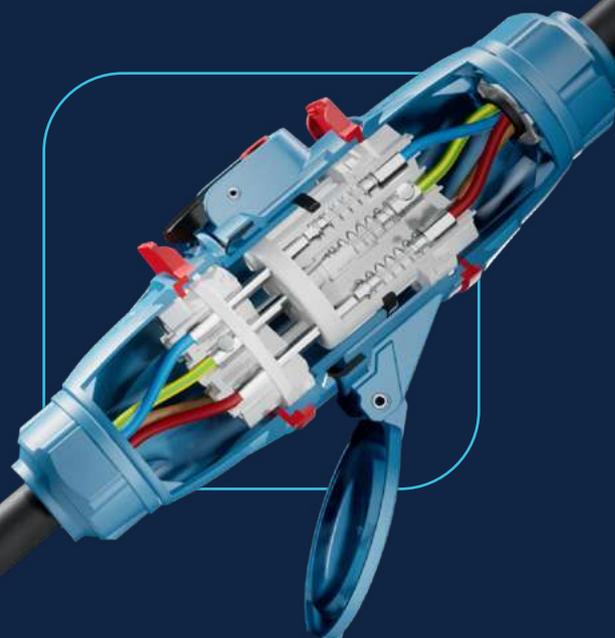




# ADDRESSING DATA CENTER ENERGY CHALLENGES

THE HIGH-PERFORMANCE  
ELECTRICAL CONNECTIONS  
ALTERNATIVE FOR GREATER PUE  
& HEAT MITIGATION



MARKET

GET  
YOUR ENERGY  
EFFICIENCY AUDIT



 **MARECHAL**  
ELECTRIC

BEYOND CONNECTIONS

# ELECTRICAL CONNECTIONS FOR CRITICAL ENVIRONMENTS

With over 70 years of expertise,  
MARECHAL ELECTRIC is an undisputed leader in  
electrical connections from 5A to 1,250A.



# DESIGNED FOR ELECTRICAL INFRASTRUCTURES AT THE HEART OF ENERGY PERFORMANCE

## RELIABLE AND DURABLE CONNECTIONS FOR HEAT MITIGATION

Your energy consumption is also impacted by your choice of electrical connectors, whether for racks, fans, generators, or pumps.

Our technology prevents the overheating of electrical components.



Up to 40 % of PUE can be consumed in a data center for temperature cooling purposes.



Energy losses in electrical connections can lead to significant overconsumption and heat generation.

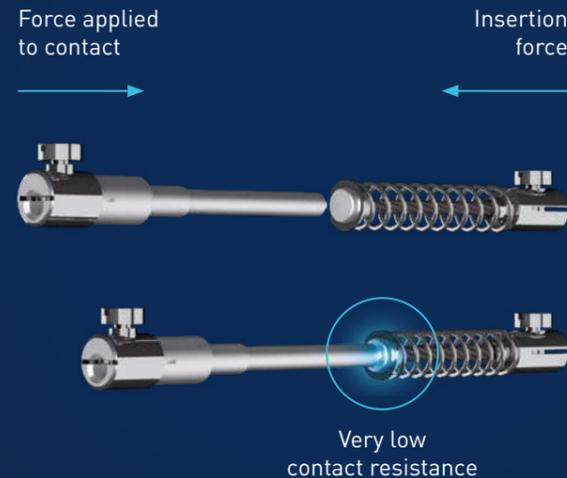
## A TECHNOLOGY THAT MAKES A DIFFERENCE

MARECHAL ELECTRIC solutions offer innovative technology to limit losses by Joule effect and generate high energy savings.

- **Self-cleaning silver-nickel contacts:** premium silver-nickel used in butt contacts ensure an extremely low contact resistance.

Material	Contact resistance	
	New	Oxidised
Brass	370 $\mu\Omega$	1,400 $\mu\Omega$
Copper	29 $\mu\Omega$	400 $\mu\Omega$
Silver-nickel	23 $\mu\Omega$	60 $\mu\Omega$

Oxidised silver-nickel alloy still maintains the lowest contact resistance.



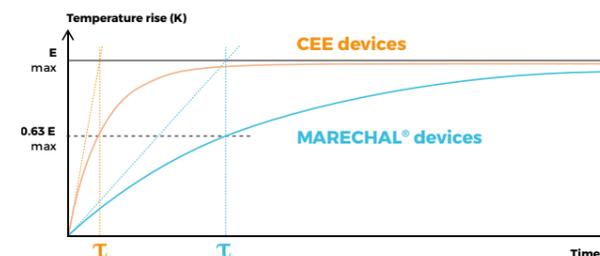
- **Spring-assisted terminals** designed to compensate for copper creep deformation, our terminals eliminate the need for regular tightening maintenance and prevent overheating.

- 1 Split terminal (allows constant force)
- 2 Conductor
- 3 Elliptical deforming ring (prevents loosening)

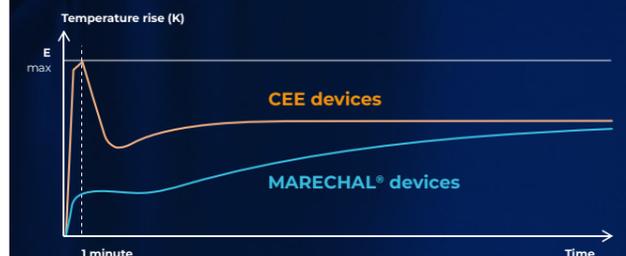


- **Capability to withstand overloads up to 10 times the nominal current rating:** thanks to their low resistance, MARECHAL® plugs and sockets have a long temperature rise time constant ( $\tau$ ), meaning they gradually reach their equilibrium temperature and can absorb temporary overloads without excessive heating.

Normal operating mode



Overcurrent operating mode (1 minute @10\* In)



# LOCAL LOAD BREAKING SOLUTIONS

Our solutions allow connection and disconnection under load up to 250 A without the need of electrically-qualified personnel.



## **EVO40 SEPARABLE SWITCH-DISCONNECTOR**

A NEW STANDARD IN LOCAL  
LOAD BREAKING SAFETY

EVO40 is designed for load breaking and circuit isolation in low-voltage electrical systems, in compliance with IEC/EN 60947-3 standard. Its robust mechanism enables circuit opening and separation, even in case of overcurrent or overvoltage (AC-23A/AC-3).

- No need for a 30 mA residual current circuit breaker (RCCB), thus avoiding inconvenient tripping.
- Ensures visible and fully apparent disconnection with an effective separation of the load and supply parts of the device.
- Maintains continuity of critical services under any circumstance.

## **DECONTACTOR™ SOCKET WITH INTEGRATED SWITCH** SECURING AND SIMPLIFYING ELECTRICAL OPERATIONS

When some maintenance and repairs are needed, DECONTACTOR™ provides a unique solution for safe and easy disconnection of all types of equipment:

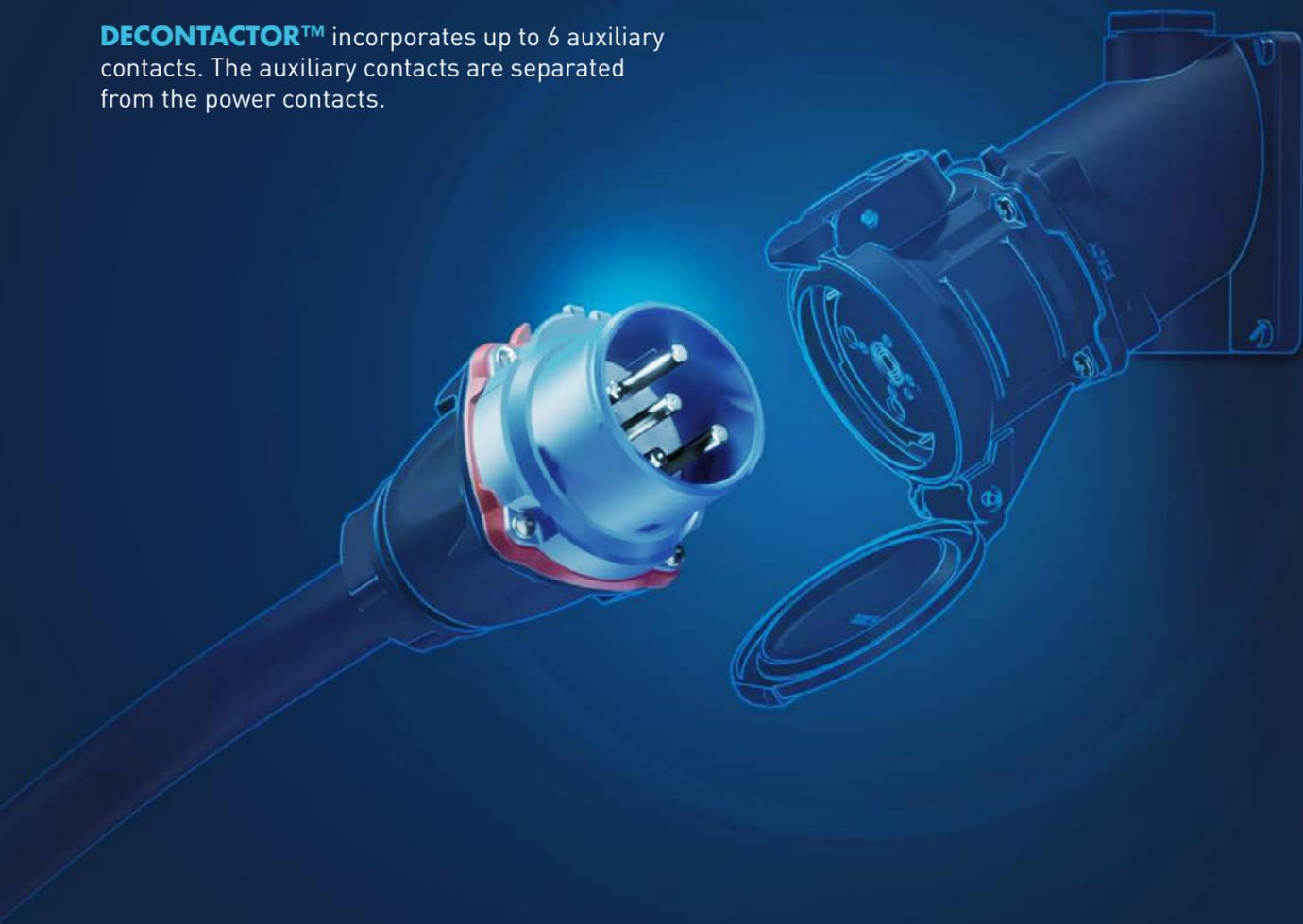
- can disconnect under load up to 250 A (AC-22A/AC-23A) in compliance with IEC/EN 60947-3 standard, with no need for a qualified electrician,
- safety shutter (IP4X) prevents access to live parts.



### COMBINE A STRONG AND LOW CURRENT IN THE SAME DEVICE

The integrated auxiliary contacts enable users to easily control equipment (sensors), and monitor various parameters (temperature, humidity...) or trigger alarms.

**DECONTACTOR™** incorporates up to 6 auxiliary contacts. The auxiliary contacts are separated from the power contacts.



### Optimised thermal dissipation compared to other manufacturers

Technical features	DECONTACTOR™	Manufacturer A	Manufacturer B
Auxiliary contacts	Up to 6	2	0
Thermal resistance	105 °C	90 °C	85 °C
Lifespan (cycles)	> 10,000	5,000	7,000

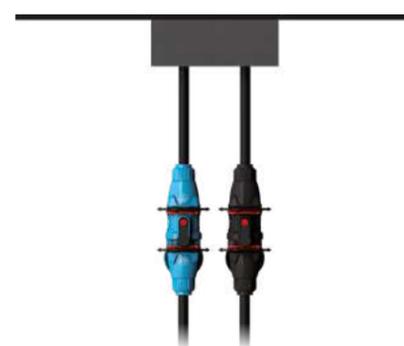
MARECHAL® connections limit losses by Joule effect in your installation.

## SIMPLIFIED MAINTENANCE & MANAGEMENT

Our solutions provide streamlined management and simplified maintenance to ensure high-level performance.

### CLEAR VISUAL IDENTIFICATION OF POWER PATHS

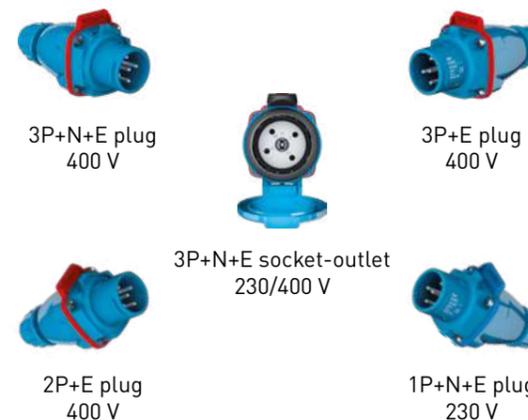
Thanks to distinct connector colours (e.g., black for main circuits and blue for backup circuits), our devices enable quick visual identification, making servicing and maintenance easier and more efficient.



### ADDITIONAL SAVING: DUAL VOLTAGE

Our unique fool-proofing design also offers “dual voltage” socket-outlets. A single 3P+N+E socket-outlet, offering 220/250V AC and 380/440 V AC at 50 Hz, can safely supply 4 plugs with the same coding but different polarities and/or voltages:

- 3P+N+E plug at 400 V AC, 50 Hz,
- 3P+E plug at 400 V AC, 50 Hz,
- 2P+E plug at 400 V AC, 50 Hz,
- 1P+N+E plug at 230 V AC, 50 Hz.



- Reduces the number of socket-outlets installed.
- Flexibility of the installation.
- Fast reconfiguration.
- Easier and more efficient servicing and maintenance.
- Reduced intervention costs.

# HIGH-CURRENT CONNECTORS

For installations requiring currents above 250A, MARECHAL ELECTRIC offers single-pole connectors designed for high-current applications up to 1,250 A.

CS1000 (500 A), SP (800 A) and DSP1250 (1,250 A) devices provide great flexibility for generator connections up to 800 kW (AC)/1,200 kW (DC) compared to direct busbar connections.

Additional benefits include:

- locking system,
- pilot contacts (SP and DSP1250 devices),
- cable sections from 50 to 630 mm<sup>2</sup>.

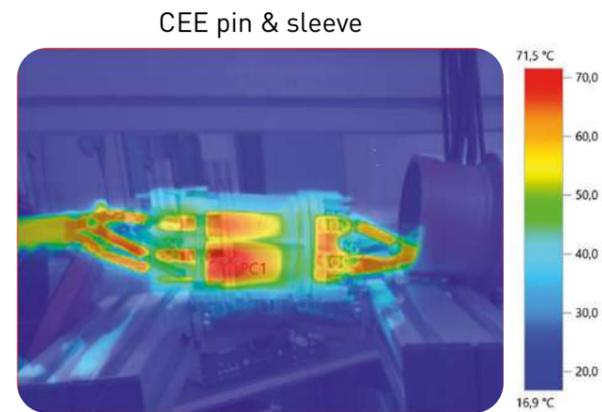


# POWER USAGE EFFECTIVENESS YOUR ENERGY EFFICIENCY INDICATOR UNDER CONTROL

MARECHAL ELECTRIC optimises your PUE, improving the overall performance of your infrastructure.

### Comparison between:

- DECONTACTOR™ (IEC/EN 60309-1 standard),
- conventional CEE pin & sleeve (IEC/EN 60309-2 standard).



**Significant heat (°C) and energy (kWh) losses**



**Low heat (°C) and energy (kWh) losses**



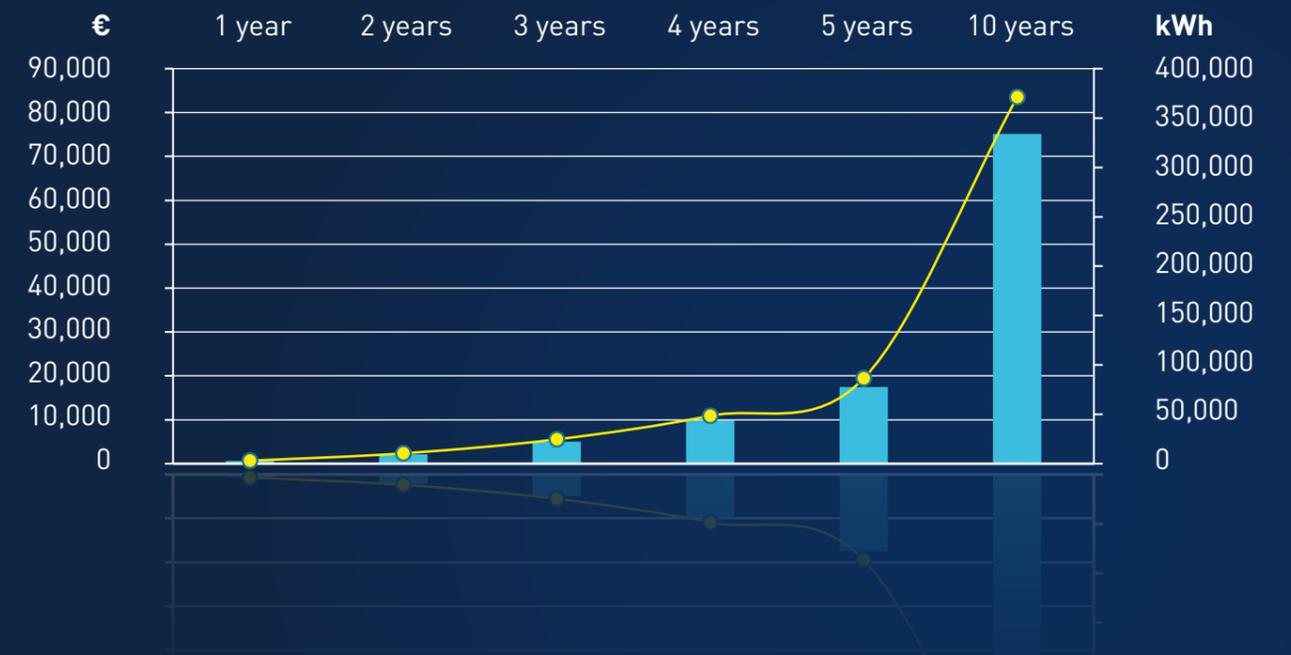
**LESS HEATING = LESS COOLING**  
the dual benefit of **DECONTACTOR™**.

Its low-Joule-effect reduces energy consumption and lower your PUE.

With **24/7 operation, 365 days a year**, this example demonstrates the energy savings and financial advantages achieved using MARECHAL® technology for 500 units of 32 A/3P+N+E sockets, assuming an electricity cost of €0.25/kWh:

Up to **334,000 kWh** saved!  
Resulting in **83,500 €** saved!

Up to: kWh  
Up to: euro (€)



The virtuous cycle of high-quality electrical components combined with our technology reduces significantly your power consumption.

**GET YOUR ENERGY EFFICIENCY AUDIT**



# A STRATEGIC INVESTMENT FOR OPTIMAL PERFORMANCE

Choosing MARECHAL® solutions for your electrical installations goes beyond ensuring safety and reliability - it is also a strategic investment for:

- optimising energy consumption: **up to 30 times** more energy-efficient than conventional solutions,
- reducing maintenance and operational costs for the entire system,
- meeting both IEC and UL standards for worldwide compliance.

## TOTAL COMPATIBILITY WITH YOUR CRITICAL EQUIPMENT

MARECHAL ELECTRIC powers and secures:

- primary and backup power supply:
  - › generators for uninterrupted energy supply,
  - › uninterruptible power supplies (UPS) for protection against power outages and voltage fluctuations,
- power distribution and management:
  - › distribution cabinets,
  - › transformers,
  - › power management systems,
- cooling and thermal regulation:
  - › air conditioning and ventilation systems,
- advanced monitoring and supervision:
  - › power distribution units (PDU).

Thanks to our solutions, your electrical infrastructure is safer, more efficient, and more resilient, ensuring optimal operational continuity.



# A GLOBALLY RECOGNISED EXPERTISE

## THE ULTIMATE SAFE DISCONNECTING SOLUTION – DECONTACTOR™ RANGE

### DECONTACTOR™ facilitates the compliance with:

- electrical machinery to the Machinery European Directive,
- electrical installation to IEC/HD 60364, NF C 15-100 and NFPA70 standards,
- electrical installation to national regulation relating to the improvement of the safety and health of workers at work in Italy, Spain, Belgium,
- electrical installation to French decree of 30 August 2010 and 22 September 2010 relating to health and safety at work when using electrical installations.

### DECONTACTOR™ complies with:

- IEC/EN 60309-1, IEC/EN 60309-4, IEC/EN 60947-3 (dealing with the load breaking capacities AC-22A and AC-23A) standards,
- UL 1682, UL 2682 (USA), CSA C22.2 N° 182.1-07 (Canada) standards,
- the European Directives Low Voltage, RoHS (affixing of CE marking), REACH European Regulation.

## THE PERFECT BALANCE BETWEEN SAFETY & ENERGY OPTIMISATION – EVO RANGE

### EVO facilitates the compliance with:

- electrical machinery to the "Machinery" European Directive on isolating device, and to standards EN 12100 and EN 60204-1,
- electrical installations to installation standards: IEC/HD 60364 and NF C 15-100 (French) or other national transposition.

### EVO is certified by LCIE BUREAU VERITAS to standard :

- EC/EN 60947-1/-3/: low-voltage switchgear and controlgear: switches, disconnectors, switch-disconnectors and fuse-combination units.

## OUR CERTIFICATIONS



North America

China



International

Colombia



Australia

Singapore



Marine

Eurasia



Military (Mil-S-901D)

Mexico

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