DATA CENTER &
FACILITY POWER SOLUTIONS

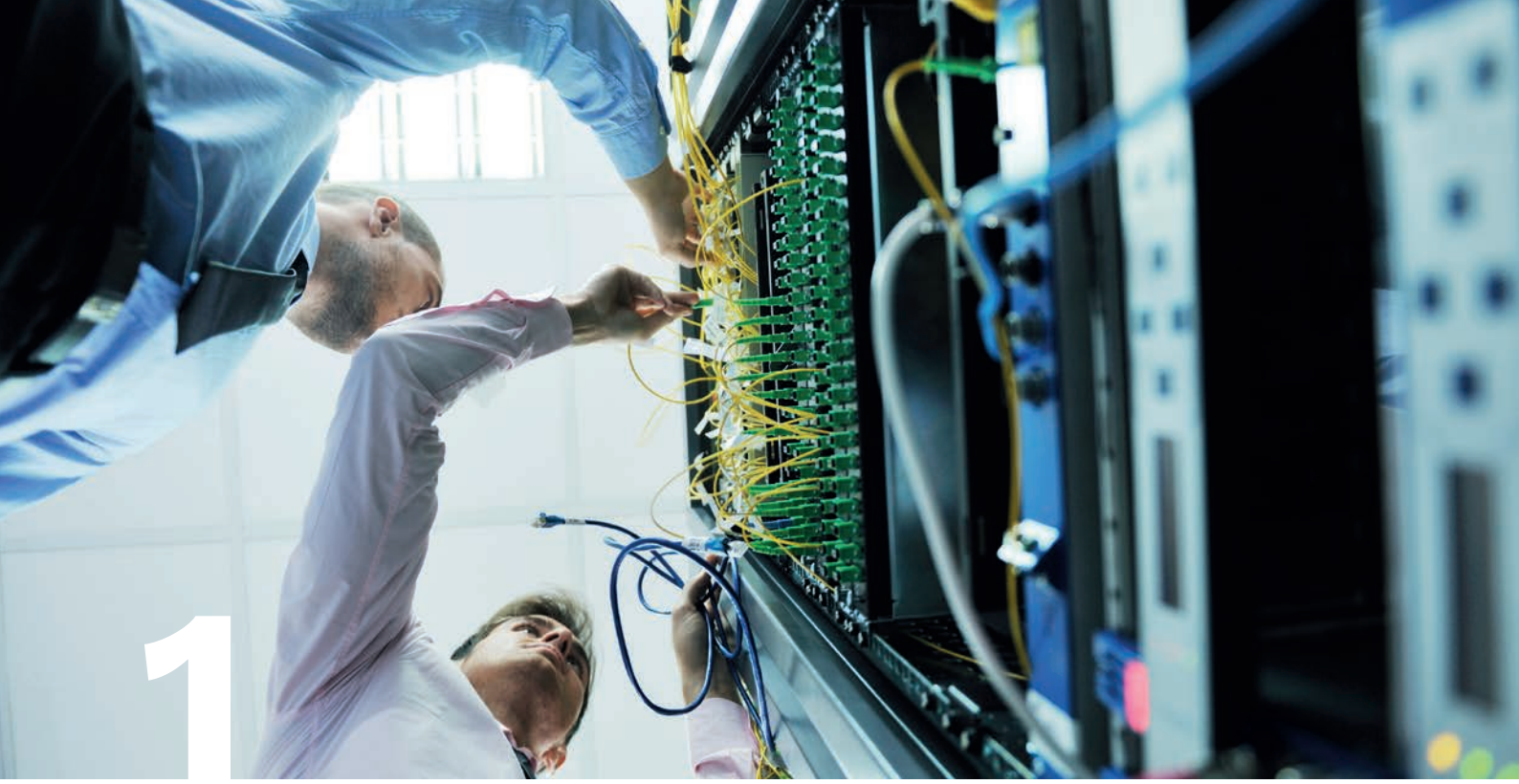
RIELLO ELETTRONICA

riello ups

A constantly increasing market

Digital infrastructures such as Data Centers, Server Farms, Big Data, Telecommunications and IT, Banks and Insurance companies are powered by ever-increasing data flows.
It is estimated that **Data Centers today consume 3% of all the energy produced in the world. By 2025 there will be at least 2.4 billion connected devices, leading to a huge growth in demand for storage and processing capacity.**
It's imperative for Data Centers to mitigate this impact by improving energy efficiency and reducing their carbon emissions.

Riello UPS uninterruptible power supplies ensure maximum efficiency while increasing the reliability and functionality of the services and infrastructure they power. This is achieved through the meticulous electrical design of the system based on these strict quality criteria: maximum availability, reduced energy consumption, optimisation of space, and local and remote monitoring.



1

Maximum availability

The subsystems and electrical components that are responsible for powering a Data Center don't only contribute the most significant costs, but they are also critical in terms of limiting downtime.

According to the Uptime Institute's **TIER Classification System**, the availability of the system within a Data Center must meet a minimum of "three nine" (99.9%) to "five nines" (99.999%), up to seven or even nine nines for high-end, mission-critical solutions where **downtime simply isn't an option**.

Riello UPS uninterruptible power supplies allow Data Centers to achieve this type of availability thanks to expertise developed over several years, flexible product configuration, the use of cutting-edge power components and innovative control technologies.

The range offered consists of versatile, compact and parallel-installable UPSs, which offer installation and operation flexibility, resilience, and considerable savings in terms of plant construction and operating costs. The UPS are able to adapt to all types of load - both inductive and capacitive - and allow scheduled maintenance to be carried out without any interruption of service thanks to system configurations with multiple connections and redundant components.

In addition to ensuring high availability, efficiency can also be further optimized thanks to the ACTIVE ECO, ECO and SMART ACTIVE operating modes offered by the Multi Power, Sentryum, Master HP, NextEnergy and Master HE ranges. Thanks to these operating modes, energy consumption is further reduced because it is possible to program the UPS according to the needs of the user and the actual load.

2

3

Reduced energy consumption

Reducing energy consumption is an economic necessity, as well as a moral obligation to the environment.
Riello UPS uninterruptible power supplies are “green” products, designed to achieve maximum energy efficiency without compromising on performance.

Our UPS are found at some of the most critical Data Centers in the world and have always been compliant with the highest possible levels of efficiency.

That’s why we rate all products by their Eco Energy Level. Based on the European Commission’s Code of Conduct, this is a rating which classifies a UPS on a range of 1-6 depending on its energy efficiency.

UPS that achieve the highest levels (4, 5, and 6) are the most efficient, deliver cost savings, and have a reduced environmental impact.

Optimisation of physical space

It’s crucial for Data Centers to maximise their available space. While server virtualisation makes a significant difference, so too can the choice of UPS.

The majority of Riello UPS’s uninterruptible power supplies are amongst the smallest footprint in their categories, including NextEnergy, the modular series Multi Power, Sentruym, Multi Sentry and Master HE ranges. For example, due to the output transformer being located inside the UPS cabinet, the Master HE occupies just 0.85 m^2.

4

Supervision and communication

Power is nothing without control. System availability and energy consumption cannot be guaranteed unless they are supported by flexible monitoring and communication systems that can integrate with any Building Management System (BMS) or Data Center Infrastructure Management (DCIM) software.

Riello UPS develops, check, and perfects a wide range of complete communication and monitoring solutions, both locally and remote access. These tools are compatible with the various protocols and guarantee a rapid response to any interfacing problems.

All our uninterruptible power supplies incorporate user-friendly front panel graphical displays that provide information on measurements, status updates, alarms, waveforms, and voltage currents in a variety of languages. This data can also be shared via internet and smartphone.

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Riello UPS solutions for your needs

Customer focused solutions

Riello Service

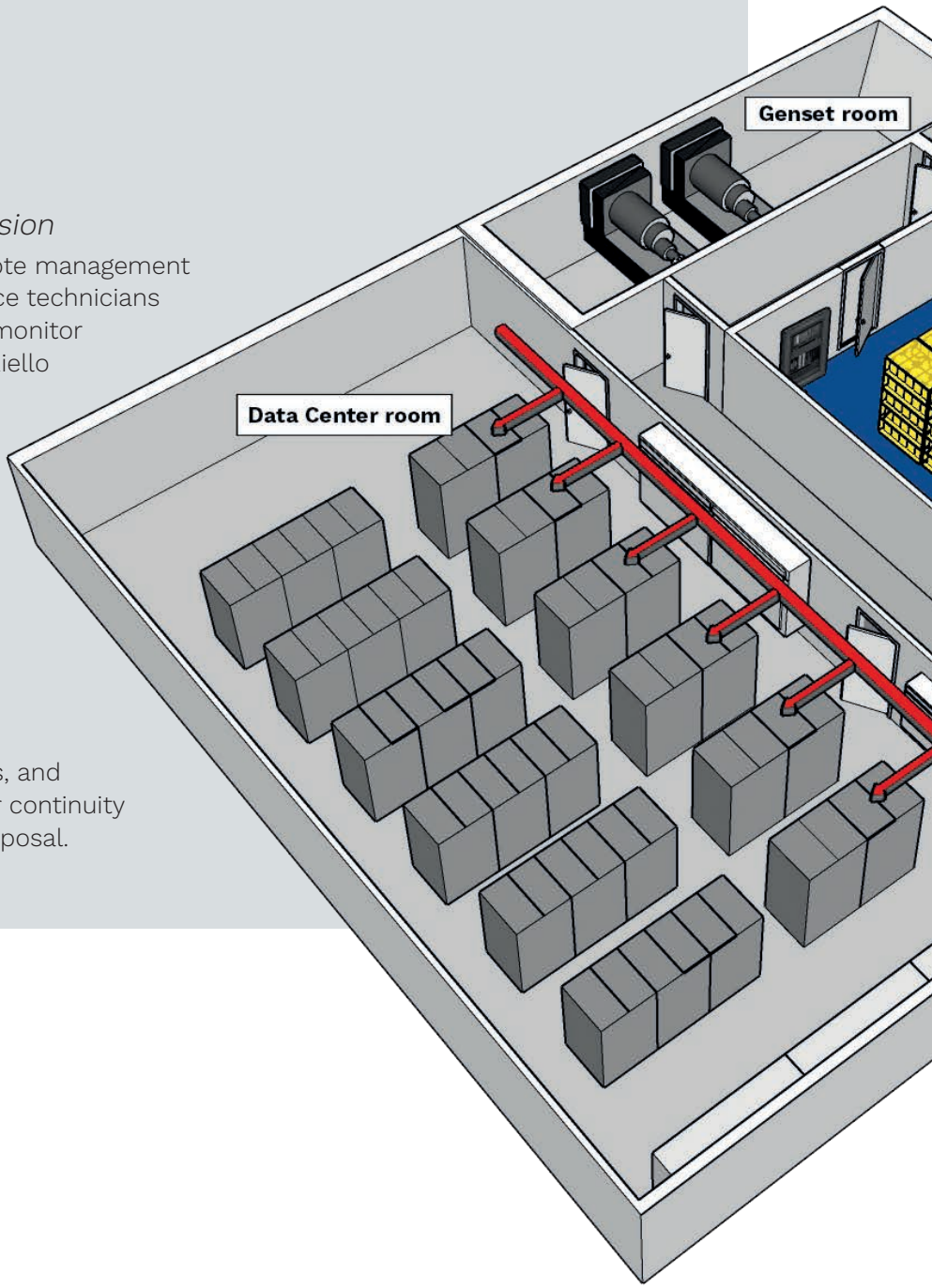
Installation and Commissioning
UPS Maintenance.

Riello Connect: remote supervision

Cloud-based remote management that enables service technicians and end users to monitor and control their Riello UPS systems.

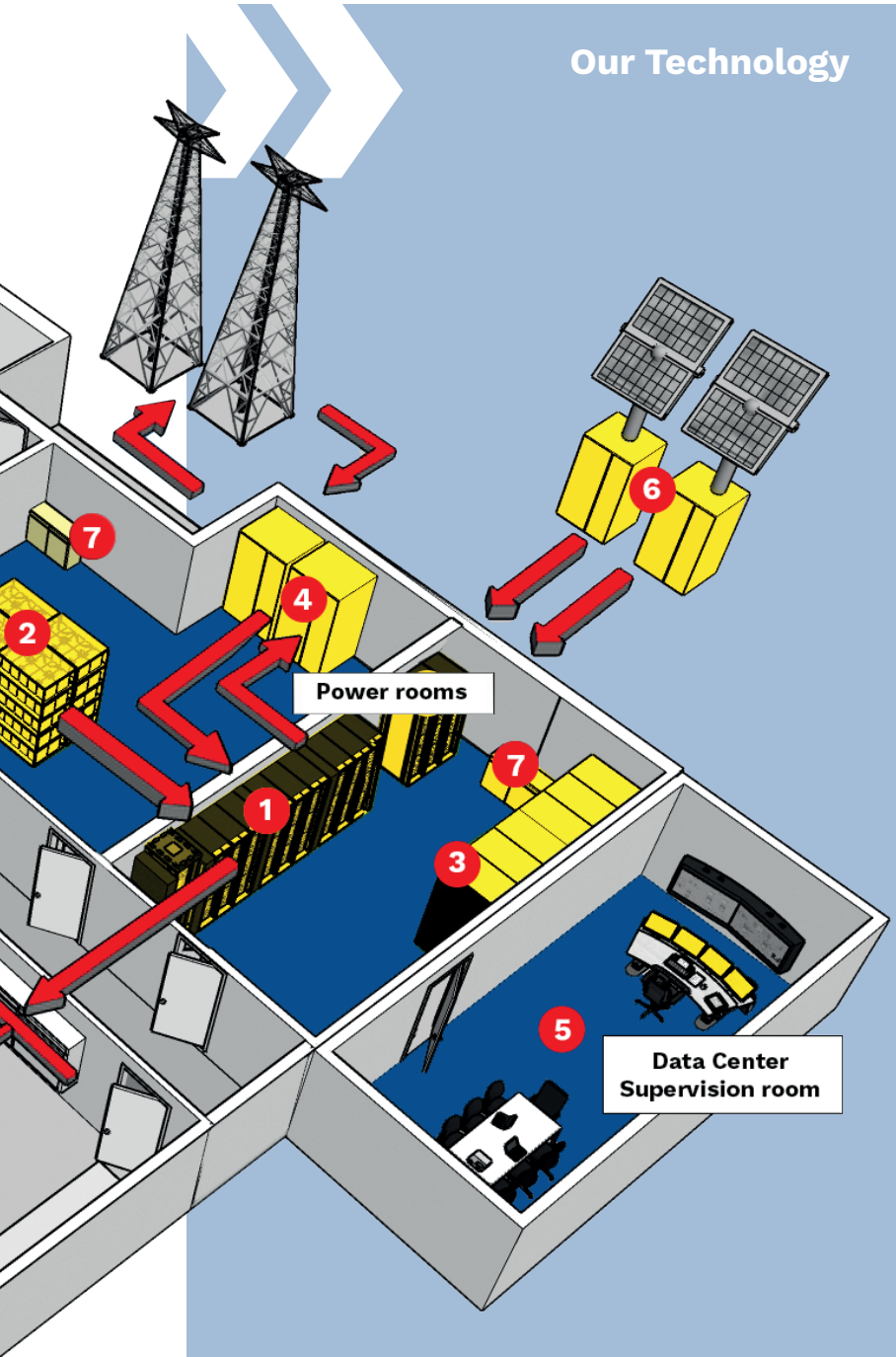
Riello TEC: consulting and presale

Regulatory advice, pre-sale support, technical seminars, and our team of power continuity experts at your disposal.



Riello UPS provides IT and Facility Managers in Data Centers with the tools and functionality they need to efficiently organise critical loads, obtaining premium performance, respecting international standards, and optimising their space.

Our Technology



Power protection and availability (1)

Single-phase and three-phase UPS up to 6.4 MVA: Sentryum, Multi Sentry, NextEnergy, Multi Power, Sentinel Dual, Master HE.

Battery (2)

Nickel-cadmium, lead-acid, lithium-ion batteries, supercapacitors.

Hybrid Storage Systems (3)

To extend the functionality of a photovoltaic system or take advantage of peak shaving using a hybrid energy storage system like Sirio Power Supply (SPS and SPS HE).

Transfer Systems (4)

Ensuring continuous and reliable power distribution (MMS and MTS).

Supervision and monitoring (5)

Communications, monitoring, and sharing software for IT and Facility Managers: PowerShield³, PowerNetGuard.

Solar Inverter (6)

Solar energy conversion systems from 1.5 kW to 800 kW.

Environmental Sensors (7)

Monitoring and recording environmental measurements in protected areas and where the UPS is installed.

Containerised Solutions

Pre-fitted power protection in a highly-secure modular container, ideal for Data Centers.

Guidelines

There are several factors that influence the planning and installation of your UPS system.

The solutions offered by Riello UPS are comprehensive and flexible at the same time, aimed at satisfying the specific needs of your sensitive and mission-critical loads.

Power quality & continuity

The UPS must act as an interface between the network and the load, guaranteeing a reliable, continuous, and quality power supply. The entire structure of a Riello UPS uninterruptible power supply, including all electromechanical, electronic, and IT components, is completely protected from external risks to ensure a power supply without any interruption or disturbance.

Maximisation of efficiency

Adopting state-of-the-art technological solutions from Riello UPS enables Data Centers to reduce their annual electricity costs by 15-20% a year without compromising on reliability and resilience.

Scalability and flexibility

Data Centers are complex infrastructures with ever-changing load requirements. Riello UPS uninterruptible power supply systems can easily be extended to provide more power, redundancy, or battery life simply by adding in additional power modules and battery units. This enables your system to grow alongside the needs of your organisation ('pay as you grow'), optimising both your initial investment and overall total cost of ownership (TCO).

Innovation

Innovation is the golden rule to excel first and better than others. Thanks to its two research centres, world-class examples of excellence for the design and development of uninterruptible power supplies, Riello UPS can constantly innovate its product portfolio implementing innovative solutions before then other and ensuring a competitive edge to our customers. Innovation and quality are the secrets of Riello UPS's success.

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Type of installation

Riello UPS uninterruptible power supplies can be installed in various ways to optimise the available space, for example, in a tower configuration, or in rack-mounted modular cabinets. Some UPS also offer the Reversible Rack/Tower which enables the option of installation on the floor or cabinet simply by extracting and rotating the display.

Type of batteries

Correct battery selection and management is crucial to ensure your UPS operates effectively in emergency conditions.
Riello UPS customizes the solution to the customer requirements thanks to UPS designed to be compatible with various energy storage systems technologies, including nickel-cadmium, lead-acid, lithium-ion and supercapacitors.
Lithium-ion batteries last much longer than lead-acid ones. They are also lighter and more compact, have reduced charging times, and require little maintenance.

Ride-through solutions

Solutions for mini-power outages

The vast majority of power outages (87%) last less than a second. But even such temporary interruptions can cause serious damage to infrastructure. For example, a Data Center can take 3 to 6 hours to transfer its operations to a mirroring site or to safely shut down, so protecting these critical systems from costly brownouts or total reboots is essential.
In the design phase of the entire system, in addition to the topology of the UPS, it is also necessary to consider the sizing and technology of the energy storage systems.
The majority of UPSs rely on conventional batteries as an energy storage system.
Due to their operational characteristics, supercapacitors can work effectively as a back up power source even in Data Center and digital applications if properly sized and coordinated with Genset operations.
Supercapacitors represent an innovative and green storage technology, characterized by a relatively low energy density and extremely high power density.

Riello UPS SuperCaps are the most efficient and effective continuity solution that make it possible to:

- reduce the size of the battery chargers, making it possible for installation in small spaces;
- guarantee high discharge currents;
- reduce thermal emission and the consequent need to use expensive cooling systems, all thanks to an extraordinarily low internal resistance (ESR) which guarantees outstanding efficiency in the charging/ discharging process (95% or more);
- improve overall system performance.

UPS solutions with supercapacitors also offer long-term TCO savings on battery monitoring, replacement, recycling and disposal.

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Riello UPS Products

Made in Italy to protect your business.

POWER PROTECTION & AVAILABILITY

SENTRYUM (S3T)

- Extensive range of solutions
- Compactness
- Efficiency up to 96.5%
- High power availability
- Smart battery management
- Maximum reliability
- Flexibility of use
- Graphic touch screen display

1:1 3:1 10-20 kW
3:3 10-20 kW

VFI TYPE **ON**LINE · **Tower** · ECO LEVEL 6 · USB **USB** plug
Energy Share · **Service** 1st start · **Supercaps** UPS · **SmartGrid** ready

MULTI SENTRY (MST)

- Complete range 30-200 kVA
- Small footprint
- High efficiency up to 96.5%
- Zero impact
- Flexibility of use
- Advanced communication

3:3 30-200 kW

VFI TYPE **ON**LINE · **Tower** · ECO LEVEL 6 · USB **USB** plug
Energy Share · **Service** 1st start · **Supercaps** UPS · **SmartGrid** ready

MULTI POWER (MPW & MPX)

- Utmost availability
- Ultimate scalability
- Unmatched power density
- Efficiency >96.6%
- Multiple controls
- Highly flexible
- Advanced commands

3:3 15-240 kW + redundancy
25-400 kW + redundancy
42-1008 kW + redundancy

VFI TYPE **ON**LINE · **Modular** · ECO LEVEL 6 · USB **USB** plug
SmartGrid ready · **Lithium** compatible · **Hot swap** battery

NEXTENERGY (NXE)

3:3 250-500 kW

- High efficiency, up to 97% in double conversion
- kW = kVA (pf 1) up to 40 °C
- Transformer-free UPS
- Full front access, back-to-back install
- Active Filter Mode (ACTIVE ECO)
- Colour LCD Touch Screen
- Peak shaving

VFI TYPE **ON**LINE
Tower
6 ECO LEVEL
USB **USB** plug
service **Service** 1st start
SmartGrid ready
Supercaps UPS
Lithium compatible

MASTER HE (MHE)

3:3 100-800 kW

- High efficiency up to 95.5% in ON LINE mode
- kW = kVA (pf 1) 10-40 °C without derating
- IGBT rectifier
- Galvanic isolation
- High overload capacity
- LCD display

VFI TYPE **ON**LINE
Tower
6 ECO LEVEL
service **Service** 1st start
Supercaps UPS
Lithium compatible
SmartGrid ready

SUPERCAPS UPS

1:1 1-10 kVA
3:3 10-400 kVA

- Clean energy
- High efficiency innovative technology
- Long operating life
- High number of cycles
- Low maintenance costs
- High working temperature
- Low footprint & weight

VFI TYPE **ON**LINE
6 ECO LEVEL

TRANSFER SYSTEMS

MASTER SWITCH STS Three-phase

- High reliability
- Hot Replacement function
- 3-pole or 4-pole version
- Advanced communication

3:3 100-800 A

Service
1st start

MULTI SWITCH ATS

- Redundant power supply
- Load protection
- Versatility of use

1:1 16-30 A

Plug & Play
installation

MULTI SOCKET PDU

- 8 programmable outputs
- LCD display
- Versatile to use

1:1 16 A

Plug & Play
installation

CONTAINERISED SOLUTIONS

- Pre-fitted solutions
- Modular and configurable
- Very high efficiency
- For urban areas and public events
- Remote and military installations

SUPERVISION AND MONITORING

POWERSHIELD³

SHUTDOWN SOFTWARE

- Graphic monitoring of ups and environmental sensor status
- Detailed display of all ups and environmental sensor parameters
- Events log and graphic display of main parameters
- Ups control programming
- Block diagram of operation

POWERNETGUARD

INVENTORY MANAGER SOFTWARE

- Graphic monitoring of ups and environmental sensor status
- Detailed display of all ups and environmental sensor parameters
- Events log and graphic display of main parameters
- Centralised management
- Support for third party ups

HYBRID ENERGY STORAGE SYSTEMS

SIRIO POWER SUPPLY (SPS & SPS HE)

Sirio Power Supply is a state-of-the-art hybrid UPS and energy storage system. Sized according to the load requirements and the battery life, it allows energy produced by renewable sources to be stored and used during the evening or in poor sunlight.
It also makes the system independent from the grid.

VFI TYPE **ON**LINE

Tower

SmartGrid ready

Service 1st start

Why Riello UPS?

"Made in Italy" technology for excellent results

A global player

A customer-centric 360° service

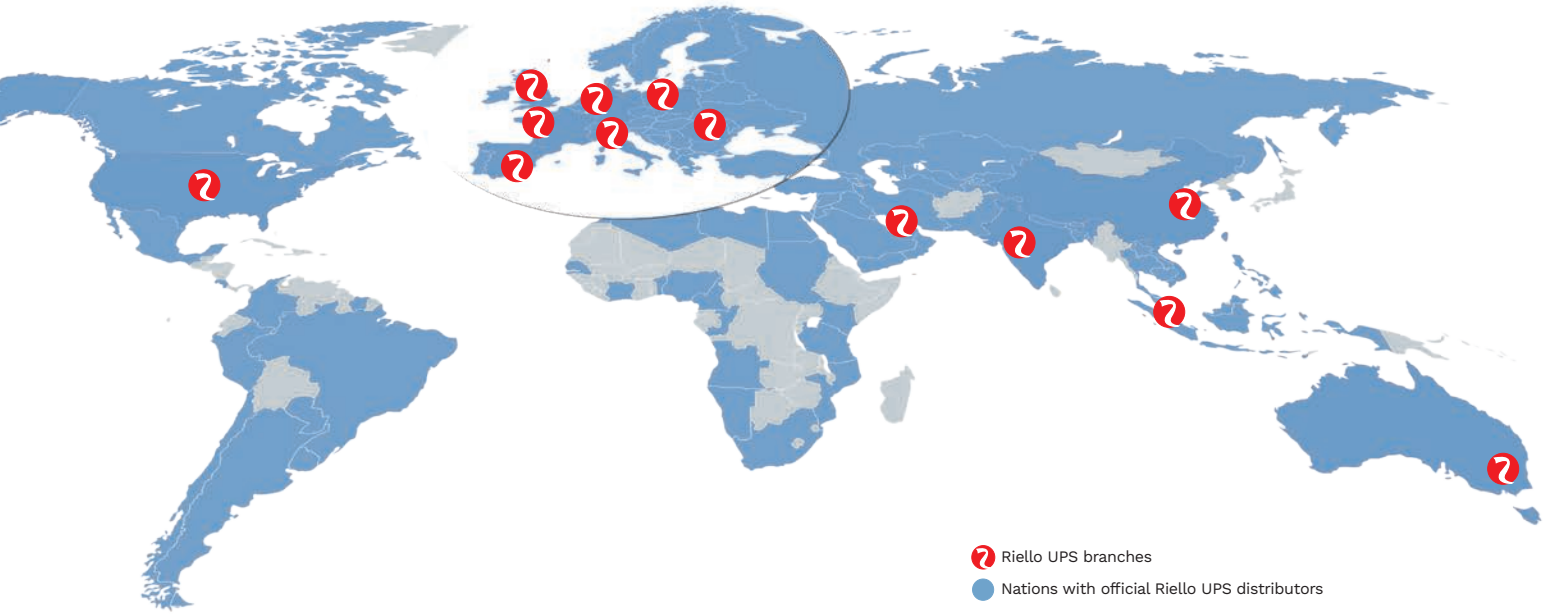
Intelligent, sustainable energy

"Made in Italy" innovation produces excellent results that are in-step with technology

Riello UPS designs and manufactures its UPS in Italy giving us direct control on quality and reliability, closely followed by the entire production, sales, assistance, and after-sales cycle.

We are a world leader in the Data Center UPS market and develop solutions equipped with innovative and advanced technologies suitable for the emerging intelligent power distribution networks that represent the future of energy. Our comprehensive and award-winning range of uninterruptible power supplies includes 23 solutions suitable for every situation. Thanks to our two research centres in Legnago (Verona) and Cormano (Milan), both world-class examples of excellence for Italy and the wider world, Riello UPS continuously innovates its product portfolio, keeping it at the cutting-edge for performance, reliability, and competitiveness.

For more info:
www.riello-ups.com



Global Player

Riello UPS is a leader in Italy and is firmly placed among the top 5 global companies in the field of power continuity. With 17 dedicated branches and a network of distributors giving us a presence in more than 85 countries, we deliver outstanding service to local customers. Our global reach spreads across Europe, the United States, the United Arab Emirates, China, India, Singapore, Vietnam and Australia.

3
PRODUCTION SITES

17
COMPANIES

85
BUSINESS COUNTRIES

250
MILLION €
TURNOVER

935
EMPLOYEES

A 360° service focused on the Customer

Technical Energy Consultant
tec

- Support from our team of power continuity experts
- Consultancy on standards
- Work tools
- Technical seminars
- Design support
- Help Desk
- FAT-Factory Acceptance Tests (Witness Test)

riello connect

- A remote monitoring service designed to increase resilience and reduce downtime to your mission-critical equipment
- Expert technicians monitoring your UPS 24 hours a day, 7 days a week, 365 days a year
- Automatic notifications by SMS or e-mail
- Regular reports on the performance of your UPS

service

- Call centre access to highly-specialised technicians
- Free swap service for small UPS
- On-site support for larger UPS
- The on-site service for replacing exhausted batteries and the procedures for transferring them for safe and proper disposal
- Preliminary site inspections to ensure the installation rooms are suitable, followed by commissioning of the UPS, including the initial start up, to ensure it is fully functional
- Tailored UPS maintenance contracts
- Technical training courses

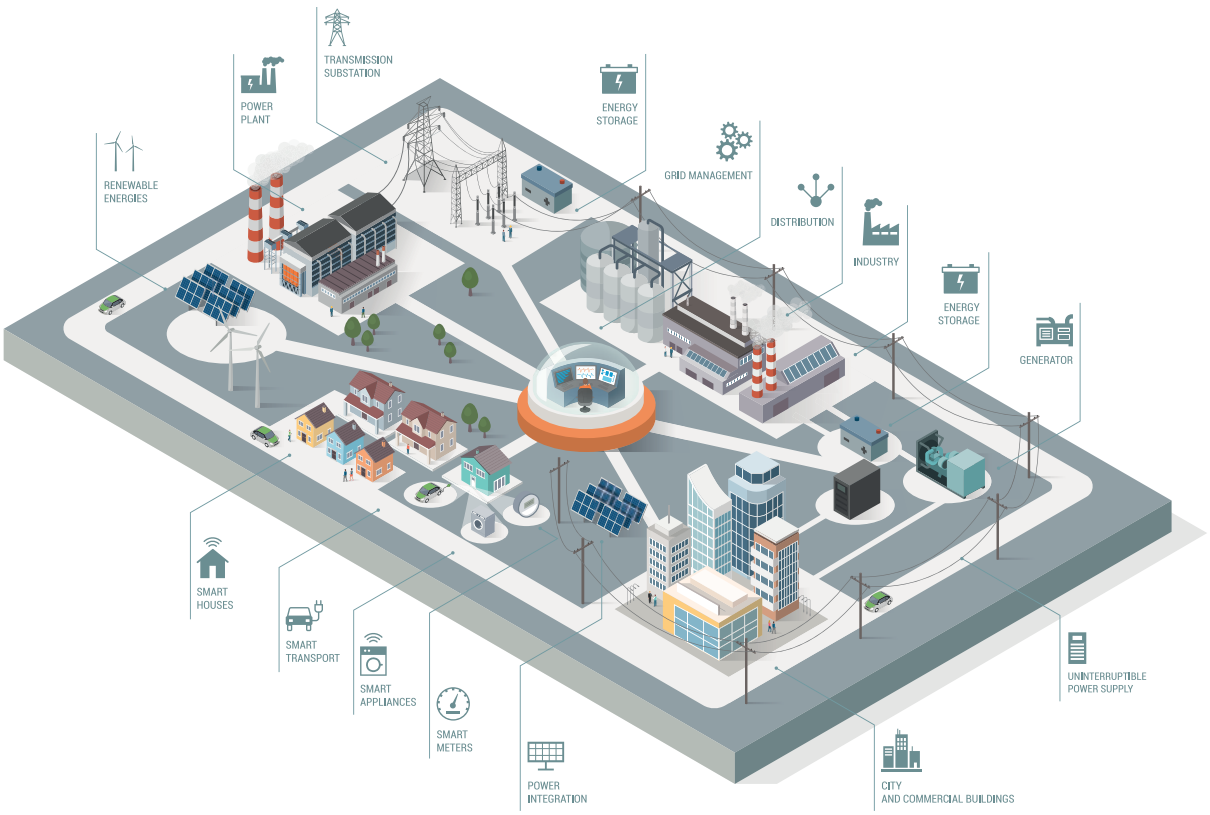
Riello UPS and intelligent energy

“Reliable power for a sustainable world” The Riello UPS philosophy condensed into a few simple words - a global brand constantly looking for the most innovative solutions.

One of the most difficult ongoing challenges in the world of UPS is how to minimise energy consumption and cost without compromising on the devices’ efficiency or performance levels. Riello UPS is the first European manufacturer to implement the Eco Energy Level system – based on the European Commission’s Code of Conduct – which classifies our UPS on 6 efficiency levels. In comparison to other available technologies, Riello UPS solutions are at the forefront of efficiency, providing energy savings that allow customers to gain a quick return on investment while at the same time reducing their carbon emissions.

Innovating towards a new concept of electricity.

Riello UPS’s commitment to combining exceptional performance whilst minimising environmental impact continues with our introduction of solutions for Smart Grids, a new concept of electrical network that integrates and manages the behaviour of all connected users. As well as helping to produce a more efficient electricity system, Smart Grids also allow a UPS and their batteries to become ‘virtual power generation plants’ combining renewable energy sources with battery storage.



References

Our customers, the best guarantee of quality

Riello UPS is the partner of choice for thousands of customers all over the world. Here are just a few examples of the market-leading companies who have chosen Riello UPS technology and our solutions.

Australia
Australia Interactive Pty Ltd.
Interactive Pty Ltd. - NSW

Austria
Europay
Raiffeisen Bank

China
China Mobile
Towngas Dongguan Financial Data
Towngas Dalian Data

India
Reserve Bank of India
ESDS Software / Data Centre
IBM India Pvt. Ltd.
Indian Institute of Science, Data Centre

Italy
ENI Green Data Center
Telecom
Engie
Banca d'Italia
Allianz Insurance

France
AXA
Crédit Agricole

Germany
Hetzner Online
Nürnberger Versicherung
Deutsche Bundesbank
Aixit Offenbach

Malaysia
Cimb Bank
CX5 Data Center

Russia
MegaFon new Data Center

Singapore
SingTel
1Net
Mediacorp

South Africa
IBM

Southeast Asia
CX2

Spain
REPSOL New "Campus" DC
Globalswitch
BitNap Datacenter Neutral
BSC Barcelona Supercomputing

South Korea
SK Telecom

Thailand
Genesis Data Centre

Turkey
Turkish Telekom

U.A.E.
Zain Telecom
Al Rajhi Bank

United Kingdom
Unilever
British Telecom
Rosebery
Tesco
Oracle
Morgan Stanley
Eir

Customer testimonial

Power protection and quality for the Irish telecommunications giant Eir

The strategic business plan of this big Irish company included the consolidation of five operational and enterprise Data Centers into two and the protection of the power supply for one of these sites outside Dublin.
"We needed a power solution for a highly critical environment to support our core business functions including management information systems and general business enterprise but also covering customer care, TV services and other business-critical services. For us, this data centre was about future readying ourselves to allow for the company's growth over the next five or six years.
Resilient power was a key driver for this project – even though we built two power plants, they're only as good as the UPS protecting them." - Owen Wynne, Contracts Manager at Eir.

The solution adopted
The € 573,000 project featured the installation of eight 400 kVA Riello UPS Master HE Ultra High Efficiency (UHE) UPSs, standalone and configured in a '2N' system with four UPS on each side.
It also included five strings of batteries per UPS, with a total of 1,680 batteries.
The project was followed by the Irish distributor of Riello UPS Pure Power Systems, which has been selling Riello UPS products in Ireland since 2004.
Pure Power Systems selected Master HE Ultra High Efficiency because it is a product that provides premium protection, power quality and green energy.
"The three major driving factors in this project were to ensure resiliency, efficiency and maintainability, whilst we had a very small footprint to work with in respect of the room layout of both the UPS and batteries. Our comprehensive solution ensured this highly critical environment had the required level of availability and redundancy." - Ian Jackson, Managing Director of Pure Power Systems.

RPS S.p.A. - Member of the Riello Elettronica Group
Viale Europa, 7 - 37045 LEGNAGO (Verona) - Italy
T +39 0442 635811 - riello@riello-ups.com

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