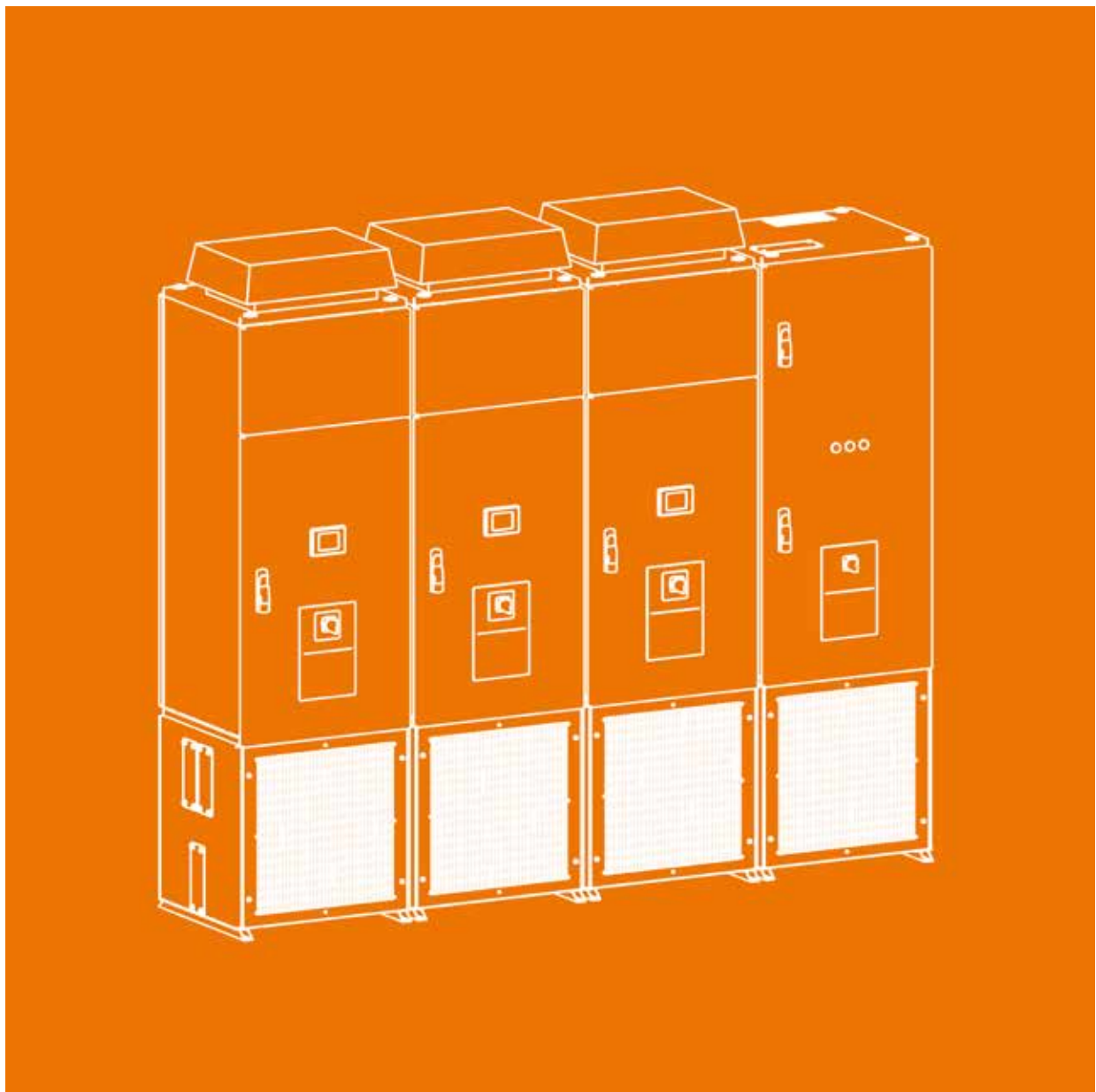


# UNINTERRUPTED POWER QUALITY



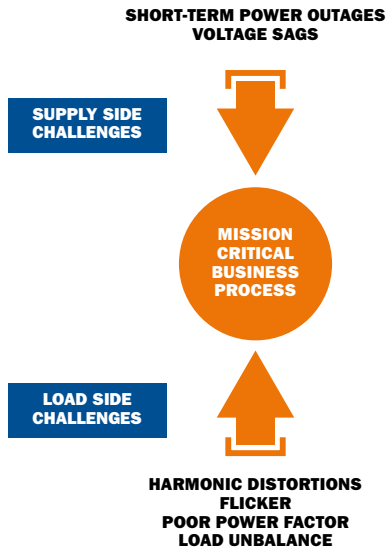
## MERUS UPQ

Comprehensive Protection for Mission-Critical Processes



# RELIABILITY CHALLENGES

## IN MISSION CRITICAL PROCESSES



Maintaining high reliability and availability is one of the key considerations in designing modern mission critical business operations. Low reliability and availability lead to significant business risks with compromised profitability and customer satisfaction.

Modern mission critical business processes demand a high quality uninterrupted power supply. Any interruption, even momentary, could damage the sensitive electrical equipment and often result in stoppages of the mission critical business processes. Such interruptions could be inflicted either by supply or load side challenges, and lead to lower availability and reliability.



### Customer Challenges

- **Unplanned interruptions due to power outages and voltage sags**
- **Loss of production and valuable data**
- **Underutilized installed electrical resources**
- **Damage to sensitive electrical equipment**
- **Rapid aging of electrical resources**



Protecting mission critical processes from a wide range of supply and load side disturbances requires significant investments and space.

To increase reliability, facilities invest in emergency diesel generators and different types of UPS systems and power quality devices, which have their advantages and disadvantages. Such conventional solutions provide limited protection from modern power quality disturbances. Oftentimes, their protection is limited to either supply or load side disturbances.

# COMPLETE PROTECTION

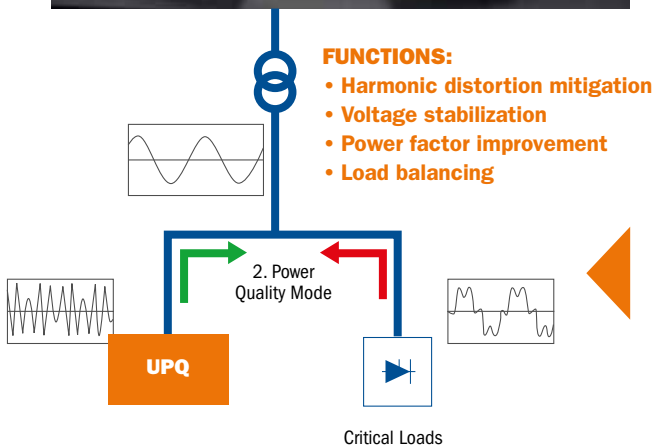
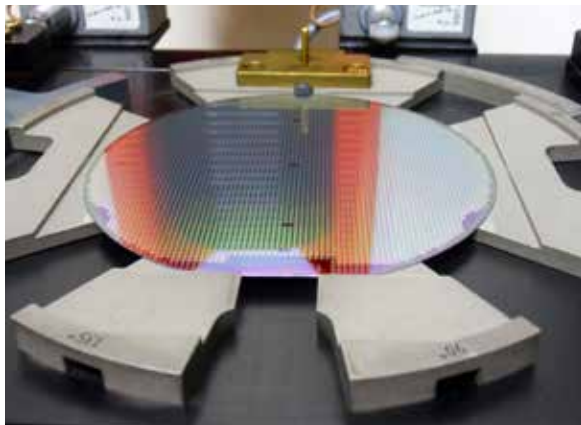
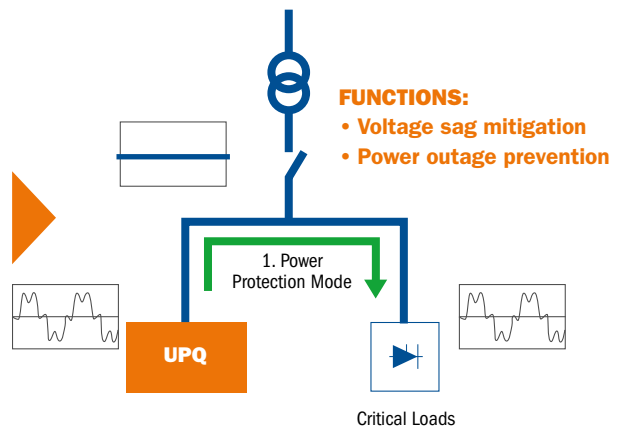
## WITH A ROBUST MODERN SOLUTION

Merus Uninterrupted Power Quality – Merus UPQ is a unique solution that combines the benefits of various power quality systems within one single robust system. Merus UPQ protects your processes against power breakdowns, unexpected losses and ensures smooth profitable business processes.

Merus UPQ provides complete protection through two operation modes.

### 1. POWER PROTECTION MODE:

In the event of a power outage or a voltage sag, the power protection mode is activated in Merus UPQ. During this mode, Merus UPQ injects real active power to the loads, ensuring complete immunity to the mission critical processes from short-term outages and voltage sags. This guarantees maximum system availability and reliability.



### 2. POWER QUALITY MODE:

After the fault is cleared, Merus UPQ returns to its normal operation mode which provides power quality functionality. In this mode, it actively filters harmonic currents up to the 50th order, and performs flicker mitigation and load balancing, as well as improves power factor.

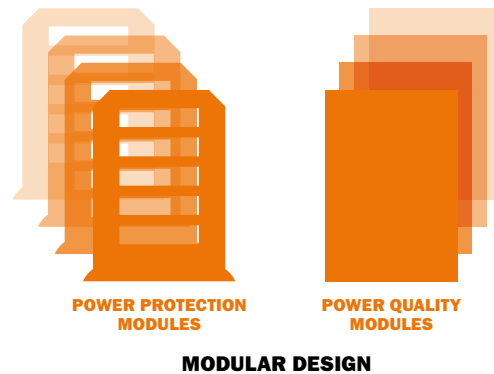
# MAXIMIZING BENEFITS

## WITH STATE-OF-THE-ART TECHNOLOGY

### TOTAL CUSTOMIZATION WITH MODULAR DESIGN:

Full scalability is achieved through modularity in both the power electronic units as well as in selection of the energy storage medium.

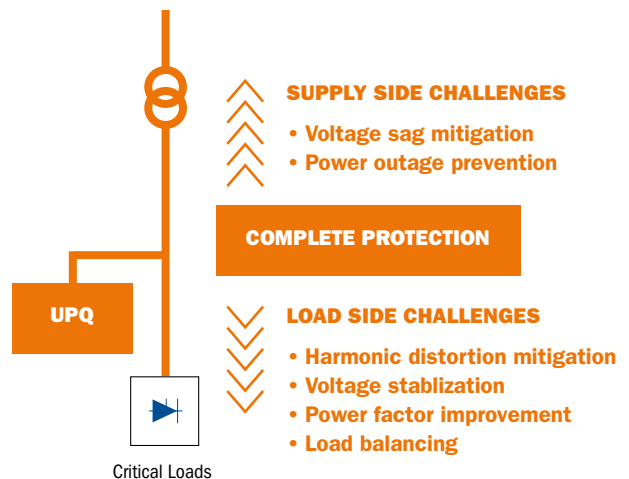
The freedom to choose from different energy storage media gives the plant owner the opportunity to optimize the investment cost according to the protection time, cost or environmental considerations.



### COMPREHENSIVE PROTECTION WITH A SINGLE ROBUST SOLUTION:

Conventional solutions in the market offer limited protection, which is often limited to either supply side or load side challenges.

Merus UPQ is a comprehensive and effective protection package from supply as well as load side disturbances. It combines the benefits of several solutions e.g. UPS, Power Conditioning and Active Harmonic Filtering into a single robust solution.



### ENABLING INTERRUPTION-FREE BUSINESS PROCESSES WITH A DYNAMIC REAL TIME RESPONSE

Merus UPQ is built on modern power electronics technology which ensures an extremely fast and effective response to power outages, voltage sags and a number of other power quality disturbances.

During the power quality mode, Merus UPQ filters harmonic distortions and improves power factor with a response time of less than 1 millisecond. In the event of a power outage or a voltage sag, switching to the power protection mode takes place in less than 10 milliseconds. Such a dynamic performance ensures maximum up-time and system availability for crucial business processes.



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### ENTIRE FACILITY PROTECTION WITH FLEXIBILITY OF CONNECTING MERUS UPQ AT ANY VOLTAGE LEVEL:

Unlike conventional solutions, Merus UPQ provides superior connectivity options. It could be easily connected at any voltage level up to 38.5 kV.

Such flexibility allows the design of an economically viable power protection solution for entire production processes. This excellent feature keeps production downtime to a minimum in your entire facility.

### LOW LOSS SOLUTION WHICH SIMULTANEOUSLY EXTENDS THE LIFESPAN OF YOUR FACILITY BY ACTIVELY FILTERING HARMONIC DISTORTIONS:

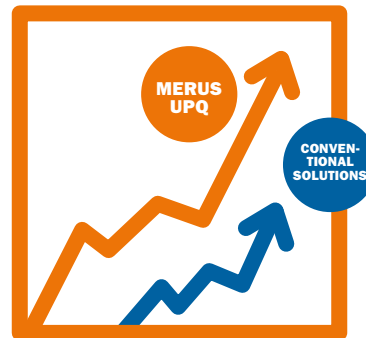
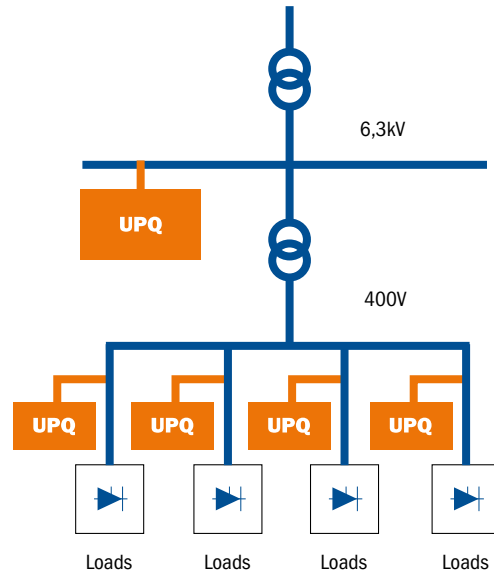
Rotary UPS has mechanical parts which cause additional losses. Conventional static UPS solutions are connected in the series, thus they have low efficiency. Unlike these conventional technologies, Merus UPQ does not have mechanical parts and is connected parallel with the loads which results in an excellent low loss solution.

Furthermore, in power quality mode Merus UPQ constantly filters harmonic currents from the electrical network, thus ensuring that the plants fulfill their promised lifespan.

### MODERN MONITORING AND REPORTING FUNCTIONALITY:

Sophisticated touch screen panel provides advanced monitoring options, either on-site or off-site. Remote monitoring is possible through the Ethernet, which keeps you updated through reporting functionality.

Modern monitoring and reporting functions feed the user with relevant information and have the option to be integrated to other SCADA systems via smart communication features.



**HIGH PROFITABILITY WITH LOW LOSSES**



# SEAMLESS OPERATION

## OF MISSION CRITICAL PROCESSES

### COMMERCIAL BUILDINGS:

The modern service-driven economy demands a high level of availability and reliability to achieve superior customer satisfaction and retention. Outages could be costly in terms of their impact on the supplier's reputation and customer confidence. Merus UPQ is a dependable solution which keeps your critical processes running around the clock, reliably.

- Financial Institutions
- Scientific Laboratories
- Telecommunication Centers
- Remote Radar Locations
- Data centers
- Hospitals
- Airports



### WIND AND SOLAR PLANTS:

Wind and solar farms are under constant pressure from the utilities to meet grid code criteria which covers low-voltage-ride-through (LVRT) and power factor, among other parameters

Merus UPQ, with its wide range of functionality, could also be flexibly applied to wind and solar farms. Real time dynamic performance enables wind and solar farms to easily comply with demanding grid codes.



### MANUFACTURING PLANTS:

Semiconductor and other process industries are very sensitive to voltage sags, power outages or other power quality issues. Any interruption could result in production losses and costly repairs.

Merus UPQ protects sensitive equipment from a wide range of power quality challenges and ensures a smooth and continuous production processes without any stoppages.

- Semiconductor Industry
- Printing Industry
- Chemical Industry
- Food and Beverage Industry
- Glass Industry
- Pharmaceutical Industry
- Other process industries



# TURNKEY SOLUTIONS

## WITH RELIABLE AFTER-SALES SUPPORT

### TURNKEY SOLUTION

The Merus Power project team is experienced and has proven technical capabilities to provide you with a turnkey solution. Our project team takes over the turnkey projects from the problem recognition phase and provides comprehensive services until the commissioning and training of the client's personnel.



### RELIABLE SUPPORT MECHANISM:

Mission critical processes demand a high quality after-sales support mechanism. Our after-sales support team strives to provide the fastest response to the client's needs in order to keep the mission critical processes running uninterrupted.



### TECHNICAL SPECIFICATION

Power output	35kVA up to 3MVA	500kVA up to 10MVA	1MVA up to 30MVA
Nominal Voltage	200-480V	480-1000V	Medium voltage
Frequency	50Hz/60Hz		
Protection degree	IP21, others upon request		
Operating modes	Power protection / Power quality		
HMI	Touch Screen		
HMI Languages	8 languages including English-German-Spanish-Chinese-Russian. Others on request.		
Monitoring	On-site and remote monitoring		
Reporting	Reports data of power quality events up to previous one month		
Communication	Ethernet / RS485, ModBus		
Cooling medium	Air		
Ambient temperature	40C, without de-rating		
Humidity	Maximum 95% RH; non-condensing		
Power losses	Total system losses 2% (typical)		
Dimensions	Configurable in 600mm modules. Details upon request.		
Noise level	<<68dB		
Energy storage media	Super capacitors, Lithium-Ion or Lead-Acid		

# WINNING BUSINESS WITH POWER QUALITY

Merus Power offers world-leading clean technology to improve power quality, energy efficiency and environmental performance. Our dynamic compensation solutions – active filters, UPQs, STATCOMs and SVCs – solve your power quality problems in no time. You will enjoy a swift payback on your investment: our solutions save energy,

increase productivity and capacity and reduce energy costs. We provide our clients with world-class products, reliable Finnish technology, agile and flexible service, tailored solutions and true co-operation.

*Merus Power is a member of  
Cleantech Finland.*

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