



The new digitalization partnership between Maschinenfabrik Reinhausen and GANZ Transformers and Electric Rotating Machines Ltd. shows how transformer manufacturers are the ideal solution provider for structural change

Digitalization transition: Transformer manufacturers as solution providers

Transformer operators are in the middle of a turning point: Their obligation is to master the necessary but complex modernizations in technology and the infrastructure while, at the same time, ensuring the stability of the networks. Transformer manufacturers can help them accomplish this. The new digitalization partnership between Maschinenfabrik Reinhausen and GANZ Transformers and Electric Rotating Machines Ltd. shows how transformer manufacturers can use this opportunity and thus become the ideal solution provider for structural change.

The global energy industry is facing enormous challenges. The growing demand for energy due to the electrification of entire industries and the shift from fossil fuels to renewable energy sources is not only increasing volatility for consumers. The feed-in of solar and wind energy is also increasing fluctuations at power generators. The digitalization of assets, intelligent operating equipment, and new approaches to network management will all play key roles in overcoming these challenges and making networks fit for the future.

After all, in this dynamic environment, operators need to know the condition of their fleets precisely, and they rely on the expertise of OEMs to put together the right solution for them. This is an excellent opportunity for transformer manufacturers to offer solutions for optimization and

build up new business areas in the process. However, the sheer variety of sensors and other digital solutions on the market is vast and confusing. Also, each component needs a specialist to integrate it into a highly critical system. This needlessly escalates the effort and costs involved.

What if there were a much easier way to do all this? What if OEMs could discuss the configuration of the required sensors and functions with just one supplier and get a finished product that they could connect to their transformer and deliver to the end customer? When looking for a suitable cooperation partner, GANZ Transformers found Maschinenfabrik Reinhausen, a system-oriented supplier. Based on the specifications required by GANZ, Reinhausen uses its ISM[®] platform – a combination of hardware and software – with all the necessary functions, defines a system solution together with GANZ, configures the required ISM[®] (Integrated Smart Module) components, adds suitable sensor technology from the MSENSE[®] product family and delivers it to GANZ fully pre-assembled. The technicians at GANZ

attach their own solution called GANZ Intelligent Solutions to their transformer and connect all the available sensors so that all data is collected in a central location and evaluated using algorithms. As a result, GANZ can supply its customers with digitalized transformers tailored to their individual needs with less effort and at lower costs. Jan Prins, CEO of GANZ Transformers, and Jürgen Ach, Director Automation, Maschinenfabrik Reinhausen, explained the advantages of this new cooperation in an interview.

Mr. Ach, why is it so important to digitalize assets?

Jürgen Ach: We know that the existing infrastructure cannot be renewed and expanded to the necessary extent. No national economy can handle this immense task. However, wide-scale digitalization of power transformers provides a remedy and new opportunities. It frees up resources and allows existing units to be operated longer. Digitalizing a single component does not increase the value of a system very much. We clearly understood that actually,

In this dynamic environment, operators need to know the condition of their fleets precisely, and they rely on the expertise of OEMs to put together the right solution for them



A partnership for the future: Jan Prins (right), CEO of GANZ Transformers, and Jürgen Ach, Director Automation, Maschinenfabrik Reinhausen.

Wide-scale digitalization of power transformers provides a remedy and new opportunities as it frees up resources and allows existing units to be operated longer

the entire system has to become digital: In other words, all the data from the power transformer has to come together into one control system. This system evaluates

all the data from the sensors in a bundle, so even more information about the fleet's current status is generated. Asset managers can therefore do actual condition-based

maintenance. In turn, this makes it possible to utilize assets in a way that optimizes their efficiency and it increases the service life.

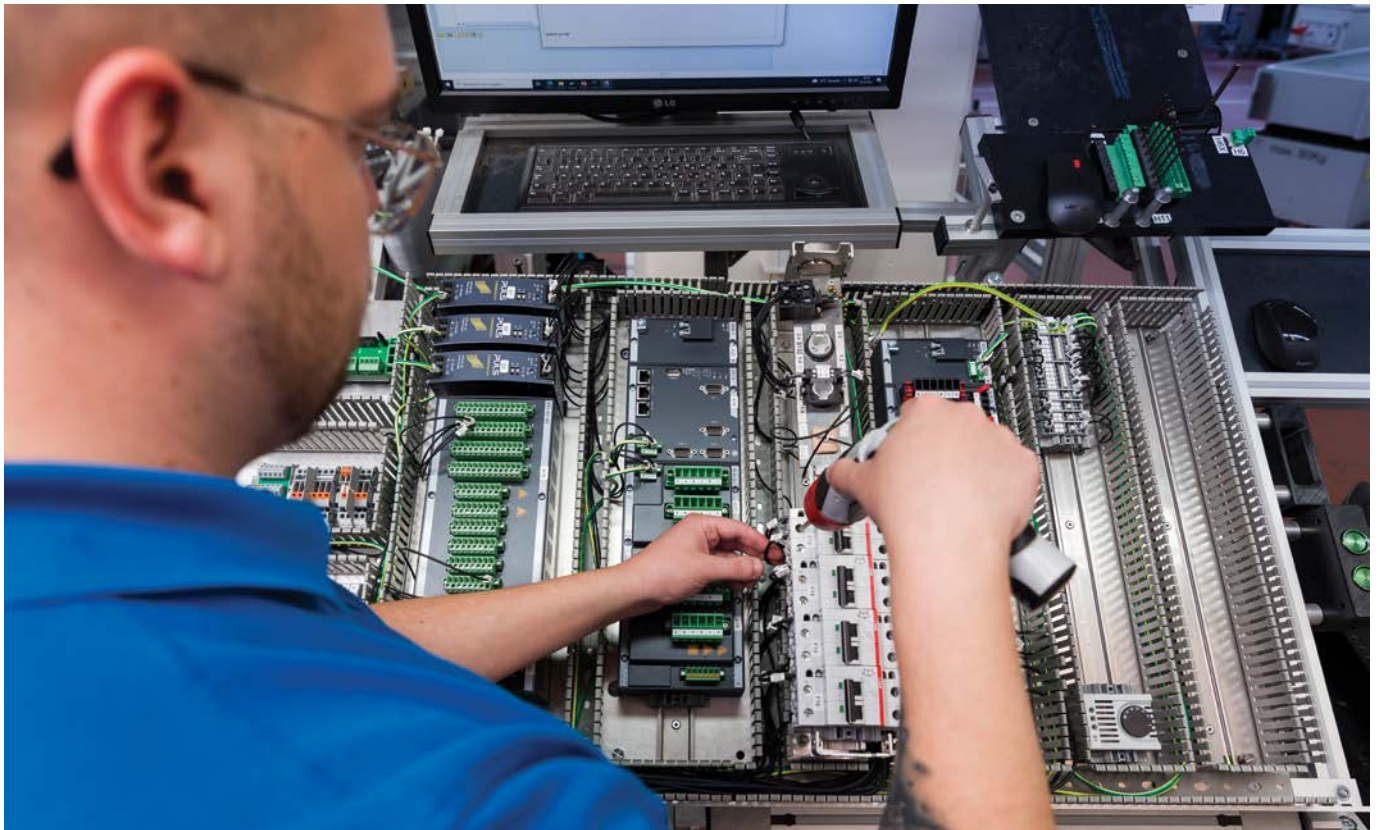
What exactly is your ISM® platform, and what benefits does it have for OEMs and operators?

Ach: This system developed by Reinhausen is housed inside a control cabinet



“With this project, we can make an enormous contribution to the energy transition for the industry! The entire distribution chain benefits from this, all the way to the end consumer.”

Jürgen Ach, Director Automation, Maschinenfabrik Reinhausen



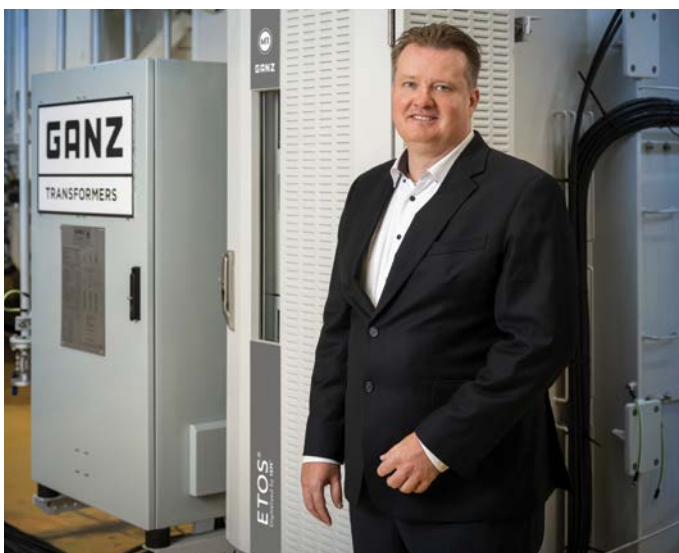
The "brain" of the GANZ Intelligent Solutions: The ISM[®] modules are pre-assembled and form the intelligent data center of the unit. They process all the data in bundled form using the latest algorithms.

where all applications and functions are integrated. There we bundle all the data from the installed sensors in the central ISM[®] computing unit, and its software evaluates it. At the same time, the system also serves as an open platform on which additional hardware can be connected with ease, no matter which manufacturer it is from. The transformer manufacturers discuss the necessary configurations with their customers. After that, we deliver the completely assembled,

GANZ Transformers specializes in providing special transformer applications and tailor-made designs: every transformer is individually designed to specific requirements

customer-specific system just in time, with all the desired functions. This also means that the transformer does not require separate control cabinets for signal

processing, the cooling system control, and the like. Of course they are possible but not necessary – everything is in our common system.



"The collaboration with Reinhausen enables us to bring new products to the market that our clients need in this age of digitalization and climate change. In this way, we want to help conserve resources and reduce the carbon footprint of power transformers. And we want to convince our customers with innovations and new solutions."

Jan Prins, CEO GANZ Transformers



Customized planning: With the support of Oktay Akkas, Business Development Manager at Reinhausen, GANZ develops customer packages that are tailored perfectly to its needs.

Mr. Prins, GANZ Transformers can look back on long company history. How would you describe your position in the market?

Jan Prins: Indeed, the history of GANZ dates back 130 years as the first transformer in the plant was built by GANZ in 1885. Today we specialize in providing special

transformer applications and tailor-made designs: every transformer is individually designed to specific requirements. Customer focus and flexibility towards our customers during the execution of projects is how we differentiate ourselves. Our aim is to make our products smarter and more digital, with a focus on reducing the environmental impact.

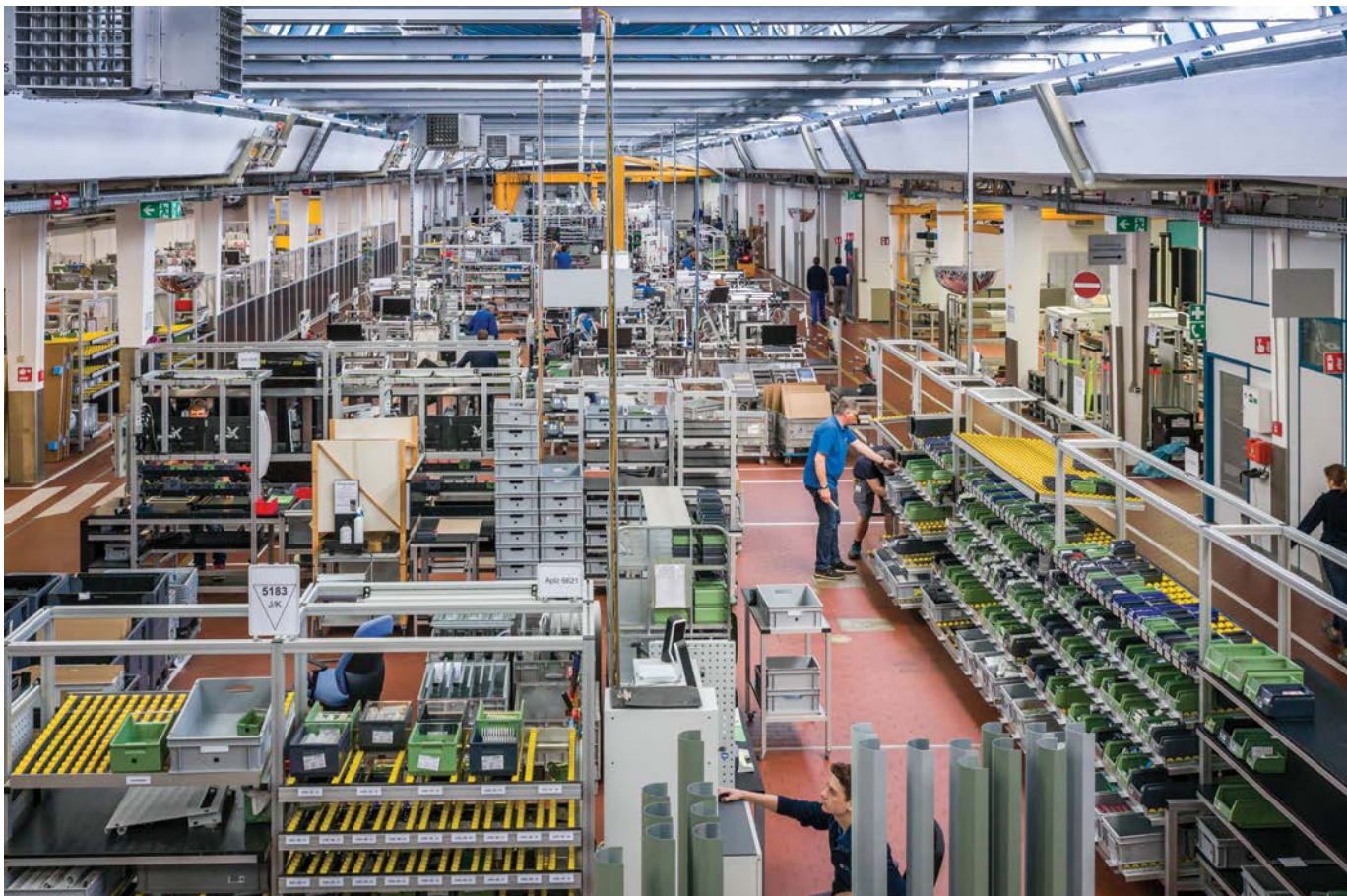
What goals do you have for this new cooperation with Reinhausen?

Prins: The cooperation with Reinhausen is the first step for GANZ to develop a complete portfolio of smart solutions for all products and to provide our end users with an opportunity to utilize the great



“Our strategic goal is to combine Reinhausen’s digitalization concept with GANZ’s comprehensive technical knowledge to create a new expert system for the benefit of our customers.”

Gábor Farkas, Strategic Purchaser at GANZ Transformers



Production in Regensburg: GANZ Intelligent Solutions is made on the ETOS® production line of Reinhausen, entirely based on customers' individual requirements.

benefits of going in a digital direction. Sustainability and digitalization are also becoming increasingly important in the electricity industry, and the current agreement will help GANZ become a market leader in producing more efficient and sustainable transformers.

In addition to this, our experienced colleagues bring their expertise to help us find feasible and workable development directions. This is how we combine tradition and innovation to make our products competitive in the international market.

Jürgen Ach: Partners like GANZ can change their own role from being system integrators to being solution providers and become less dependent on subsystem providers such as sensor manufacturers. That is why we do not only offer individual components. Instead, we provide a platform on which OEMs can compose their own system because the ISM® platform is entirely open to interfaces. As a result, they can also integrate sensors from third-party manufacturers, develop their own software modules on the platform, differentiate themselves on the market, and thereby open

We provide a platform on which OEMs can compose their own system because this system is entirely open to interfaces

up new business models – such as linking temperature and weather data to create an intelligent cooling system control.

As demands on the energy grid and sensor data increase, so does the need for intelligent algorithms. Our partners can develop these together with us and thus have the opportunity to differentiate themselves from competitors.

Mr. Prins, how has the collaboration with Reinhausen been going so far?

Prins: Both companies have been very keen on having this strategic cooperation, and the collaboration has been very positive and constructive. The senior management teams of both companies were very supportive of starting this unique collabo-

ration within our industry. By establishing direct communication channels between our companies, even at lower levels, the cooperation has seen a very effective and dynamic development.

In this kind of collaboration, we draw on the extensive consulting services provided by Reinhausen.

Together, we have reviewed the processes and needs at GANZ and have developed a system portfolio for us. In addition, we are creating new expertise and independence internally since we are strategically specializing our sales and production teams for a common platform with Reinhausen. In combination with our power transformers, this forms a genuine, whole GANZ product that we can offer, configure, install, and service on our own.



Detailed preparation: Together, specialists from GANZ and Reinhausen devise engineering circuit diagrams, compiling all the information in a central location.

Do you see even more potential in the new technology? What are the next steps?

Prins: In the future, we will also work with the customer portal configurator developed by Reinhausen. With this tool, we will be able to configure the desired product in real-time while speaking with our customers, and we will know immediate-

ly what price range we are working with. This makes the offer process so much shorter. We immediately have a detailed circuit diagram, and customers have a transparent view of their costs. We can also store our process steps here for the long term. Seamless documentation of our work steps ensures the quality of our products, and the high-security status of the portal enables us to do this.

Mr. Ach, MR developed the platform solution for OEMs and would like to promote more collaboration with transformer manufacturers. What goals is Reinhausen pursuing with these efforts?

Ach: By integrating all sensors and functions on a single platform and giving



“The challenge for this collaboration lies in revolutionizing a conventional business model with a dedicated OEM such as GANZ Transformers. Through this process, we want to establish new business cases as well as our digitalization platform ISM® as the industry standard in the market.”

Oktay Akkas, Reinhausen Business Development Manager OEM Cooperations

By integrating all sensors and functions on a single platform and giving OEMs the possibility to add their own software to the system, we save them time and money

OEMs the possibility to add their own software to the system, we save them time and money. Digital transformers are still high-cost factors, though. We want to be the ones who scale this concept, providing more affordable prices through high volumes so that all OEMs can invest in digital systems.

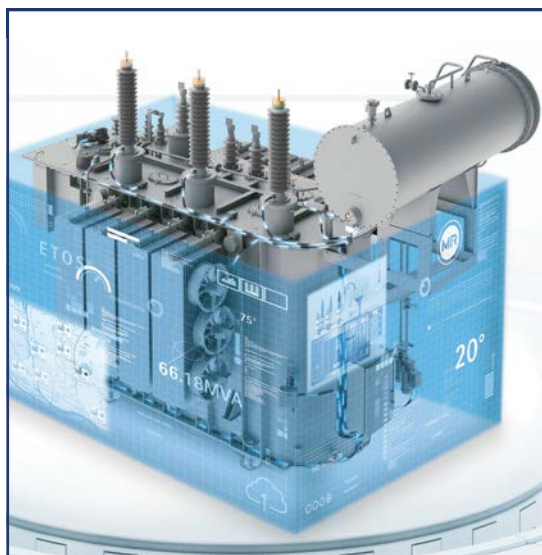
This also has an impact on the end users. With more manufacturers operating on the same platform, it also becomes easier and less expensive to train employees and stock spare parts. In the best scenario, every transformer will eventually be digital. As the Automation Director, that is very important to me.

Why is that important to you personally?

Ach: What we are doing here serves a purpose because we make the energy transition possible. We can integrate renewable energy in a world where the new infrastructure cannot be built fast enough. For that reason, we are also working with The



Ready to go: Precise and fast wiring of all components is already completed at Reinhausen. This saves customers valuable time.



Integrated Smart Module (ISM®) – the central intelligence

All the data flow together through the SensorBus® into the central computing unit, where it is evaluated and assessed by algorithms. This unit combines the entire expertise about transformers that Reinhausen has accumulated over the decades. Operators can choose between three designs: Reinhausen's ready-made control cabinet, an integration into an existing motor-drive unit, or an installation in the operator's own control cabinet. Up to six different software applications are available for performing the evaluation, depending on requirements.

We are also working with The Association of German Engineers (VDI) on standards for the safe integration of various hardware and software in systems such as our ISM® platform

Association of German Engineers (VDI) on standards for the safe integration of various hardware and software in systems such as our ISM® platform. Our goal is to establish open standards on an international scale and thereby set the highest safety standards for digitalized transformers.

And where do you see the key benefits?

Prins: The scaling that Reinhausen aims to achieve for the industry is precisely why the system also becomes absolutely modular for us, since we supply individual solutions. On the one hand, we can

design standardized customer packages and thus respond quickly to requests. On the other, with GANZ Intelligent Solutions and the ISM® modules (see box), we can integrate any sensors or software much more conveniently. We are in a position where we can offer individually designed transformers based on established, high-quality and safe standards. Having Reinhausen as a full-service provider also makes many things easier and more economical for us.

How do you perceive the developments within the market and among your customers?

What changes can you recognize, and in which direction will this trend lead?

Prins: The transition of the sector is key for targeting the reduction of global CO₂ emissions to net-zero by 2050, and the demand for customized solutions with an increased focus on smart and digital solutions is growing rapidly. Our expectation is that this growth will continue in the coming years, as some experts describe this as the age of electrification and the decade of energy.

Transformer manufacturing has changed little for decades, but renewable energy generation has brought new challenges to the industry. Smart grid services, transformers with sensors, monitoring systems, optimized operation, and more environmentally friendly ester-based transformers are all responding to the market and the technological needs of the industry's sustainable turnaround. We want to lead and facilitate this change.



Final check before delivery: On the IEC test bench, specialists test in accordance with the IEC norm whether GANZ Intelligent Solutions is working perfectly and as ordered.



Uncomplicated and fast: With the help of engineering plans, the trained specialists at GANZ can quickly connect GANZ Intelligent Solutions to their transformer in just a few steps.



“The best way to be prepared for the needs and challenges of the future is to have smart solutions from independent partners established as of yesterday. Together with GANZ Transformers, we are pursuing our common vision of a standardized automation and digitalization solution at the grid node, the power transformer...”

Herbert Schubert, Reinhausen Area Sales Engineer



Sebastian Hilmer, Reinhausen Head of OEM Cooperations

By integrating the secondary technology into our OEM solution as a complete system, we reduce the often high process costs associated with manually connecting devices from various sensor manufacturers

Sebastian Hilmer: We offer a comprehensive cooperation program to support OEMs as they evolve into solution providers. First of all, we discuss the initial situation and the goals of our customers. The catalyst for joint cooperation is often the wish to digitalize and differentiate the transformer or to reduce the costs of internal processes. Then, with a team of experienced specialists, we analyze and optimize the value chain across our companies together with the OEM. In the process, we consolidate the customer variance to form customer-specific system packages, which we then use to

cut the time OEMs spend on offers and orders. Besides reducing the effort, this also enables them to meet short-term deadlines for offers.

By integrating the secondary technology into our OEM solution as a complete system, we reduce the often high process costs associated with manually connecting devices from various sensor manufacturers. The training courses we offer enable OEM employees in sales and production to sell, install, and also expand the jointly developed system solutions. Using the digitalization of transform-

ers as a base, OEMs can open up new business models and, for example, implement their own algorithms in their individualized solution. By providing a digitalized product portfolio in combination with optimized value chains, we enable transformer manufacturers to differentiate themselves from others on the market.

Would you like more information about our cooperations?

Feel free to contact us at s.hilmer@reinhausen.com.