SEW EURODRIVE

MOVITRANS®

Contactless energy transfer system

Interview 2: Charging vehicles inside and outside production facilities

Designed for simplicity and optimized installation

MOVITRANS® contactless energy transfer system makes production facilities modular and flexible

Everyone is familiar with those electric toothbrushes that sit in their stands and charge wirelessly, just like magic. Smartphones can also be charged using suitable contactless charging points.

This technology has rapidly become a standard fixture in the latest generation of cars and even mobile homes. Simply place your cell phone in the tray and not only will the battery charge, but the mobile device will also become integrated into the vehicle electronics – all without the owner needing to find the correct cable or socket.

Contactless energy transfer has long been part of industry, too, and is one of the cornerstones of cutting-edge production. MOVITRANS® is a key element that supplements the comprehensive portfolio of Bruchsal-based drive and automation specialists SEW-EURODRIVE. For more than two decades, the company has been one of the most important leading suppliers of this technology for industrial use.

In an interview, Managing Director Mechatronics Innovation at SEW-EURODRIVE, Dr. Hans Krattenmacher, reveals the secret behind the MOVITRANS® success story and how that story will develop in the future.

Dr. Hans Krattenmacher,
Managing Director Mechatronics Innovation,

has been with SEW-EURODRIVE for over 20 years. Right from the start of his time with the company, he came into contact with the MOVITRANS® contactless energy transfer system – which was still in its infancy at the time.

He experienced up close and personal how this "very, very new technology" at the time began to take off and ultimately scored its initial success in the field.

What makes this solution so unique on the market? What makes SEW-EURODRIVE different to the rest?

The question is more: What does SEW-EURODRIVE do differently to the rest in general? This applies not only to MOVITRANS®, but to our entire product portfolio. For gearmotors in particular, there are countless manufacturers out there. Despite that, customers still buy from SEW-EURODRIVE. I believe we have systematically transferred the values that we offer our customers with our standard products to MOVITRANS®. We have done so through innovation on the one hand and by offering a complete approach that helps our customers find solutions for their applications on the other.

After all, unlike many start-ups currently do, we didn't just launch products and components onto the market – we offer complete packages from a single source. We also support our customers from the outset. Right from the design stage, we help them select the correct system. We make it easy for them by enabling them to choose from a wide range of systems to find the solution that meets their needs. In our portfolio, they can find everything they need – the various installation systems and the correct devices.

All of this always comes in the kind of high level of quality you would expect, with availability that is worldwide rather than limited. On top of that, we have skilled personnel who can provide help and support at any time. In MOVITRANS®, we also have a system that is perfectly coordinated in any field of application, from installation and startup to operation. Everything that happens in our system works and has been thoroughly tested.

When you talk about the many new applications, do you also mean in the urban environment? Here on the Bruchsal efeuCampus you are testing roadworthy mobile systems in cooperation with partners.

That's right. I believe the strict line we currently draw between logistics in a factory hall and urban logistics will gradually start to dissolve, overlaps will appear, and the distinction will become blurred. Although the mobile systems were developed for industrial use, they are now finding their way into the urban environment – with appropriate modifications. Theoretically, however, it is also possible to imagine that I could bring a vehicle that is currently driving around a town somewhere back into a factory hall and have it drive around there.

I believe we will see the previous boundaries breaking down and that things will start to overlap in places. That's why the technology we have here is not simply limited to industrial automation. In the long term, it will find uses in many different fields.

efeuCampus –
testing roadworthy systems

What is the future for the MOVITRANS® system? What are your targets for 2030, for example?

At the same time, we are continuing to drive forward the integration of all components in our entire portfolio using our MOVI-C® modular automation system. It goes without saying that this also includes integration into networked systems. The systems we are talking about – whether in factory automation or in other environments – are now networked. We are all increasingly seeing this now in our personal lives at home, too. Suddenly, everything is connected with everything else – smartphones, televisions, food processors, extractor hoods with cooktops, and so on. This is more than just networking for networking's sake, however, but rather because it can bring great advantages.

Connected systems also make it possible to manage energy and performance better overall. In this way, I only provide energy when it is actually needed. And I feed it to exactly where I need it. We will therefore continue to move forward with this systematically, including in the next ten years, so that our devices fit perfectly well in networked systems.

Both of these mean we are digitalizing our product portfolio. We design our products and solutions – including our MOVITRANS® – in such a way that it can be used comprehensively in vertical digitalization. In this way, we are opening the door to a completely cutting-edge, future-oriented system that supports the Green Deal while at the same time coping consistently with a digital environment.

With that in mind, what do you still have to do with MOVITRANS® system?

Precisely because of how we intend to be systematically future-oriented, we are also continuing our path with the infrastructure components, for example by introducing a range of voltages. We already have 60-volt and 360-volt components to connect different systems. But we are far from finished. We are currently working on making the mobile side more adaptable so we can supply many different mobile applications. It is also a recognition that integration into mobile systems always requires adaptation. After all, it is to be expected that our system will be sought-after and used in many new applications in the future and we will systematically work toward that.

> **"The strict line we currently draw between logistics in a factory hall and urban logistics will gradually start to dissolve, overlaps will appear, and the distinction will become blurred."**

You mentioned networking – what kinds of things does this involve taking account of and doing?

There are two basic requirements for the networking and digitalization we are talking about – first, energy networking, the way we provide it in MOVITRANS®, and second there is communication networking. When you have achieved both of these, then you have, in principle, all the tools you need to make a diverse range of products and solutions for applications that are equally diverse. If we think of an infrastructure with lots of plugs, where the current supply and data transfer are conducted via cables and plugs – human intervention is always required.

This is the situation we have now in electric mobility. However, we now also have the Internet of Things. This technology thrives on mobility, and vice versa. Fundamentally, it relies on 24/7 availability. This can only be achieved by installing technologies that keep systems functional without human intervention.

So it's no longer simply about contactless energy supply, but ultimately also about data transfer that is similarly contact-free?

That's right. The two things go hand in hand. **After all, it would be a little odd if I transferred the energy contactlessly, but then still needed a plug for communication transfer.** This is why we will also create a range of new types of system for communication transfer, alongside the familiar system. There is definitely more to come in terms of infrastructure. Ultimately, infrastructure is always a combination of energy and communication – these two things are the basic requirements of cutting-edge logistics.

> **"If you have simple, flexible, and above all robust solutions for both requirements – contactless energy supply and contact-free data transfer – then you are onto a winner. All the technical gadgets in the world are no use at all if they ultimately only work occasionally. That is our clear focus – what we make has to be robust so it functions safely and reliably."**

What makes it so challenging to meet both these requirements?

If you have simple, flexible, adequate and, above all, robust solutions for both of these, then you are onto a winner. That last characteristic – robustness – is what SEW-EURODRIVE is famous for, after all, and for me, it's the be all and end all. To put it more crudely, technical gadgets are all very well, but if they only work occasionally, you quickly lose interest and patience. That might not be too bad in the consumer sector, where the annoyance threshold is slightly higher.

However, for everything that affects our daily life – either our personal lives or in industry – you simply need reliability. You don't want to get annoyed and just have to hope that something works. It simply has to work, with no interruptions. And new technologies need to live up to the standards of reliability set by long-standing, trusted ones. The things we have tested there for decades, ensuring availability and function are safeguarded, have to be transferred to the new technologies. After all, user acceptance will only grow when I can achieve the same level of availability and robustness. That's why this is what we very clearly focus on. What we make has to be robust enough that it functions safely and reliably.

To make the jump to the current climate change problems, how do things stand in terms of reliable functionality when it comes to temperature resistance, if we increasingly experience extremes of climate such as longer-lasting periods of hot or cold weather?

For purely industrial electronics and use indoors, ambient temperature tolerances of 0 °C to 40 °C are sufficient. However, it is true we will have to start thinking about whether the upper temperature limit of 40 °C that is currently standard on the market will still be sufficient for the future, given the unpredictable weather such as the long periods of extreme heat. In the past, this design was based on the assumption that 40 °C would never happen.

Suddenly, we are now surpassing that limit – even at our latitudes. MOVITRANS® alone cannot yet solve this issue. However, with this technology, we're talking about a different kind of infrastructure, including more decentralization. The energy revolution is based on the process of moving from centralized energy generation with large power plants to a decentralized power supply spread across the whole country, with wind, solar, biomass, etc. This means achieving grid stability and a stable infrastructure will simply happen differently to the way we know it now. And MOVITRANS® really does help establish a stable, cutting-edge energy infrastructure.

> **"In fact, we are one of the few suppliers on the market that trusts its components to work outdoors. Our MOVITRANS® components are also qualified for temperatures below freezing."**

Does this also apply to the outdoors?

In fact, we are one of the few suppliers on the market that trusts its components to work outdoors, too. Our MOVITRANS® components are also qualified for temperatures below freezing, meaning we can go into deep-freeze facilities, for example, and we can supply outdoor applications, too. Particularly in countries such as China, where there are regions that experience winter temperatures that remain at about -20 °C for long periods, even dipping to -25 °C, we can already offer and reliably operate our electronics.

> **“Communication and energy infrastructures are being completely overhauled, and we are also heading toward new concepts and new ideas. This makes it all incredibly exciting. For me, this means pure innovation and a real desire to help shape the future.”**

I can hear your passion for the MOVITRANS® technology in every answer you have given. Was there never any danger for you that it might be nothing more than a passing fad?

You’re not wrong there. I can still clearly remember my university days. When I was doing my doctorate in Karlsruhe **there was a lot of hype about communication technology**. I was at the Institute for Electrical Energy Systems and High Voltage Technology at the time, and suddenly we were losing students. Mobile networks were an up-and-coming issue back then, and the associated switch from wired to wireless communication technology, so everyone wanted to study communication technology. We have now become so used to this technology that we are all discussing whether we still even need landline phones at home. Anyway, we were a bit irritated at our Institute. Suddenly, energy technology wasn’t considered very exciting – it was seen as too dry and too conservative.

Now, the situation is reversed. **Everything communication technology has already gone through – the dynamics, the hype – is what we are suddenly facing in energy technology.** This and the energy infrastructure are being completely overhauled, and we are also heading toward new concepts and new ideas. This makes it all incredibly exciting. Since this is home territory for me, it’s a lot more than fun and games for me.

It is pure innovation and a real desire to help shape the future.

Find out more about MOVITRANS®:

Interview 1: Factory automation // Smart factory
Interview 3: Energy-autonomous factories and energy-autonomous homes

On the corporate website:

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