

Energy Management Software

Powerstudio
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 **CIRCUTOR**
Technology for energy efficiency

At **CIRCUTOR**, we have been manufacturing and distributing systems and equipment for electrical energy efficiency for more than 35 years. All the knowledge acquired during this time is reflected in our products, which are reliable, robust, easy to use and most importantly: innovative.

In keeping with this philosophy, in the eighties **CIRCUTOR** increased the potential of their products by equipping them with communications for energy management networks. This in turn created the need for management and control software, in response to which **CIRCUTOR** developed the first software of this kind in the market. As a result, all of the measurements of the equipment in the electrical network were centralised in a single location for fast and easy access.

Over time, this management software has evolved, incorporating all of the new equipment developed by **CIRCUTOR** and taking advantage of the powerful computer platforms available in the market.

CIRCUTOR's Electrical Energy Efficiency software (e³) is currently called **PowerStudio** and encompasses all of the tools needed to manage your power control equipment: from electricity, gas and water meters to reactive energy compensation systems and powerful network analyzers.



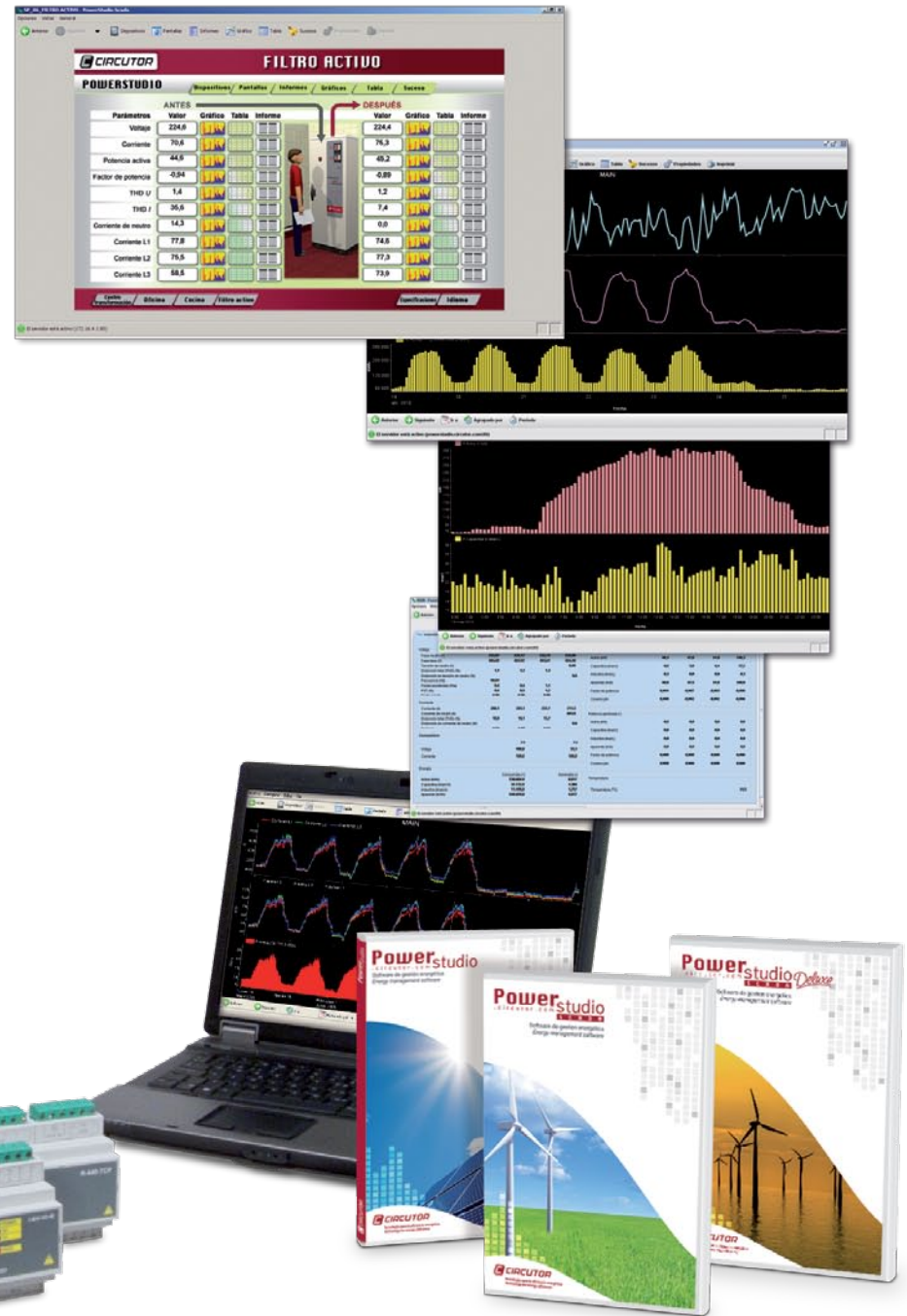
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PowerStudio is a simple, powerful and user-friendly software application, enabling the following:

- Complete energy studies
- Production ratios (energy consumption per unit produced)
- Power quality
- Arrangement of the information obtained in graphic and table format.

It enables complete energy monitoring of power analyzers, meters, earth leakages and total control of various magnitudes in the industrial process field.

PowerStudio, in conjunction with **CIRCUTOR** equipment and systems, adapts to your particular needs by providing tools for the supervision and control of your installations.



FEATURES

Powerful

Software capable of communicating with all **CIRCUTOR** equipment.

M

Measuring Equipment:

- Converters
- Centralizers
- Meters
- Power analyzers
- Voltmeters, ammeters, process indicators

P

Protection Equipment:

- Earth leakage relays
- Earth leakage centralizers

Q

Quality & Metering Equipment:

- Multifunction meters
- Power quality analyzers

R

Reactive equipment:

- Intelligent power factor correction regulators

V

Smart charge of electric vehicles:

- Smart electric vehicle charging systems

Versatile



Communications Platform:

Ensures uninterrupted communications As a Windows service, communications are only lost if the computer shuts down.



Editor

Since the editor is separate from the communications platform, the applications can be edited offline, which facilitates the integrator's task of editing the applications. This means that applications with Internet connection can be edited remotely.



PowerStudio client

Allows you to interact with the communications engine to view the application and manage parameters.

Simple

Extremely easy-to-use Software. No programming knowledge required to develop the applications.

Current



32 and 64 bit technology compatible with Windows: Windows NT, Windows 2000, Windows XP, Windows Server 2003, Windows Vista, Windows 7.

VERSIONS

Features

- Windows service (it is not necessary to have a user session open in order **PowerStudio** to communicate with the equipment)
- Online display of equipment parameters (including electric parameters, process signals, temperatures, etc.)
- Remote parameter setting
- Real time graphic display
- Historical records
- Historical data represented in graphic and table format
- Export of XML data (OPC and SQL with additional module).

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Real time variable display, database creation,
representation of recorded data in graphic and table
format, xml server and export of data to files
(.txt and .csv extensions)

Powerstudio
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SCADA

Powerstudio + SCADA screens,
reports, events

Powerstudio *Deluxe*
.circuitor.com
SCADA

Powerstudio + Modbus Driver
.circuitor.com Generic, OPC client

Powerstudio

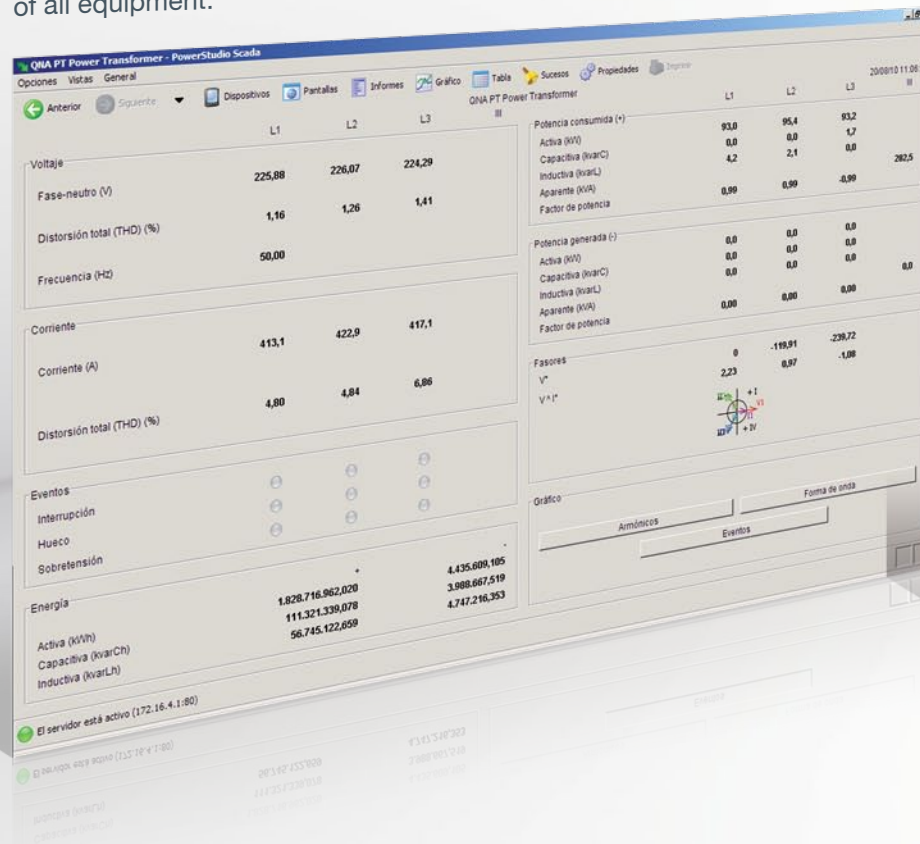
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PowerStudio enables the following:

- Configuration of **CIRCUTOR** control and measurement equipment connected to the communications network
- Real time display of the parameters of the measurement equipment installed
- Creation of databases
- Recording and consulting the historical data stored in a computer in graphic or table format
- Obtaining the data via XML server
- Export to text files and spreadsheets
- Access to information through a conventional Internet explorer

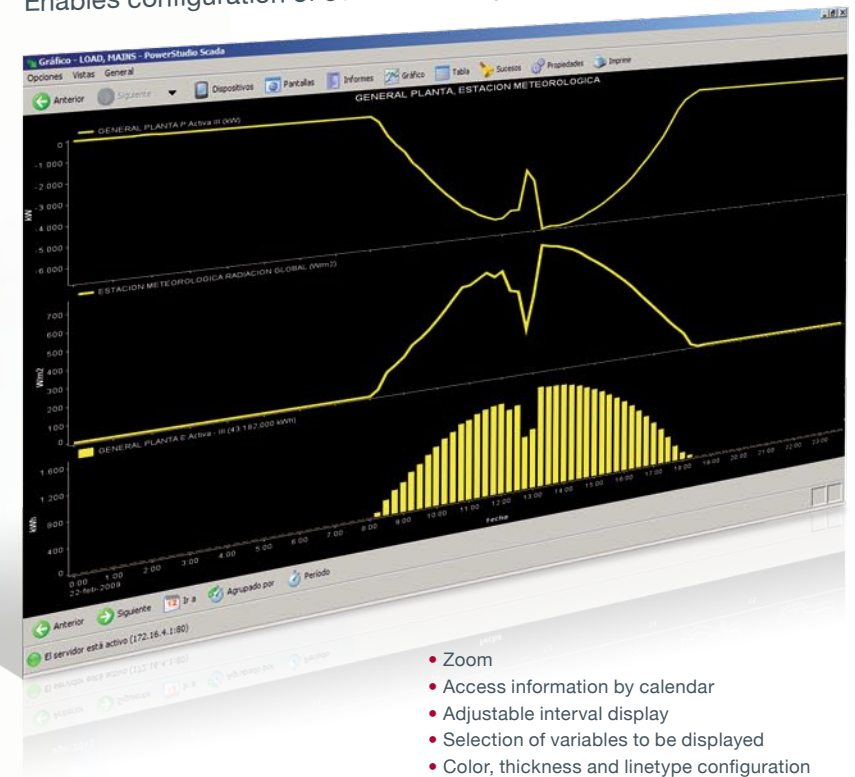
Real time variables

Real time display of all measured variables of all equipment.



Graphics

Graphic representation of the historical data recorded by software. Enables configuration of colours and layout individually.



- Zoom
- Access information by calendar
- Adjustable interval display
- Selection of variables to be displayed
- Color, thickness and linetype configuration

XML

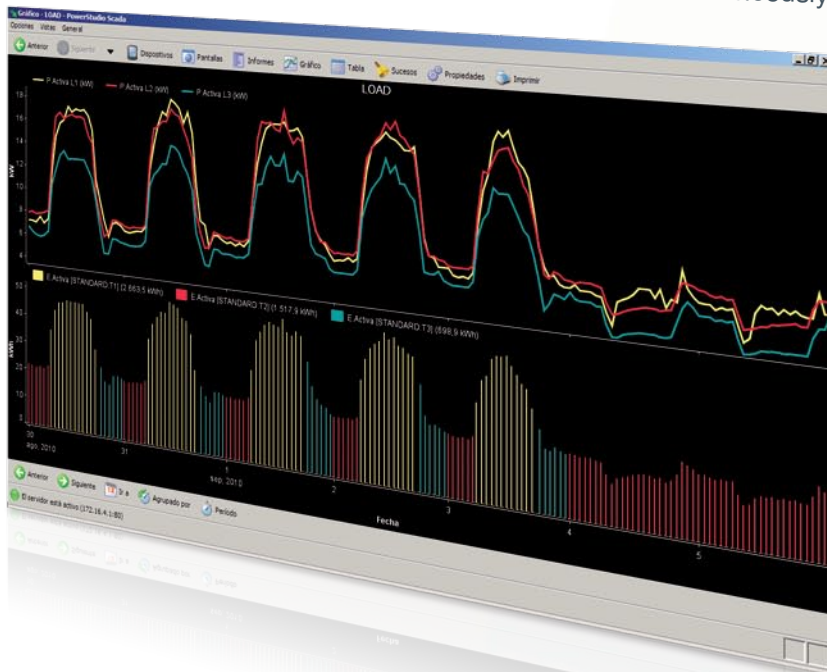
XML server for accessing data remotely.



(Example of XML request)

Graphics

Display multiple parameters simultaneously.



Tables

Data display in table format with the option of exporting txt and csv files.

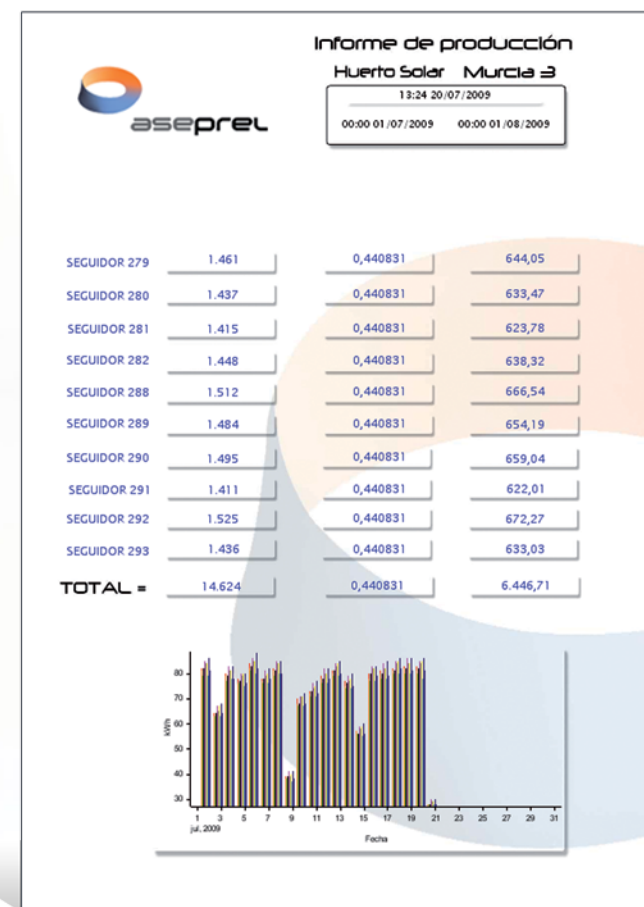
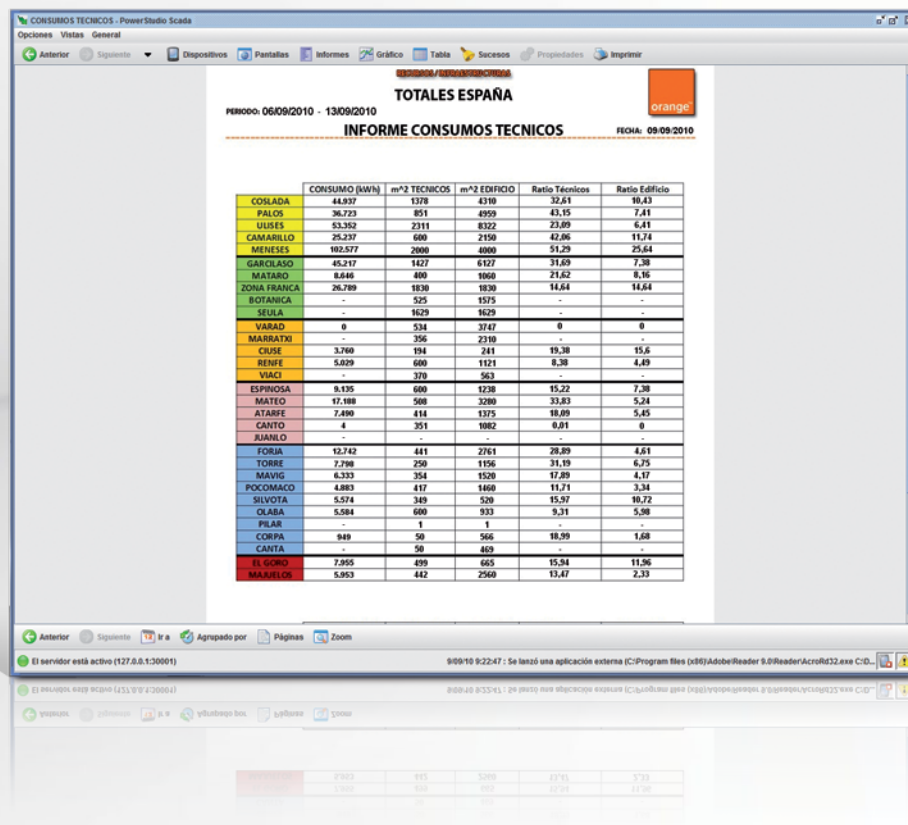
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Lunes 09 01:00:00	32,8	45,9	42,6	48,0	38,5	45,0	45,4	45,6	45,6
Lunes 09 02:00:00	32,2	45,9	42,6	48,0	38,5	45,0	45,4	45,6	45,6
Lunes 09 03:00:00	32,4	47,0	41,9	47,9	39,9	45,4	45,6	45,6	45,6
Lunes 09 04:00:00	32,7	47,6	42,4	49,1	45,4	45,6	45,6	45,6	45,6
Lunes 09 05:00:00	32,9	46,4	42,2	49,7	45,4	45,6	45,6	45,6	45,6
Lunes 09 06:00:00	32,0	45,4	42,3	48,5	45,4	45,6	45,6	45,6	45,6
Lunes 09 07:00:00	32,2	45,6	42,0	47,4	41,0	47,2	45,9	45,9	45,9
Lunes 09 08:00:00	35,7	45,6	42,4	47,5	37,6	44,9	44,9	44,9	44,9
Lunes 09 09:00:00	49,4	48,6	42,6	47,6	38,1	44,9	44,9	44,9	44,9
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Lunes 09 11:00:00	55,3	74,5	59,9	50,8	38,1	44,9	44,9	44,9	44,9
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Lunes 09 15:00:00	54,9	74,6	75,3	74,6	63,6	60,6	60,6	60,6	60,6
Lunes 09 16:00:00	62,3	75,5	78,1	74,3	63,5	74,3	74,3	74,3	74,3
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Lunes 09 22:00:00	61,9	72,8	76,4	76,4	72,5	75,8	75,8	75,8	75,8
Lunes 09 23:00:00	61,7	73,8	76,4	76,4	72,5	75,8	75,8	75,8	75,8
Lunes 09 24:00:00	61,8	73,9	76,7	76,2	72,5	75,8	75,8	75,8	75,8
Lunes 09 25:00:00	60,1	74,0	76,8	77,3	72,4	73,6	73,6	73,6	73,6
Lunes 09 26:00:00	58,3	72,4	77,3	77,3	72,4	73,6	73,6	73,6	73,6
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Lunes 09 60:00:00	46,7	69,2	71,2	76,7	72,6	74,5	74,5	74,5	74,5

In addition to all of the options offered by **PowerStudio**, **PowerStudio SCADA** also allows you to:

- Create SCADA screens combining different parameters from different **CIRCUTOR** equipment connected to the communications network.
- Generate reports or simulate electric bills for the allocation of partial costs.
- Manage and control events programmed by use of alarms or process automation actions.

Reports

With **PowerStudio SCADA** you can generate reports allocating partial costs, production ratios, etc. predicting all kind of energy invoices.



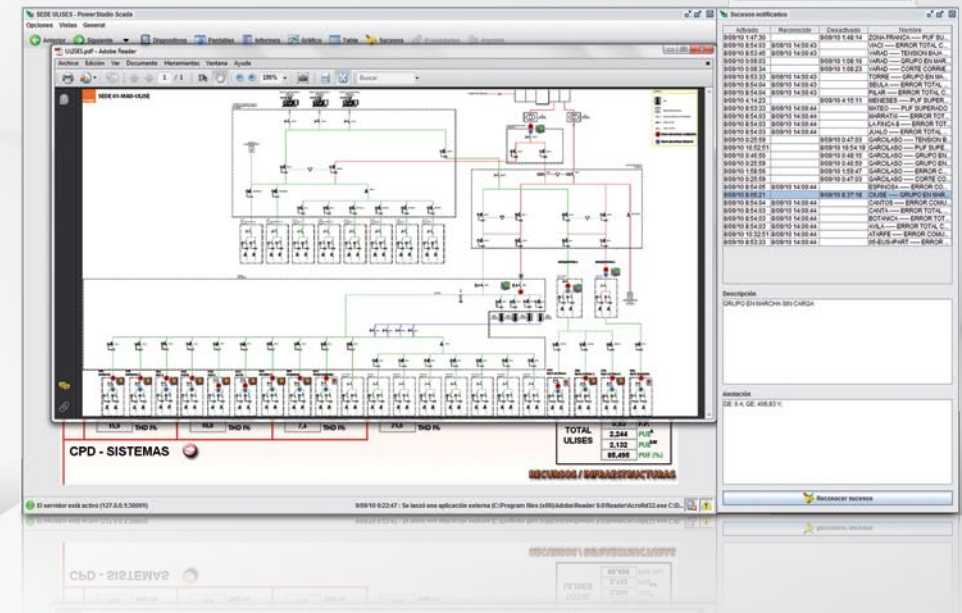
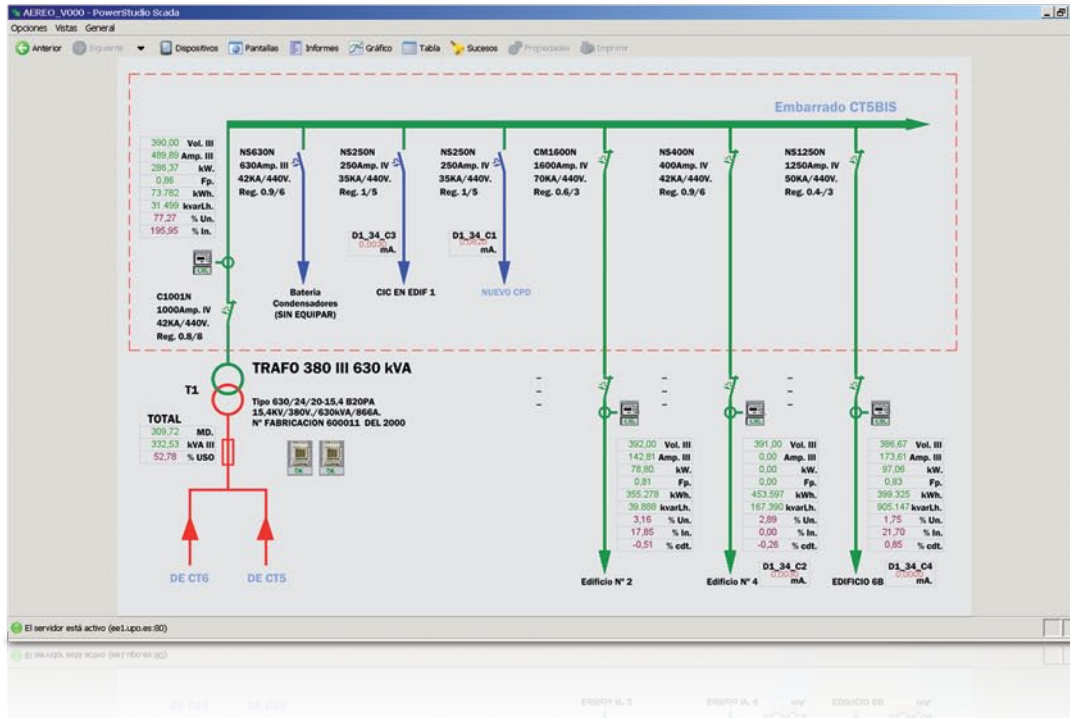
Events

With the events module you can control and generate alarms and events, automatically controlling the most critical installations and important conditions.

SCADA screens

With SCADA screens you can configure all kinds of interactive windows, create personalised screens and combine different parameters from different **CIRCUTOR** equipments in a simple way, thus obtaining the maximum amount of information in an intuitive and user-friendly environment.

Activado	Reconocido	Desactivado	ZONA FRACCA	Nombre
80010 147 30	80010 148 14	80010 148 14	YACI	ERROR TOTAL C.
80010 854 03	80010 140 03	80010 140 03	VARAD	TENSION BAJA
80010 854 05	80010 140 03	80010 140 03	VARAD	GRUPO EN BARR.
80010 108 34	80010 108 16	80010 108 23	VARAD	CORTE CORRIE
80010 854 03	80010 140 03	80010 140 03	TORRE	GRUPO EN BARR.
80010 854 04	80010 140 03	80010 140 03	SEILA	ERROR TOTAL C.
80010 854 04	80010 140 03	80010 140 03	PLAR	ERROR TOTAL C.
80010 854 03	80010 140 03	80010 140 03	MATEO	PUL SUPERADO
80010 142 23	80010 145 11	80010 145 11	MENES	PUL SUPERADO
80010 854 03	80010 140 03	80010 140 03	MARRATJ	ERROR TOT
80010 854 03	80010 140 04	80010 140 04	LA FRACA	ERROR TOT
80010 854 03	80010 140 04	80010 140 04	JUAN O	ERROR TOTAL C.
80010 025 59	80010 047 03	80010 047 03	GARCILASO	TENSION B
80010 18 52 51	80010 18 54 19	80010 18 54 19	GARCILASO	PUL SUPERADO
80010 046 50	80010 046 16	80010 046 16	GARCILASO	GRUPO EN BARR.
80010 025 59	80010 046 50	80010 046 50	GARCILASO	GRUPO EN BARR.
80010 158 56	80010 158 47	80010 158 47	GARCILASO	ERROR C.
80010 025 59	80010 047 03	80010 047 03	GARCILASO	CORTE CO
80010 854 05	80010 140 04	80010 140 04	ESPINOZA	ERROR CO
80010 854 03	80010 140 04	80010 140 04	CAÑES	GRUPO EN BARR.
80010 854 04	80010 140 04	80010 140 04	CANTOS	ERROR COMU
80010 854 03	80010 140 04	80010 140 04	CANTA	ERROR TOTAL
80010 854 03	80010 140 04	80010 140 04	BOYARICA	ERROR TOT
80010 854 03	80010 140 04	80010 140 04	AVILA	ERROR TOTAL C.
80010 10 32 51	80010 140 04	80010 140 04	ATARFE	ERROR COMU
80010 854 03	80010 140 04	80010 140 04	IS-ELU-IPART	ERROR



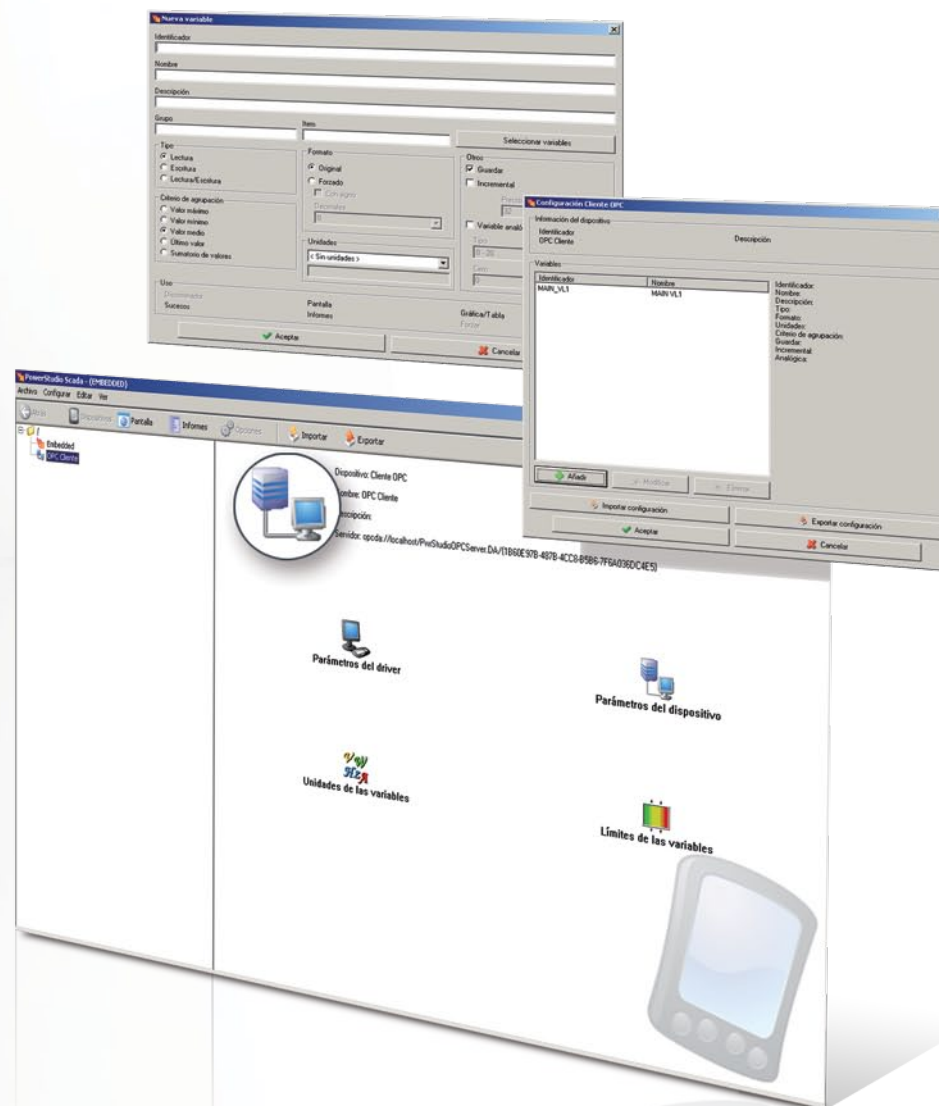
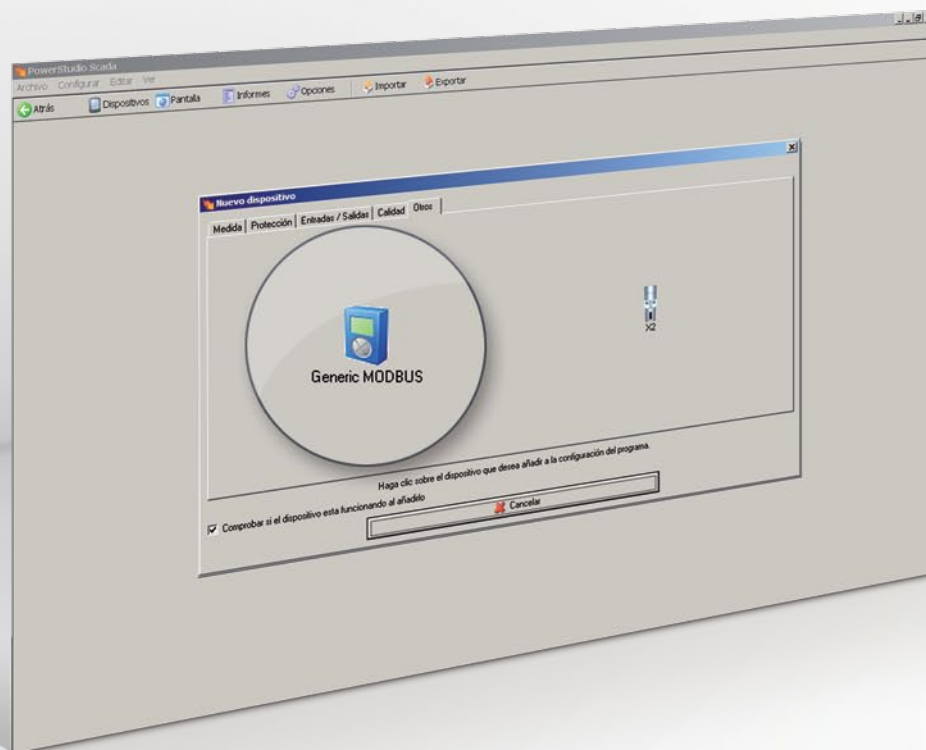
In addition to all of the options offered by **PowerStudio SCADA**, **PowerStudio SCADA Deluxe** also allows you to:

- Interact with any equipment equipped with Modbus/RTU communications protocol.
- Interact with any SCADA application in the market using the OPC server option.
- Possibility of UDP, TCP connections

Generic MODBUS

It is a driver that allows you to integrate any MODBUS communications equipment in **PowerStudio SCADA Deluxe**.

PowerStudio SCADA Deluxe includes OPC Client which allows you to integrate the information obtained by other SCADA in the market using OPC technology.

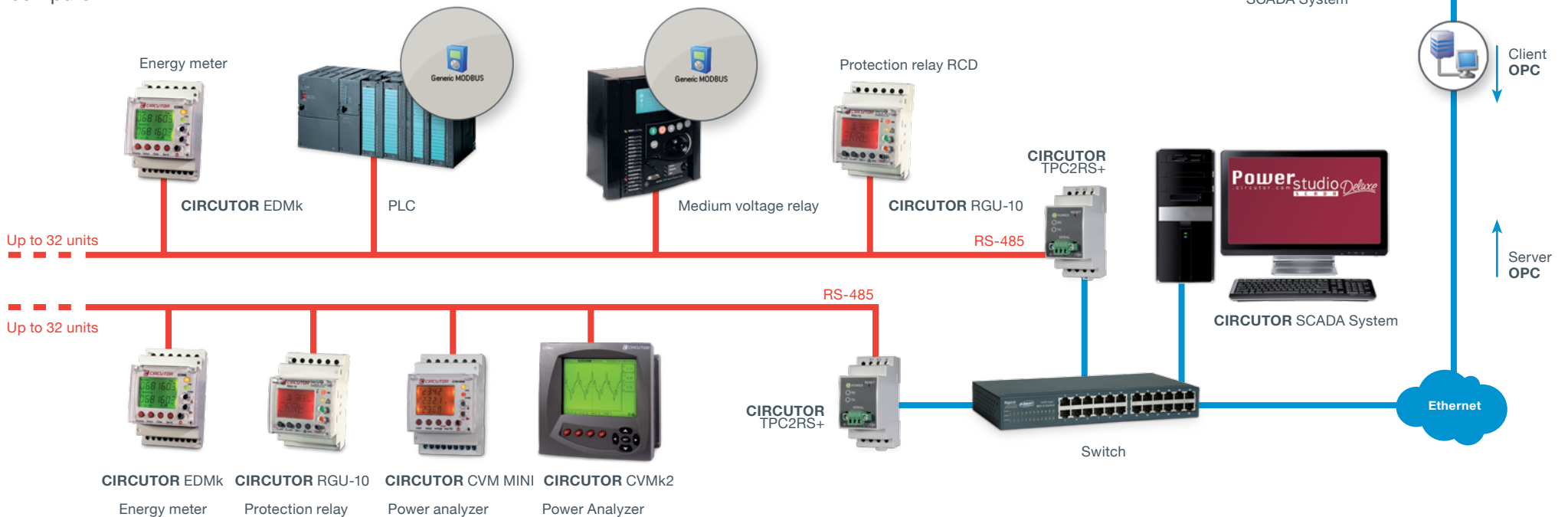


SCADA Applications

PowerStudio SCADA Deluxe allows you to create applications on any device equipped with OPC or Modbus communications. **PowerStudio SCADA Deluxe** allows you to:

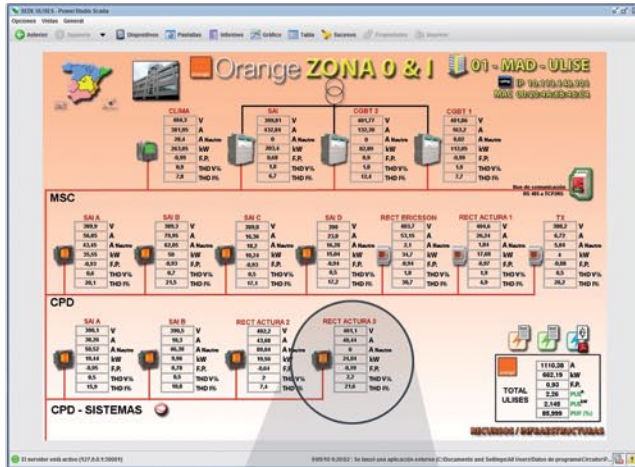
- Integrate equipment with Modbus/RTU communications into the application using the generic driver
- Manage the information obtained by other SCADA in the market using the **OPC DA** communication driver
- Communications through RS-232 or RS-485/Ethernet converters.

This enables you to centralise the management of one or more installations in a single software program and computer.

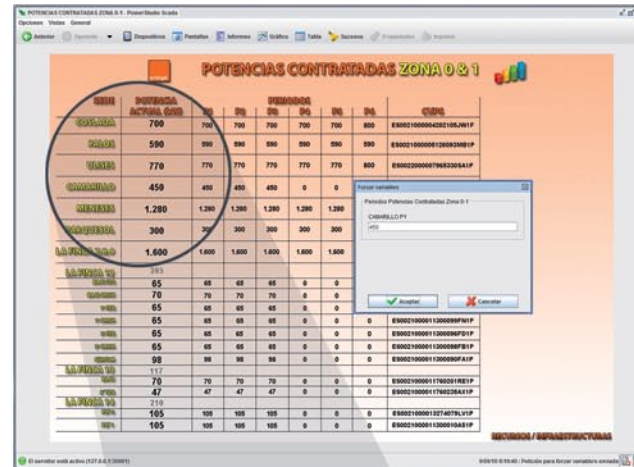


APPLICATIONS

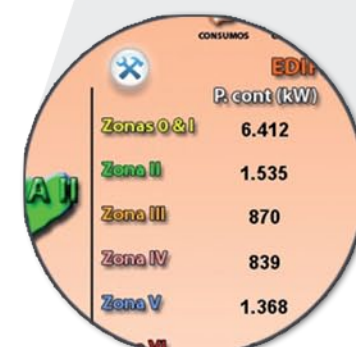
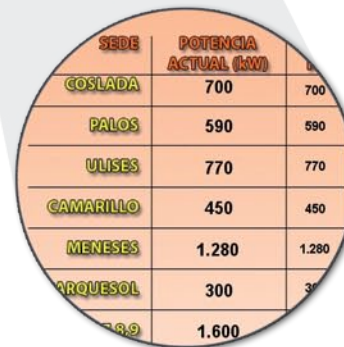
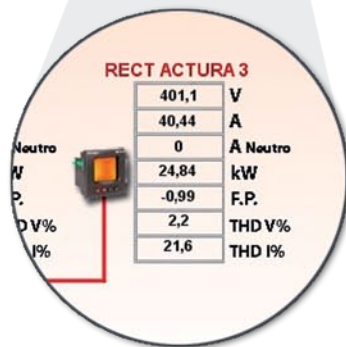
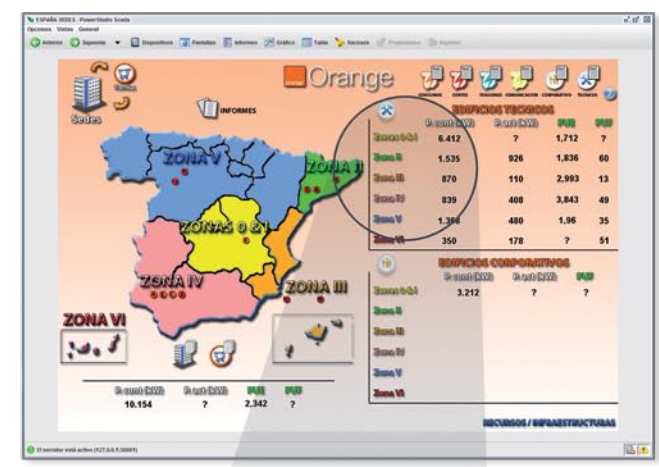
Displays the desired parameters of various devices on one screen



Possibility of forcing variables in real time using the keyboard



Energy reports for time periods



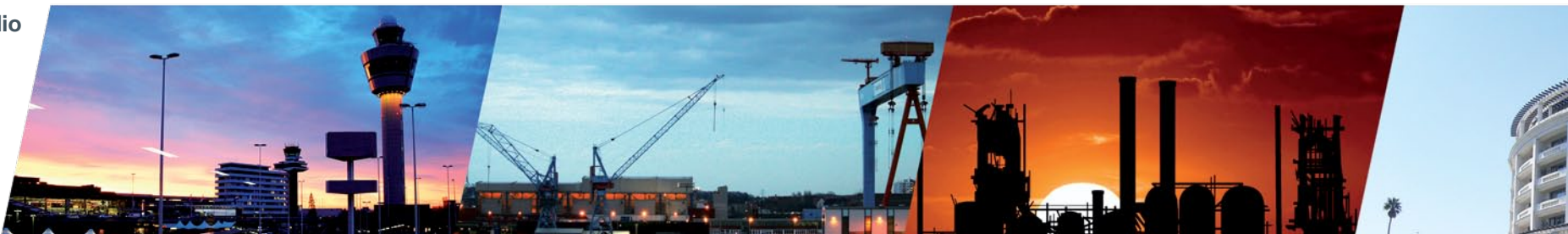
• Airports

• Ports

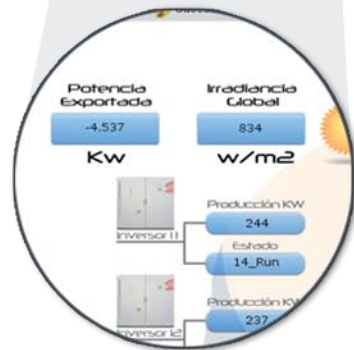
• Industry

• Hotels

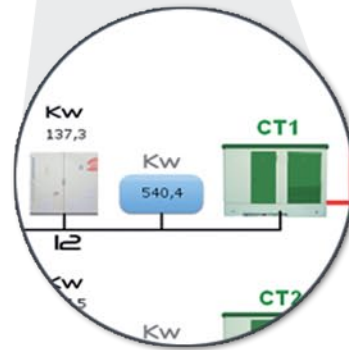
There are **PowerStudio** applications for all types of installations including:



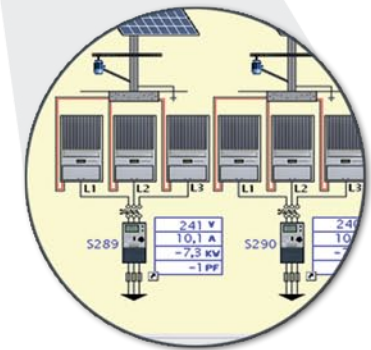
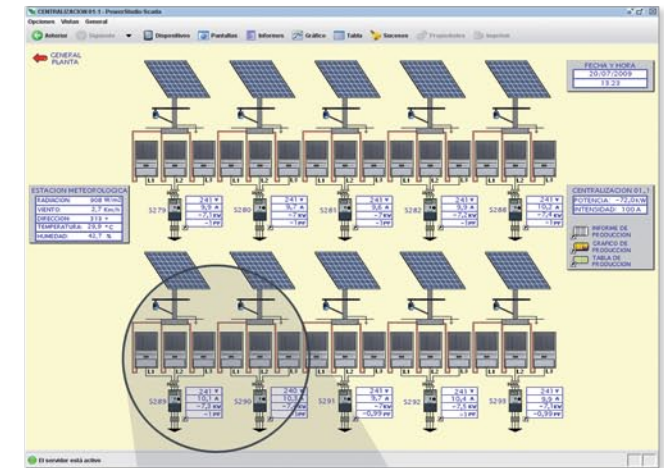
Monitoring inverters



Power monitoring in photovoltaic power plants



Monitoring the energy generated from photovoltaic panels



• Photovoltaics

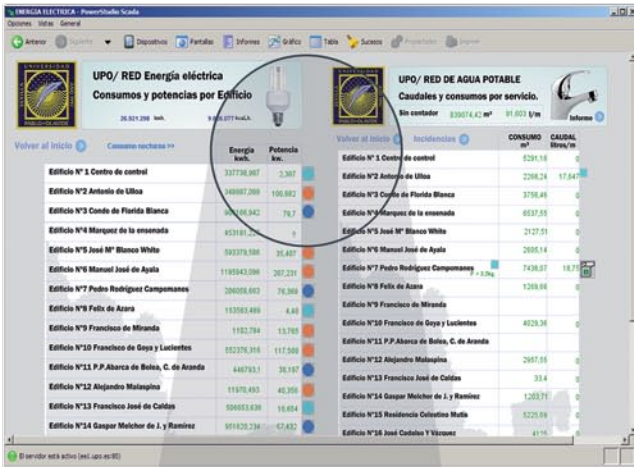
• Universities

• Hospitals

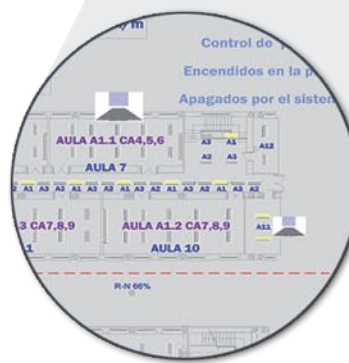
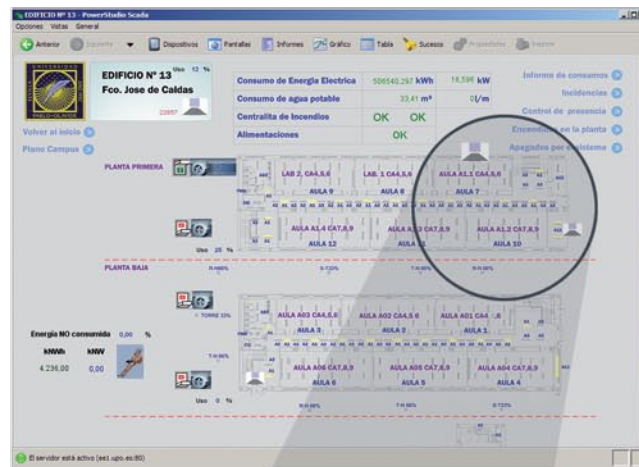


APPLICATIONS

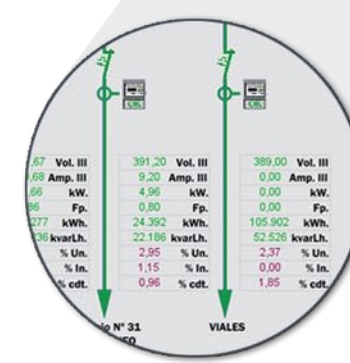
Water and electricity usage



Display room lighting status



Allocation of energy costs



- Shopping malls

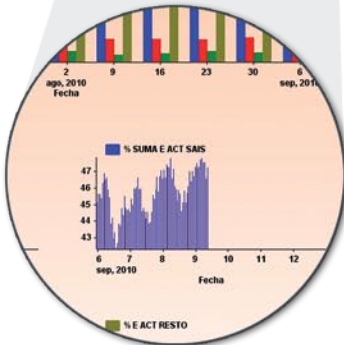
- Campsites

- Wind farms

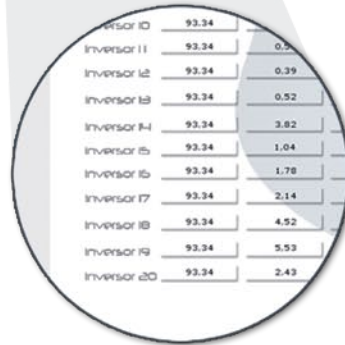
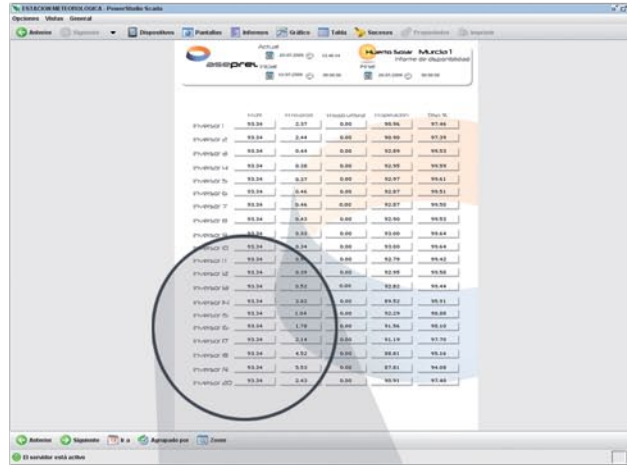
- Offices



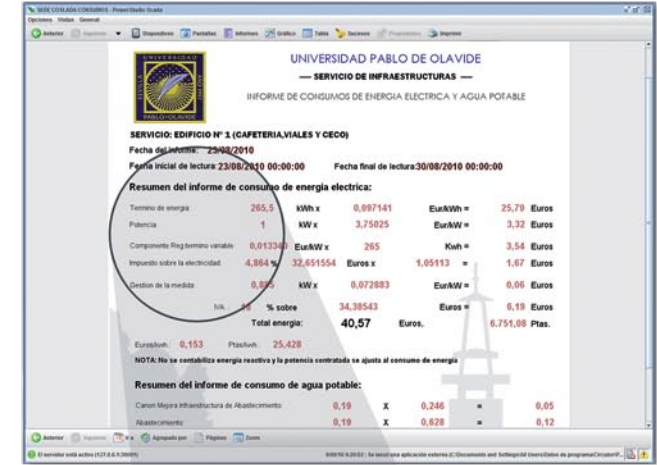
Time-period energy reports



Photovoltaic reports



Controlling the relevant electrical parameters of an installation, energy reports



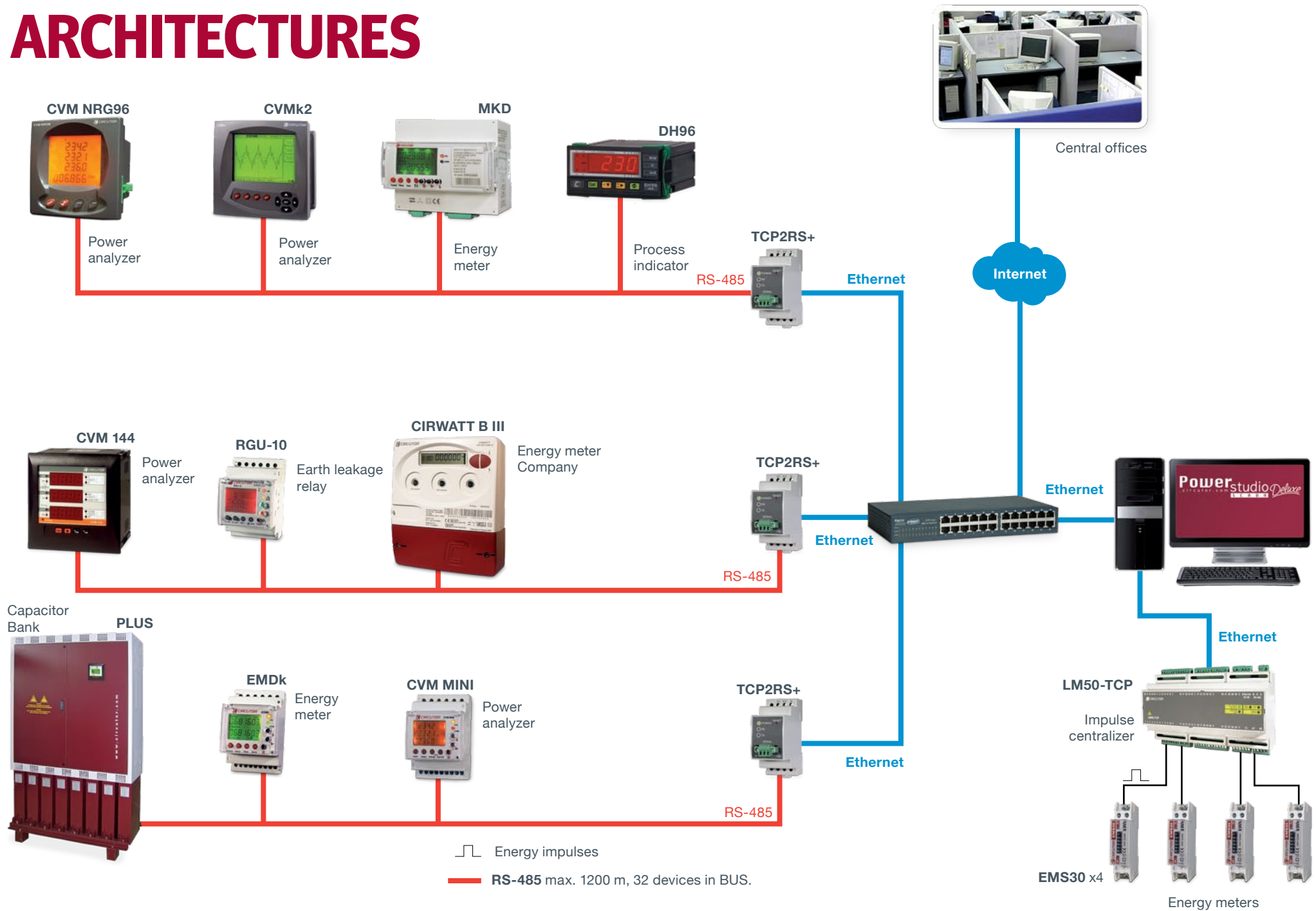
• Telecommunications

• Electricity distribution companies

• Water treatment plants



ARCHITECTURES



PRODUCT REFERENCES



CVMk2

Power and power quality analyzer

Power analyzer for high and low voltage balanced and unbalanced three-phase networks. Advanced feature equipment with power and energy measuring accuracy up to Class 0.2. Comes with VGA display, RS-485 Modbus communications, optional expansion modules for connecting digital inputs and outputs, analogue inputs and possibility of communicating via an Ethernet or Modbus/TCP expansion module (M54402).



LM50-TCP+

Meter centralizer

Device with 50 digital inputs. Centralises the input of impulses from commercial meters (energy, water, gas, etc.). Detects the logic state of the inputs (0 or 1) and Indicates alarm detection to the master system, the application of which depends upon the external sensor installed. Ethernet connection and Different communication methods: UDP, TCP and Modbus/TCP. (M31566).



CVM NRG96

Three-phase power analyzer

Power analyzer for low voltage balanced and unbalanced three-phase networks. Measures more than two hundred thirty electrical parameters and comes with RS-485 Modbus/RTU communications for communicating with master software. Backlit display, panel measurements: 96x96 mm (M51911).



RGU-10C

Earth leakage relay

Immunes earth leakage relay with real time display showing the value of the leakage. Sensitivity and trigger time can be programmed (0.03 to 30 A depending on transformer) and has the possibility of setting parameter for self-reclosing. Backlit LCD display, DIN rail: 3 modules (P11944).



CVM MINI

Power analyzer for three-phase systems

Power analyzer for low voltage balanced and unbalanced three-phase networks. Measures more than two hundred thirty electrical parameters and comes with RS-485 Modbus/RTU communications for communicating with master software. Backlit display, DIN rail and panel adaptor capacity: 72x72 mm (M52021).



Computer PLUS

Power factor regulator

Three-phase power factor regulator. Using a three-phase measuring system, the device compensates the presence of inductive reactive energy independently from the load existing in each phase. Displays $\cos \phi$ and acts as a power analyzer displaying multiple electrical parameters. Equipped with a capacitor control system: reports any anomalies related to its capacity (R12511).



TCP2RS+

Ethernet communications gateway

Gateway designed to convert the Ethernet physical layer to RS-232 or RS-485. The Web Server is a console from which the user can configure settings of the equipment. The equipment can work with a fixed IP address or in DHCP mode using name identification. It is a highly reliable, stable and robust converter, ideal for industrial environments (M54033).



CIRWATT B

Energy billing meter

CIRWATT B is designed for energy billing (standards EN 50470-1 and EN50470-3 (MID)). CIRWATT B comprises a wide range of models that can be used for small power consumers with single-phase systems and for large power consumers as well. Equipped with the latest PLC communications technology. When connected to PowerStudio, acts as an analyzer reporting on the installation's most relevant electrical parameters.

HARDWARE



PowerStudio Embedded 7000

In addition to all of the advantages of the conventional PC version of **PowerStudio**, this new platform called **PowerStudio Embedded 7000** offers the user greater system stability since the platform is exclusively dedicated to power management, and therefore, to controlling energy efficiency in buildings and industrial plants.

- **PS/PSS/PSSD* Embedded** system (Linux Inside)
- Ethernet 10/100 BaseTX communication port
- Fixed IP or DHCP configuration
- One RS-485/RS-232 serial port and one RS-232 port available for connection to different devices
- Resistant to extreme temperatures (Compact Flash System)
- Support for DIN rail
- Available in all three versions of **PowerStudio**

* PS: PowerStudio, PSS: PowerStudio SCADA, PSSD: PowerStudio SCADA Deluxe



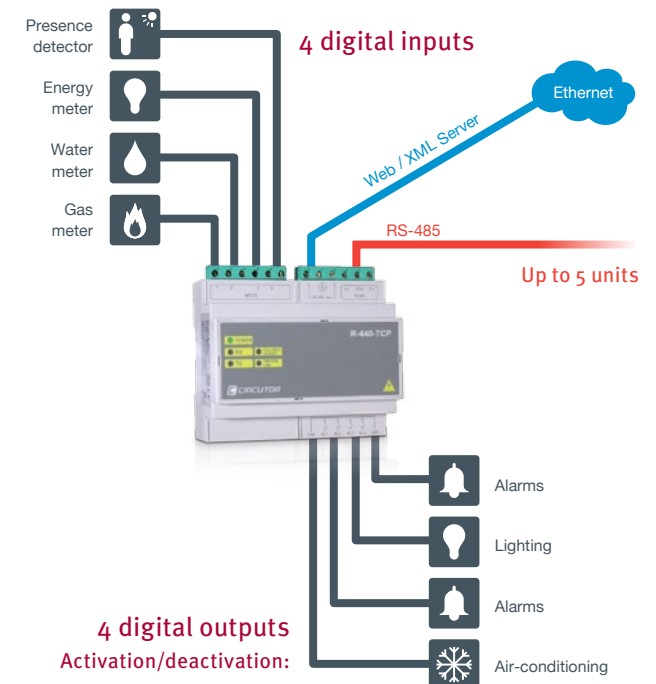
Efficiency Data Server

Efficiency Data Server is a device equipped with four voltage-free digital inputs and outputs. The device is equipped with an **Embedded PowerStudio** with built-in web server which makes it easy for the user to consult any variable without having to install any additional software into the LAN computer.

Embedded PowerStudio Technology

- Includes monitoring software and **Embedded PowerStudio** energy control
- Real-time display, calculation and recording of parameters from devices connected.
- Creation of tables and graphics (export option)
- Creation of access users and profiles
- Automatic event management and parameterisation
- Alarm logging and event management
- Alarms sent by email
- Integrated XML server
- OPC integration by optional module

Example of application in outline form



ADDITIONAL SOFTWARE

OPC-DA

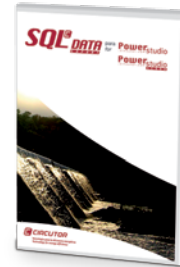


OPC-DA for PS/PSS/PSSD is a software tool created to quickly and easily integrate all of the electrical parameters from **PowerStudio**, **PowerStudio SCADA** or **PowerStudio SCADA Deluxe** software to a second control SCADA used by an **OPC-DA** client.

OPC-DA for PS/PSS/PSSD incorporates the Tunneling function for easy, safe and reliable communications between various networked computers (LAN/VPN/IP). This integration method solves problems associated with the Windows DCOM configuration.

- Multiple architectures and network topologies.
- Easy configuration and start-up of **PS/PSS/PSSD** software
- Automatic integration of **OPC-DA** and **PS/PSS/PSSD**
- Immediate integration between the OPC server and OPC client.
- System robustness (Windows service)
- IP architectures with the Tunneling function.

SQL DATA EXPORT



SQL Data Export for PS/PSS/PSSD is a software tool for integrating **PS/PSS/PSSD** data into a new or existing SQL type database. With **SQL Data Export**, the user can integrate the data from field equipment connected to the monitoring system through SQL queries.

SQL Data Export connects to the **PS/PSS/PSSD** system by means of an IP connection, thereby facilitating the installation of the SQL export software in the most appropriate computer for the consulting or data integration project.

- Export of historical data in **PS/PSS/PSSD** to SQL type databases.
- Option of selecting devices or databases to be exported.
- Multiple architectures



PowerQualityModule

Manages the power supply quality of your installation and controls anomalies automatically using the **PowerStudio** quality module. You can monitor your installation and receive reports in order to take any necessary corrective measures to remedy incidents and optimise performance.

Powerstudio mobile

PowerStudio mobile is a specific application for smartphones that allows you to display the data on wireless network devices.





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