



Merus[®] HPQ

– Hybrid Power Quality Solution

All-in-one power quality product for active harmonic mitigation
and power factor correction combined



MERUS POWER



MERUS POWER

**“Good power quality
is perfect compatibility
between the electrical
network and
electrical devices.”**



A technology company mitigating power quality issues

Merus Power is a global technology company headquartered in the city of Ylöjärvi, Finland where 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 base of our business.

Power quality is becoming a critical issue in electrical environments as industry, automation and machinery are constantly increasing. Almost every load connected to the network in modern times is polluting the electrical system in some way. Poor power quality can appear in many shapes and forms, and it can cause heavy economic and technical issues if not properly mitigated. The most common power quality issues are high harmonics currents and reactive power. The cost of these problems can be directly related to increased energy consumption or penalties, but also to hidden costs such as increased downtime, loss of production, equipment damage, or data loss.

Harmonic mitigation and reactive power compensation are not stand-alone technologies but are key parts of a coordinated power quality strategy that maintains a clean electricity network. Our Merus® 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.

Merus[®] HPQ solution

For dynamic reactive power compensation and harmonic mitigation

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 high technology.

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

Customer benefits of Merus[®] HPQ solution include

- Lower energy costs
- Maximized productive time
- Reduced maintenance costs
- Optimization of embedded generation
- Specification compliance
- Supply reinforcement



Merus[®] HPQ solution

and its many applications

Thanks to its modular and versatile structure, Merus[®] HPQ has an exceptionally wide range of application possibilities:

- Conventional manufacturing
- Renewable energy generation plants
- Critical process facilities
- Material handling
- Industrial and office facilities
- Retail and leisure facilities
- Healthcare facilities

Typical sources that cause poor power quality are chillers, pumps, variable frequency drives (VFDs), cranes, elevators, and DOL motors. Merus[®] HPQ is a versatile power quality improvement solution for both fast-changing and more stable loads for all applications.





Merus® HPQ solution

The main differences from a typical active harmonic filter (AHF) and a passive power factor correction (PFC) system

Merus® HPQ is a combined solution of a traditional detuned capacitor bank and a modern active harmonic filter. The detuned capacitor bank will take care of most of the capacitive reactive power needs, while the active harmonic filter module handles the small intermediate steps and inductive reactive power.

Merus® HPQ has several advantages over typical PFC solutions:

- Typical passive PFC system has a limited ability to reduce harmonics and they do not cope well with unbalanced loads, while Merus® HPQ filters out harmonics and balances the unbalanced loads of the power system.
- Merus® HPQ eliminates the need to use different sized capacitor steps. Passive PFC systems require multiple capacitor steps to work properly.
- Merus® HPQ is a faster, more redundant, and scalable system for various types of industries and electrical loads.
- Capacitor bank's lifetime is increased, compared to the traditional PFC system
- All-in-one solution: harmonics mitigation and dynamic reactive power compensation in one system
- Hybrid solution has lower cost of installation and operation than two separate systems



Merus[®] HPQ solution

features and benefits

Smaller installation footprint compared to traditional power factor correction systems

Lower cost compared to an active harmonic filter-only -solution

- Fewer number of active harmonic filter modules required which reduces costs

Great linear output

- Better performance than traditional PFC-system
- Load balancing possibilities
- Harmonic mitigation

Inductive side compensation

Higher lifetime of the capacitor steps

- Due to the voltage harmonics mitigation

Saves money and improves power quality

- Cost reduction is achieved by upgrading compensation devices with 21st-century technology
- Better power quality: fewer interruptions and faults
- Better and faster power factor control: reduced electricity bills and fewer problems

No unnecessary small steps to capacitor banks

- Dynamic parts ensure that smaller steps by the capacitor bank are not needed
- All-in-one solution – no separate controllers required
- Higher effective compensation compared to traditional separate compensation systems

Extends the lifetime of equipment

- Increased lifetime of equipment in the network, due to harmonic mitigation.
- The capacitor bank's lifetime increases as the voltage harmonics are mitigated

Integration

- The solution is easy to integrate into a standard capacitor cubicle
- Well suited to OEM cabinet builders
- Suitable even for retrofit installations
- Single installation project with the lowest costs

Modern and user-friendly interface

- Easy to use HMI
- Provides additional information about system status
- Trend recordings give more value and understanding
- Remote monitoring option

Merus Power

Electrify your Future

Merus Power is a global technology company headquartered in the city of Ylöjärvi, Finland where 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 base of our business.

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@meruspowers.com.
One of our sales reps will be in touch with you as soon as possible.

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