

WebProCat + GOLIAH 4

Different by choice.

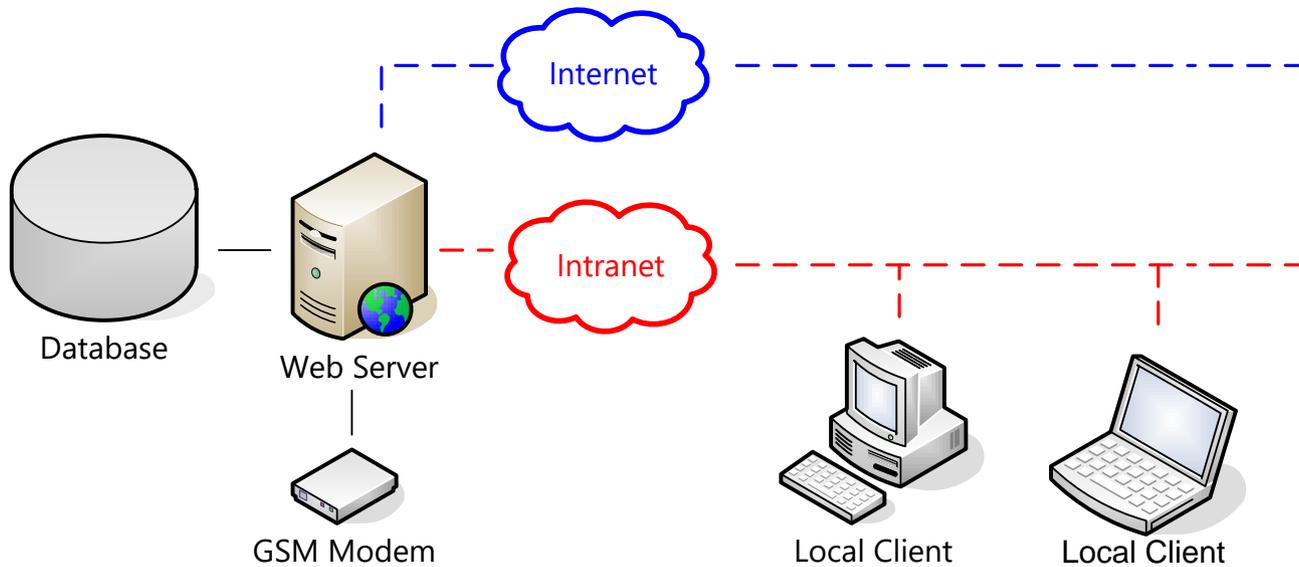


by **AUTOMA**
SMART TECHNOLOGY

System Features

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ARCHITECTURE

Simply different by choice

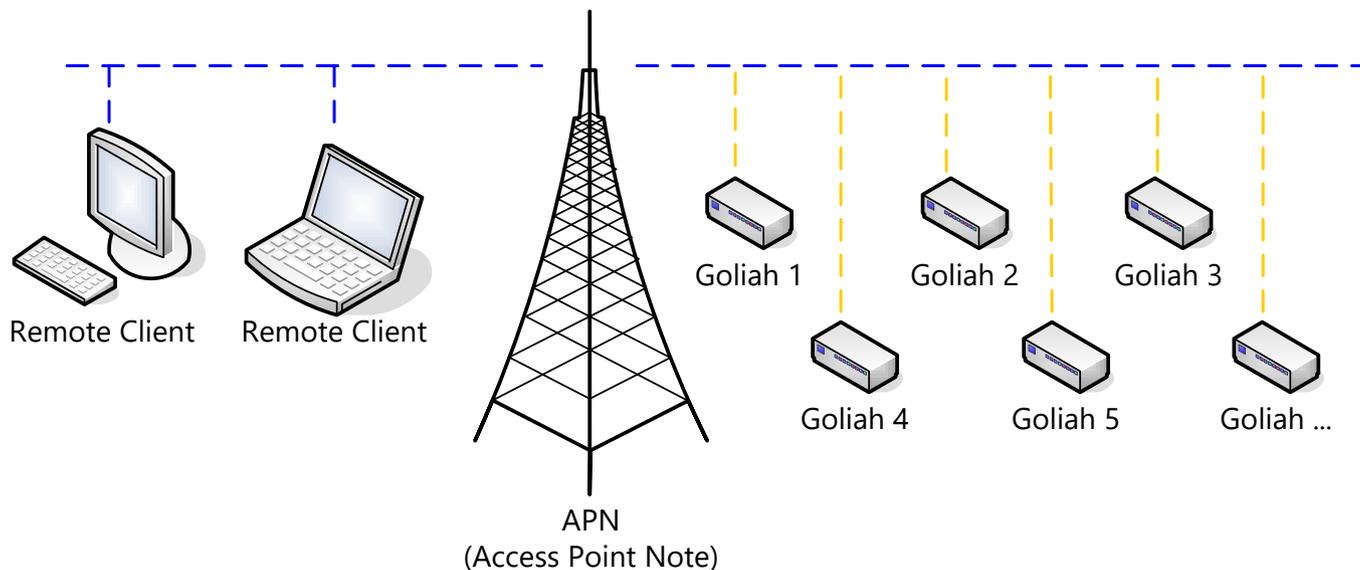
WEBPROCAT + GOLIAH 4: Our proposal for a complete, global and custom anti-corrosion protection systems monitoring of metal structures.

It comes from a thirty years long experience in monitoring systems production, especially oriented to Cathodic Protection (CP) and functional parameters control of Water/Gas/Oil distribution networks (pressure and capacity).

BY CHOICE we've created an all-inclusive solution having all the tools needed for a quick and accurate control of distribution plants, as by sector law enacted.

BY CHOICE we've designed an architecture leading the company to really ownership of data, devices, operating procedures and functional results.

BY CHOICE we've enabled structures to provide a truthful control of systems, in straight touch with the real system functions, receiving real time data without any middleware.



INFRASTRUCTURE

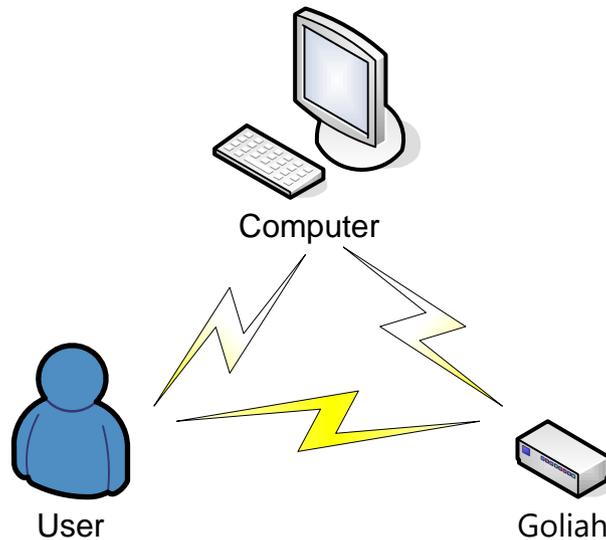
Just your network

All the resources necessary to system management are conceived to fit the existent company server architecture.

This way, it's possible to include the GOLIAH 4 + WEBPROCAT in the pre-existing infrastructure faster and more efficiently, with low costs and top benefits.

The system needs only few elements to be deployed: a server, an intranet and obviously some PCs to access the Web Configuration Program, in order to collect and analyze historic records, to generate KT efficiency indexes, and manage all the reports as foreseen by law.

Nothing more than what you actually have, no peculiar technologies, no complex technological components, to preserve the global system ownership, its management, maintenance and, above all, the outputs supplied.



COMPONENTS

Simple on purpose

Few, essential and totally integrated each other are the elements that compose the system. From the central server of processing to the field units of measurement (datalogger), neither remotely controlled nor operator-assisted, also passing through the management software.

THE SERVER

A processing server system connected to the corporate network, powered by an UPS (Uninterruptible Power Supply) and equipped with an automatic data backup system. This is the minimum configuration required to guarantee both a correct base functionality and a possible safe system restore.

The server operating features and its redundancy systems can be customized depending on the number of available tele-surveillance devices.

THE COMMUNICATION

The system performs different types of data exchange, via GSM and GPRS connections. Two communication channels are available: a primary channel on a broadband Internet connection and a secondary redundant channel, via traditional GSM modems. The GSM channel capacity (defined as the number of GSM modems needed at the same time) is proportional to the GSM service usage, to the number of installed devices and, mostly, to the unavailability of a GPRS connection in the tele-surveillance points of measure. At least one GSM modem has to be present.

THE SOFTWARE SUITE

A software suite for historic data analysis, operating and functional setup of measuring devices, data processing, visual warnings of malfunctions and much more: this is the main core of our solution.

A complete suite of web applications specifically designed for Cathodic Protection (CP), allows you a simple, intuitive and unified system management.

THE DATA LOGGER

The main system elements are the measuring devices performing tele-surveillance or operator assisted measurements.

They allow to monitor, to record, and to control all the functional parameters, with a real-time anomaly warnings, according with rules and configurations set by the system administrator.

Datalogger allows you to perform all the measures as by law enacted, including on-off and electric field variability measures.

PRODUCTS

WebProCat

ONCE UPON A TIME...

Originating from the need of collecting the received data into an easy-to-read database, the WebProCat is the right tool to make easier performing Cathodic Protection tasks.

This product, simply usable via web, shows the following useful features:

- Customizable Census,
- Graphical measures visualization,
- Points of measure mapping,
- Automatic generation of authority reports,
- Wizard configuration of devices,
- Customizable Access policies,
- Several print options ready to click,
- And much more.

LET DREAMS COME TRUE

Through a simple and user friendly initial page, it's possible to access several available products, among which:

- **WebProtection:** rights and users management,
- **WebProCat:** CP data reference and management,
- **WebCommLink:** devices configuration and visualization

The whole infrastructure is developed with the newest RIA (Rich Internet Application) technologies, able to guarantee an all-involving and easy user experience, and high level performance also in the presence of huge data records.

The operating procedure is compatible with any O.S. browser; it only needs a server machine with Apache Tomcat (available for Windows, Linux and MAC platforms) installed, in case you decide to add it to your own existent intranet.

The database is not linked to any DBMS on purpose, to favour its easy integration on pre-existent scenarios.

USER MANAGEMENT

The powerful user management system is able to control manifold access levels, classified as follows:

- GUEST
- USER
- ADMINISTRATOR

Moreover it's possible to set restrictions on user actions, like displaying and modifying only a part of the whole network, as defined in the archive.

| Username | Nome | Ambito | Drets |
|----------|---------------------|------------------------|---------|
| 0000955 | Francisco Lopez R. | BAS NATURAL DISTRIB | [Icons] |
| 0000142 | Angel Pons Rovira | SSTT Catalunya Norte | [Red X] |
| 0001033 | Jordi Capdet Noya | SSTT Catalunya Sur | [Red X] |
| 0004280 | Jasfeta Matamoros | SSTT Catalunya Norte | [Red X] |
| 00010812 | Eduard Lujan Noya | SSTT Catalunya Norte | [Red X] |
| 00020812 | Antonio Sanchez D | BAS NATURAL DISTRIB | [Icons] |
| 0002054 | José María Martínez | SSTT Catalunya General | [Red X] |
| 0001090 | Bernardo Ariano G. | BAS NATURAL DISTRIB | [Red X] |
| 0001177 | Antonio Ortiz Caste | BAS NATURAL DISTRIB | [Red X] |
| 0001402 | Anelino Anduega J | Dirección Técnica | [Red X] |
| 0001782 | Jaume Pastor Cabé | SSTT Catalunya Centre | [Red X] |
| 0001011 | Ruben Montori Laza | SSTT Catalunya Norte | [Red X] |
| 0001022 | Luis María López F. | Dirección Técnica | [Red X] |
| 0001057 | Kabeno Diaz Martí | SSTT Catalunya Sur | [Red X] |
| 0001019 | Cérick Mata Prover | SSTT Catalunya Centre | [Red X] |
| 0001492 | José Luis Bravo La | SSTT Madrid Sur | [Red X] |
| 0002102 | Roberto Ventura JI | SSTT Madrid Norte | [Red X] |
| 0002247 | José María Muñoz | SSTT Madrid Sur | [Red X] |
| 0002031 | Angel Garcia Oriola | SSTT Madrid Sur | [Red X] |
| 0002231 | Javier Montori Sur | SSTT Madrid Norte | [Red X] |
| 0002232 | Juan Carlos León | SSTT Madrid Norte | [Red X] |
| 0002238 | Juan Carlos Sánchez | SSTT Madrid Norte | [Red X] |

WebProtection

Usuari seleccionat: Antonio Sánchez D

Username: [Input field]

Password: [Input field]

Nome: Antonio Sánchez Díaz

Ambito: BAS NATURAL DISTRIBUCION

Operacions: Sánchez Díaz Antonio

Cellular: +3492000

WebProtection: rights and users management screen (Screenshot #1)

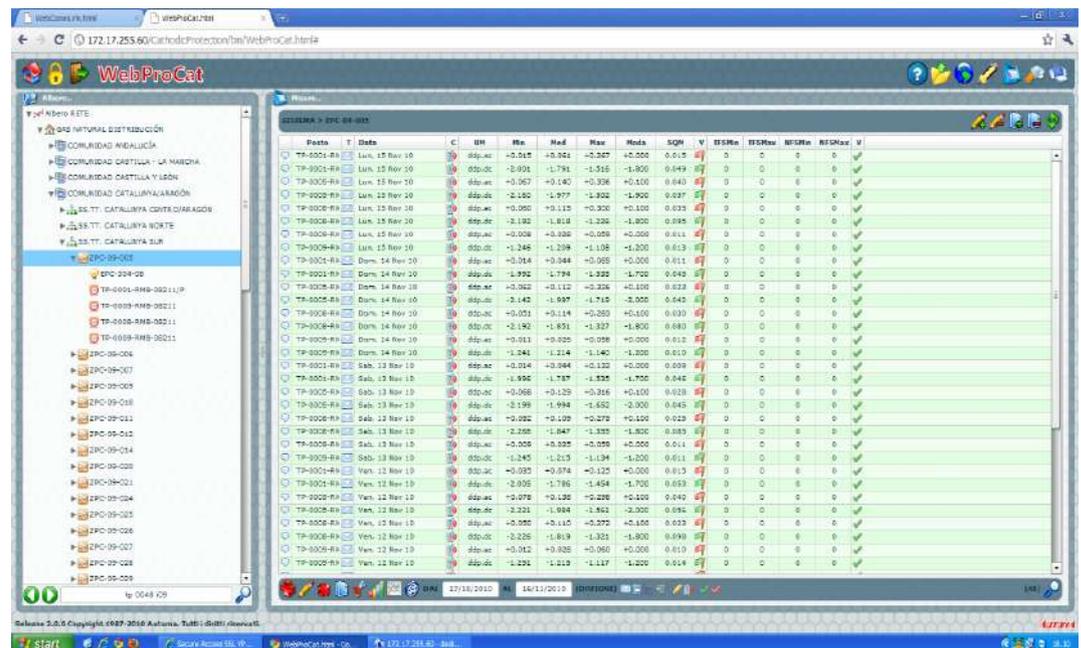
DATA UNIFORMITY

A uniform system management enables the coexistence of both measuring options, on site and remote, with simple and clear usage.

Moreover it's possible to insert the measurements performed manually, in order to have a unified database.

Modify, rename, delete, move and copy are all possible operations, by means of the great flexibility offered by our product: you can split your own network in areas, distributors, systems and measure sites and differentiate them by the census records and available operations.

Moreover it's possible to import measures provided by other suppliers in order to have a unique consultation data tool.



The screenshot displays the WebProCat software interface. On the left, there is a tree view showing a hierarchical structure of measurement sites, including 'ZPC-09-001' through 'ZPC-09-028'. The main window shows a table of measurement data for 'ZPC-09-001'. The table has columns for 'Posta', 'Fecha', 'C.', 'U.N.', 'Min.', 'Med.', 'Max.', 'Moda', 'SQN', 'ESTORn', 'ESTORm', 'ESTORa', and 'RESORn'. The data rows show various measurements with values ranging from -2.902 to 0.643, and dates from 10/11/2010 to 12/12/2010.

| Posta | Fecha | C. | U.N. | Min. | Med. | Max. | Moda | SQN | ESTORn | ESTORm | ESTORa | RESORn |
|------------|----------------|----|------|--------|--------|--------|--------|-------|--------|--------|--------|--------|
| TP-0001-RA | Lun. 15 Nov 10 | RA | RA | -2.902 | -1.791 | -1.516 | -1.800 | 0.643 | 0 | 0 | 0 | 0 |
| TP-0001-RA | Lun. 15 Nov 10 | RA | RA | -0.567 | +0.140 | -0.336 | +0.100 | 0.643 | 0 | 0 | 0 | 0 |
| TP-0002-RA | Lun. 15 Nov 10 | RA | RA | -2.150 | -1.977 | -1.902 | -1.900 | 0.627 | 0 | 0 | 0 | 0 |
| TP-0002-RA | Lun. 15 Nov 10 | RA | RA | +0.050 | +0.113 | +0.300 | +0.100 | 0.623 | 0 | 0 | 0 | 0 |
| TP-0003-RA | Lun. 15 Nov 10 | RA | RA | -2.192 | -1.812 | -1.226 | -1.800 | 0.645 | 0 | 0 | 0 | 0 |
| TP-0003-RA | Lun. 15 Nov 10 | RA | RA | -0.208 | +0.228 | -0.200 | +0.200 | 0.611 | 0 | 0 | 0 | 0 |
| TP-0004-RA | Lun. 15 Nov 10 | RA | RA | -1.346 | -1.204 | -1.108 | -1.200 | 0.613 | 0 | 0 | 0 | 0 |
| TP-0001-RA | Dom. 14 Nov 10 | RA | RA | +0.014 | +0.044 | +0.068 | +0.000 | 0.611 | 0 | 0 | 0 | 0 |
| TP-0001-RA | Dom. 14 Nov 10 | RA | RA | -1.992 | -1.794 | -1.922 | -1.700 | 0.640 | 0 | 0 | 0 | 0 |
| TP-0003-RA | Dom. 14 Nov 10 | RA | RA | +0.062 | +0.112 | +0.316 | +0.100 | 0.623 | 0 | 0 | 0 | 0 |
| TP-0003-RA | Dom. 14 Nov 10 | RA | RA | -2.142 | -1.997 | -1.715 | -2.000 | 0.643 | 0 | 0 | 0 | 0 |
| TP-0003-RA | Dom. 14 Nov 10 | RA | RA | -0.221 | +0.114 | -0.280 | +0.100 | 0.630 | 0 | 0 | 0 | 0 |
| TP-0004-RA | Dom. 14 Nov 10 | RA | RA | -2.190 | -1.851 | -1.337 | -1.800 | 0.680 | 0 | 0 | 0 | 0 |
| TP-0003-RA | Dom. 14 Nov 10 | RA | RA | +0.011 | +0.020 | +0.038 | +0.000 | 0.612 | 0 | 0 | 0 | 0 |
| TP-0003-RA | Dom. 14 Nov 10 | RA | RA | -1.241 | -1.214 | -1.140 | -1.200 | 0.610 | 0 | 0 | 0 | 0 |
| TP-0001-RA | Sab. 13 Nov 10 | RA | RA | +0.014 | +0.044 | +0.122 | +0.200 | 0.609 | 0 | 0 | 0 | 0 |
| TP-0001-RA | Sab. 13 Nov 10 | RA | RA | -1.996 | -1.787 | -1.935 | -1.700 | 0.645 | 0 | 0 | 0 | 0 |
| TP-0003-RA | Sab. 13 Nov 10 | RA | RA | -0.068 | +0.123 | -0.216 | +0.100 | 0.623 | 0 | 0 | 0 | 0 |
| TP-0003-RA | Sab. 13 Nov 10 | RA | RA | -2.198 | -1.994 | -1.652 | -2.000 | 0.645 | 0 | 0 | 0 | 0 |
| TP-0003-RA | Sab. 13 Nov 10 | RA | RA | +0.092 | +0.102 | +0.272 | +0.100 | 0.623 | 0 | 0 | 0 | 0 |
| TP-0003-RA | Sab. 13 Nov 10 | RA | RA | -2.258 | -1.847 | -1.333 | -1.800 | 0.685 | 0 | 0 | 0 | 0 |
| TP-0003-RA | Sab. 13 Nov 10 | RA | RA | +0.208 | +0.329 | +0.578 | +0.200 | 0.611 | 0 | 0 | 0 | 0 |
| TP-0003-RA | Sab. 13 Nov 10 | RA | RA | -1.945 | -1.213 | -1.134 | -1.200 | 0.611 | 0 | 0 | 0 | 0 |
| TP-0001-RA | Ven. 12 Nov 10 | RA | RA | -0.083 | +0.074 | -0.125 | +0.200 | 0.613 | 0 | 0 | 0 | 0 |
| TP-0001-RA | Ven. 12 Nov 10 | RA | RA | -2.005 | -1.786 | -1.454 | -1.700 | 0.653 | 0 | 0 | 0 | 0 |
| TP-0002-RA | Ven. 12 Nov 10 | RA | RA | +0.078 | +0.128 | +0.228 | +0.100 | 0.640 | 0 | 0 | 0 | 0 |
| TP-0003-RA | Ven. 12 Nov 10 | RA | RA | -2.221 | -1.994 | -1.561 | -2.000 | 0.695 | 0 | 0 | 0 | 0 |
| TP-0003-RA | Ven. 12 Nov 10 | RA | RA | -0.288 | +0.140 | -0.372 | +0.100 | 0.633 | 0 | 0 | 0 | 0 |
| TP-0003-RA | Ven. 12 Nov 10 | RA | RA | -2.226 | -1.813 | -1.321 | -1.800 | 0.699 | 0 | 0 | 0 | 0 |
| TP-0003-RA | Ven. 12 Nov 10 | RA | RA | +0.042 | +0.028 | +0.060 | +0.000 | 0.610 | 0 | 0 | 0 | 0 |
| TP-0003-RA | Ven. 12 Nov 10 | RA | RA | -1.231 | -1.213 | -1.117 | -1.200 | 0.614 | 0 | 0 | 0 | 0 |

WebProCat: measures visualization screen (Screenshot #2)

SYSTEM ANALYSIS STATUS

The system or plant analysis is simplified thanks to a real-time measure analyzer which computes received data till then and displays anomalies of different points of measure.

Tele-Surveilled Points, or Systems, don't complying with Cathodic Protection, in the reference year, will be downgrade at "in-site", as provided by APCE guideline.

The remote, or in-site, received measures can be read directly clicking on measurement site or with a customizable selective filter.

Infrastructure scalability and quick info access are product key features, suitable for both small and complex IT systems.

Through its accurate differentiate access policy and a powerful warning sites email auto-sending system, it's possible to select a long distance management in order to simplify the analysis of several systems included in.

| Zona | Distributore | Impianto | Sistema | C | KT | KM | V | Calcolato # |
|---------|----------------|-----------------|-------------|-------|-------|----|---|----------------------|
| UNA-RED | UNA-ZONA | UNI-SERVIZIO-TE | DEMO-CEPSA | 0,00 | 0,00 | | | Mar. 16 Nov 10 18:43 |
| UNA-RED | UNA-ZONA | UNI-SERVIZIO-TE | DEMO-MENTCO | 5,87 | 0,00 | | | Mar. 16 Nov 10 18:43 |
| UnaZona | UnDistributore | UnImpianto | SOMAGLIA | 54,32 | 20,00 | | | Mar. 16 Nov 10 18:43 |

| R | Punto | R | TLC | BD TLC OP | REG TLC OP | R | BD OP | T | REG OP | R |
|---|---------|---|-----------------------------------|-----------|------------|---|---------|---|--------|---|
| 1 | 02-1417 | 1 | 7 di 263 (Mancanti 256 di 45 pp) | 0 di 0 | 0 di 0 | 1 | 2 di 11 | 1 | 0 di 1 | 1 |
| 2 | 02-741 | 2 | 23 di 263 (Mancanti 240 di 45 pp) | 0 di 0 | 0 di 0 | 2 | 3 di 2 | 2 | 0 di 1 | 2 |
| 3 | 02-744 | 3 | 33 di 262 (Mancanti 229 di 45 pp) | 0 di 0 | 0 di 0 | 3 | 4 di 2 | 3 | 0 di 1 | 3 |

WebProCat: system analysis status screen
(Screenshot #3)

MAPPING

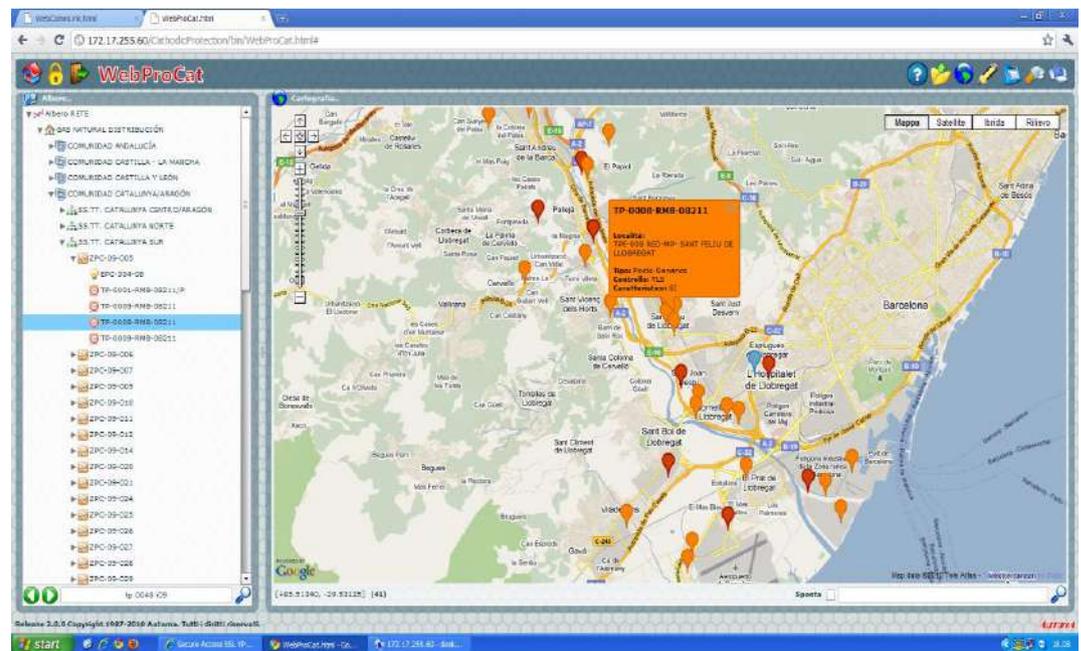
The system is hooked up with a powerful world system mapping called Yahoo Maps which allows an excellent resolution of national area, with additional zoom option and three types of visualization: Map, Satellite and Hybrid.

Furthermore, it's possible to print paper maps, being the product directly accessible via the web application.

In this way, it will be possible to display the arrangement of several installed measure sites on the network and convey to operator the exact position of under-maintenance points of measure.

Moreover, each measure site is coloured based on its functional features, distinguishing between feeders, crossovers, drainages, characteristic and integrate points.

It's possible to insert, in a simple way, new points of measure coordinates only having knowledge either locality or the street where devices are installed.



WebProCat: system mapping screen
(Screenshot #4)

DISPLAYING

The powerful displaying service allows to analyze every 86400 single sampled values to the purpose of time trend analysis.

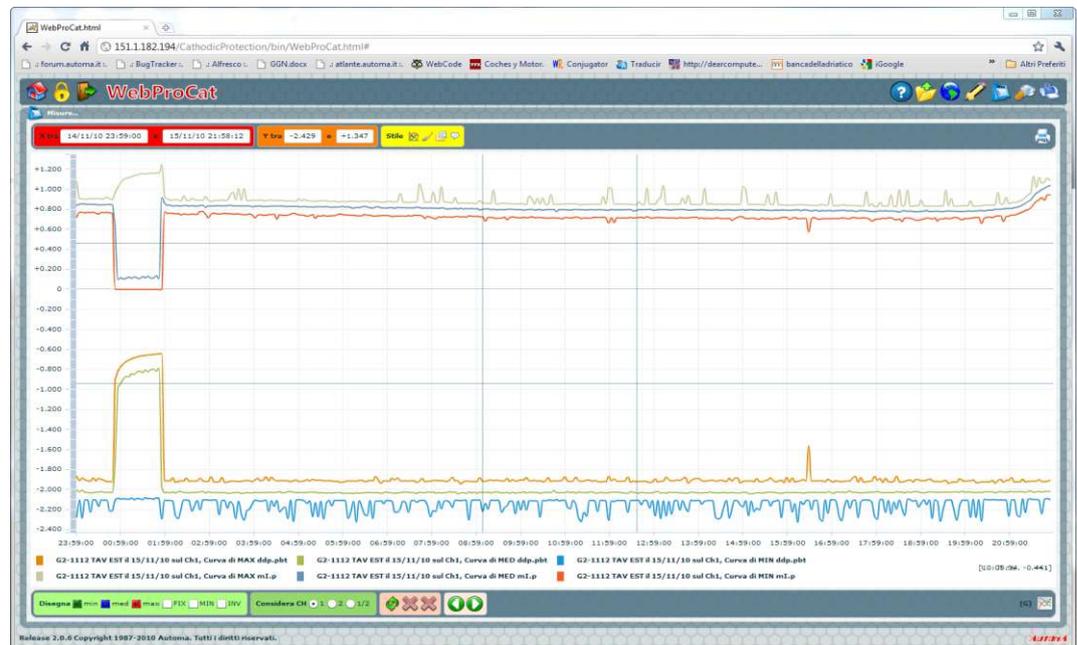
Zoom option is simply available by clicking on desired area, you can use filter based on the desired period or performed measure time.

In this scenario you can furthermore compare reports coming from different points of measure and different time periods: overlap graphs allow you an immediately comparison of values.

The comparison service includes instant-off against registered measures evaluation, preserving the different samples times.

Each curve is plotted with different colours and for each measure is possible to display minimum-average-max curves and further potential associated channel (PD/current useful comparison).

The program has a further displaying modality called time trend analysis, able to display daily values of all performed values in the reference year, in order to obtain time trend values.



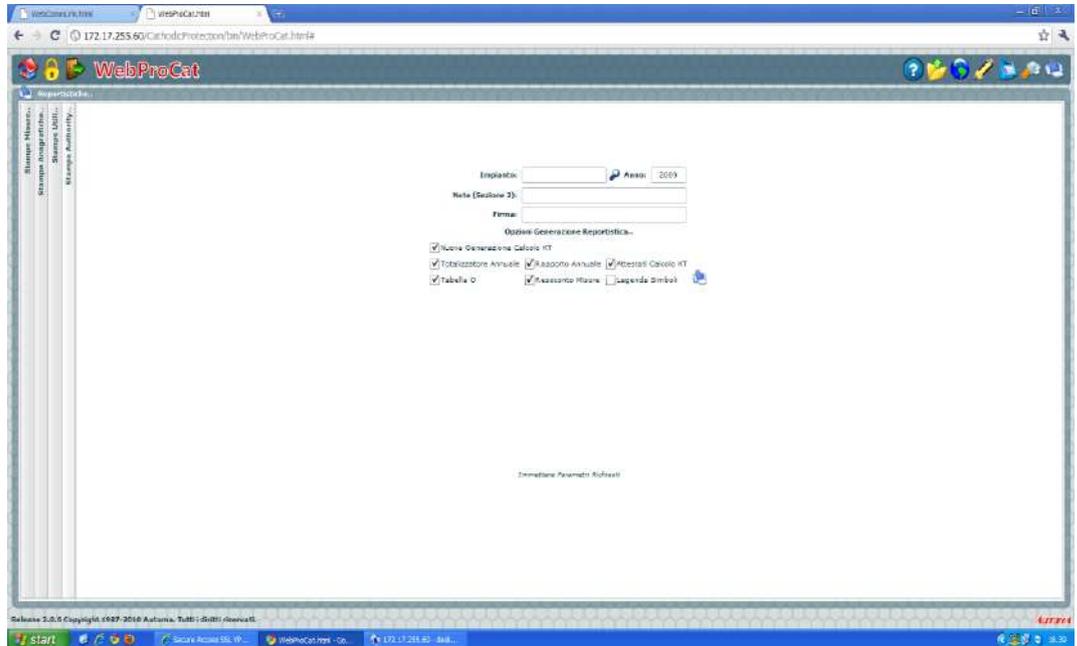
WebProCat: graphical measure visualization screen (Screenshot #6)

REPORTS

A wide range of reports, available in most used format (PDF, XLS, CSV, TXT), make able to read offline database contents, therefore also external persons (not in cathodic protection team) can read them. Available prints are:

- Census Report
- Measure Report
- Useful Report
- Authority Report.

Every print has been thought to be “ready to click” and it’s complying, both in contents and form, with APCE guidelines and UNI laws in force.



*WebProCat: authority report screen
(Screenshot #7)*

DOCUMENTATION

The whole device documentation, formed of PDF manuals, video guide and HTML pages directly readable over Internet, allow, at the same time, a quick learning and usage, as well as the solution of every kind of practical problem.

A continuous effort of our R&D team make it constantly updated and in development phase, allowing us adjustments of laws and guidelines changing with time.

AEEG 168/04 Complying Application, ACPE guidelines (last edition) and PC UNI laws.

PRODUCTS

GOLIAH 4 datalogging, telemeasure, telecontrol

GOLIAH 4 is a Remote Monitoring Unit (RMU) derived from the already available G2 / G4 family, in a form factor conceived for the UK market, a particularly narrow remotely controllable data logger, perfectly adaptable to typical test-posts.

Based on low consumption technology, it is powered by long life lithium batteries and allows an autonomous on-site working life of about 42 months, or by main power or solar panel with battery backup to keep it operative even in absence of external power supply.

It inherits all the operational features of its predecessors and improves their performance in several respects. Its management can be done locally, using a connection to a computer through Bluetooth 4.0 or MiWi wireless connectivity, or remotely, through GSM/GPRS /UMTS (2G/3G/4G) connection.

The management firmware of the Goliah 4, thanks to the integrated Flash memory, can be updated locally, by connecting it wirelessly to a PC/tablet, or remotely, through GPRS/UMTS network, when connecting to the server.

In addition to the multiple communication ports, which allow, among other things, the management of external devices such as remotely controllable rectifiers, the unit can also be equipped with a GPS receiver with 1PPS synchronization function, which allows the perfect synchronization of time bases, especially concerning the registration of simultaneous events on several test-posts (Instant-OFF cycles).

All the technical and operational characteristics described below may or may not be present, depending on the chosen device configuration.

TECHNICAL CHARACTERISTICS OF THE DEVICE

- Ultra-low-power micro-controller, 32-Bit RISC technology (80 MHz), with built-in Flash memory and boot-loader, allowing the download of the firmware updates
- Internal perpetual clock calendar

- Communication ports:
 - Wireless Bluetooth Low Energy 4.0 for local host connectivity (optionally MiWi),
 - GSM/GPRS/UMTS/LTE Modem Unit,
 - Serial TTL for GPS receiver
 - Multipoint RS485 for external devices
- Serial SPI Flash memory for storage of measurement data from 64 Mbit (8 MByte) to 1280 Mbit (160 Mbyte(optional))
- Battery level monitoring
- 5 measure channels, galvanically insulated, with 2 KHz sampling rate and the following characteristics:
 - Input impedance:
 - > 10 MOhm (standard),
 - Accuracy:
 - >0,02% rms on DC range
 - Direct current (DC) and alternating current (AC) measurements, simultaneously possible on each channel
 - Voltage range:
 - ± 500 mV, ± 20 V, ± 50 V, ± 100 V;
 - Current intensity measurement on external or internal normalized shunts (up to 250mV), with selectable current scale;
- Built-in solid state cyclic interrupter (maximum current 2.6A), for coupon electrical disconnection from the pipe and on-off cycles execution; also equipped with an external precision resistor for the current measurement on the coupon (*optional*);
- Connection board for the 5 channels, with separated common for each one;
- Low power, low voltage power supply:
 - Lithium batteries with intrinsic autonomy of at least 48 months (size D batteries distributed in pack);
 - External source:
 - Solar Panel (12V),
 - Mains (with a 12V AC/DC adapter)
- Shock resistant ABS container, assuring IP 67 / DIN EN 60529 protection rating, ideal for UK standard test-posts
- External case dimensions: 127 x 85 x 76mm
- Operative temperature range: - 20°C ÷ + 60 °C
- Lightning and surge protection (impulsive transient protection 8/350uS > 5KV);

G4C is supplied ready for typical measurement settings:

- Storage of measures:
 - Storing of the daily record of 86400 samples in a cyclic queue for a duration of 7 to 62 days, depending on the programmed channels and the flash memory installed, allowing for the retrieval of complete measures on request (even when only the daily summaries have been transmitted)-
 - Storing of the daily summary in a cyclic queue for a period of 365 days, allowing for local and remote retransmission even of already transmitted data.
- Transmission of measures:
 - Daily, with a sampling frequency of 1 time per second, and restitution of the parameters with a daily period (1 summary a day);
 - Possibility, on demand, of downloading the 24 hours recording (86400 values);
- Sampling Period of 1 second, with the following recorded values:
 - Absolute minimum value with date and time of occurrence
 - Absolute maximum value with date and time of occurrence
 - Average value over the sampling period
 - Mean square deviation
 - Mode of the samples
 - Number of values outside admitted range
 - Total time of permanence outside admitted range
- Instant-OFF cycles, with E_{on} and E_{off} logging
- Parametric setting of the measured electrical quantities;
- Control of the analytical functions and their settings by means of a PC or Android/iOs devices in local connection and/or remotely, by means of GSM/GPRS/UMTS communication
- Management of the communication functions, remote control, telemetry and/or remote activation through a modem connection with the Web applications (WebCommLink and WebProCat)
- Management of communication features by means of a modem connection, freely available on operator request;
- Management of the alarms and of the respective alarm calls by means of the parametric setting.

G4C can be integrated with:

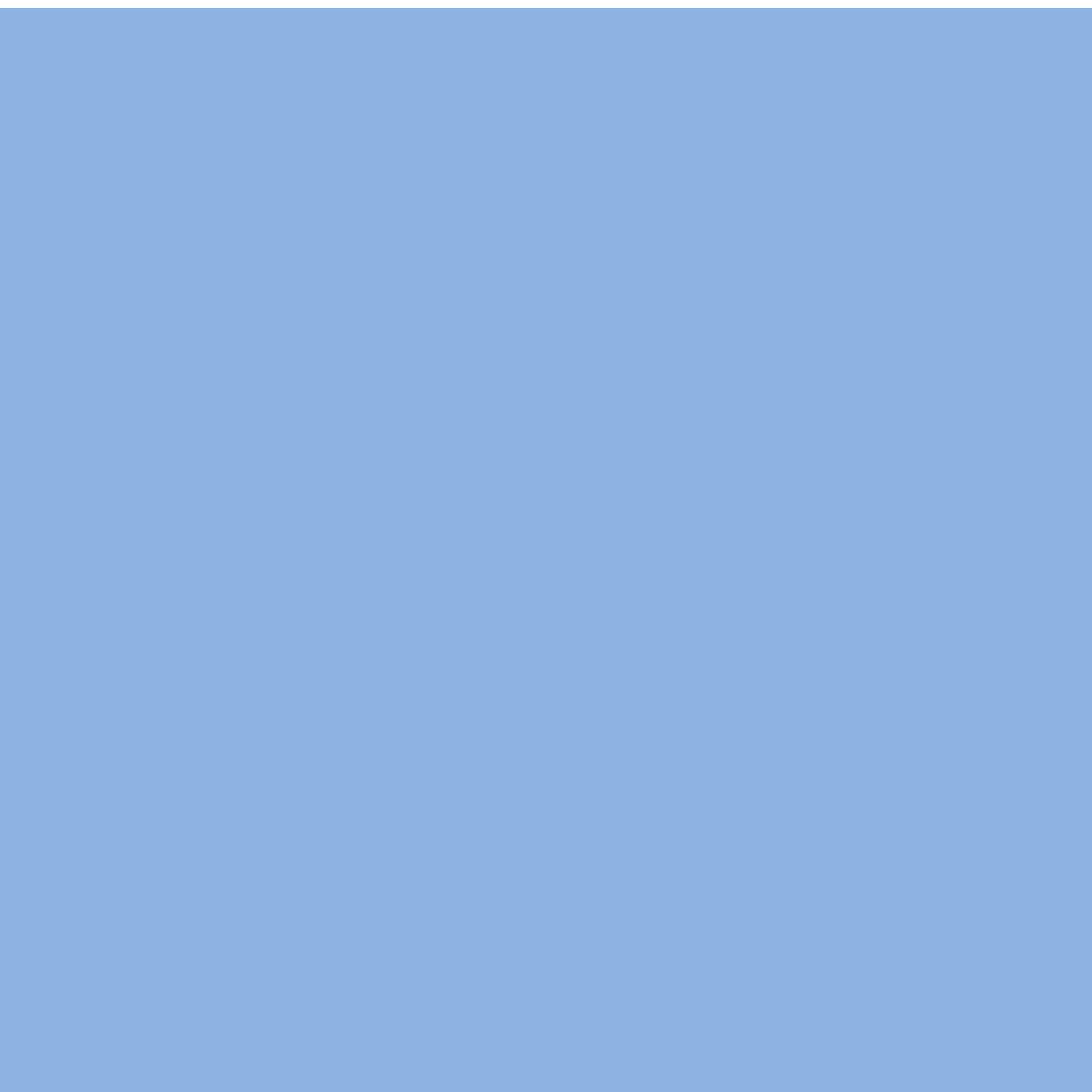
- FIDO MOBILE software, for device configuration management and for measurements data transfer; the communication takes place by means of Bluetooth Low-Energy 4.0 interface (or optionally of suitable USB-to-MiWi adapter miUSB);
- WebProCat web application, for measures management, analysis and graphical representation; the device generates output files that can be natively imported;
- Third-party applications, through a customer provided protocol.



BENEFITS

Join us

- Software suite, devices and acquired data property without time limits
- Investment amortization in 4 years in comparison with a "service" solution
- Guarantee reliable costs by clear price list and by technician experience
- Easy usage thanks to a new properly developed web interface
- Modular applications with chance to buy further modules next
- Problematic instant warnings thanks to Email, Web and SMS automatic warnings
- Real-time data availability, without delays due to mediators
- System integration inside the own server room
- Previously stored data import of different sources
- Database uniformity which allows a complete manage of your systems
- Applications and devices flexibility
- Reports automatic production provided for law
- Quick devices substitution in case of fault
- Qualified software and hardware assistance



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