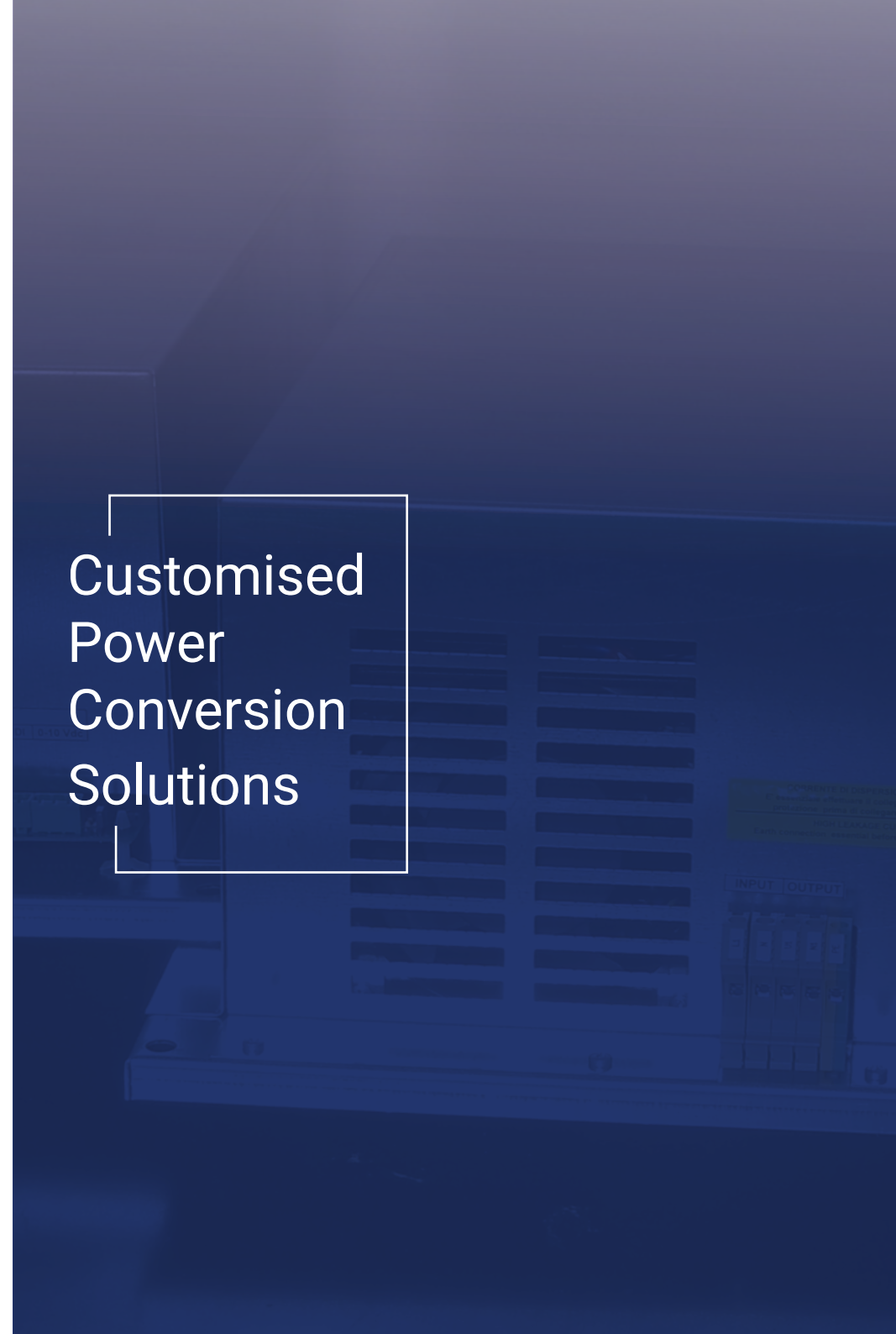




Customised Power Conversion Solutions



“Innovation distinguishes between a leader and a follower.”

Steve Jobs

**“Start by doing what is necessary, then what is possible,
and suddenly you are doing the impossible.”**

St. Francis Of Assisi

**“It is not the strongest of the species that survives,
nor the most intelligent that survives.
It is the one that is most adaptable to change.”**

Charles Darwin







MCB is a young dynamic Company founded in 1996 from high-skilled professionals in the design and production of Power Conversion Equipment.

The Company has the aim to offer cutting edge and **custom** technical solutions. MCB **masters** the Power Electronics technology with a unique know-how breaking new grounds according to a fast evolving challenging market where only the excellences can thrive into.

Our Final Mission? Guaranteeing a reliable point of **balance** in any power-conversion operation aiming at our customers peace of mind.

MCB can offer a broad range of technical power conversion solutions such as:

- 3in1 AC/AC Power Sources (Frequency Converter, Voltage Regulator, Voltage Stabilizer)
- AC/AC and AC/DC Current Generators (very high current, very low voltage)
- AC/DC Power Sources equipped with Battery Charging function

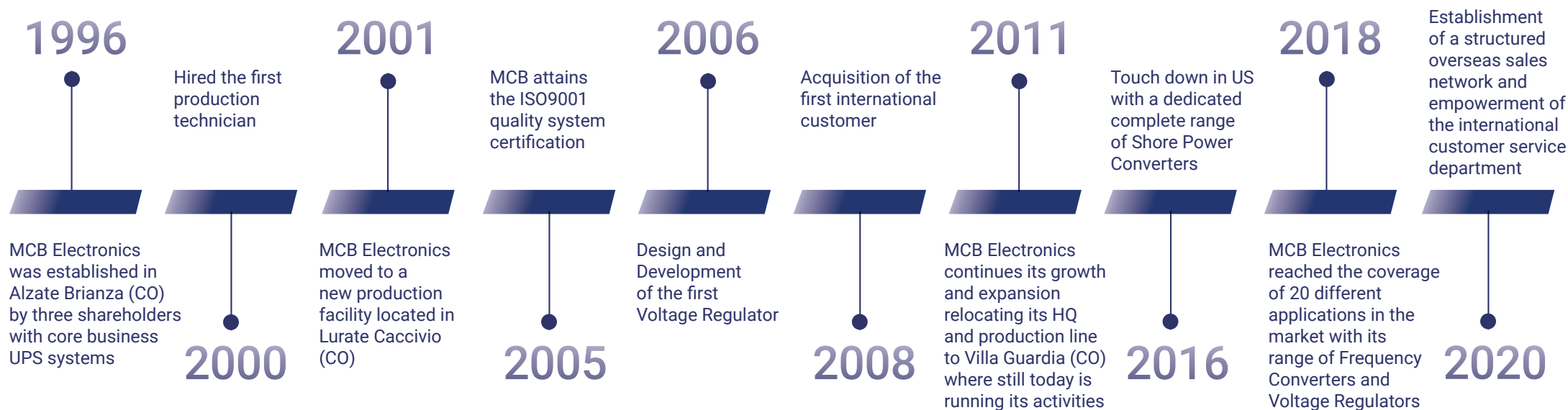


First Voltage Regulator
designed and commercialised in 2006



**Our presence
in the World:**
supplying more than
200 Customers
in more than
10 Countries

From the Origins to the International Expansion



HQ is based in Villa Guardia (CO), 20minutes from Como City and the homonymous Lake Como. Just 30mins from the Swiss border.

Company Organization:

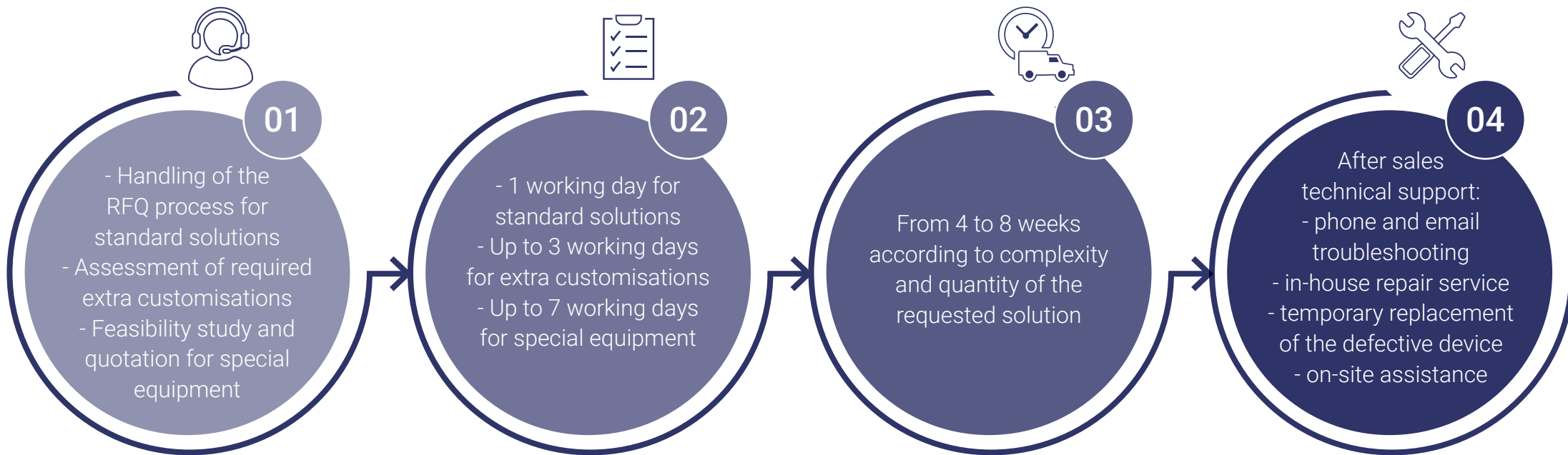
- Administration
- Purchase Department
- Technical Design Department
- R & D Department
- Production, Assembly and Testing Department
- National and International Sales Department
- Technical Customer Service Department

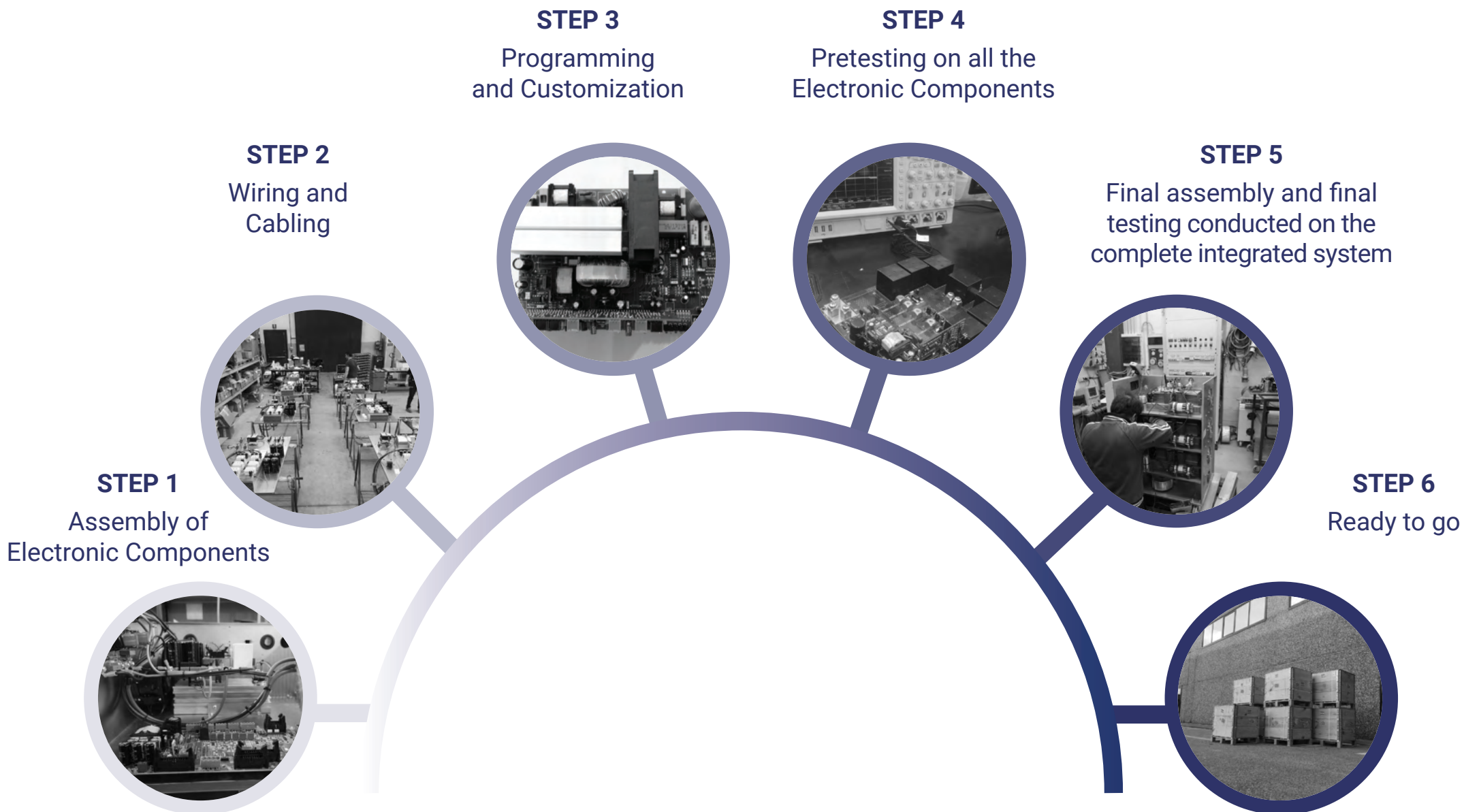
Several local technological artisans supporting our production process 100% Made in Italy

Macro Numbers:

More than 200 customers served worldwide
+124% turnover from FY14 to FY2020







Our technology thanks to its versatility is designed, programmed and assembled to be deployed in nearly 30 different applications fields

- Electric motors, rotors, actuators, alternators
- Aeronautics, Reactors
- Lighting (Incandescent, LED)
- Airports
- Marine and Nautical
- Assembly Lines
- Medical (Radiology, MRI)
- Automotive, Home Automation
- Medium and High Grid Voltage Testing
- Cables and Wires Testing
- Military Containers
- Climatic Chamber
- Motorhomes
- Cold Room, Refrigerator
- Dishwasher, Washing Machines
- Compressors
- Packaging
- Domestic and industrial switches, Differentials
- Portable Appliances – Hairdryer, Heaters, Accessories
- Boilers components testing (burners, blowers ...)
- Pumps, Fans
- Electronic components testing (IGBT, MOSFET etc...)
- Research Centers and Research Labs
- Fridges, Freezers, Refrigerators
- Transformers, Coils and wound parts
- Home Appliances (electrical, stovetop, ovens, microwaves)
- Vacuum Pumps
- Industry
- Water and Air Depuration (Ozone)
- Unmanned aerial vehicles (drones)
- Wind tunnels and propellers
- Photovoltaic
- Battery packs



Avionics

Aircraft Ground Power Units [GPU] - When parked an aircraft cannot use the normal 50Hz (or 60Hz in America) mains power as it needs 400Hz power. As a result, airports need GPU to allow the aircraft to function whilst on the ground



Automotive

By powering test benches with our power conversion systems it is possible to test powertrains and automotive components at several different Frequencies and Voltages with an extended Power range



Marine & Offshore

Shore Power Converter. It allows boats to plug in at any dock all over the world, regardless of the Frequency and the Voltage provided by the Marina



Drones

Our special modular and parallelable AC/DC power supply can power grounded drones with full compatibility with any AC mains power. Broad customizable wattage ranges with smooth adjustment of both current and voltage in output



Household Appliances

Beside the testing of compatibility and compliance with all the electric worldwide mains power specifications, our technology is used to verify the durability of home appliance electronics components as well as the isolation on the partial discharge testing



Electric Motors

We are able to power and test any type of electric motor (AC, DC, DC brushless etc ...) intended for the most diverse market applications. Our consulting approach aims at the perfect sizing of our machines according to the technical specifications and the operating modes of the engine. We are also able to supply devices for the suppression of transients in case of sudden disconnection of the load and systems for the correction of the power factor for those motors with low $\cos \phi$



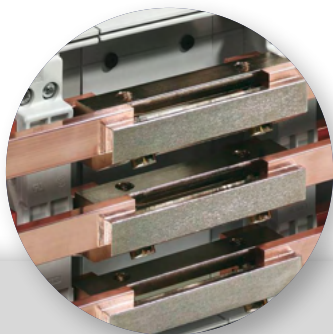
Certification and Regulatory Labs

Our Frequency and Voltage Converters are used to power electric devices for regulatory testing



Electrical Grid Testing

Supplying transformers in medium and high Voltage Power Grids modulating Voltage and Frequency up to the resonance point with the scope to detect break points on the power lines



Industry

Testing of magnetothermic switches and automatic circuit breakers.
Testing busbar impedance and quality of its connection points.
Testing of packaging machines



Military

Supporting the International Armies and Humanitarian Aid Organizations in their missions around the world by powering their electrical and electronic equipment in areas where it is not compatible with the local mains power



Remote Areas

In some African Regions our Power Sources are used to convert the single-phase mains power line to a three-phase system compatible with the local electrical devices



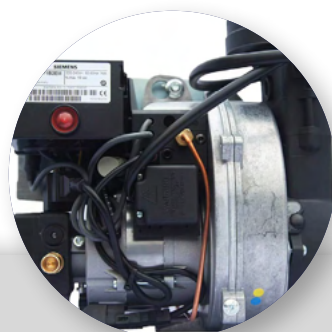
Motorhomes

These vehicles, like the Boats and Yachts in the marine sector, need to work in any corner of the Globe. Our Power Conversion technology, worldwide compatible, supplies their electrical equipment irrespective of the local mains power line specifications



Climatic Chambers

Devices tested at different environmental and electrical conditions powered by our Power Conversion solutions regulating Voltage and Frequency



Burners

Testing of industrial burners assessing Inrush current value and its duration



Water Treatment Systems

Water Depuration carried out through Ozone Generators supplied by our Power Sources with 800Hz Frequency output



Oil Pipelines

Valves certification procedure upon variation of Voltage and Frequency values through our Power Sources

Plate



Our Technical Solutions

Maxi Tower



Rack 19"



*Mini
Tower*



AC/AC Power Sources

POWER-BOOST

POWER-TRUST

Power-Trust is like Power-Boost without any transformer and available as standard just in SS and TS versions (1-phase/1-phase and 1-phase/3-phase)

BASIC

DELUXE

PREMIUM

AC/AC and AC/DC Current Generators

POWER-FLOW

Fully custom current generator featured by very high DC or AC current output and very low DC or AC voltage output. Perfect solution for testing thermal-magnetic circuit breakers, busbars, electric motors.

AC / DC Power Sources

POWER-SPIN

Scalable and Modular AC/DC power source with very wide voltage and current ranges. The perfect solution for powering UAV test stands, wind tunnels, automotive components such as windshield wipers, sunroofs, air blowers, electric seats, headlights and next-gen DC home appliances.

	AC / AC Power Source	Current Generators [AC / AC & AC / DC]		AC / DC Power Source
Product name	Power-Boost / Power-Trust	Power - Flow AC	Power - Flow DC	Power - Spin
Power range	1.5kVA - 150 kVA	1kVA - 150 kVA	1kW - 90 kW	1kW - 200kW
AC Input	1-phase, 2-phase, 3-phase			
AC Output	1-phase, 2-phase, 3-phase	1-phase 3-phase	-	-
Output Voltage Range [PH-N]	2-150Vac & 4-300Vac	down to 1Vac	down to 1Vac	1-400Vdc
Output Frequency Range	from 40 to 80Hz and 400Hz	From 40Hz to 400Hz	-	-
Output Current Range [PH-N]	from 1x5A [1.5kVA @300Vac] to 3 x 333,3A [150kVA @150Vac]	up to 40kA		1-500 A
Current Regulation	Full Regulation within the output current range			
Local Control Interface	° LCD display 4x40 characters and command buttons ° LCD 7" touchscreen			° LCD display 4x40 characters and command buttons
Remote Controls	° Analog I/O 12 poles with 0-10Vdc control ° Ethernet and RS232 equipped with SCPI protocol			° Ethernet and RS232 equipped with SCPI protocol
Drivers	LabView Drivers			-

3in1 AC/AC POWER SOURCES

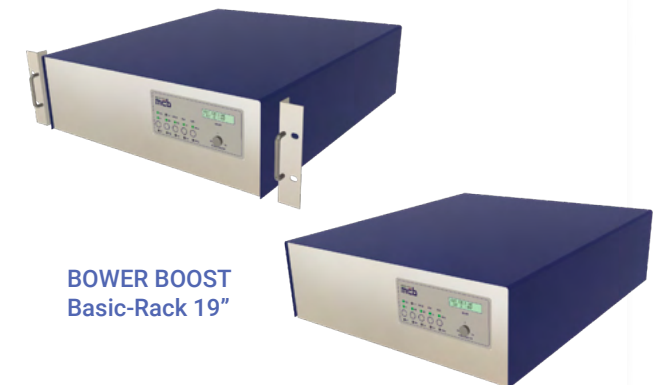
POWER-BOOST

POWER-TRUST

- With autotransformer or isolation transformer (Power-Boost) and without transformer (Power-Trust)
- Plate, Rack 19", Mini Tower and Maxi Tower
- Single-Phase [SS], Three-Phase to Single-Phase [TS], Three-Phase [TT]
- Extended Power range (up to 240kVA)
- Extended Voltage range (up to 700Vac)
- Extended Frequency range (up to 400Hz)

EXTRA FEATURES

- Stabilized Output Voltage
- Frequency Regulation
- Max Current Limitation
- Current Regulation
- 1-phase input 3-phase output configuration [ST]
- Phases output modulation in the 3-phase [TT] devices:
 - ✓ 0° offset – 1-phase output [TS configuration]
 - ✓ 120° offset – European 3-phase output [TT configuration]
 - ✓ 180° offset – American 2-phase output
- 4 available Control Panels



BOWER BOOST
Basic-Rack 19"

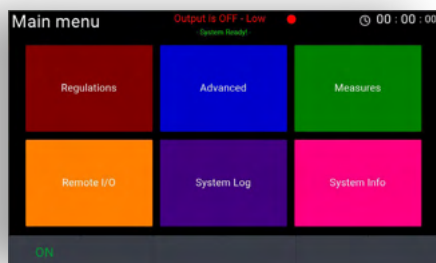
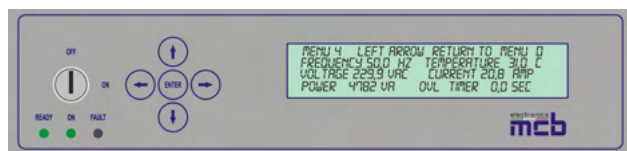
Power-Boost

	BASIC	DELUXE	PREMIUM
Single-Phase [SS] - Power [1.5kVA - 3kVA - 5kVA - 7.5kVA]	✓	✓	✓
Three-Phase Single-Phase [TS] - Power [10kVA - 17.5 kVA - 25kVA]	✓	✓	✓
Three-Phase [TT] - Power [9kVA-15kVA-21kVA-30kVA-60kVA-80kVA-100kVA-150kVA]	✓	✓	✓
Autotransformer	✓	✓	✓
Isolation Transformer	Optional up to 30kVA, Standard from 45kVA to 150kVA		
Output Voltage Regulation Range - Local [PH-N]	125Vac ± 25Vac 250Vac ± 50Vac	2 - 150Vac 4 - 300Vac	
Output Voltage Regulation Range - Remote [PH-N]	2 - 150Vac 4 - 300Vac		
Voltage Switch between LOW Voltage Range 150Vac to HIGH Voltage Range 300Vac	Manual	Manual/Automatic	Manual/Automatic
Sensing Function	✓	✓	✓
Max Current Setup	-	✓	✓
Current Regulation	-	-	✓
Third Frequency Value beside 50Hz and 60Hz	-	✓ [400Hz]	✓ [400Hz]
Frequency Regulation	-	✓ [40Hz - 80Hz]	✓ [40Hz - 80Hz]
Phases Offset Modulation on 3-phase models [TT]	-	-	✓ [0°, 120°, 180°]
Remote Control - Communication Interfaces	RS232 and Ethernet with SCPI protocol and analog I/O 12 poles with 0-10Vdc. Except for Rack 19" TS : RS232 (optional Ethernet adapter) with ASCII code (optional SCPI adapter) and analog I/O 10 poles with 0-10Vdc		
LED Indicators Panel [only remote control]	✓ [only on Plates SS models]	-	-
2 x LED strings + Command Buttons	✓ [only on Rack 19" TS models]	✓ [only on Rack 19" TS models]	✓ [only on Rack 19" TS models]
LCD Display [2 x 16] + Potentiometer	[only on SS models]	-	-
LCD Display [4 x 40] + Command Buttons	✓ [Only on Towers]	✓	✓
Touch Control Panel [7"]	-	-	Optional

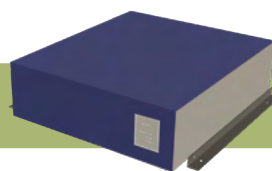
Power-Trust

Unlike the Power-Boost Family, the Power-Trust family is not equipped with any transformer and it's available just in SS and TS versions (1-phase/1-phase and 1-phase/3-phase)

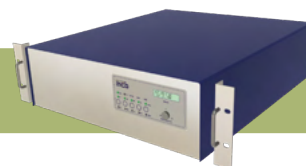
	BASIC	DELUXE	PREMIUM
Single-Phase [SS] - Power [1.5kVA-3kVA- 5kVA - 7.5kVA]	✓	✓	✓
Three-Phase Single-Phase [TS] - Power [10kVA-17.5 kVA - 25kVA]	✓	✓	✓
Three-Phase [TT] - Power [9kVA-15kVA-21kVA-30kVA-60kVA-80kVA-100kVA-150kVA]	Optional	Optional	Optional
Autotransformer	-	-	-
Isolation Transformer	-	-	-
Output Voltage Regulation Range - Local [PH-N]	SS [from 2 Vac to Vinput - 4Vac] TS [2-300Vac]		
Output Voltage Regulation Range - Remote [PH-N]			
Voltage Switch between LOW Voltage Range 150Vac to HIGH Voltage Range 300Vac	-	-	-
Sensing Function	-	-	-
Max Current Setup	-	✓	✓
Current Regulation	-	-	✓
Third Frequency Value beside 50Hz and 60Hz	-	✓ [400Hz]	✓ [400Hz]
Frequency Regulation	-	✓ [40Hz - 80Hz]	✓ [40Hz - 80Hz]
Phases Offset Modulation on 3-phase models [TT]	-	-	Optional
Communication Interfaces [remote control]	RS232 and Ethernet with SCPI protocol and analog I/O 12 poles with 0-10Vdc. Except for Rack 19" TS : RS232 (optional Ethernet adapter) with ASCII code (optional SCPI adapter) and analog I/O 10 poles with 0-10Vdc		
LED Indicators Panel [only remote control]	✓ [only on Plates SS models]	-	-
2 x LED strings + Command Buttons	✓ [only on Rack 19" TS models]	✓ [only on Rack 19" TS models]	✓ [only on Rack 19" TS models]
LCD Display [2 x 16] + Potentiometer	[only on SS models]	-	-
LCD Display [4 x 40] + Command Buttons	✓ [Only on Towers]	✓	✓
Touch Control Panel [7"]	-	-	Optional



BASIC

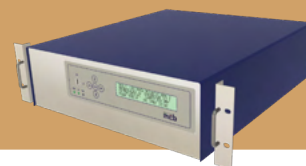


LED indicators panel with just remote control option
- Standard and available only on Plates in SS models



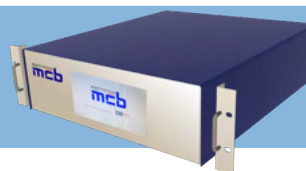
Potentiometer, LED Indicators, LCD Display [2x16 characters]
- Standard on Rack 19" in this package

DELUXE



Controlling Command Buttons and LCD Display [4 x 40 characters]
- Standard on Rack 19" in this package
- Standard on Mini Tower and Maxi Tower in all the packages

PREMIUM



7" LCD Touch Screen Control Panel
- Optional on Rack, Mini Tower and Maxi Tower only in this package

AC/AC & AC/DC Power-Flow
Current Generator



- AC/AC or AC/DC
- up to 150 kVA
- up to 90kW
- up to 40kA
- low output Voltage (1-10Vac/Vdc)

AC/DC
Power-Spin



- Compatible with any worldwide AC mains electricity upon customer requirements
- Power range from 1kW to 200kW
- Voltage range from 1Vdc to 400Vdc
- Amperage range from 1A to 500A
- * Upon request battery charging function included
- ** Upon request "limited power" working mode



Thanks



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