THE FUTURE IS EFFICIENCY

Solutions for Data Centres & telecom infrastructures

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Circutor

Ensure your service continuity and improve the energy sustainability of your data centre.

We are aware that, when managing and operating a data processing centre (DPC), one of the key points is to ensure that the IT devices and servers do not have a power disconnection that shuts down the service of the associated clients, causing costly penalties. For this reason, it is absolutely necessary to install devices capable of reducing risks and improving the quality of electrical energy, such as residual current monitoring devices or power quality analysers, which will tell us if a voltage variation has affected our electronic devices.

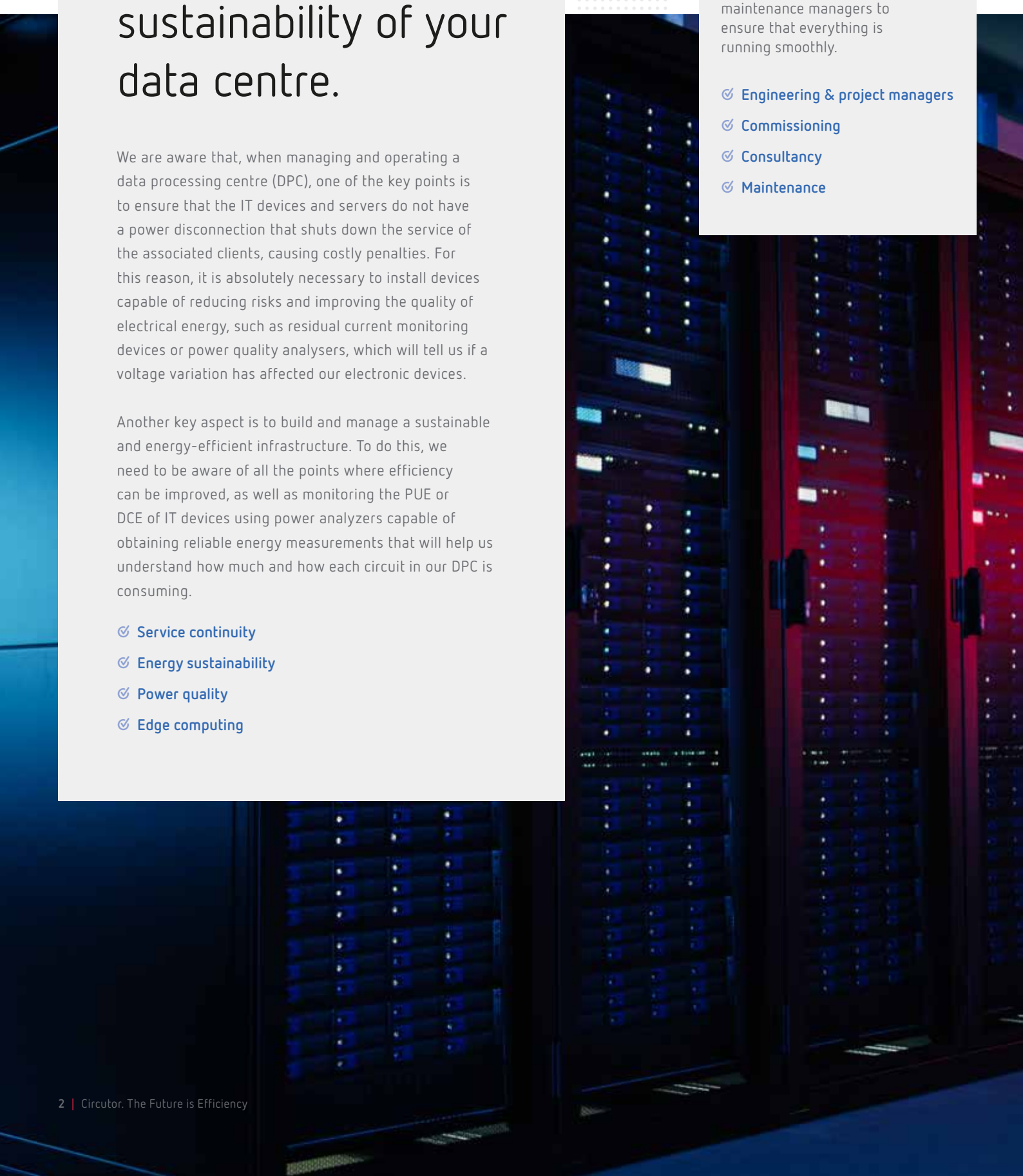
Another key aspect is to build and manage a sustainable and energy-efficient infrastructure. To do this, we need to be aware of all the points where efficiency can be improved, as well as monitoring the PUE or DCE of IT devices using power analyzers capable of obtaining reliable energy measurements that will help us understand how much and how each circuit in our DPC is consuming.

- Service continuity
- Energy sustainability
- Power quality
- Edge computing

Present at all times

We advise our customers during the design of their data centres to improve their energy efficiency. We answer any questions before and after commissioning and are present with the maintenance managers to ensure that everything is running smoothly.

- Engineering & project managers
- Commissioning
- Consultancy
- Maintenance



Ensures maximum Data Centre performance

Our solutions are designed to guarantee the continuous operation of the services of any data processing centre, as well as to optimise energy resources to the maximum, improving energy efficiency both at server and power supply level, to reduce consumption and the impact of the carbon footprint and to obtain reliable information for calculating the PUE and DCE of IT systems, making data centres more energy sustainable.

Make your Data Centre as profitable as possible

To ensure maximum business profitability, we must guarantee the operator of a data processing centre the continuity of IT services, without interruptions in the service that could lead to significant cost overruns, as well as the correct management of energy resources, consuming efficiently and extending the useful life of all the components of the installation.

What aspects do we have to take into consideration when managing our Data Centre?

Service continuity

Monitor residual currents to avoid interruptions in IT services and avoid interruptions in air conditioning and water pumping systems.

Sustainability and energy monitoring

Measure how your IT systems and loads consume energy to calculate your PUE, DCE and control the impact of your carbon footprint, as well as monitor and act on the different sensors in your server room.

Power quality

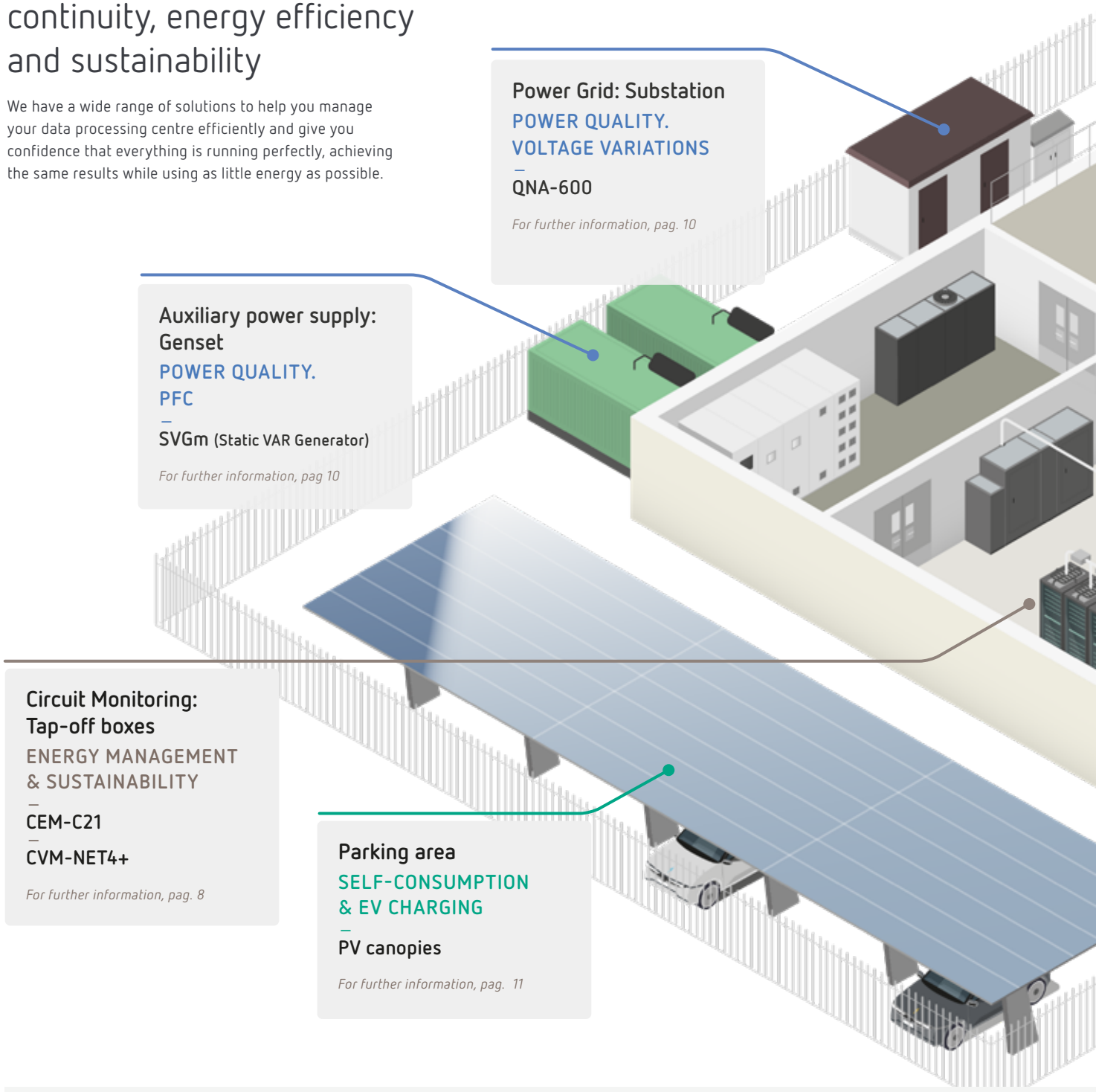
Avoid continuity problems created by your own loads, improve the performance of your auxiliary power systems and detect any voltage variations that may affect loads and IT systems.

Self-consumption

Reduce your energy consumption, minimise the impact of your carbon footprint by using your car park to generate energy and recharge electric vehicles.

Solutions to ensure service continuity, energy efficiency and sustainability

We have a wide range of solutions to help you manage your data processing centre efficiently and give you confidence that everything is running perfectly, achieving the same results while using as little energy as possible.



Power Grid: Substation
POWER QUALITY.
VOLTAGE VARIATIONS
–
QNA-600
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Auxiliary power supply: Genset
POWER QUALITY.
PFC
–
SVGm (Static VAR Generator)
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Circuit Monitoring: Tap-off boxes
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–
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Parking area
SELF-CONSUMPTION & EV CHARGING
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Continuity of service

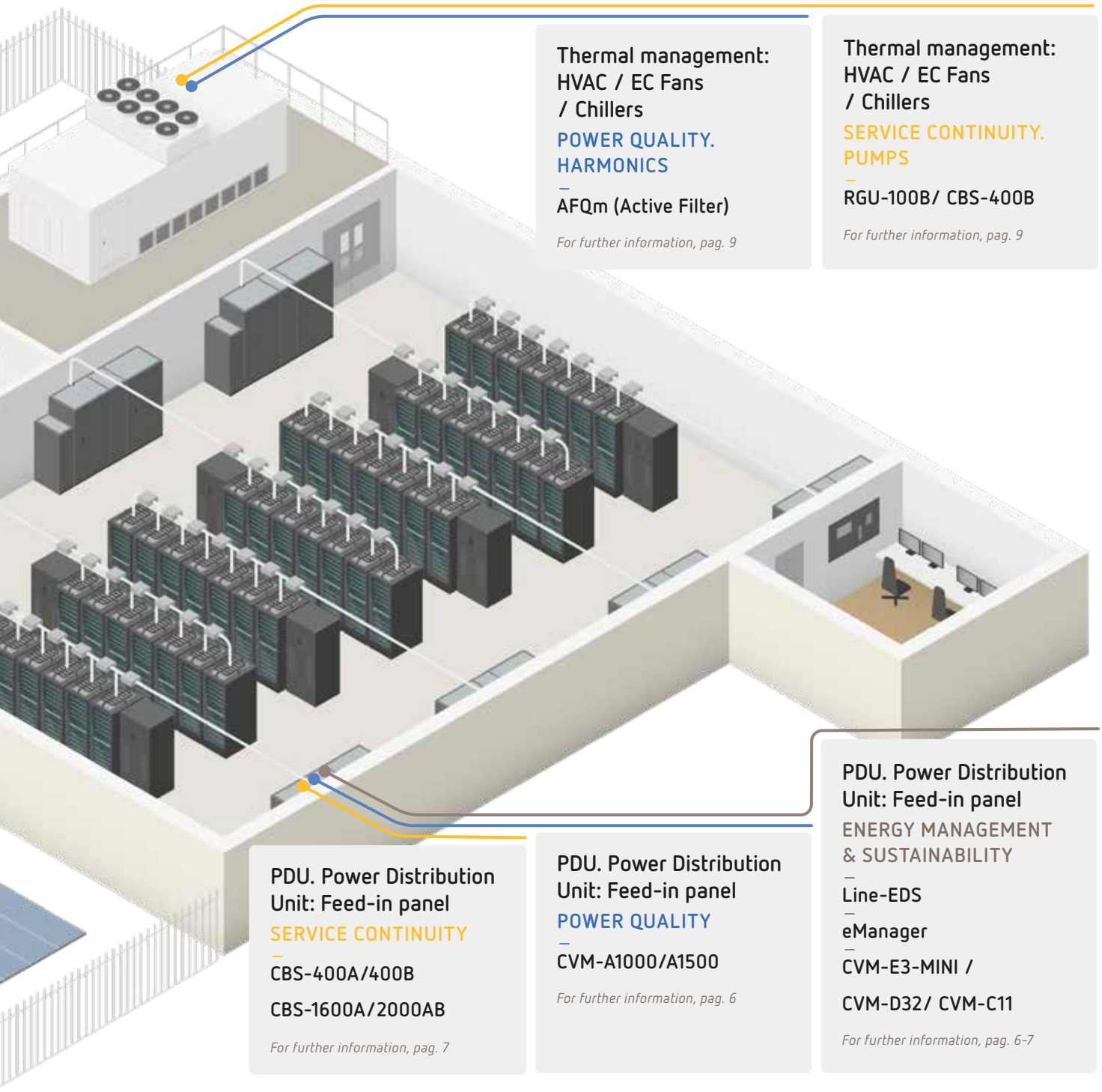
PDUs → Monitors the residual current (RCM) of each electrical circuit, singlely, to ensure continuity of service and detect the source of each leak before the protection is triggered.

Thermal management and water pumps → Ensures the continuity of cooling and water pumping systems, protecting and monitoring each motor to detect in advance any loss of insulation in its windings.

Sustainability and energy control

PDUs → Manage the total consumption of each server line, generate alarms and capture historical data to discover how consumption is distributed, calculating the PUE & DCE and the impact of your carbon footprint.

Tap-off boxes → Manages the consumption of each server or client and monitors the status of each circuit individually.



Thermal management: HVAC / EC Fans / Chillers

POWER QUALITY. HARMONICS

AFQm (Active Filter)

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Thermal management: HVAC / EC Fans / Chillers

SERVICE CONTINUITY. PUMPS

RGU-100B/ CBS-400B

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PDU. Power Distribution Unit: Feed-in panel

ENERGY MANAGEMENT & SUSTAINABILITY

Line-EDS

eManager

CVM-E3-MINI / CVM-D32/ CVM-C11

For further information, pag. 6-7

PDU. Power Distribution Unit: Feed-in panel

POWER QUALITY

CVM-A1000/A1500

For further information, pag. 6

PDU. Power Distribution Unit: Feed-in panel

SERVICE CONTINUITY

CBS-400A/400B

CBS-1600A/2000AB

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Power quality

Cooling systems → Solve the problems caused by harmonics generated by your HVAC systems, fans or chillers.

Genset → Compensates reactive energy to get the most out of your generator and extend its useful life.

Substation → Detects and avoids voltage variations that could damage the IT devices in your installation and compensates reactive energy to extend the useful life of the power transformer.

Self-consumption

Parking → Install photovoltaic canopies to generate your own energy, protect workers' vehicles and recharge those that are electric.

Solutions for Power Distribution Units: Feed-in panels

Power Quality control

CVM-A1000 / A1500

The device registers electrical variables and power quality events such as swells, dips, interruptions (every half cycle) and transients (according to **IEC 61000-4-30** Class A). In addition, those events are directly displayed in CBEMA, ITIC y SEMI-F47 graphs.

- Check the voltage quality
- Detect events and transients
- Display CBEMA and ITIC curves
- Energy control
- PUE & DCE control
- Register of CO_2 emissions (footprint)
- Understand possible IT damages
- Sensor status control
- Comply with IEC 61000-4-30
- Alarm warnings

Waveform · Web server · Datalogger · Calendar · Ethernet Modbus · RS-485 Modbus · RS-485 BACnet · Modular · Flex optionnal

Sustainability and energy control

CVM-C11

The **CVM-C11** is a power analyzer for a panel (96 x 96 mm). Ideal for analyzing electrical and consumption quality variables.

- Voltage monitoring
- Energy control (0,5S)
- Register of CO_2 emissions (footprint)
- Power quality: 31st harmonics measurement
- Power quality: THD%
- Neutral current

NEW

96 x 96 panel · 2 Inputs · 2 Outputs · 2 Outputs · RS-485 Modbus · RS-485 BACnet

Sustainability and energy control

CVM-E3-MINI

The **CVM-E3-MINI-WiEth** is power analyzer for DIN Rail connection that lets you gather information on the energy consumption and electrical parameters of your installation quickly and easily.

- Voltage monitoring
- Energy control (1%)
- Register of CO_2 emissions (footprint)
- Power quality: 31st harmonics measurement
- Power quality: THD%

CVM-E3-MINI:
- RS-485, Modbus, BACnet
- Transistor Output

CVM-E3-MINI-Wi-Eth
- Ethernet, Wi-Fi, Modbus

3 modules DIN · Flex optional · Wi-Fi optional · Ethernet Modbus · RS-485 Modbus · RS-485 BACnet

Sustainability and energy control

CVM-D32

Line-CVM-D32 is a power analyzer to monitor and measure more than 250 electric variables. Designed to properly manage the quality of consumption and supply, by reading harmonics and recording the number of power quality events counter (swells, dips and interruptions) that occur in the installation.

- Voltage monitoring
- Voltage events counter
- Energy control (1%)
- Register of CO_2 emissions (footprint)
- Power quality: 40th harmonics measurement
- Power quality: THD%

2 Outputs · RS-485 Modbus · Modular

EXPANDABLE:

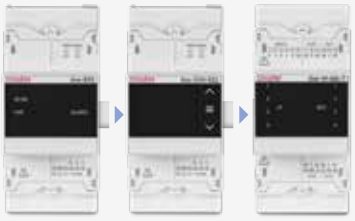
Line Input/Output
- 4 relay OUT + 4 digital IN
- 4 analog OUT + 4 analog IN
- 8 digital IN + 6 relay OUT

Sustainability and energy control

Line-EDS

It allows to manage and register the information of an installation on a single device using an integrated web server, without the need to install a PC, as it incorporates the powerful energy management tool PowerStudio, by CIRCUTOR.

- Datalogging CIRCUTOR devices
- Datalogging any Modbus device
- XML server + webserver
- 1 year of data
- Expandable
- EMS software integrated (PowerStudio)



Web server · Datalogger · Calendar · Ethernet · Wi-Fi · RS-485 · Modular

Sustainability and energy control

eManager

It is an OEM industrial controller designed to be the core of any Smart Project. It consists of a powerful Linux Embedded device, memory optimized to deliver fast performance and communication technologies to collect and send data where it is needed.

- Make you own module combination
- Voltage monitoring
- Energy control
- Temperature control
- Sensor status control
- Alarm warnings
- Open programming: Unique interface

96 x 96 panel · Node-RED & Multilanguage API · Industrial communication protocols integration

Service continuity

CBS-400A/CBS-400B

The residual current monitoring and protection relay (**IEC 62020**), for type A (CBS-400A) or type B loads (CBS-400B) with 4 totally single circuits.

- Residual current monitoring
- Ensure the service continuity
- Monitor the leakage on each server lines
- Alarm control to prevent blackouts
- 4 type A channels (CBS-400A)
- 4 type B channels (CBS-400B)

RCD · 3 modules DIN · Preventive control · RS-485 Modbus · 4 circuits (type A or type B

Service continuity

CBS-1600A/CBS-2000AB

The residual current monitoring device (**IEC 62020**), for 16 single type A circuits (CBS-1600A) or for 16 single type A circuits + 4 single type B loads (CBS-2000AB) with 4 totally single channels.

- Residual Current Monitoring
- Ensure the service continuity
- Monitor the leakage on each server lines
- Alarm control to prevent blackouts
- 16 type A channels (CBS-1600A) + 4 type B channels (CBS-2000AB)

RCD · 6 modules DIN · Preventive control · RS-485 Modbus · 16 type A circuits (CBS-1600A) · 16 type A + 4 type B circuits (CBS-2000AB)

Solutions for Circuit Monitoring: Tap-off Boxes

Sustainability and energy control - BCM

CVM-NET4+

The **CVM-NET4+** is a Branch Circuit Monitoring power analyzer for DIN Rail connection that lets you gather information on the energy consumption and electrical parameters of your installation. You can monitor up to 12 single phase circuits, 4 three phase circuits or any other combination

- Branch Circuit Monitoring (BCM)
- Energy control
- Monitor 12 single phase circuits
- Monitor 4 three phase circuits or any combination

4 Three-phase analyser or 12 Single-phase analyser | 4 Outputs | RS-485 Modbus

Sustainability and energy control

CEM-C21

The **CEM-C21** is a three phase direct connection meter for DIN-rail installation. This device allows you to take the energy consumption of each server line in order to control each circuit individually to check the consumption of each customer.

- Voltage monitoring
- Energy control
- Direct connection (65A)
- Register of CO2 emissions (footprint)
- Breaker status control

1 Output or 1 Imput | 4 quadrants | Sealable | Mesurement of parameters | RS-485 Modbus | IEC/MID

Sustainability and energy control

CVM-C12c

The **CEM-C12c** is a single phase direct connection meter for DIN-rail installation. This device allows you to take the energy consumption of each server line in order to control each circuit individually to check the consumption of each customer.

- Voltage monitoring
- Energy control
- Direct connection (100A)

NEW

1 mod. DIN | Single-phase measure | Up to 100 A | RS-485 Modbus | IEC/MID

Solutions for thermal sytems: HVAC / EC Fans / Chillers

Power Quality control - HARMONICS

AFQm - Active Filter

The **AFQm** active filters are the most complete solution for solving power quality problems. This solution reduces the presence of harmonics in the DC, ensuring the quality and continuity of the servers. The solution also helps to maintain the voltage level by compensation reactive inductive and capacitive energy and reduces the neutral current in order to improve the UPS efficiency.

- Reduce harmonics
- Improves the efficiency
- PFC (lead or lag power)
- Improves UPS efficiency(reduce neutral current)
- Avoids conductor overheating
- Thermal protection trips
- Avoids communication
- interferences with IT servers

MODELS

AFQm-M

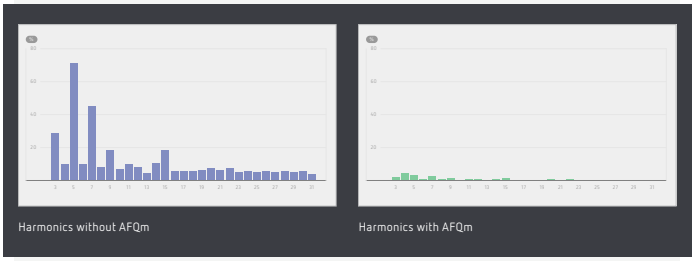
- Wall-mounted multifunction active filters at 30, 60 and 100A

AFQm-F

- Floor-mounted multifunction active filters at 100, 200, 300 and 400 A

AFQm-R

- Rack module multifunction active filter at 100 A



Harmonics without AFQm

Harmonics with AFQm

Auto-diagnostic · Web server · Datalogger · Modular · Smart cooling · Send alerts · Remote configuration · Ethernet Modbus

Service continuity - PUMPS

RGU-100B

The residual current monitoring and protection relay (IEC 62020), compatible with the WGB series, for type B loads (IEC 60755).

- Ensure the service continuity
- Monitor the leakage on each VSD
- Prevents isolation problems
- Prevents unexpected tripprings
- Alarm control to prevent blackouts

RCD · 3 modules DIN · t and A · Preventive control · RS-485 Modbus · 1 type B circuit

Service continuity - PUMPS

CBS-400B

The residual current monitoring and protection relay (IEC 62020), type B loads with 4 single circuits.

- Residual current monitoring
- Ensure the service continuity
- Monitor the leakage on each server lines
- Alarm control to prevent blackouts
- 4 type B circuits

RCD · 3 modules DIN · Preventive control · RS-485 Modbus · 4 circuits type B

Solutions for Power Grid: Substation & Genset

Power Quality - POWER FACTOR CORRECTION

SVGm

The Static VAR Generator (SVGm) is the most accurate power factor correction solution both for compensate inductive or capacitive reactive power (from 0,7L to 0,7C). This solution requires minimal maintenance as it has no mechanical parts and is not affected by harmonics present in the installation.

- Improves the efficiency
- Reduce energy looses
- Reduce CO_2 emmisions
- PFC (lead or lag power)

MODELS

SVGm-M
- Wall-mounted PFC at 30, 60 and 100 kvar

SVGm-F
- Floor-mounted PFC at 100, 200, 300 and 400 kvar.

SVGm-R
- SVG Rack module for PFC at 100 kvar.

Auto-diagnostic · Web server · Datalogger · Modular · Smart cooling · Send alerts · Remote configuration · Ethernet Modbus

Power Quality - VOLTAGE VARIATIONS

QNA-600

The QNA-600 power quality analyzer is designed to register electrical variables and power quality events such as swells, dips, interruptions (every half cycle) and transients (Class A according to IEC 61000-4-30:Ed.3) than can damage the IT components. In addition, the device will send you automatic reports based on EN 50160 European standard detailing the utility supply quality.

- Check the voltage quality
- Detect events and transients
- CBEMA and ITIC curves reporting
- EN 50160 reporting
- Comply with IEC 61000-4-30:Ed.3
- Understand possible IT damages
- Energy control (for CO2 footprint)
- Sensor status control
- PUE & DCE control
- Alarm warnings

Example report EN 50160

Ethernet · Wi-Fi · Web server · 4 analog Outputs · 12 Inputs · 4G

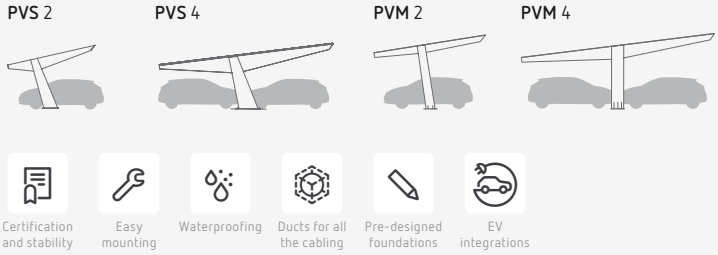
Solutions for Parking Area: Self-consumption

Self-consumption & EV charging

PV Canopies

PV Canopies is a solution that combines a solar photovoltaic canopy with an EV charging system. This solution allows electricity to be produced when there's sun, thus covering part of the installation's electricity consumption, and providing power to charge electric vehicles. The PVingPark has all the elements necessary to install it.

- No limit to the number of parking slots.
- Power depending on the number of parking places
- Integrated electric vehicle charging (PVS) and compatible with external charging posts (URBAN and Raption).
- Achieves Eurocode compliance.
- Easy mechanical assembly of PV modules.
- Pre-engineered foundations.
- All wiring channelled.
- Waterproofing.



PowerStudio SCADA

Energy Monitoring Software

Control and data acquisition system with real-time monitoring, reporting, alarm management and SCADA interface for simple diagramming. The main functions are as follows:

- Creation of databases
- Event logging
- Energy cost management
- Energy balancing
- Energy consumption ratio
- Consumption reports
- Alarm tables
- Power quality management
- Compatible with other SCADA software on the market
- Analysis and management of variables
- Energy / production ratio
- Cost / production ratio
- Essential tool for **EN 16001** / **ISO 50001** certification.

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