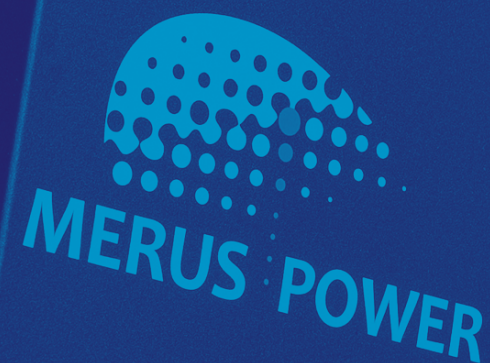
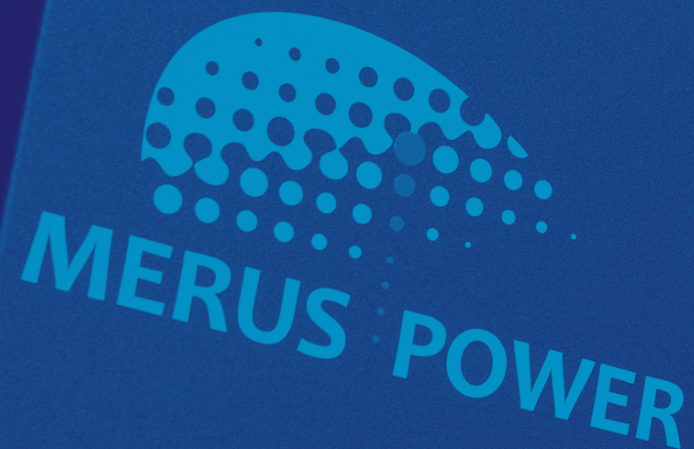




MERUS POWER

Made in Finland



We enable a sustainable and energy-efficient future for society with our scalable and innovative energy storage and power quality solutions.



A technology company from Finland

Merus Power is a technology company headquartered in the city of Ylöjärvi, Finland. We design and manufacture Finnish innovative battery energy storage systems and power quality solutions. Scalable and modular power electronics, intelligent software technologies, and electrical engineering expertise are the basis of our business. Our innovative Merus® technology enables the use of our products and services in a wide range of different application needs.

We accelerate the renewable energy transition by enabling easy grid connection, ensuring grid stability and grid code compliance. Our energy storage system supports the grid by balancing production and consumption while allowing participation in the Frequency Reserve markets. We turn the challenges of renewable energy into a brand-new source of income.

Our power quality solutions reduce electrical disruptions caused by poor power quality, improving the profitability and energy efficiency of customers' operations, and achieving significant energy and cost savings. In addition, by enabling better power quality in industrial and commercial applications, we contribute to the reduction of CO₂ emissions and help customers achieve their sustainability goals.

We provide a wide range of support services together with our local and global partner network. Our Merus® Services ensure the return and optimal operation of our customers' investments throughout their life cycle.

Our growth is supported by global megatrends such as climate and emission targets from public and private players, green transition with various related investment programs, and sustainability goals. Our customer base is diverse and consists of players in the fields of industry, power generation, and renewable energy, among others.

Join us in creating a more sustainable and energy-efficient future!





Kari Tuomala

CEO's greetings

"The energy market is undergoing an unprecedented transformation, resulting in renewable energy sources playing an increasingly important role in total energy production. The efforts behind this are to curb climate change and reduce industrial greenhouse gas emissions. Technological developments are helping to accelerate this transformation by reducing the deployment costs of renewable energy and decentralizing energy production to different parts of the electricity system. The energy transition poses significant challenges to power system management. Energy must be able to be managed, regulated, and stored efficiently in order to ensure a constant balance between supply and demand.

Merus Power is a Finnish technology company operating in the global market, focusing on innovative and scalable energy storage systems and power quality solutions. With our world-class technical competence, we are contributing to the global shift towards sustainable energy and enabling the use of renewable energy sources in growing markets. Our ever-growing staff has a passion for technology and represents internationally valued expertise.

We have been actively developing our business and product portfolio throughout our more than fifteen-year history and have successfully delivered solutions to over 70 countries around the world. We are proud of the important work we do to support green transition, enable the growth of renewable energy in electricity networks, and help our industrial customers operate more energy efficiently achieving their own goals.

With our growth strategy, we aim for strong growth in the energy storage market and the integration of renewable energy. In addition, we aim to grow faster than the global market for power quality solutions. Global megatrends support the growth in demand for renewable energy and provide us with a strong growth platform."

Kari Tuomala
CEO of Merus Power



**One technology,
multiple innovative solutions.**

Why choose **Merus Power?**

Merus Power is recognized as a desired technological partner for its extensive power quality experience, innovative technological solutions, and highly qualified personnel, among others. We always aim to provide cost-effective and reliable solutions with benefits that are appreciated by our customers and exceed their needs.

Years of experience in power quality and engineering

The fruit of our over 15-year operating experience and continuous product development is an extensive and specialized product portfolio that meets our customers' increased needs. We hold a profound local and global presence as well as a strong industrial order backlog in power quality solutions. Over the years, we have delivered solutions to over 70 countries around the world to various customers and successfully mitigated all sorts of power quality issues.

Scalable and modular reliable technology

Our Merus® Solutions can be easily tailored to a variety of applications and can meet small and large-scale customer needs with their modular structures. Their compact size, design, and scalability allow simple and cost-effective integration into many electrical systems.

Internationally valued competent staff

One of the things that tie us Merus staff together is our passion for technology and our desire to provide the world with innovative technological solutions. Our experienced project team has already successfully completed a large number of power-quality projects all around the world right from the initial phase of problem recognition to onsite delivery including installation, commissioning, and training of our customers' personnel.

- **Over 15 years of experience in power quality and electrical engineering**
- **Profound local and global presence with strong industrial order backlog**
- **Deep understanding of revenue stacking business models for energy storage systems through in-house trading and analysis team**
- **Route to reserve markets with own trading and optimization system**
- **Strong investment in software development and substantial Merus® Software portfolio - entirely developed in-house**
- **Cost-effective and top-quality scalable solutions made with Nordic excellence in Finland**
- **Customer-oriented approach and support**
- **Unique opportunity to simulate various real situations in laboratory conditions**
- **Trusted company - Publicly listed on NASDAQ OMX First North since June 2021**

Electrify your Future.

Our values



Passion for technology

We are fueled by our passion for technology. With our advanced solutions, we want to support the growth and development of renewable energy, as well as improve production efficiency and reduce the environmental impacts of businesses.



Appreciation and trust

We respect and appreciate the work of others around us. We value the wishes and needs of our customers and strive to be a reliable partner for them and our stakeholders.



Exceeding customer needs

We aim to exceed the needs of our customers and help them achieve their goals. We want to manufacture cost-effective and high-quality solutions valued by our customers that greatly benefit them.



Clean future

We enable the growth and development of renewable energy. We increase its profitability and allow simple and trouble-free integration of it into electric grids. We help reduce energy consumption and CO₂ emissions. We act responsibly ourselves and take the environmental impacts of our actions seriously. Our aim is to empower a sustainable and more energy-efficient future.

- Merus Power Group local office
- Merus® Certified Partner
- Countries to which our solutions have been delivered





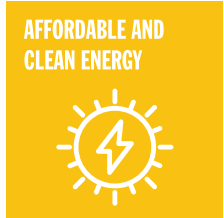
Visible global handprint of Merus Power



We work committedly for the UN Sustainable Development Goals, and we also help our customers achieve their own sustainable development goals. We monitor the implementation of responsibility with key figures such as green energy capacity, the share of electricity storage capacity and CO₂ emission reductions.



We contribute to the sustainable and energy-efficient development of the economy and society globally. Our solutions that enable better power quality in industrial and commercial applications contribute to the reduction of CO₂ emissions and improve the process efficiency of our customers' companies.



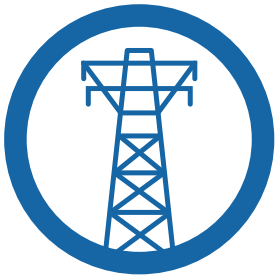
Our quality system is certified with the ISO 9001 quality standard and our environmental system with the ISO 14001 standard. Our solutions comply with IEEE 519, G5/4 and EN 50160 standards and other power quality regulations. We also have UL 508 / CSA C22.2 No. 14 Listing for our active harmonic filter product family.

At Merus Power, we are fully convinced that technology has a significant role in creating a more sustainable future.

We keep track of our positive environmental impact through three different parameters: the amount of renewable energy we helped to connect to the grid, our share of the operating reserve in the Finnish electricity market, and the amount of CO₂ emission reductions we achieved by installing our different solutions around the world.



Renewable energy

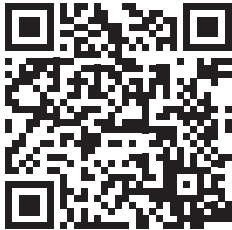


Finnish electricity market



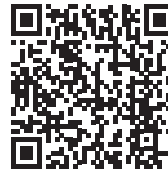
CO₂ emission reductions

Read the QR code to see what our current numbers look like on our website.



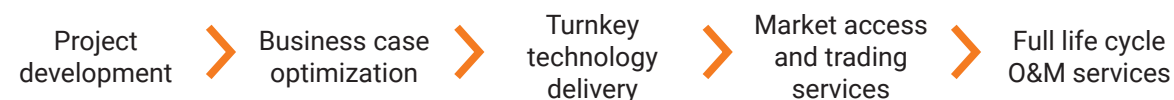
Merus® ESS

Energy Storage System



Merus® ESS is a high-power, fast-reacting and reliable lithium-ion-based battery energy storage system fully designed and manufactured by Merus Power. (1–50 MW/MWh, LV, MV & HV solutions)

With the exception of the batteries, the entire solution from controllers to inverters is manufactured in our own premises in Finland using innovative and high-quality Merus® Technology. Thanks to its scalable technology, modular structure, and easy configurability, our battery energy storage system can be customized according to the individual electrical needs of each customer. Batteries are purchased from the global battery market from major recognized suppliers, always keeping in mind sustainability, energy efficiency, and of course the end customer's best interest. Therefore, all our battery energy storages are specifically built and tailored to provide the best possible solution.



Merus® Technology is prepared to meet energy transition needs

Our high-quality Merus® ESS is able to react to the needs of the electric grid in less than 0.1 seconds, even though the market requirements are much slower. This ultra-fast reaction time is made possible using Merus® proprietary Technology utilizing optical fiber communication for control. For Merus Power, this communication technology is well-known from our comprehensive power quality portfolio (HPQ, STATCOM, SVC). Our energy storage system customers have the opportunity to participate in the upcoming electricity markets simply through software modifications by Merus Power's electricity market analysts and software experts.

Merus® Energy Management & Trading Software

The electricity market is in transition, and it is essential to keep up with the times. We are constantly looking for ways together with our customers to find new earning opportunities in different electricity markets. With our own Merus® Software Technology, we are able to keep up and adapt to the needs of the future electricity markets. We turn the challenges of renewable energy into a brand-new source of income.

We have in-house electricity market analysts to follow the current market situation and new trends. Together with our software experts, energy storage specialists, and market analysts, we are constantly developing Merus® Energy Management and Trading Software. We can optimize the benefits of the entire investment, including the aging of the energy storage battery technology.

We have developed and manufactured our energy storage solutions ourselves. We have been using similar technological solutions in our power quality portfolio for years and we know our technology inside and out. Our delivery scope includes basic and detailed engineering designs, equipment, supply, energy management system (EMS), factory and site acceptance tests (FAT and SAT), cloud service, remote access and monitoring, commissioning, start-up, and EPC works. We also provide trouble-free turnkey solutions in both Finland and abroad through our extensive and professional partner network with EPC contracts.

Merus® A2

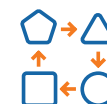
Active Harmonic Filter



Merus® A2-Active Harmonic Filter is the backbone of Merus Power's product portfolio and has been successfully helping customers tackle power quality problems worldwide.



Modular scalability: By adding Merus® A2-modules in parallel, higher harmonic compensation capacity can be achieved without any technical limitations. This offers flexibility when more loads are added to an electrical system.



Endless versatility: Merus® A2 is one device capable of delivering multiple innovative solutions. Customizable functionality and several built-in operation modes make Merus® A2 an extremely versatile device.



Dependable durability: Merus® A2 can operate in different demanding environments, even including harsh and heavy industrial ones without its performance and response time being negatively affected.

Merus® A2-Active Harmonic Filters operate similarly to noise-canceling headphones.

They measure the distorted current of the non-linear load and inject harmonic frequencies, but with an opposite phase angle. Canceling out harmonic currents reduces voltage harmonics and eliminates distortion at the point of common coupling.

They are connected in parallel with the loads to be compensated and measure the distorted current of the non-linear load then inject harmonic frequencies, but with an opposite phase angle. Canceling out harmonic currents reduces voltage harmonics and eliminates distortion at the point of common coupling. Only the fundamental frequency current component is left to be supplied from the power system.



Active harmonic filtering: Merus® A2 senses the harmonic distortions created by non-linear loads in the network and provides an effective and real-time response to cancel them. Merus® A2 ensures a guaranteed compliance with harmonic distortion limits specified in IEEE 519, G5/4, EN 50160 and also other power quality standards and regulations. It can be installed to cancel harmonics of an individual large load or group of loads.

Dynamic reactive power: Merus® A2 provides dynamic reactive power compensation, which is used for power factor correction, voltage variation and flicker mitigation. This improves electrical efficiency in the electrical system as well as achieves money savings.

Load balancing: Phase-to-phase connected equipment can burden only two of the three lines and create voltage unbalance between the phases. Merus® A2 offers dynamic load balancing that distributes the burdens more evenly between all three phases, which prevents overloading of the electrical system.

Merus® HPQ

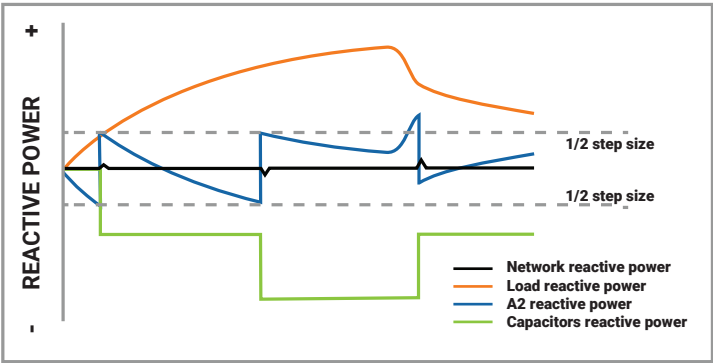
Hybrid Power Quality Compensator



Merus® HPQ is a hybrid power quality compensator that combines two existing technologies in one compact and well-performing solution. Its operation is based on two main components: a detuned capacitor bank and an active harmonic filter. The detuned capacitor steps fulfill most capacitive reactive power needs, while Merus® A2-Active Harmonic Filter module handles the intermediate steps and inductive reactive power, filters the harmonic currents, and balances the unbalanced currents. Merus® HPQ is an all-in-one power quality system.

Merus® HPQ is the perfect cost-effective solution to replace old capacitor banks with economical and reliable technology.

- Stepless and fast power factor correction
- Active Harmonic current mitigation
- Imbalance correction



Merus® HPQ system is connected in parallel with the loads, where the detuned capacitor bank will feed the capacitive reactive power need. Merus® HPQ can use a standardized and cost-efficient detuned capacitor bank step ratio (1:1:1:1:1:1), because the Merus® A2-module will take care of the middle steps. Merus® A2-module controls the capacitor bank and receives measurement data from the current transformer, which can be installed to measure network or load side current (depending on the operation mode). Simultaneously, Merus® HPQ mitigates harmonics, compensates reactive power, and balances unbalanced currents. The HPQ entirety solves all major power quality problems, even in demanding environments.



Merus® 4DRIVES

Optimized Active Harmonic Filter for VFDs



Merus® 4DRIVES is an optimized active harmonic filtering solution for Variable Frequency Drives (VFD) and it is based on Merus® A2-Active Harmonic Filter technology.

- User-friendly operation and functionality with easy commissioning
- Simple to integrate into VFD scope of supply
- Aimed specifically for volume Original Equipment Manufacturers (OEM) and system integrators
- Fully designed, manufactured, and tested by Merus Power in Finland

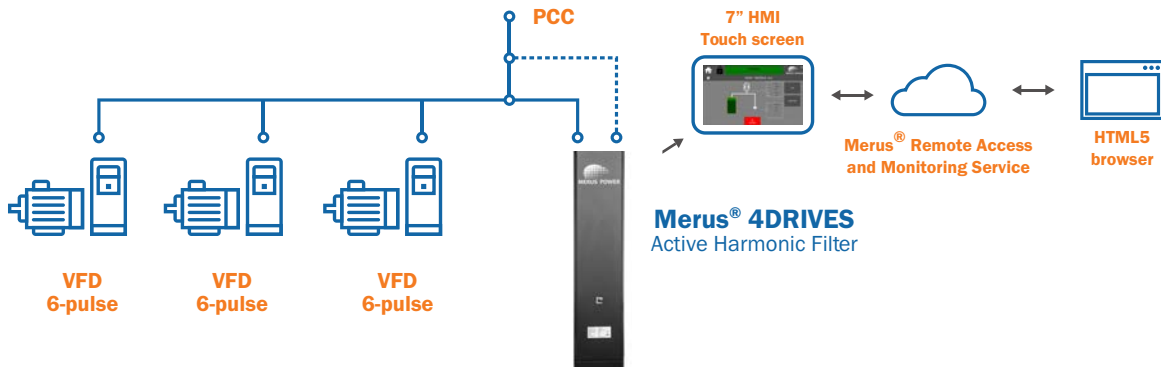
Our simple solution to complex power quality problems:

- Improves power quality and energy efficiency
- Enhances sustainability
- Ensures operational reliability and higher productivity
- Increases redundancy and reduces maintenance costs
 - longer lifetime of electrical and process equipment with reduced maintenance costs
- Compliance with IEEE 519, G5/4, EN 50160, and other power quality standards and regulations
- Access to professional technical and after-sales support 24/7
- Compact modular and scalable design



Typical segments of Merus® 4DRIVES include water and wastewater treatment plants, buildings and heating, ventilation, and air conditioning (HVAC) applications, data centers, and industry applications.

Merus® 4DRIVES active harmonic filter provides an optimized solution for Variable Frequency Drive (VFD) applications. One active harmonic filter can be used for multiple six-pulse drives in a system. The filter selection and dimensioning can be made based on the needed harmonic current distortion. The filter current rating is substantially lower than the combined drive load current, which allows savings in comparison to active front-end (AFE) drives.



Merus® STATCOM

Static Synchronous Compensator



Merus® STATCOM is a modular and modern Static Synchronous Compensator for demanding applications and heavy industrial loads.

Merus® STATCOM is a compensation solution based on a Voltage Source converter (VSC). It can act as a source or sink for reactive power, allowing continuous control of the system's grid. If there is a need for reactive power, Merus® STATCOM can provide instant reactive power support to stabilize the supply grid. In other situations, it absorbs the excess reactive power to ensure the stability of the grid.

Merus® STATCOM is a modular and redundant system. It is designed to operate as a standalone unit and higher power can be achieved by installing more modules. Each module has its own cooling system and an independent Control and Protection System (CPS) that communicates with the Supervisory Control and Data Acquisition (Merus® SCADA). In case a module has an internal failure, it will be disconnected from the system and the remaining modules continue their operation without any unnecessary interruption.



Merus® STATCOM application areas:

- Steel industry: Electric Arc Furnaces (EAF), Lade Furnaces (LF), rolling mills, etc.
- Mining industry: Mine winders, excavators, conveyors, etc.
- Shredders and crushers
- Industrial welding
- Cement plants
- Traction
- Industrial and harbor cranes
- Voltage and reactive power control in transmission and distribution utilities

Heavy industry is a vastly energy-intensive sector. Processes like mining, steel manufacturing, or cement production consume a lot of energy and generate all kinds of power quality problems from flicker to low power factor. These issues can stall production, weaken efficiency and even decrease the capacity of factories. In addition, poor power quality can cause expensive penalties for not complying with grid codes.

Merus Power is recognized as a desired technological partner for its extensive power quality experience also in heavy industry, innovative technological solutions, and highly qualified personnel. We always aim to provide the most cost-effective and reliable solutions with benefits that are appreciated by our customers and exceed their needs. We have a strong order backlog in heavy industry power quality solutions.

Merus® STATCOM and SVC project journey

Assessment
and analyses



Project specifications
and budgetary estimates



Design and
system configuration



Implementation
and commissioning



Training and transitioning
to Merus® O&M Service

Merus® SVC

Static Var Compensator



Merus® SVC is a cost-effective Static Var Compensator solution with fast reactive power compensation for higher-power-class applications.

At the heart of our Merus® SVC sits a Merus® Thyristor Valve, used in Thyristor controlled Reactors (TCR) for dynamic control of reactive power. Merus® Thyristor Valve was developed to meet the highest requirements for compactness, performance and reliability in harsh industrial environments. Thanks to the modern composite construction, the valve is compact enough to be installed even into a standard sea freight container, enabling relocatable static var compensator designs.

Modular design with efficiency proven by control algorithms

Merus® SVC systems can be built for all medium voltage levels starting from 3.3 kV all the way up to 38.5 kV. Power output ranges from 4 MVar to 250 MVar. The devices can be connected in parallel for a higher total output and added redundancy. Each Merus® SVC system is tailor-made to fit the network fault level and load parameters.

Open- and closed-loop control strategies permit effective flicker mitigation, reactive power control, power factor control and harmonic mitigation. The thyristor valves in Merus® SVC are equipped with Merus® Control & Protection System that utilizes proven control algorithms.

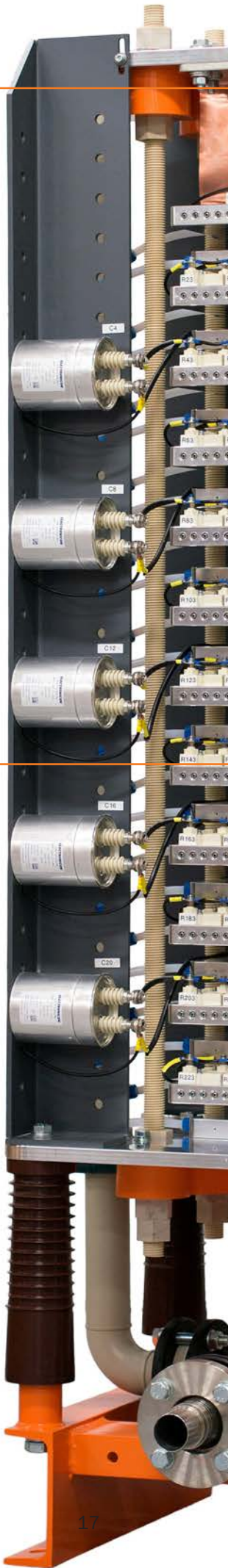
Modernizing SVCs

Lifetime expansion for aging SVC

Static Var Compensators built with thyristor-based power electronics technology have been in use since the 1970s. They continue being installed in demanding applications, such as Electric Arc Furnaces, mining plants and transmission and distribution networks. High reliability and availability is required from these installations, as they play an extremely vital role in eliminating flicker, reducing voltage variation and increasing productivity in industrial facilities and extending transmission and distribution capacity in the electrical networks of utilities.

Keeping an aging SVC up and running can be a challenge for several reasons, including shorter lifetime of active components versus passive components. The manufacturer's specific electronic control components may have become obsolete, and the electrical characteristics of new spare thyristors must be closely matched with the other thyristors in the valves. Thus, the reliable long-term operation of an ageing SVC system can be compromised leading to operational or safety risks.

Our experienced team of competent engineers takes a consultative approach to find out the right solution for the modernization of an aging Static Var Compensator.



Merus® Services



Merus® Services ensure the optimal operation and return on our customers' investments throughout their life cycle. We provide a wide range of support services together with our local and global partner network.



We make it our priority, that our customers get the best out of our solutions. We pride ourselves in exceeding our customers' expectations and that can only be achieved if our solutions are operating at their highest efficiency and productivity levels at all times.

Apart from cost-effective and flexible service agreements, we offer power quality studies and analyses, installation and commissioning services, spare parts and training and support. With our smart IoT service like Merus® Remote Access and Monitoring Software, we are able to provide both remote and on-site services.

Cybersecurity matters are exceptionally important for Merus Power. On the one hand, they lead our day-to-day work and the control of our operations, and on the other hand, they play a key role in information security and software design in the products we manufacture.

We have a team of qualified service specialists extended by an experienced and competent partner network in place to help you. Our service engineers works closely together with our R&D team.



Power quality studies and analyses



Merus® Smart IoT Services



Installation and commissioning services



Service agreements and spare parts



Technical training and support



Smooth project execution with minimum downtime.

Merus Power

Electrify your Future

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Merus® Solutions can be easily tailored to a variety of applications and can meet small and large-scale customer needs with their modular structures. Their compact size, design, and scalability allow simple and cost-effective integration into many electrical systems.

Over the years we have worked with various customers in industry, utility, infrastructure, and renewable energy applications in over 70 different countries.



Send us an email to sales@meruspower.com.
One of our sales reps will be in touch with you as soon as possible.

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