

Kairos

Advanced Datalogger for
Cathodic Protection remote monitoring



TECHNICAL BROCHURE

Pietro Fiorentini S.p.A.

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Who we are

We are a global organization specialized in designing and manufacturing technologically advanced solutions for natural gas treatment, transmission and distribution systems.

We are the ideal partner for operators in the Oil & Gas sector, with a business offer that goes across the whole natural gas chain.

We are in constant evolution to meet our customers' highest expectations in terms of quality and reliability.

Our aim is to be a step ahead of the competition, with customized technologies and an after-sale service program undertaken with the highest grade of professionalism.



Pietro Fiorentini advantages



Localised technical support



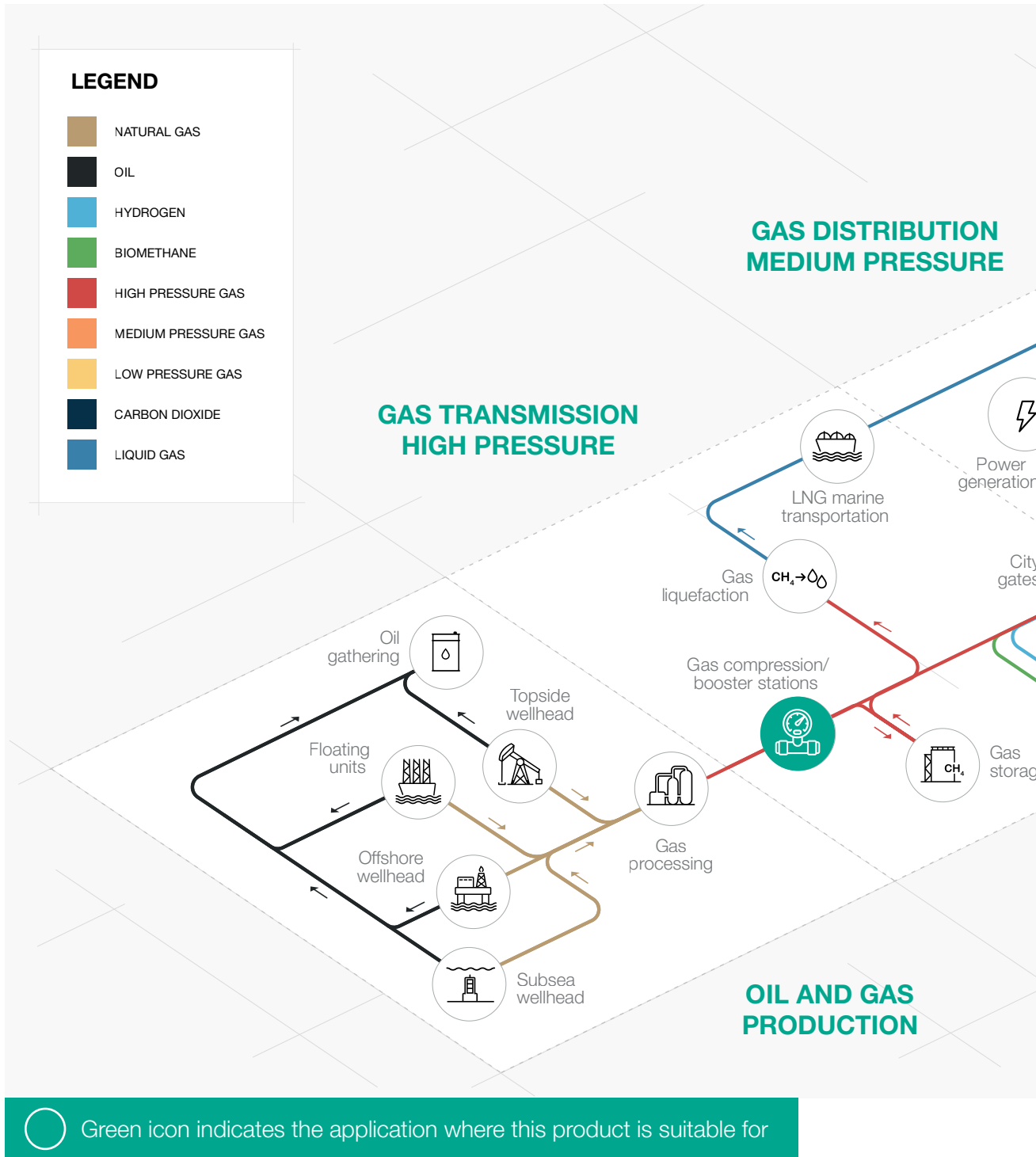
Experience since 1940



We operate in over 100 countries



Area of Application



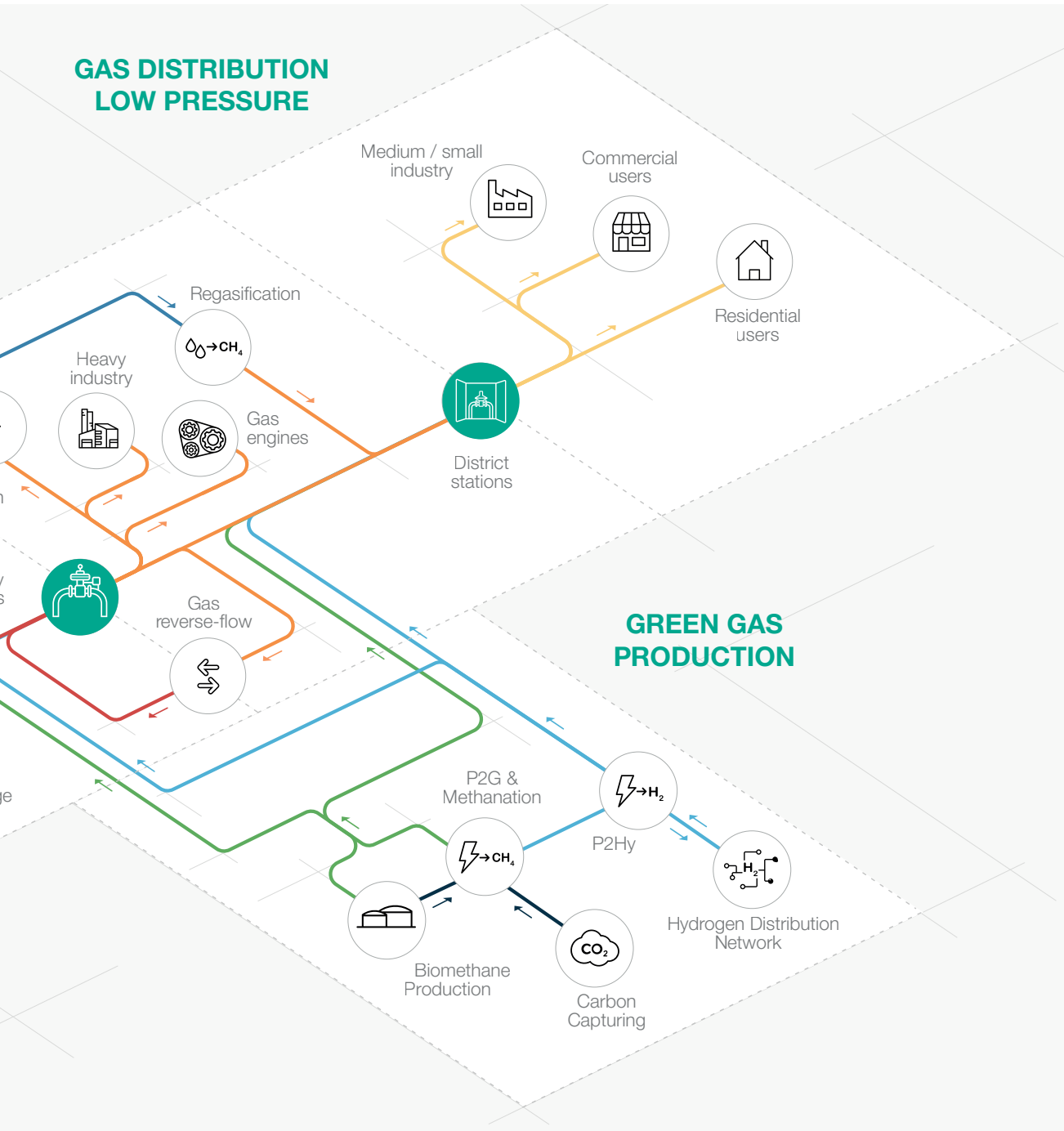


Figure 1 Area of application map



Introduction

Kairos is the datalogger for the continuous remote monitoring of the electrical parameters of the cathodic protection systems, completely designed and manufactured by Pietro Fiorentini S.p.A. in its Facility in Rosate (MI) – Italy.

The activities of the Research&Development department makes Kairos a state of the art digital device to monitor all working parameters of the application, including E_{ON}/E_{OFF} measuring cycles on buried coupons.

Kairos is available both with battery power supply or with mains power supply to adapt to all installation configurations: in all the test post conditions and in the Transformers/Rectifier or Drainage cabinets.

The integrated communication module is able to connect in 4G/LTE or CAT-M network technology (with fallback to 2G/GPRS)..

Kairos is compliant to the international technical standards and measuring guidelines in the application of the monitoring of the effectiveness of the cathodic protection in metallic buried structures (ISO EN 15589-1, EN 13509).



Figure 2 Kairos



Figure 3 Kairos installation

The state of the art of the acquisition technology

- **4 physical channels DC/AC**
 - E_{ON} + internal cyclic switch for E_{OFF}
 - I_{COUPON} current (through its internal shunt)
 - V_{OUT} for high voltage measures (range $\pm 100V$)
 - I_{OUT} for high current measures (through external shunt)
- **Precision up to 0,02%**
- **Selectable range scales**
- **Remotely fully configurable from S2B**
- **External power supply (optional)**
- **IP54**
- **Integrated communication antenna (remote antenna optional)**
- **Modem 4G/LTE or CAT/M + 2G/GPRS**
- **Touch protected connection board**
- **Fully configurable internal switch for different E_{OFF} sampling cycles.**



Figure 4 Kairos installed in the field



Technical specifications

Channel DC / AC

Measure type	Selectable scales (precision)
CH1 E_{ON} / E_{COUPON} Potential + E_{OFF} cyclic switch	$\pm 0,2V$ (0,2%) $\pm 2V$ $\pm 10V$ $\pm 20V$ (0,02%)
CH2 I_{COUPON} (through its internal shunt)	$\pm 25mV$ $\pm 50mV$ $\pm 100mV$ $\pm 150mV$ (0,5%)
CH3 V_{OUT} High voltage	$\pm 2V$ $\pm 20V$ (0,02%) $\pm 50V$ $\pm 100V$ (0,2%)
CH4 Low Voltage or I_{OUT} (through ext. shunt)	$\pm 0,2V$ (0,2%) $\pm 2V$ $\pm 10V$ $\pm 20V$ (0,02%)

Table 1 Channel list

Features

Feature	Values
Operating temperature range	$-25^{\circ}C \div +60^{\circ}C$
Input impedance	10M Ω
Configurable thresholds	High and low
Daily statistics	Daily data frame [Min, Max, Av, St.Dev., NAL+, NAL-, TFL+, TFL-]
Continuous logging	24h, sampling by seconds: 86400 samples a day
Statistic logging	24h, sampling by seconds, elaboration by minute: 1440 statistics elaborations
Internal cyclic switch	Remotely fully configurable
Configurable functions	Transmission interval, channel full scale, thresholds, acquisition sampling times and elaboration
Memory	Recovery of data stored in memory for up to 1 year (daily statistics)
Battery life	Up to 3 years for battery supplied datalogger; up to 30 days for the external power supplied model (standard operating mode);
Nominal dimensions	Width 86 mm; height 210 mm (without antenna); depth 79 mm

Table 2 Features

Accessories & Optionals

Kairos can be supplied with a full range of external shunts. Following the denominations:
1,5A - 15A - 30A

Interface cable for field connection with label and colour mapped headings

Power supply adapter external 230V AC power adapter (SELV type, DIN bar or EU Standard wall socket plug) with output cables (Kairos can be supplied with connection power cable and internal backup battery)

Also provided with a large choice of external SMA antenna, (chosen in accordance with our Application Specialists accordingly of the needs).

All the accessories and optionals have to be requested in the order phase.

Kairos competitive advantages



Easy to install, plug and maintain in the field



Precise and selectable Full Scales



Local communication with wireless technology



Configurable and optimized mechanical switch for OFF measurements



Optional external power adapter for a long term maintenance scheduling



Smart integration with S2B cloud service



Field interface touching protection



2G and 4G network technologies



Materials and Approvals

Part	Material
Body enclosure and electronics	Plastic polycarbonate, electronic boards all internal

REMARK: The materials indicated above refer to the standard models. Different materials can be provided according to specific needs.

Table 3 Materials

Kairos-β is designed to meet EN 13509 cathodic protection measurement techniques, applies the prescriptions contained in the EN ISO 15589-1 Petroleum, petrochemical and natural gas industries - Cathodic protection of pipeline systems - Part 1: On-land pipelines. The device matches the specifications of EN 60529:1991+A1:2000+A2:2013 Degrees of protection provided by enclosures (IP Code) and IEC 62262:2002 Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts (IK Code)

The product is certified according to European Directive 2014/53/UE (RED), 2014/35/EU (Low Voltage) and 2011/65/UE (RoHS 2).



EN 13509



RED



IP54



IK07

Customer Centricity

Pietro Fiorentini is one of the main Italian international companies with high focus on product and service quality.

The main strategy is to create a stable long-term oriented relationship, putting the customer's needs first. Lean management and thinking and customer centricity are used to improve and maintain the highest level of customer experience.



Support

One of Pietro Fiorentini's top priorities is to provide support to the client in all phases of project development, during installation, commissioning and operation. Pietro Fiorentini has developed a highly standardized intervention management system, which helps to facilitate the entire process and effectively archive all the interventions carried out, drawing on valuable information to improve the product and service. Many services are available remotely, avoiding long waiting times or expensive interventions.



Training

Pietro Fiorentini offers training services available for both experienced operators and new users. The training is composed of the theoretical and the practical parts, and is designed, selected and prepared according to the level of use and the customer's need.



Customer Relation Management (CRM)

The centrality of customer is one of the main missions and vision of Pietro Fiorentini. For this reason, Pietro Fiorentini has enhanced the customer relation management system. This enables to track every opportunity and request from Customer in one single point and make free the information flow.



Pietro Fiorentini

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