



My extensive international experience in various engineering and management roles has enriched my business perspective and prepared me to lead the global technology development of Hitachi Energy's transformer business

Forging ahead the innovation path with Lorenzo Prieto

Head of Technology at Hitachi Energy Transformers Business

It has been a few weeks since the closure of the 2024 CIGRE Session. During those days in Paris, you could feel the energy of an industry that provided the path to electrify the world further to transition to Net Zero. People everywhere, at an event full of interaction, with companies presenting their offerings, different in-booth activities, workshops, poster and plenary sessions with industry experts eagerly interchanging ideas, knowledge, and passion to accelerate the progress.

The 2024 Paris Session concluded with record-breaking achievements, including attendance from over 4,500 delegates and more than 11,000 participants from more than 95 countries. This year's event also had a record number of contributions, with 1,185 papers presented.

Hitachi Energy also had a record number of papers and contributions, including more than 70 scientific papers, sixteen of those focused on the latest transformers technologies and innovations that show a clear commitment to collaboration and cocreation. Most importantly, Hitachi Energy's presence at the event was just the tip of the iceberg, representing a large and diverse team of experts who are advancing the

knowledge and technology in line with the pioneering leadership of the company with more than 250 years combined heritage in transformers.

Inspired by this memorable participation, we aimed to explore how Hitachi Energy has been keeping its pioneering spirit over the years, being at the leading edge of the technology when it comes to transformers. To help us gain insight into Hitachi Energy's innovation and technology priorities and vision, we interviewed Lorenzo Prieto, Head of Technology from the Business Unit Transformers at Hitachi Energy.

Lorenzo, you have been in the transformer domain for more than 30 years - tell us about your experience and how you think the industry has evolved over the past few years.

As you said, I'm an Industrial Engineer with 33 years of experience in the electrical and mechanical design of large power transformers. In my current role at Hitachi Energy, I lead the technology development of our transformers business globally, but my extensive international experience across different

engineering and management positions have enriched my business perspective, deepening my understanding of how the energy sector is evolving.

We are living in unprecedented times. Demand for transformers has increased

Lorenzo Prieto is an Industrial Engineer with over 30 years of expertise in the electrical and mechanical design of large power transformers. Graduated from the University of Seville in Spain, Lorenzo has cultivated a rich and dynamic career shaped by diverse international experiences. His deep technical knowledge and strategic vision have positioned him at the forefront of innovation in the energy sector.

Lorenzo serves as the Global Technology Manager for the Transformers Business at Hitachi Energy, leading technological advancements in transformers solutions. His leadership and forward-thinking approach are key to driving Hitachi Energy's transformers pioneering initiatives on a global scale.

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worldwide, driven by the energy transition and the growing need for electrification, among other factors. Hitachi Energy, as a leading original equipment manufacturer (OEM) responded to customers' and market demands for increased capacity through the various investments that the company has announced to expand operations of existing facilities and the construction of new factories around the world. And I believe this is proof of our pioneering vision and strategy because what we are trying to do is to take advantage of all the good things we already have in our company while recognizing and complementing what we are lacking or what we need to strengthen - for me this is what it means to be a technology leader, to be aware of who you are and what your capabilities are, to maximize them and to be proactive in seeking new ideas.

I firmly believe that at Hitachi Energy, when we think about what makes us a leader, we need to consider our portfolio of cutting-edge solutions and, equally importantly, the people behind those technologies. They are the real heroes who keep our pioneering spirit and Hitachi Energy's long transformer heritage alive.

It is certainly true that authentic leaders are those who constantly strive to excel while having clear strengths. Which do you believe are Hitachi Energy's?

At Hitachi Energy, we have some truly brilliant, knowledgeable, and diverse people who are full of passion, and they're the ones who are shaping our corporate culture every day where knowledge sharing is crucial. For us, all the knowledge of a person or team must be maximized, which is why we have several initiatives in place to make this knowledge exchange happen. A concrete example is our Trafo School initiative that acts as an enabler to educate and certify our employees on various technical subjects. For us, the devel-

opment and growth of our employees are top priorities. Just to give you an idea of the magnitude of this global initiative, we currently have 250 courses permanently available. In 2023, we provided 55 training sessions - face-to-face, online, and community sharing sessions with around 990 people trained from 26 countries. So far, since we started this initiative, we have issued around 2,200 certifications to our employees.

Alongside the initiatives we carry out internally to increase our knowledge, we are also constantly listening to the needs of the market and our customers. Together with them, we co-create and develop new solutions, or even through partnerships and collaborations with several universities and research centers around the world. Some examples are the partnership we have with the University of Seville in Spain, with North Carolina State University in the US, or the Uppsala University in Sweden, where Hitachi Energy has established a close collaboration in research in several fields, such as material science, process simulations, and high voltage physics. Examples of research collaborations include Hitachi Energy employees conducting research as PhD students in the novel field of architectural materials. In process simulations, Hitachi Energy and researchers are collaborating on methods to optimize processes, or in a recent and innovative collaboration, we are testing the use of AR/XR to design specific products in the transformer components field.

You said that to keep the pioneering leadership alive, you have to look beyond and capture what you need, not only in the present but in the future.

It might seem an easy answer, but "our people" is our real strength - and I firmly believe in this statement. In our transformer business, we have a deep understanding of the design, features, and capabilities of our transformers. We have an

extensive product portfolio, where safety and quality are paramount, and after many years of experience in the market, we are able to support our customers in their diverse needs and work with them to co-create the solutions they need. This is our core business, and the many papers presented during CIGRE 2024, covering topics like transformers sustainability, diagnostics, and renewable applications,



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are a good example of how our experts are not just exploiting our experience but are always trying to look beyond to explore new boundaries and to look further into the future seeking new opportunities for collaboration.

To pursue this philosophy, we must be aware of our field of expertise and where we can complement it with oth-

er resources and innovative approaches that are truly out of the box. We recently launched a contest for start-ups that addressed entrepreneurs from around the world who were looking for innovative ideas to drive sustainable solutions into the transformers industry. We received submissions from around 30 countries, and the winner was a startup dedicated to recycling glass fiber-reinforced plastics

(GFRP) into reclaimed glass fibers and pyrolysis oil.

Recycling is not our core business, so we are happy to collaborate with third parties that are more experienced than us in specific fields. In this case, they will help us on our journey to reduce the waste to landfills, facilitating recycling and supporting circularity while being energy efficient.



The know-how of the talent we have in the company is shared and circulated among the teams around the world and in our research centers, but this must also be transferred to future generations

This has been an incredible learning experience for us. We saw how new generations and new business models can complement what we do with innovative ideas.

You mentioned the new generations. I would like to add that many studies show they have a particular inclination toward more sustainable choices and mindsets than the generations that have preceded them. What is the role of the new generations in Hitachi Energy's strategy?

This is a fundamental aspect to consider because, as I said, our people are our strength. The know-how of the talent we have in the company is shared and circulated among the teams around the world and in our research centers, but this must also be transferred to future generations.

Hitachi Energy is a growing company, and with the various investments in our transformer factories, we need new people and talents to meet the challenge of creating the solutions needed for the sustainable grid of the future. That's why we have many partnerships with universities – we believe it's important to establish contact with young talents early on in their education. They are the generations who will make the strategic decisions in the next century, who will lead companies like Hitachi Energy and define which will be the leading solutions and drivers to meet the evolving market needs.

The transformer industry, and the energy sector in general, have a responsibility to attract new generations. To achieve this, we need to increase the visibility of our actions and, more importantly, demonstrate how we are making a positive impact on society. Electricity will be backbone of the entire energy system, powering not only our homes but also industries, automobiles, transportation, and data centers. These data centers are the brains of our increasingly connected world and will drive developments in artificial intelligence that will become more prevalent in our lives and in the business environment.

What are the key factors that you believe will be critical to maintaining the company's technology leadership? What cannot be overlooked?

In recent years, there has been tremendous development and advancement from the standpoint of digitalization. We have made a transition from the phase where we were trying to understand the potential of digitalization to the point where we are now already exploiting this enormous potential and all the possibilities it has opened up ahead of us.

We now consider digital transformation an enabler at Hitachi Energy and more specifically in transformers manufacturing. Through our technology platform TrafoStar, we are now capable of making the most of our engineering and R&D excellence centers around the world. Wherever the source of new innovations and know-how, we are able to share information, designs, and manu-

facturing techniques with our factories around the world, making possible our goal of helping our clients wherever they are and whatever their needs are.

Digitalization must be considered and exploited as a huge opportunity for improvement in efficiency in our processes, platforms, and data management.



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In Hitachi Energy, we are adopting the use of AI and digitalization to drive the industry in safety, quality, and overall customer satisfaction

For instance, artificial intelligence plays a key role in our transformers' digitalization strategy. We are embedding the use of AI throughout the process value chain with projects that directly impact the design, manufacture, operation, and maintenance of transformers and consequently their safety, quality, reliability, and performance.

To mention some examples, in design time, we are optimizing the electrical design to reduce losses and prevent failures. During manufacturing, we increase safety in our factories and assist inspection with AI. Through our monitoring tools, we are rolling out algorithms to predict end-of-life and detect failures in different components.

We are developing these projects while also training our engineers in the usage of AI, publishing articles and patents in this area, and leveraging partnerships with universities and third parties. Overall, in Hitachi Energy, we are adopting the use of AI and digitalization to drive the industry in safety, quality, and overall customer satisfaction.

