GODEL SMART SENSOR 34,5kV

Network Monitoring and Loss Prevention Sensor

Lactec

ANEEL
Agência Nacional de Energia Elétrica
PDI - Programa de Pesquisa, Desenvolvimento e Inovação

Neoenergia

A sensor for networks up to 34.5kV reports events such as temporary faults, current surges and unbalances to SCADA, while taking real-time current measurements with an accuracy of 98% or more. It integrates these measurements every 15 minutes, making it helpful for energy balance calculations and reducing energy losses.

TECSYS
Smart Power

DESCRIPTION

The equipment consists of a 34.5kV three-phase distribution line monitoring system. It uses a RTU unit and a set of up to 03 sensors.

The RTU unit receives real-time data from each sensor and sends it to the operation center.

In-field installation is carried out with a lightweight team, using a ladder and maneuvering pole, without the need to interrupt the power supply.

The system is based on the measurement of the current of each monitored phase where the sensor is installed in the 34,5kV distribution line. The values are transmitted to the RTU unit via a radio transceiver, which processes the electrical quantities and reports the readings and events to the concessionaire's operation center using the open DNP3 protocol and to the management center using the proprietary protocol. Current and angular phase measurements are collected and integrated every 15 minutes, to calculate energy flow and energy balance studies.

The remote communication system allows data to be transmitted in the most appropriate way, taking into account factors such as the geographical location of the points where the sensors are installed, the frequency, the volume of data and the desired transmission speed.

Electronics to Business

ANATEL

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TECSYS®

TECHNICAL ESPECIFICATION

GODEL Smart Sensor 34,5kV

FEATURES	
Measured nominal current range	Up to 400 A
Supportability	Withstands short-circuit current of up to 12 kA
	It registers up to 4 kA of event, but the reading saturates
Current measurement	By electromagnetic field
Voltage detection	By electrical field
Sensor status information	The status of the sensor is monitored by the RTU unit. If the sensor malfunction, the failure is reported to the SCADA
RTU power supply	It has a full range 90 to 240 Vac power supply with +5Vdc@1A and +14Vdc@2.5A outputs
	Allows solar panel power supply
	Power backup through batteries or ultracapacitor modules
	The autonomy is dependent on the communication module that is applied to the RTU
Sensor power supply	The sensors are powered by a solar panel and the energy is stored in ultracapacitors for up to 36 hours of autonomy
Accuracy of current measurement in the field	Measure range – 4 A to 400 A: 10% for currents from 4 A to 10 A
	5% for currents from 10 A to 40 A; 2% for currents up to 40 A
PC parametrization software	A Software PC is utilized to parameterize the set. The connection is made via the Serial/USB adapter
Maximum sensor grouping in a concentrator unit	Up to 3 (three)
Concentrator unit power supply	Full range 90 to 240 Vac or by solar panel
App for the visualization of events and logs	Open protocol with configurable pre- and post-event cycle information available as analysis tools via Website
	Provides information on the Website in graphic and tabular formats
	Events are sent to the SCADA system as spontaneous message in DNP3 format at the moment they occur

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Event detection	Reports to SCADA with real-time calculation
	Transient shutdown by phase and group
	Permanent shutdown by phase and group
	Current surge
	Neutral overcurrent
	Flow inversion
	Inverted sensor
	Current (RMS by phase)
	Neutral module (resultant current)
	Neutral angle (resultant current degree)
	Module and phase angle A, B, and C
	Ultracapacitors low level of tension alarm
	Low voltage level alarm for ultracapacitors
	Communication failure among devices in the group
	Current Surge Intensity (A by phase)
	Battery voltage (by phase and concentrator)
Sensors groups	Manual connection of 03 sensors carried out by the RTU or via parameterization software
Minimum and maximum cable diameter	From 5 to 33 mm
Protection level	Case specially developed for power line applications, open-air operation, and exposure to harsh environments
	The sensors have IP 67, and the RTU unit has IP 65
Data export	Web interface stores all data generated in the set, including operation log data

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FEATURES

- Mass of memory of up to 100 events by sensor
- Serial communication with specific module
- Spontaneous messages (unsolicited) sent with time information to SCADA

BENEFITS

- Spontaneous event generation with DNP 3.0 protocol
- Flexibility with the communication usage by the client
- Easy to install equipment
- Maintenance-free
- Service life >10 years
- Operation temperature: -5°C to 65°C
- Operation frequency: 60 Hz
- Able to be attached to cables with diameter of up to 33 mm

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OPERATION DIAGRAM

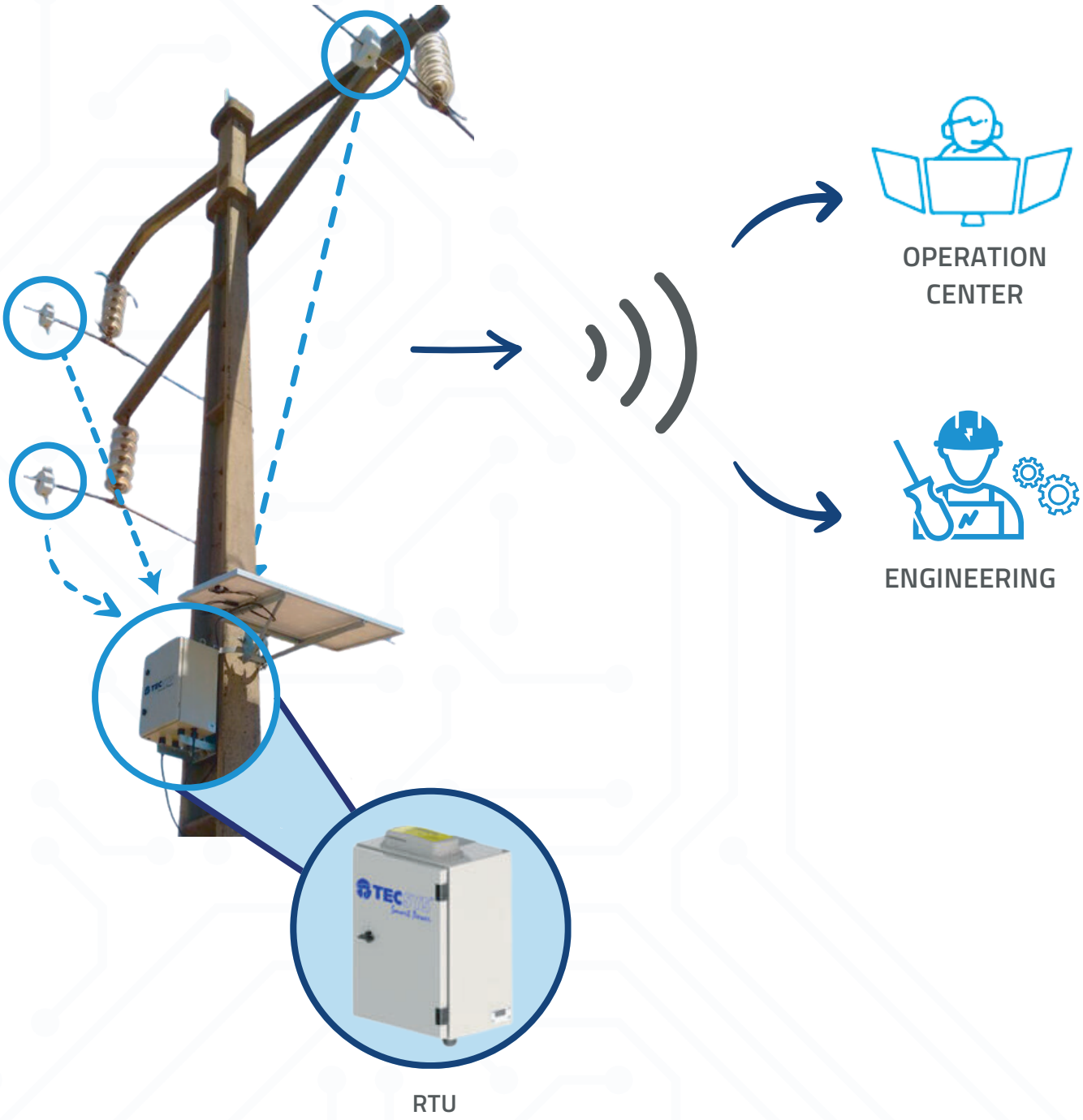

Diagram 1: Intelligent sensing system topology

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INSTALLATION

Figure 1: Installation using a ladder and a maneuvering pole, without the need to interrupt the power supply.

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