The future of energy management towards the process of digital transformation

IoEnergy, is now reality!





## **About Us**

All-round solutions in the field of energy conversion and supply for technological systems, know-how, experience, cutting-edge research, development of highly-innovative products, professional services and continuous after-sales support: All this is Braga Moro.



#### The story

In 1946, Luigi Moro founder the company Raddrizzatori Metallici Moro Luigi in Milan, Italy.

Twenty years later, in 1966, the small factory became Braga Moro, and it started producing power systems for telecommunications, soon becoming a leader in this sector. In the seventies, Braga Moro started designing solutions tailored to the needs of its Clients, and although conducting research in several fields, the company decided to specialize in production for the telecommunication sector.

When telephony systems started getting smaller, the company reduced the size of its conversion systems by integrating the power supply and battery assembly into a single unit, opening a major new branch in the firm's activity: power systems.

Today Braga Moro is leading the market of Telecommunication, Industrial and Enterprise of conversion and storage power systems offering innovative solutions more and more oriented towards the connected-energy able to give to the Client an overall control of its Energy systems.

#### **Our client consciousness**

For Braga Moro, each client is special and deserves exclusive attention. We don't discriminate among clients by factoring in the quantum of business value we are receiving from them or the scale of their business operations. Customer satisfaction is our priority and Braga Moro is always willing to walk the extra mile to accomplish it. We are constantly upgrading andhoning the cutting edge of our services to make them more relevant and cost competitive to our clients.

#### **Our Solutions**

• Power Systems: DC/DC, AC/DC, DC/AC power supplies and converters for use in Telecommunications, Industrial and Information Technology

• UPS: Uninterruptible Power Supply units (Interactive, On Line, Modular, Mono and Three Phase, rackable and tower) widely used for Information Technology, Telecommunication and Industrial markets

• Modular Power Storage Systems: Back-up capability that can be modular, depending on the requirements and the application involved (Pb, Gel, Ni-Cd, Ni- Mh, Li)

• Main distribution frames and integrated solutions for fixed and mobile telephony

• Tailored systems designed to meet customer needs

• Value Added Professional Services: Feasibility Study, Design, Installation and Commissioning, Repair Services, On-Site Maintenance





# **Verso+ Modular Inverter Solutions**

34

TheVerso+ inverter series power systems supplies uninterrupted, highly efficient and stable AC sine wave voltage. Designed for use with computer and network loads such as data transmission, network communication and billing system of large data computer room. The systems are widely used in communication, electric power, transportation, military and other fields.

The systems consist of 2 to 63 inverter modules, a static switch, maintenance bypass and DC/AC distribution units to form an n+m redundant single phase or three phase system.

The adoption of the latest digital control technology and automatic current sharing with no master-slave parallel redundant design provides excellent operation and performance. A static bypass with synchronizing phase lock design achieves uninterrupted switching between inverter and bypass which can operate in both online and offline modes.

The system operating mode and parameters can be set in the controller. In addition, multiple types of communication interfaces such as RS232, USB, SNMP and voltage free contacts alarm signals are provided to comply monitoring requirements.

#### **Features**

Wide capacity range: 6 to 630kVA

- Pure sine wave output voltage with low harmonic distortion

- All modules are hot-swappable for easy installation and maintenance

- Self-adaptive mains frequency: 50 or 60Hz
- High reliability, automatic current sharing with

no master-slave technology

- no master-slave techno
- High efficiency
- High power density, compact and lightweight
- Integrated Maintenance bypass switch
- Touch screen controller

- CAN-bus communication mode, monitor each module's operating parameter and status

- Intelligent speed controlling and fault alarm fan

- Both single and three phase systems use the same controller and inverter modules

- Load power factor: Less than 0.6 leadto 0.6 lag

- No rear access required
- Flexible monitoring function: RS232, USB, SNMP and voltage free contacts alarm

## **BM Modular Power Station Solutions**

The same technology is used in large custom made, stand-alone systems as for small power cores. Preconfigured high efficiency racks with ultimate reliability, can be installed in customer cabinets using minimal space.

In telecom plants or other grid locations, control & supervision systems, data transmission equipment, hazard detection systems and fire alarm & suppression systems need highly reliable power supplies to operate. Compact, high power dense Braga Moro equipment will use little space in the cabinets used to fulfil these functions. Heat losses are minimal, voltage stability is optimal, longevity is maximal, and reliability is unquestionable.

These high power and compact system have all of the features needed for supplying DC power to the loads and charging the back-up batteries, including the control functionality that provides supervision & control of the power supply, and communicates management data to the operator. All the rectifiers can operate in parallel under controller to Braga Moro System control Unit (SCU) to create a single DC power output.



These rectifiers module and also are Solar modules. Specially designed for telecom, broadcast solutions and data center applications. As rectifier module can work with outstanding reliability, efficiency and power density. As solar module it is an isolated DC/DC converter which has the MPPT function. The module can be identified as Rectifier or Solar automatically by input voltage.

The BRM 48/3000W has an efficiency of 97%. All the rectifiers series have digital primary and secondary control, realize excellent monitoring and regulation and wide input range.

The rated output voltage of the BRM series start from 24Vdc up to 220Vdc, with a wide range of output power for each rectifier's modules.





For a wide range of capacities, modules in parallel sharing the load will provide utmost reliability and power availability.





# MDCC Modular DC/DC converter Solutions



Floor stading



MDCC Modular Converter Solutions are the ideal solution for low to medium power DC to DC conversion applications that require compact, efficient and flexible DC power solutions.

These DC/DC converter systems are available in different and customizable configurations.

The MDCC is a 6 converters bay sub-rack. It can be used with additional sub-racks to increase the output power.

The back-plane may be separated into individual converter sections to allow the sub-rack to accommodate different polarity or voltage rated converters in the same sub-rack (e.g. 125V/48V and 125V/24V, or 48V/-24V and 48V/+24V).

Each converters section can be controlled by one SCU (system Control Unit) through an isolated CAN-BUS, or each block can have its own SCU to improve the reliability of the system

## **Features**

• Facilitates cost-effective n+1 deployment.

• The back-plane may be separated into individual and isolated converter sections. This allows a single section to accommodate different polarity, or voltage.

- System can work with input polarity inversion.
- In one cabinet we can realize a fully redundant system with double controller.
- The MDCC can provide a customizable output distribution.
- Easy installation and maintenance
- Battery management can easily add to MDCC systems.
- Flexible monitoring function: RS232, USB, SNMP and voltage free contacts alarm.



## Thyristor - controlled power supplies and battery chargers

The Thyristor-controlled (SCR) Series power supplies and battery charger use six or twelve pulses SCR switching design technology principle to achieve the desired DC Output Voltage. It basically consists of a transformer to set a suitable level to feed the rectifier bridge in order to get controlled DC output to the battery and load after being smoothened by the filter circuit.

The power output requirement is adjusted by using phase control technique which is provided by the control circuit. It is designed for low maintenance and remote monitoring with an optional SNMP interface board or RS485 interface board. User friendly enables the users to quickly attend the equipment.

This series has a wide output voltage from 24Vdc up to 220Vdc, can be i provided in different power module, each module can be put in parallel to increase power and reliability of the system.

Cabinets are floor, wall or rack mountable and equipped with knockouts for cable conduit entrance. Input, output and remote alarm connections are wired to easily accessible, internal terminal blocks.

The units can operate in the most diverse conditions; large cities, rural areas, marine oil platforms, utilities, petrochemical, Industrial Process, Electric Transportation, AC distribution, Switchgear Protection, Engine Starting, Alarm systems, Rail Road Service, Radio, Telemetering, Microwave, Telephone, UPS.

The failure rate is very low, with less than 0.1% and the MTBF is more than 200,000hours



## Features

- Wide input voltage range.
- Three phases, six pulse.
- 1% of regulation steady state.
- Compatible with all kind of batteries.
- Float and equalize voltage.
- 12 hours equalize timer.
- Easy installation and maintenance
- HDMI with touch panel (optional).
- 110% current limit.

• Flexible monitoring function: RS232, USB, SNMP and voltage free contacts alarm.





# **Braga Moro UPS Series**

Our products are developed to be used in the field of critical power protection. UPS Product Technology business designs, manufactures and delivers premium power quality products and related software products that ensure organizations all over the world enjoy a safe and managed power supply. Protect your critical power application with a Braga Moro UPS – ranging from 400VA to 2080kVA. Using state of the art technology Braga Moro offer different UPS with high reliability and maximum application flexibility.

With our power solution in place, your mission-critical equipment is protected from any fluctuation in your power source, enabling you to concentrate on your core activities. Leave your critical power needs with Braga Moro, a reliable power quality supplier for more than 50 years.



## **Features**

- Low input current distortion and high input power factor eliminates need for costly filters or oversized generator.
- Small footprint.
- High output power factor allows for optimal sizing of UPS.
- Low output voltage distortion.
- ECO mode enables automatic energy savings under stable power conditions.
- Excellent overload behavior, withstands toughest conditions.
- Cold start function (start-up without mains present).
- Matching battery packs for extended back up times.
- All the Braga Moro UPS can connect easily in parallel to improve the output power and reliability of the loads.
- SNMP plug in card for integration into networks.
- Potential free alarm contacts.
- Different kind of software to manage the load and control the UPS.
- Backfeed protection.

A wide range of Braga Moro UPS series			
Series	Power Range	Case	In/Out
Pegasus Plus	1kVA ÷ 3kVA	Tower	1:1
Acquarius Plus	1kVA ÷ 3kVA	Tower/Rack	
Orion Plus	6kVA ÷ 10kVA	Tower/Rack	1:1
Octans Plus	10kVA ÷ 20kVA	Tower	1:1 - 3:1
Perseus Plus	10kVA ÷ 80kVA	Tower	3:3
Perseus HE	10kVA ÷ 600kVA	Cabinet	3:3
Hercules Plus	10kVA ÷ 2080kVA	Cabinet	3:3

## **Solar Smart Energy Solution**

The world faces an unparalleled challenge: meeting growing global electricity demand with minimal environmental impact. As a competitive source of energy, solar is a key contributor to solving this challenge – especially as electricity costs rise and solar systems become increasingly economically viable. Solar energy is abundant, clean and scalable for installations of any size. Along with other renewables, solar will support economic revitalization around the globe as it enables economic growth to be decoupled from environmental impact. Government-backed incentives and subsidies for solar installations are becoming a thing of the past, as solar schemes look increasingly commercially attractive in their own right.

Braga Moro comprehensive solar solutions portfolio, supported by a sales dept, service and manufacturing footprint, Braga Moro has everything you need to ensure solar power installations of all sizes are as efficient, reliable and well-managed as possible - all while maximizing return on investment. Our solar offering includes inverters, low-voltage products, monitoring and control systems, grid connection, stabilization and integration products, as well as complete electrical balance of plant solutions. We also offer a wide range of support and maintenance services, including remote operations and diagnostics, that will help ensure your solar installations deliver optimal performance. Braga Moro has been supplying solar power solutions since the early 2000s, and we are uniquely positioned to leverage our expertise in power electronics, smart grids, distributed control systems and many other parts of the energy chain. We can meet your every product, solution and service need – right up to the connection with the photovoltaic (PV) panels - whether for residential and commercial rooftop applications, utility-scale PV plants and grid connections, grid integration solutions, or microgrid solar applications.

BM's vision is power and productivity for a better world, and solar is a perfect fit. With our passion for technology and innovation, our global presence and local competencies, and our commitment to renewables, Braga Moro is helping to drive the growth of solar to its full potential. In short, Braga Moro is here to help drive your long-term success in solar power.









# **Storage Solutions**



Braga Moro Storage Solutions offers a broad range of stationary batteries, designed to guarantee uninterrupted power supply in a myriad of applications. Our technologies have been developed and optimized during years to meet different market needs. AGM-technology based products are manteinance free, as well as GEL-technology that enhances product behaviour even in critical conditions. LiFepo4 products ensure high reliability thanks to a low maintenance and specific attitude to different discharge rates. With Lifepo4 we ca provide high density capacity solutions for several applications. To complete technologies portfolio, Braga Moro has developed new systems, as residential solutions for energy management software to share the storage energy. We have the expertise to bring the best energy backup products and solutions to the market for every business. Thanks to this attitude we can guide our customer through the market necessities, guarantee clients satisfaction and build long-lasting relationship.





# GALAXY

GalaXy is a suitable web oriented scalable platform able to manage and monitor a power system or IoT devices trough the different types of connection and protocols.

The GUI (Graphical User Interface) is based on open source frameworks and can be customized according to the clients needs.



# **Braga Moro Sistemi di Energia** Your best partner for the digital transformation!

#### **Professional services and support**

Assist	Advise	Design	Support
<ul> <li>✓ Expert on SI team</li> <li>✓ Head start on BM solutions</li> <li>✓ Product installation</li> </ul>	<ul> <li>✓ Survey</li> <li>✓ Architecture</li> <li>✓ Project deployment</li> <li>✓ Security and Compliance</li> </ul>	<ul> <li>✓ Graphics Style</li> <li>✓ Best practices</li> <li>✓ Scalability</li> <li>✓ Interoperability</li> </ul>	<ul> <li>✓ Custom training</li> <li>✓ System-based troubleshooting</li> <li>✓ Enhance and Support</li> </ul>
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