy, industry, buildings and mobility. Sector coupling is often extolled to the skies, but there is a lack of concrete implementation. A climate-neutral society will have to be much more circular and integrated than the linear world of today. This can also lead to conflicts of interest within industry

What support are you hoping for from politicians?

A major focus of policy must be on the questions: How can we make the transformation resilient and competitive? How do we create a balanced system of incentives for the billions and trillions of additional investments needed? A future new EU Commission and a possible next German government will have a very large playing field ahead of them.

Holger Lösch
Deputy Director General Executive Board BDI e.V.

ON THE RAILS: VISION BECOMES REALITY

Rail travel is mostly electric. Nevertheless, Dr. Lars Müller still sees a lot of potential to become more efficient. ***Key driver: Electrification of existing lines.***

TARGET BY **2030**:

75%

ELECTRIFIED LINES

CHALLENGE: TRANSPORTING & STORE ELECTRICITY

Dr. Daniel Nordsiek
(r.) Director HARTING Innovation Hub Minden

Dr. Lars Müller
(l.) Board Member of Rail Campus OWL e.V. and Head of Business Line Testing Services DB Systemtechnik GmbH

Dr. Daniel Nordsiek: The All Electric Society describes the vision of a CO_2 neutral and sustainable world in which our energy supplies are essentially based on renewables. Does the AES play a role for the railway?

Dr. Lars Müller: The All Electric Society is anything but new for us. Railways have long been committed to comprehensive, area wide electrification. We have been travelling electrically for almost 150 years, and today around 2/3 of our journeys involve sustainably generated electricity. Only the electrified railways are fast, capable of transporting heavy goods and enable flexibility, which is why efficient modernised lines are generally electrified.

So power sources are an issue?
The problem is not how we generate the electricity, but how we store it. We use electricity for the trains that is at least partly produced in a CO_2-neutral way.

To what extent is Deutsche Bahn already electric today?
At present, a total of 61 per cent of the rail network is electrified, while 90 per cent of all train kilometres are already covered electrically, which is a large share as such. Specifically, the figure stands at 99 per cent for long-distance passenger transport, 97 per cent for freight transport and still at 81 per cent for local transport.*

These are the figures for Germany?
Yes. The situation is different on the other sides of the border because the electricity grid in Europe is anything but uniform. Almost every country has its own voltage in the rail transport sector. And that is why only about half of the rail border crossings are equipped with an overhead line. Within Europe, Germany is positioned in the middle of the field in terms of the percentage of electrified railway lines;. That said, we are a huge player: If you look at the electrified kilometres of track, things look different again.

What strategies are there in Germany for further expansion? Are you focussing purely on the electrification of all routes, or are there several approaches being pursued?

DB: 90% of all train kilometers already covered electrically.

Let's start with the new track construction: Electrification is the obvious choice. There are, however, not so many new routes being built. Consequently, expansion is the main driving force, i.e. retroactive electrification. We have set up programmes for this purpose: The aim is for 75 per cent of routes to be electrified by 2030. We want to step up our efforts above all in local transport, freight and works transport and the harbour railways. We are already on target in terms of long-distance transport.

What are the challenges when dealing with traction current?
Traction current is operated with alternating current and has a contact wire voltage of 15 kV and a frequency of 16.7 Hertz. Transporting the electricity is an important issue, because I already use some of it in the grid. While the train is running, it uses the electricity. So we have to transport more than we consume. And that brings us to a challenge that impacts on the All Electric Society and on us as well of course: the issue of storage. We have to come to terms with the so-called dark doldrums outside of the summer months: In these periods, wind energy and photovoltaic systems supply either no electricity or only small amounts of electrical energy due to calm or weak winds and simultaneous darkness. However, this issue not only impacts on railway operations; it is a socio-political issue that we will only be able to solve through joint efforts undertaken by politics, the business arena and research.

What are the major challenges when it comes to energy issues at the moment?
For me, the biggest challenge is to transition away from fossil fuels and secure availability through long-term storage options. That would be the path to the All Electric Society. Optimisations within the electrical system makes less sense at present. The levers and screws at work there are too modest and incremental. The generation of energy and shifting away from fossil fuels - these are the big issues.

**Source: https://www.allianz-pro-schiene.de/themen/infrastruktur/elektrifizierung-bahn/*

strategy

ON THE WAY TO THE ALL ELECTRIC CONTINENT

A pan-American perspective

From the northern reaches of Canada to the southern landscapes of Brazil, the Americas are forging ahead on the path toward an all-electric society. **Each country, bringing its own initiatives and unique strengths to the table, is progressing the transition to sustainable energy sources and cleaner transportation systems.**

CANADA: PIONEERING FUEL CELLS

Canada's aggressive targets aimed at reducing greenhouse gas emissions and accelerating the adoption of electric and hydrogen-powered vehicles anticipates that the sale of gasoline-powered cars will cease entirely by the year 2035 alongside a mandate requiring 60% of all vehicles sold within the next five years to be electric or hydrogen-powered. Additionally, Canada aims to derive 30% of its energy from hydrogen sources by 2050, employing methods such as electrolysis and renewable energy production.

With abundant hydroelectric resources, the country is positioned to lead green energy production. Canada's commitment to these goals has attracted significant foreign investment, particularly in the development of electric battery packs and zero-emission mobility solutions. HARTING, deeply entrenched in the industrial sector, has supported the design of state-of-the-art fuel cells produced by Ballard Power Systems, which are now powering several new hydrogen and hybrid trains, including the Siemens Mobility Mireo platform. HARTING's vast array of connectivity solutions, including the high performance rail line, enables us to facilitate the adoption, design, and deployment of this new technology.

Jon DeSouza
Managing Director
HARTING Americas

USA: ACCELERATING PROGRESS STATESIDE THROUGH GOVERNMENT INITIATIVES

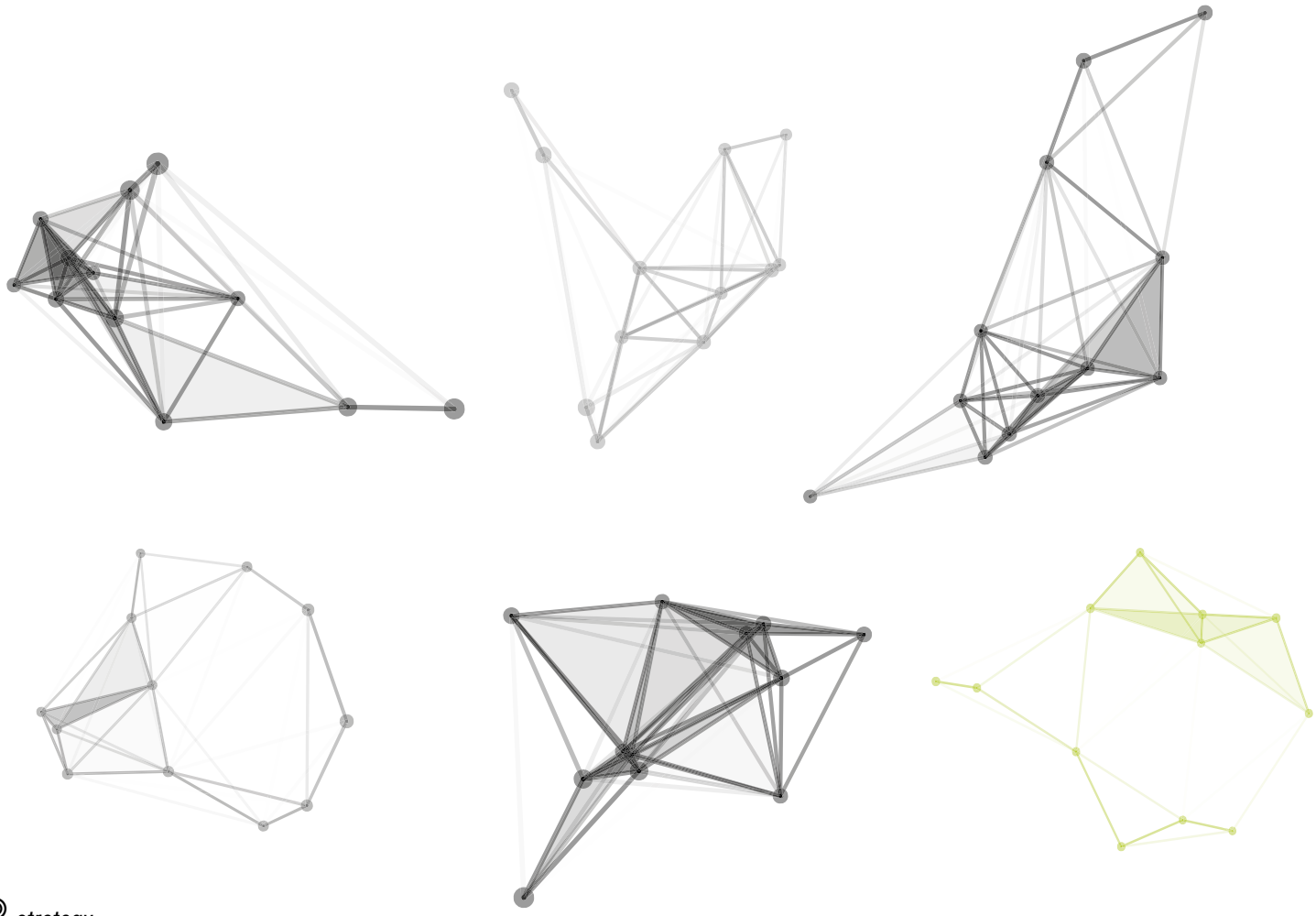
In the United States, government bills and funding mechanisms are driving substantial investments toward electrification projects. With over $108 billion allocated for the electrification of transportation alone, the nation is witnessing an unprecedented wave of infrastructure development. Federal initiatives, such as the Infrastructure Investment and Jobs Act, are earmarking funds through 2031, with a significant portion dedicated to advancing the electric society.

From rail systems to high-speed trains, and electric buses, the U.S. is witnessing a transformative shift to cleaner transportation modes. HARTING collaborated with the Agricultural Industry Electronics Foundation to develop a high-voltage connector adopted by John Deere, with many uses in agribusiness, including potato harvesting. The electrification of their tractors underscores HARTING's pivotal role in shaping the nation's electric future.

BRAZIL AND MEXICO: HARNESSING CLEAN ENERGY

Brazil stands out as one of the cleanest energy producers globally, boasting a diverse portfolio of renewable sources such as hydro, wind, and solar power. Collaborations with companies like Siemens and Progress Rail are driving innovations in electrification – particularly in the railway sector. Meanwhile, Mexico is emerging as a key player in the energy boom, with Siemens spearheading the introduction of cutting-edge technologies from Europe into the Mexican market.

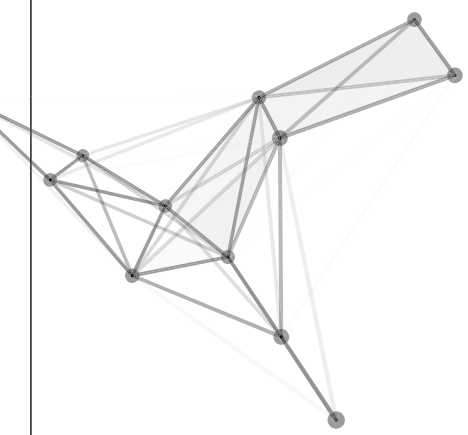
As HARTING navigates these dynamic landscapes, it leverages its expertise to support initiatives ranging from the electrification of Mexico's burgeoning markets to wind energy projects in Brazil. Working with WEG for their wind power generators, HARTING supplies the entire cabling system for the wind towers, including WEG's newly-announced 7 Megawatt generator, which will be the largest in Brazil and adaptable to other global markets.



strategy

ALL ELECTRIC MINDSET?

What future viability means for specialists and managers



For employees, attuning to the future vision of the All Electric Society means rethinking technology and social responsibility. Just what does this entail for the Human Resources department? tec.news spoke with Doris Höpfl, Board Member for Human Resources & Legal Officer at the HARTING Technology Group.

tec.news: How is HARTING positioning itself in terms of mindset and expertise with regard to the All Electric Society?
Doris Höpfl: Especially in these current, very exciting times, it is extremely important to look at the future viability of people's skills. Often – and this is still largely the case here – existing competency models are geared towards technical competencies and are strongly focussed on management areas. What is certain, however, is that the demands on people's skills in the world of work are changing and we need to ask ourselves the question: How are

”Change is not just about expertise. It's also about creativity and flexibility.“

they able to be open to change? **It is the task of people in managerial positions to recognise and promote existing potential.** At HARTING, we are currently defining a respective framework and aligning it in particular with our strategic roadmap towards the All Electric Society, innovation and product portfolio. In other words, we are looking at which key competences we need in terms of our contribution to the future vision of an AES in order to fill them in a targeted manner. **It's not just about expertise, but also relates to factors such as creativity and flexibility in change.**

How does HARTING develop the spirit in which connectivity will make a valuable contribution to the AES?
The AES is a great opportunity, not only for society but also for us at HARTING. We create connections – and also in terms of people! I am convinced that we will significantly shape this spirit with our product portfolio and set a convincing example. With this potential, it is essentially in the hands of our management team that we enthuse and inspire people to follow this path. This requires persuasive strength and trust. A culture in which people get involved, think creatively and take responsibility. **They should be encouraged to utilise all opportunities and have the confidence to do new things.** For this to succeed, we give people the necessary trust enabling them to fully develop their expertise. **This also goes hand in hand with a certain willingness to take risks and substantial levels of collaboration across departments.** As managers, we will create the space and the platform for this. And we need significantly more diversity for a globally successful HARTING Technology Group – different people rooted in different backgrounds and cultures. We already have an international presence and will continue to develop this network. The aim is to bring together new skills in the company with the in-depth knowledge that already exists in the organisation. All these aspects represent key success factors.

Does HARTING become attractive to potential employees by positioning itself in the AES?
If a company makes vital contributions to transforming society towards greater sustainability in order to tackle the climate crisis, this is naturally highly attractive to people – across all generations. A corresponding sense of belonging is also a weighty factor. Because people are increasingly looking for the purpose of their actions and asking themselves the question: What contribution can I make with what I do? In terms of the All Electric Society, this means: We are people who are determining and shaping the All Electric Society with what it needs – connectivity. We are not just connecting technical devices – we are also connecting people!

Doris Höpfl
Board Member for Human Resources and Legal Officer of the HARTING Technology Group

7,5 TONS LESS CO_2 PER MACHINE

Further electrifying production: How it succeeds, what it brings

Increasing electrification in the production area is an important trend that has gained in significance in recent years. Electrification enables companies to make their production processes more efficient and environmentally friendly at the same time. The use of electric machines and systems can cut energy costs and reduce CO_2 emissions. In addition, electric drives often offer greater precision and flexibility, resulting in better product quality. It is important to note, however, that electrification can also be associated with challenges, such as the need for the appropriate infrastructure and staff training. Overall, however, electrification is a promising approach to making production more sustainable and efficient.

Electrification in the production area refers to the optimisation of traditional production processes through the use of electrical energy. This can include the transition from fossil-based energy sources to renewable energies, such as electricity generated by wind or sun, as well as the implementation of electrical machines and systems. Here are some additional reasons favouring electrification and relevant trends in production:

01
Lower costs for electromobility:

The transition to electrically powered vehicles in logistics and material transport plays a vital role in the electrification of production chains.

02
Sustainability pressure from consumers:

Consumers are increasingly focussing on sustainably produced goods. Companies are responding to these demands by electrifying their production and showcasing their ecological responsibility.

03
Research and development:

Investment in research and development promotes the emergence of new technologies that drive electrification in production and enable innovative solutions forward.

Increasing electrification in production is having transformative repercussion on industry. Only through joint cooperation between industry, governments and research institutions will it be possible to develop innovative solutions and establish electrification as a key element of sustainable production.

Examples from HARTING production:

- *Injection moulding machines are converted from hydraulic to electric drives*
- *Use of electric instead of pneumatic or hydraulic core pulls for injection moulds*
- *Annual savings per machine: 20.000kWh / 7.5t CO2 (EC)*
- *Servomotors in assembly systems replacing pneumatic cylinders*
- *Connection of all systems to the machine network via V-Lan in order to track consumption data (e.g. electricity and compressed air)*

Heinz-Peter Einhoff
Director Global Industrial Engineering, HARTING Electric

customer benefits

RECYCLE BATTERIES? PLUG & PLAY!

OCTOPUS recycles lithium-ion batteries efficiently, cleanly and safely

The recycling of batteries, especially lithium-ion batteries, **represents one of the most daunting challenges of the energy transition.** The Salzgitter-based company No Canary is tackling this challenge and has developed the "OCTOPUS System": these recycling plants shred lithium-ion batteries in a vacuum chamber and then process the output into a raw material concentrate, which is also referred to as the so-called “black mass”. The absolute pressure in the shredder is rated at 5 mbar, which – following the shredding of the cells – enables gentle vaporisation at low temperatures, thereby accelerating the drying process and stepping up the throughput of the entire system.

In the shortest possible time to the start of production. Recycling efficiency: almost 100 %.

Vacuum systems on an industrial scale shred the batteries and convert them into black mass.

Safe, secure and reliable battery discharging

Before recycling can get started, however, the lithium-ion batteries must be completely discharged. This cannot be achieved by way of the vehicle's own connectors. No Canary has specially developed a touch-safe discharge unit for this purpose, which consists of two 35 mm² conductors, M8 eyelets and a Han-Eco® 6B grommet housing. The power is transmitted to the company's own grid by way of a Han® 100 A module (< kV). The mating partner is accommodate in a Han-Eco® 6B coupling housing.

When the cells are discharged, the operators remove the coupling housing from the discharge unit and replace it with a short-circuit bridge. This also consists of a Han-Eco®, which is fitted with a power module and a small circuit board. This lights up a red LED as long as the electrolyte in the cells is still active. **"Deep discharge and short circuits cause the lithium to migrate back into the cathodic active materials and the electrochemical potential is fully degraded. The battery is then deactivated,"** as No Canary explains.

The connectors contribute to safe operations. If the short-circuit bridge is accidentally connected to a charged cell, a fuse protects users against cable melting and damage to the system. Moreover, infrared and visual cameras monitor the processes in the unloading chambers. These are connected to the network by way of Han-Modular® RJ45 cable assemblies (including new Domino modules). In this way, the cameras can be designed as highly compact and space-saving components.

Exceptionally eco-friendly solution

No Canary is pursuing the aim of building recycling lines that are as efficient, clean and safe as possible: On the one hand, the components of the batteries, i.e. lithium, cobalt, nickel, copper, graphite, aluminium, organic carbonates and manganese, are to be recovered as completely as possible. The company reports **recycling efficiencies in excess of >95% in terms of lithium battery cells and >99% with regard to the black mass,** which is later broken down into its raw material components by specialised companies in the chemical industry.

High economic efficiency

However, No Canary also ensures that as much energy and other cost factors as possible are saved in the recycling process, which is where the vacuum process plays to its strengths: **Unlike recycling processes to date, the lithium-ion batteries do not have to be thermally pre-treated, thereby saving time and energy.** According to the company's information, the start-up ranks as the first and only provider of the vacuum shredding process on an industrial scale to date.

24 hours subsequent to deep discharge, the cells can be dismantled, recyclable materials sorted out and the remains shredded. After separating the organic solvents from the electrolyte, the dried shredded material is broken down and divided into further fractions. One of these is the Black Mass containing the coveted raw materials ready for new battery cells.

Helge Alten
Sales Engineer, HARTING Germany

customer benefits

HTW D
Hochschule für Technik und Wirtschaft Dresden
University of Applied Sciences

PLOUGHING THROUGH THE FUTURE WITH AI

Agriculture in the All Electric Society: the example of AgXeed

Prof. Dr. agr. Karl Wild
Professor of Technology in Horticulture and Agriculture at HTW Dresden

"Data-based decision-making, GPS guidance and the use of sensors in the fields are now standard on advanced farms. These technologies enable the precise monitoring and control of agricultural processes, from sowing to irrigation and harvesting, and help to promote the sustainability of agriculture."

tec.news: What can precision farming methods contribute to improving sustainability and environmental compatibility in agriculture? What impact does this have on the CO_2 balance?

Prof. Dr. agr. Karl Wild: Precision farming enables production resources to be deployed in a more targeted manner, which can significantly reduce the use of pesticides or fertilisers, for example. The data-based optimisation of crop rotations and cultivation systems or harvesting strategies also help to increase sustainability and environmental compatibility. Improved soil management methods can reduce the emission of nitrous oxide, a potent greenhouse gas, and step up the storage of CO_2 or carbon in the soil. In addition, more efficient operating processes and a reduction in the use of heavy machinery can reduce the consumption of fossil fuels and consequently CO_2 emissions.

What role is autonomous driving playing in your practical research projects?

Meanwhile, highly automated driving represents the state of the art in agriculture. "Autonomous working", however, is the key challenge here, because it is not just about driving, but above all about the optimal execution of processes such as soil cultivation, fertilisation or harvesting. In the future, technology will have to replace the operators who previously monitored the processes, made machine settings or rectified faults. In order to achieve this, we will need appropriate sensors, data analyses and actuators, while artificial intelligence and machine learning can also help us in this context. This area represents a focus point of our work. Moreover, we are also concentrating on researching and optimising the integration of autonomous vehicles into agricultural operations, such as the "AgBot" from our partner AgXeed. While AgXeed concentrates on autonomous driving and on the tractor, our focus, as already mentioned, is on the implement attached to the tractor, i.e. on process regulation and control on the implement without human intervention.

On a research field in Pillnitz, you are harnessing PV while at the same time practising state-of-the-art arable farming between the rows of modules. How do vehicles and module rows get along with each other?

Agri-photovoltaics (APV) is a concept that aims to utilise the same area for solar power generation and agriculture at the same time. Our test and research facility consists of approx. 3 m high, vertically standing bifacial modules (i.e. they produce electricity from both the front and the back), which are arranged in several rows at 12 m apart. We practise precision farming between the rows of modules. We are working with standard tractors as well as with our AgBot. Given that the localisation and navigation accuracy of the vehicles is +/- 2 cm, we can drive relatively close to the module rows. We also need to source renewable electricity from arable land and with this concept only about 10% of the arable land is actually required. Our trials have also shown that agriculture can in fact benefit from the rows of modules. Soil loss due to erosion is reduced, for example, while biodiversity increases.

Watch the complete video interview with Prof. Dr. agr. Wild and find out more about research at the HTWD.

Precision Farming = cultivating fields with digital high-tech: precise, efficient, sustainable.

About AgXeed

The technology company AgXeed and HARTING have been cooperating in the field of precision farming for a number of years now. AgXeed is providing comprehensive autonomy solutions, such as the "AgBot" robot series for the autonomous cultivation of arable land. In this context, the AEF high-voltage interface supplied by HARTING is making a valuable contribution to electrification. By comparison with agricultural machinery harnessing hydraulic engines, this results in greater efficiency, while promoting sustainability at the same time.

www.agxeed.com/de

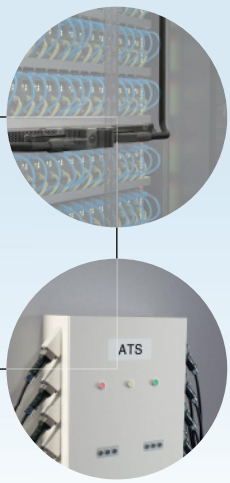
✲ *customer benefits*

EFFICIENT POWERRRR!

Costs down, availability up: *coordinated connectivity from the network infrastructure to the printed circuit board*

Andras Meszaros
Industry Segment Manager, HARTING Electric

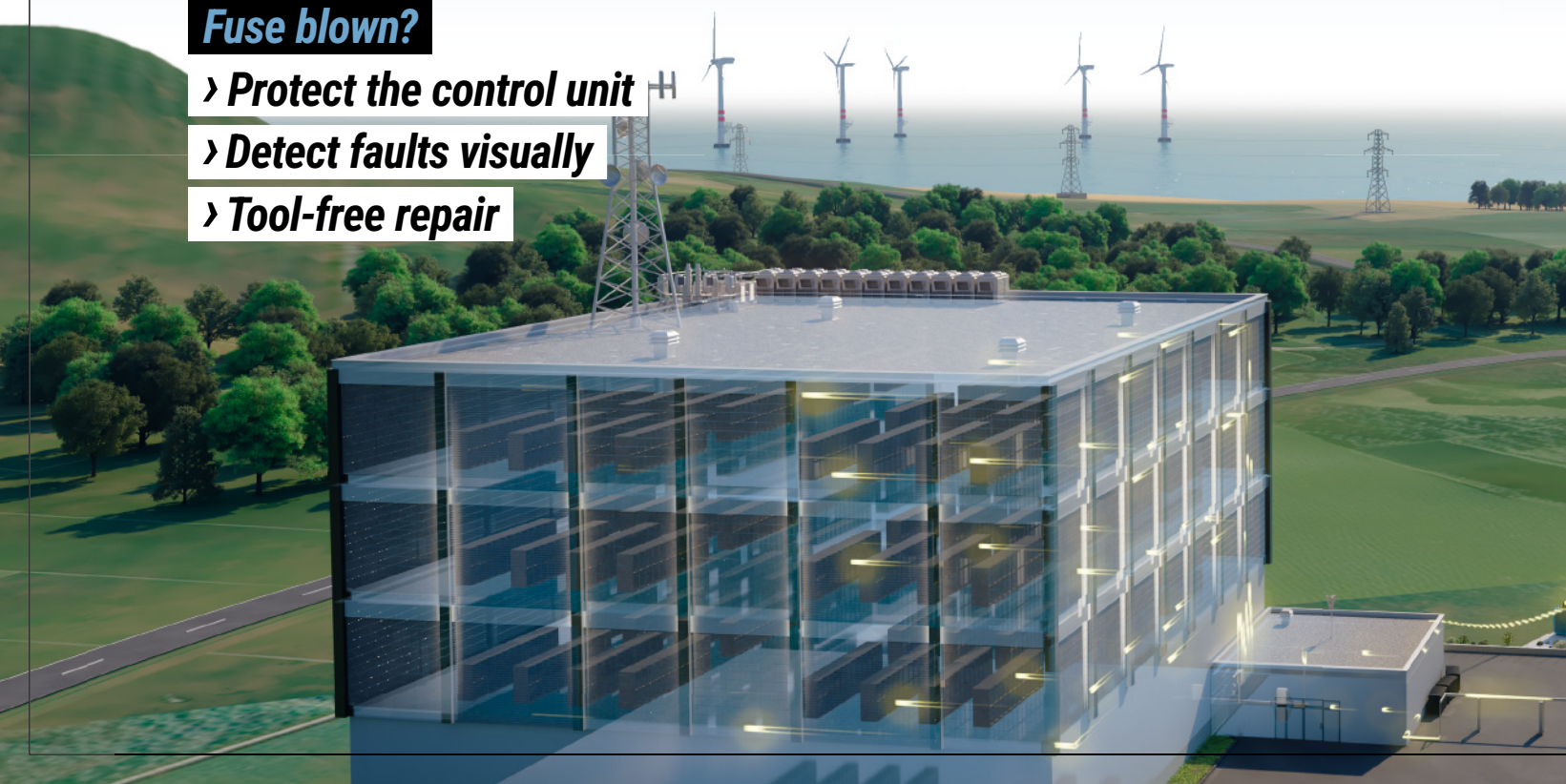
The consistent implementation of the AES determines that the energy is optimally connected, regulated and controlled. Data centre operators are also faced with the challenges of optimising space utilisation, while boosting availability and enhancing energy efficiency. HARTING is offering a harmonised portfolio to meet these demands.

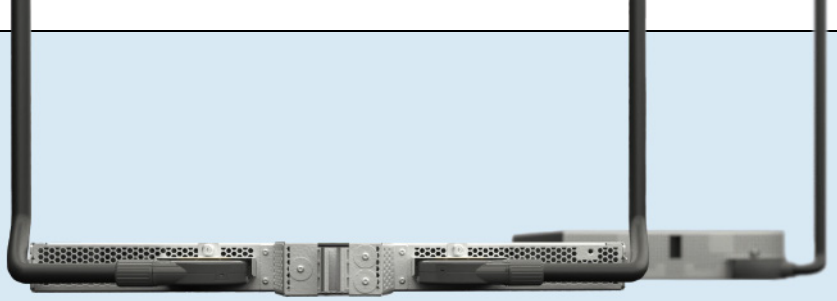


Convenient and secure scalability
The advantages of Plug & Play over hardwiring are already apparent when connecting data centres to the networks. For example, installation times are trimmed if parts of the transition from the 110 kV high-voltage grid to the low-voltage area inside the data centre (400 V/230 V) are implemented by way of plug connectors. The Han® HPR HPTC series connectors are ideal for the transformer output: They enable transmission up to 3.6 kV/1400A (AC/DC, partial discharge-free housing) and ensure effective protection in scenarios in outdoor areas (up to IP69K). Indoors, the Automatic Transformer Switch (ATS) ensures the power supply to the downstream devices. Here, the connection of the transformers on the lower level is best implemented by way of Han® HPR Single Poles.

Fuse blown?

› Protect the control unit
› Detect faults visually
› Tool-free repair





Making space for IT equipment
The Open Compute Project (OCP), a working group to which HARTING has already belonged for six years, focuses on making data centres more efficient, more flexible and more rapidly scalable.

In this context, the following factors are to be curbed:
- **the investment and operating costs**
- **energy consumption**
- **the environmental impact**

Up to 50 % of the transmission losses at intersections points can can be saved.

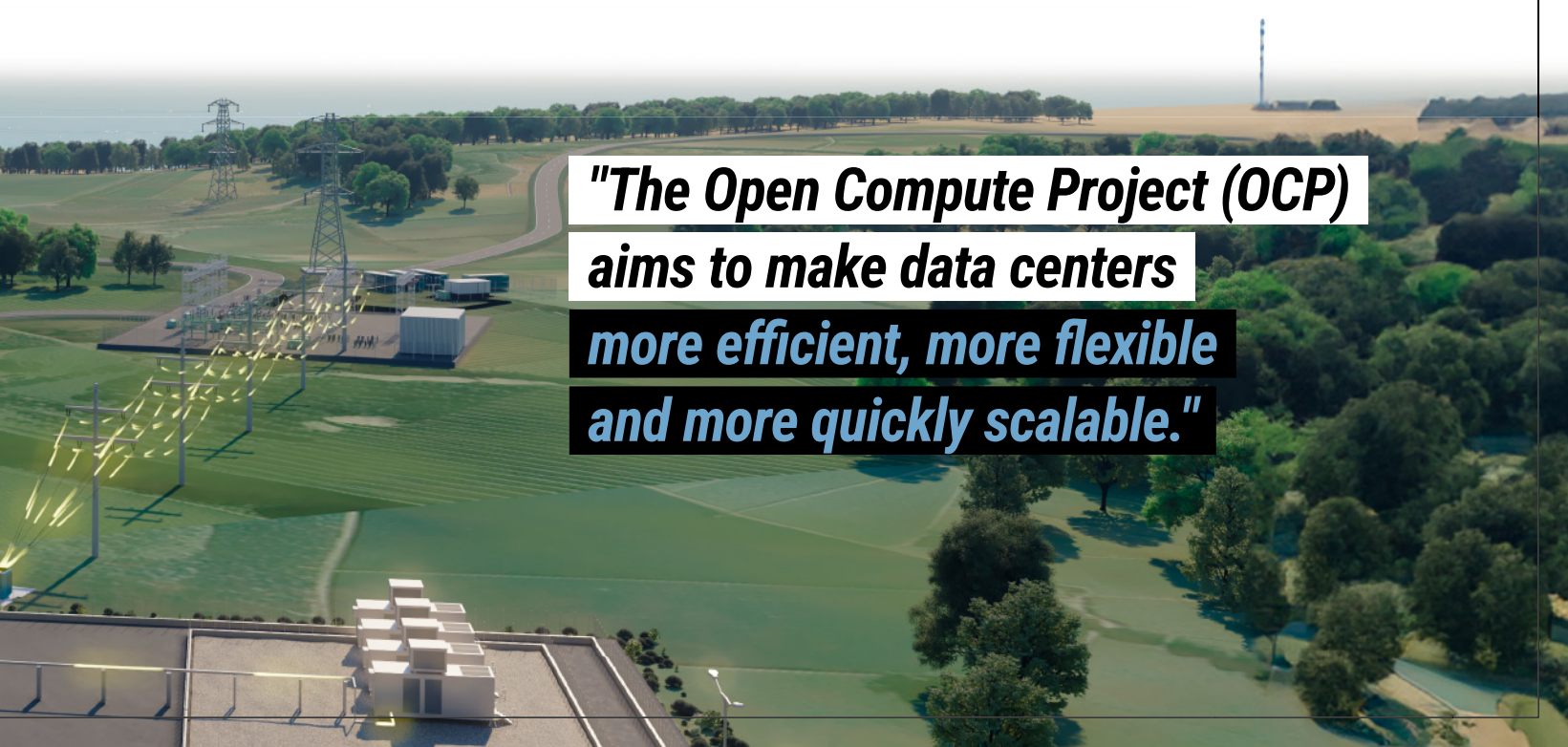
Implementing the OVR3 standard, the OCP has paved the way for space savings in the energy distribution of data centres. The advantages of the standard can be aptly illustrated using the power shelves, the foundation for the power supply of the computing units. OCP member Delta Energy Systems has named its latest device after the "ORV3" standard:

"The shelf has a 50V output that feeds power directly to the busbar for the server supply. Each housing contains six **P**ower **S**upply **U**nits (PSU) each with an output of 3 kW. The successor that we are currently working on features six PSUs, each delivering an output of 5.5 kW. **The output power increases by a good 80 %, while installation space contracts by an appreciable quarter and dimensions and efficiencies remain enchanged,"** as Cihan Aydin, Senior Design Engineer Power Electronics, Delta Energy Systems reports.

HARTING supports these developments with the Han® ORV3, which supplies the power shelves with power. Compared to conventional solutions, **the flat plastic housing requires 50 % less installation space, is lightweight and enables convenient and rapid configuration for different current and voltage levels.**

High system availability
The open ORV3 standard plays to its strengths in the server rack units. Standardisation enables simpler and faster service for the numerous components deployed in data centres. Other functions, such as cooling, for example, are regulated and secured in data centres by wa of control cabinets. Here, HARTING has developed the Han® Protect, a new connector that simplifies protection and reduces the required installation space in the control cabinet by up to 30 %. **Blown fuses are indicated on the outside – without opening the cabinet – by an LED and replaced tool-free. Maintenance processes are streamlined and system availability trends upwards.**

Energy efficiency on the up and up
According to the ORV3 specification, the upper power limit is 32 A. Higher power requirements are handled by the Han-Eco® series. Their voltage ranges extend up to 1000 V, with an upper limit of 70, 100 or more amperes, depending on requirements. Thanks to its modularity, the series enables a wide range of adaptations.
The contacts are characterised by low impedance. HARTING has compared the Han-Eco® with conventional CEE plugs and sockets and determined that **up to 50 % of the transmission losses at interfaces can be eliminated. For large data centres, this equals appreciable annual electricity cost savings of up to €95,000.**



"The Open Compute Project (OCP) aims to make data centers more efficient, more flexible and more quickly scalable."


M12 Unshielded Overmolded: Solution details
Connector A
Configure
cable
"Away from the product range and towards needs-based and timely production."
O N _ D E M A

collaboration & co-creation

INDIVIDUAL PRODUCTS IN JUST A FEW HOURS

Web configurators for on-demand production

The vision of a society that meets its entire energy requirements by sourcing green electricity and distributing it in line with demand also poses new challenges for the suppliers of the necessary "hardware".

There will certainly be a wide range of applications in both industrial and private environments that will need to be supplied with energy. And these consumers need to be provided in line with demand and connected accordingly. Certain (industrial) standards, but also individual scenarios have to be reconciled.

In the case of a very large number of individual products with different characteristics, a product range can no longer be completely thought out, predefined or even pre-produced. The consumption of resources, warehousing and therefore also the financial risks are unlikely to be calculable. **Consequently, there must be a shift away from selecting from a range of products on offer and towards the demand and requirements based and timely production of products according to actual customer requirements.**

HARTING is already meeting these challenges today and is moving in this direction by offering web configurators. In the area of unshielded M12 cable assemblies, a web configurator offers the complete range of options for customised cable assemblies. Only pre-tested and functioning combinations of connectors and cables can be selected in order to provide users with maximum safety. At the end of the configuration process, digital documents such as drawings and 3D models are directly available for users to work with.

All internal systems up to the digitalised production line are designed to manufacture and deliver this newly defined product in a "one-piece flow" process in the shortest possible time. The unit of measurement for the production process is no longer defined in weeks or days between order and dispatch, but is minimised down to hours.

The focus is on individuality and the short-term provision of both physical and digital products. This enables optimised, demand and requirements based and therefore sustainable use of raw materials and energy right from the outset of the production process.

Sven Stühmeier
Manager Digital Product Service, HARTING Customised Solutions

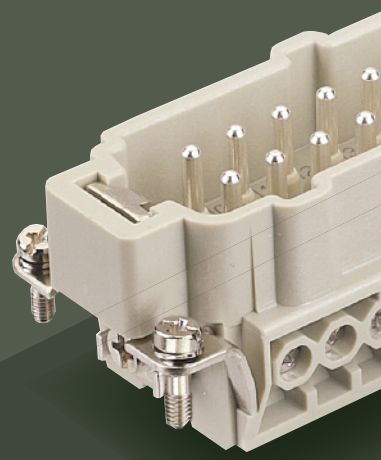
"In future, not only will the product be created, but also its digital twin."

HARTING uses the Asset Administration Shell to create the digital product passport and determine the PCF – also for configurators. The individual components are each equipped with an administration shell. These individual administration shells subsequently result in a superordinate administration shell for the entire solution.

customer benefits

MARKET-READY: FIRST CO_2-REDUCED CONNECTOR COMPONENTS

HARTING GreenLine: new, bio-based plastics



Dirk Teiwes
Team Leader Heavy Duty Connectors, HARTING Electric

Manufacturing companies are required to critically scrutinise the components of their products.

Meanwhile, decarbonisation is in full swing. More and more areas are being electrified in line with the All Electric Society (AES) and sectors are being meaningfully linked.
The synergies of sector coupling and the associated efficiency gains, however, are only one of the keys to achieving climate neutrality. Manufacturing companies are called on to critically examine the components of their products.

The HARTING Technology Group is also living up to its ecological responsibility in terms of the carbon footprint of its connectors. The Hanover Fair 2024 marks the launch of the HARTING GreenLine featuring the first low CO_2 connector contact inserts from the Han® E series in sizes 6B to 24B.

ISCC+ certified connector inserts made from bio-based plastics

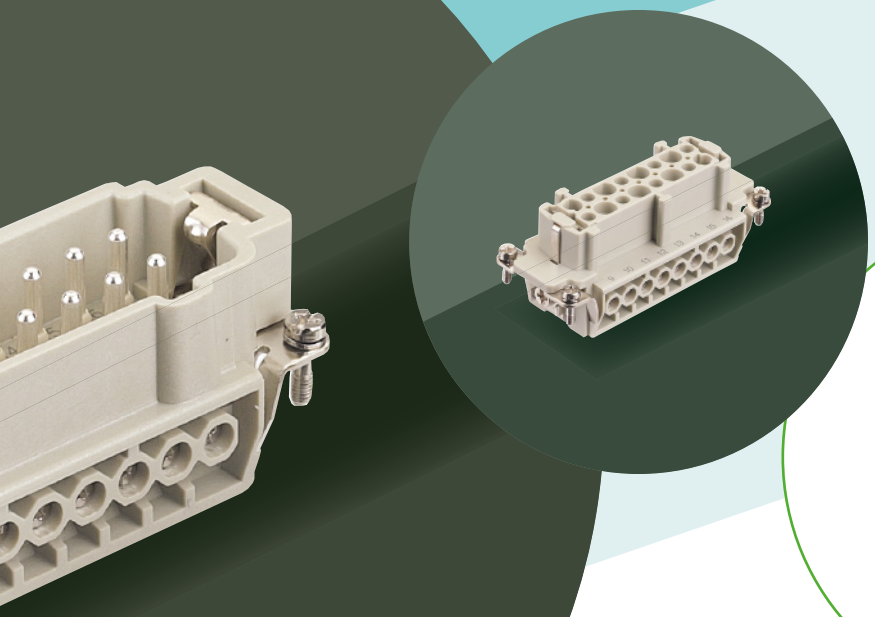
The previous manufacturing process for inserts for Han® industrial connectors involved mineral-based raw materials. The use of new, bio-based plastics now enables a reduction of the CO_2 footprint for the first time. The new bio-polymer is produced according to the "Mass Balance" concept, involving renewable instead of purely fossil raw materials. This bio-polymer meets the international sustainability and carbon certification (ISCC+) and delivers appreciable CO_2 reductions in excess of 70 % (based on certified, bio-based polycarbonate).

As a result, customers opting for the HARTING GreenLine benefit from positive effects on the environmental balance of their manufacturing processes of devices, machines and systems for customers.

ISCC+ certification enables the complete traceability of the materials involved along the entire supply chain. In this way, customers will improve their carbon footprint.

Digital product passport facilitates access to the Product Carbon Footprint (PCF)

The digital product passport introduced at HARTING in 2023 provides convenient access to the Product Carbon Footprint (PCF). The product passport can be called up by way of the QR code on the housing or on the connector insert. The passport provides all the relevant manufacturer information, the Asset Administration Shell (AAS) and the PCF. The products of the new HARTING GreenLine also feature the ISCC+ logo.



With this QR code the digital product passport can be called up.

Why not give it a try right away?

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