



Consumption Management Systems for energy and water

Systems with **PLC** communications and
prepaid systems, using RFID



Consumption management systems

*At **CIRCUTOR**, we have been manufacturing and distributing electrical energy efficiency management systems and equipment 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.*

The rational and consistent use of energy is vital, in order to make current and future energy needs compatible. Therefore, there is a great need for energy efficiency policies.

Energy must be measured to guarantee its correct management. Likewise, communications equipment must be used to centralise all data in one point, in order to make sure that it is handled correctly

Consumption management

Particularities

The main concern with this type of installation is to provide an efficient and fair service, both to the owner and to the end client. Normally, the users of these consumption points are not aware of the rational use of energy or water. In many cases, they arrive to the site and use all kinds of charges without concern for the energy or the water consumed, since they pay the same, whether they consume a great deal or a little.

In addition, given that the disconnection of the equipment as well as the opening of the water supply is usually done manually, they are frequently left on by mistake, thereby generating unnecessary consumption.

Unnecessary expenses in installations

$$1 + 2 + 3 + \dots + n = \text{Cost } 0\text{€}$$

If you multiply these expenses by "n" sites, the overall cost associated to the use of the installation can represent potential savings for installation energy managers.

Solutions

CIRCUTOR offers 2 consumption management solutions:

- The remote metering and operation of its energy and water meters, via **PLC**, for intelligent management. As the meters are connected to the low voltage network, they are automatically detected by the system management equipment: the **PLC 800** concentrator. Through this system, managers remotely take the initial reading of the meter assigned to a client upon arrival, and switch on the energy and water supply. Once the client's stay has finished, the managers remotely cut off the supply without having to travel. The cost of the energy and water consumed during the stay is allocated from the main office.
- **Prepaid** energy and water consumption system. The user pays for the quantity consumed and it is charged to an **RFID** card. The user can activate the meter and open the supply of energy or water with the use of a card. If the user exceeds the consumption that he paid for on arrival, the meter will automatically cut off the supply. With this system, we can guarantee that users always pay before consuming; they control what they consume and they only acquire what they need.



SGC (Consumption Management Systems)

This type of system is usually implemented in installations such as camp grounds, marinas, resorts, camping areas, etc.



PLC (Power Line Communications)

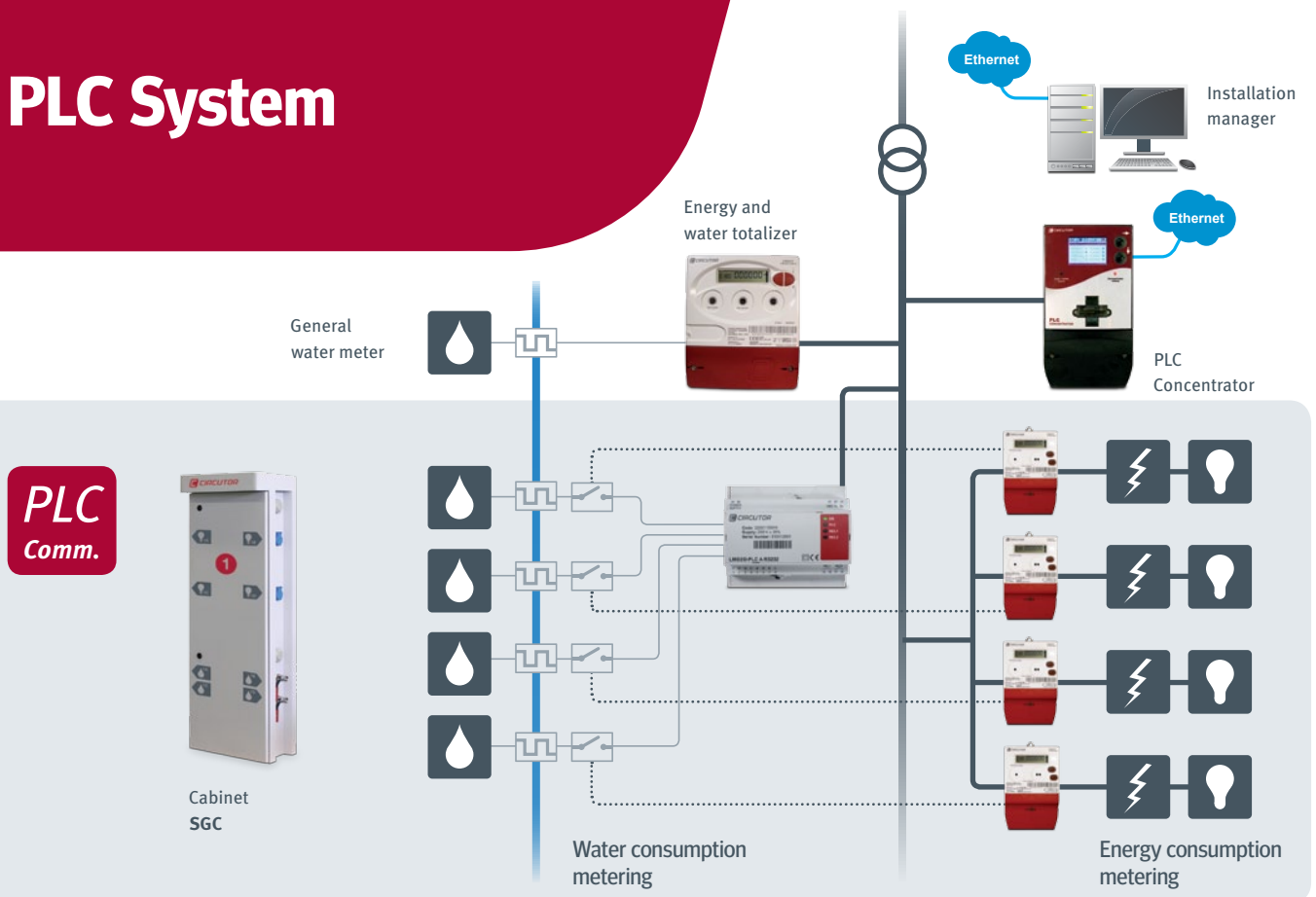
This is a communications system that uses an installation's existing electrical lines.



RFID (Radio Frequency Identification)

This is a data storage and retrieval system that can transmit the identity of an object through radio waves.

PLC System



How does the PLC communications system work and what benefits does it offer?

CIRCUTOR's Energy Management System with PLC is made up of 3 primary elements:

- **CIRWATT B**
single-phase electrical energy meters: They are installed in groups of 4 in **SGC** cabinets to measure energy and water consumption. They manage the connection/disconnection of the supply to each site.
- **PLC 800** data concentrator: This device downloads the data from the energy meters and manages the opening/closing of the electricity and water supply at each of the consumption points.
- **LM6I2O** impulse concentrator with PLC communication. This equipment collects data from the water meters installed in the cabinets and adds the consumption to the electrical energy consumption.

Easy installation system

The connection of a new meter to the network does not involve any additional configuration; when it is connected it detects itself in the **PLC 800** concentrator and automatically starts the data download, without anyone having to be involved in the process.

Robustness

The system uses the meters themselves to resend the information. This guarantees communication with the devices that are the furthest away from the transformer substation.

Safety

Access security for consumption data is ensured by means of defined user names and passwords, which restrict access to the control system.

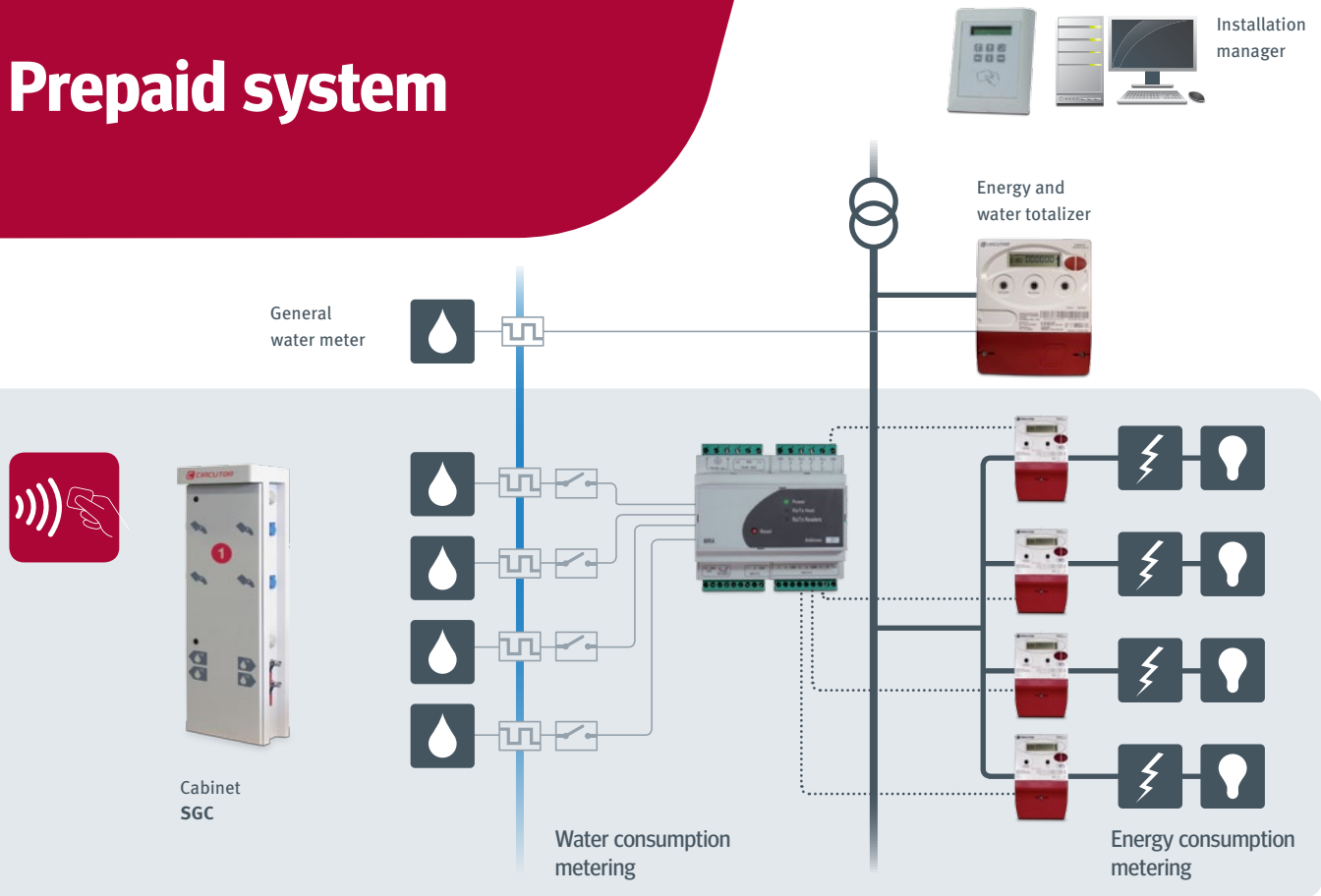
Two-way communications

This management system allows for both meter reading and taking remote action on the meters. For example, we can read the energy consumption associated to a site and take remote action on its electricity and water supply.

Consumption and status of the current electricity and water supply

Using the management software, it is possible to take a reading of the electrical parameters (energy, voltage, current,...), of the water meter or of the status of the electrical supply to the site (connected or disconnected).

Prepaid system



How does the prepaid via RFID system work and what benefits does it offer?

CIRCUTOR's prepaid Energy Management system is made up of 1 primary element:

- **Energy dispenser B II:** This meter, with a prepaid system via **RFID** cards, allows you to control energy and water consumption.

Easy installation system

Connecting a new meter to the network does not involve any additional configuration. Simply install the **SGC** cabinet with the prepaid system in the installation and the **RFID** card reader system in the manager's office.

Robustness

The system uses a weatherproof and tamper-proof cabinet.

Safety

It allows the activation and deactivation of the installation's consumption via the **RFID** card without having to open the cabinet.

Remote communication

This management system allows the installation manager to manage the consumption of each site with having to travel to each of them, thanks to **RFID** cards.

Awareness, responsibility and cost-effectiveness

It provides a wealth of benefits both for clients and for the installation where it is implemented. From the users' point of view, it allows them to significantly reduce their consumption of energy and water, because each person pays for the amount that he needs, as he is able to see his balance in real time, becoming increasingly aware of and responsible for his own consumption.

From the point of view of the installation, delinquency of payments is eliminated because clients must pay before using energy and water; not paying is never an option.

Advance payment entails economic benefits for installations as they have the money before providing the energy. Therefore, it financially helps these companies.

CIRCUTOR products used by the PLC system

SGC

Safe, compact consumption management system with a PLC communications system



Comprehensive solution for remote consumption management in installations, via PLC. Its easy installation allows energy centralization and management from a compact cabinet.

For sites with a small consumption there is a model consisting of 4 **CIRWATT B** single-phase meters, 4 water meters, 4 electrovalves and 1 **LM6I2O** concentrator.

For sites with consumption greater than 16 A there is a model consisting of **CIRWATT B** three-phase meters and higher-amperage outlets in addition to the equipment already mentioned in the previous model.

CIRWATT B

Single-phase meter and recorder



Single-phase meter for measuring and recording the electrical energy consumed. It has an integrated PLC communication and integrated relay module. Using management software and the **PLC 800** it can limit the power to each site and open/close the supply when a client arrives to or leaves the assigned site.

PLC 800

PLC Concentrator



It is a concentrator with PLC communications (through the existing power cables in the installation). The concentrator is the equipment responsible for managing the installed devices: it reads and stores energy meter readings for billing, opening/closing the electric supply and regulating maximum consumption.

CIRWATT B

Three-phase multifunction meter and recorder



It is a meter for measuring and recording the electrical energy consumed. It is generally installed at the head-end of the installation in order to have information on the total energy consumed.

LM6I2O

Impulse concentrator with PLC communication



It is equipment, with PLC communication, that takes meter readings from any device that emits impulses (up to 6 devices), such as water or gas meters. It has 2 outputs which can act on contacts, acoustic and/or luminous devices for performing a protective or alarm operation.

CIRCUTOR products used by the **prepaid** system

SGC

Safe, compact consumption management system with a prepaid RFID system



Comprehensive solution for remote consumption management in installations, via **RFID** cards. Its easy installation allows energy centralization and management from a compact cabinet.

For small sites there is a model consisting of 4 **Energy dispensers B II**, 4 water meters and 4 electrovalves.

For larger sites with consumption greater than 16 A there is a model consisting of 2 **CIRWATT B** three-phase meters, 2 water meters, 2 electrovalves and 1 **LM6I2O** concentrator.

Dispenser B II

Energy dispenser with prepaid system via RFID cards



It is an energy dispenser with a **prepaid** system via **RFID** cards that guarantees that clients pay for the amount of energy that they will consume before consuming it.

MR4

Electronic controller for prepaid systems



It is equipment, with RS-485 communications, to take RFID / Radio readings (up to 8 readers). It has 4 relay outputs to act upon contacts, acoustic and/or luminous devices. Attached to DIN rail.

CIRWATT B

Three-phase multifunction meter and register



It is a meter for measuring and recording the electrical energy consumed. It is generally installed at the head-end of the installation to have information on the total energy consumed.

RVE-TERM

HF mobile terminal for prepaid systems



It is a HF Advanced mobile terminal for timed or mixed prepaid systems. The equipment allows **RFID** card recording (balance, number of credits). Selection of the prepaid application: timed, mixed. It has a backlit LCD display. Possibility to activate an Administrator account (numeric password) to prevent use by unauthorized individuals. It generates a card with an installation code.

Energy and Water Consumption Management Systems

Systems with **PLC** communications and **prepaid** systems via RFID

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