

# Chemicals - Petrochemicals



## Temperature Sensors

Quality and  
Safety  
of your temperature processes



*Measure up* 

# Pyrocontrole

## Your Expert for Temperature Measurement

Positioned at the core of the requirements in the chemicals and petrochemicals sector, Pyrocontrole designs and develops sensors which match your operating specifications and can withstand the multiple constraints of your processes. With our focus on design quality, reliability and rugged construction, our equipment strictly complies with the regulatory standards enabling you to maintain your product quality while ensuring that your installations remain safe. Whether you need standard or custom-made equipment, we are used to handling the complexity of the situations facing you. We help to cut your maintenance spending while also reducing your energy costs.



### Made in France

The equipment is machined, assembled and checked in France by experienced, qualified teams to guarantee quality and reliability.

Pyrocontrole and its Export Department provide worldwide coverage backed by membership of the Chauvin Arnoux Group, with its ten subsidiaries spread across the world.

Our organization means we can support all your projects, including those abroad.

### Explosive environments, high pressures, severe operating constraints

We are organized to offer a range of products whose design, production and life cycle comply with the European ATEX and PED directives.



### Quality and Safety

In compliance with your specifications and in strict application of the regulations (ATEX, PED, SIL), we undertake to meet even your most difficult requirements.

References: Total RC, Arkema, Solvay, Basf, Bluestar Silicones, Adisseo, GPIC (Gulf Petrochemical Industries Company), Qatar Petroleum, Satorp, Lebanon Chemicals, SIR (Sté Ivoirienne de Raffinage), SAR (Sté Africaine de Raffinage), Qapco, Technip, Saipem, Jacobs, Foster Wheeler, Auxitec, Nigc.

## Qualification and Inspection

Our Quality Department handles the inspections and entry tests for the materials required to produce the temperature sensors as well as the checks and tests at the end of the manufacturing process, in accordance with the specific requirements stated in the order.

Welding can be carried out according to WPS Welding Procedure Specifications and WPQR Welding Procedure Qualification Records. The expertise of our welders is certified by WPQ (Welder Performance Qualification) by the French National Welding Institute (Institut National de Soudure).

We have integrated resources for this in our factory:

- COFRAC-accredited laboratory (Accreditation 2-1385 for Calibration by Comparison).
- Measurement bench for checking temperature sensor response times according to the NF EN 60751 standard.
- Calculation software tailored for the ASME PTC 19.3 standard.
- Specialized room equipped for penetrant testing of welds in compliance with the NF EN 571-1 standard.
- Bench equipped for hydrostatic tests.
- X-Ray facility for weld inspections and positioning of the measurement elements.



## Tests and Validations

- Calibration in our Cofrac-accredited laboratory (no.2-1385, from -40 °C to 1550 °C)
- PED, provision of calculation spreadsheets

## Non-destructive testing

- Penetrant testing of welds
- Helium tests
- Hydrostatic tests
- X-Ray inspection of welds

## Traceability of materials and manufacturing methods

- CCPU material quality certificate
- PMI tests on sensors, welds and machined flanges
- WPS (Welding Procedure Specifications), WPQR (Welding Procedure Qualification Record), WPQ (Welder Performance Qualification)



## In-situ calibration without affecting productivity, at the interval which you require

Depending on your quality requirements, to check and guarantee the right level of accuracy for your temperature measurements over time, Pyrocontrole proposes a methodology for in-situ verification without dismantling the sensors and without halting production. Simple, reliable and quick to set up, our temperature sensor assembly technology with in-situ verification offers multiple advantages in terms of energy saving, productivity, quality and traceability.

### ATEX

Under the authority of a supervising expert in charge of all ATEX activities and in liaison with the approved organizations, Pyrocontrole guarantees:

- document management (technical files, main and ancillary drawings, workshop tests, operating manuals with the declaration of conformity accompanied by a work method)
- management of your order and the product including archiving for a ten-year period
- CE-type certificate of conformity granted by an approved organization such as the LCIE (Laboratoire Central des Industries Electriques – central laboratory of the electricity industry in France).
- Production Quality certificate awarded annually by INERIS (Institut National de l'Environnement Industriel et des Risques – French national institute responsible for industrial environments and hazards)
- conformity of the product delivered (ATEX marking of sensor, operating manual, CE declaration of conformity, traceability)



### PED

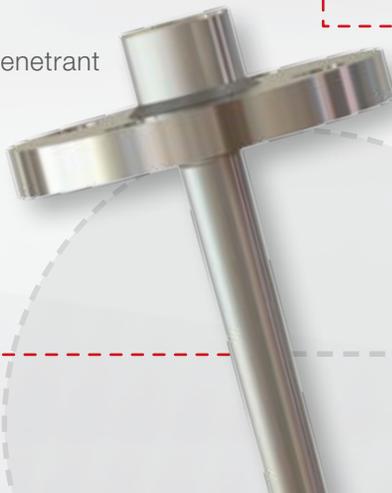
In compliance with the European Pressurized Equipment Directive (PED), we handle design and manufacturing of your equipment according to your operating conditions: operating pressure, maximum operating pressure, speed, mass and temperature of the fluid.

We assess its conformity in accordance with the ISO 9000 standard:

- order review
- design review

And on request:

- drawings of the sensors
- ASME (American Society of Mechanical Engineers) spreadsheets
- material certificate
- PMI tests
- qualified welding according to a specified operating procedure
- verification of the welds by a penetrant test or X-ray test certificate
- ingress protection verification by a hydrostatic test or helium test certificate.



### SIL

The SIL (Safety Integrity Level) requires certain essential information in order to define the preventive maintenance intervals necessary to keep the same level of safety.

Our temperature sensors can be equipped with an SIL-approved HART (Highway Addressable Remote Transmitter).

With its automatic fault detection system, our transmitter complies with the EN 61508 standard on functional safety of electrical, electronic or programmable electronic (E/E/PE) systems.

Pyrocontrole includes a declaration of conformity (PYRO EL2232) and an explanatory technical manual with this equipment.



General-purpose temperature sensors

A range of versatile universal sensors for measuring flame, furnace or ambient temperatures.

Bimetallic or gas expansion thermometers

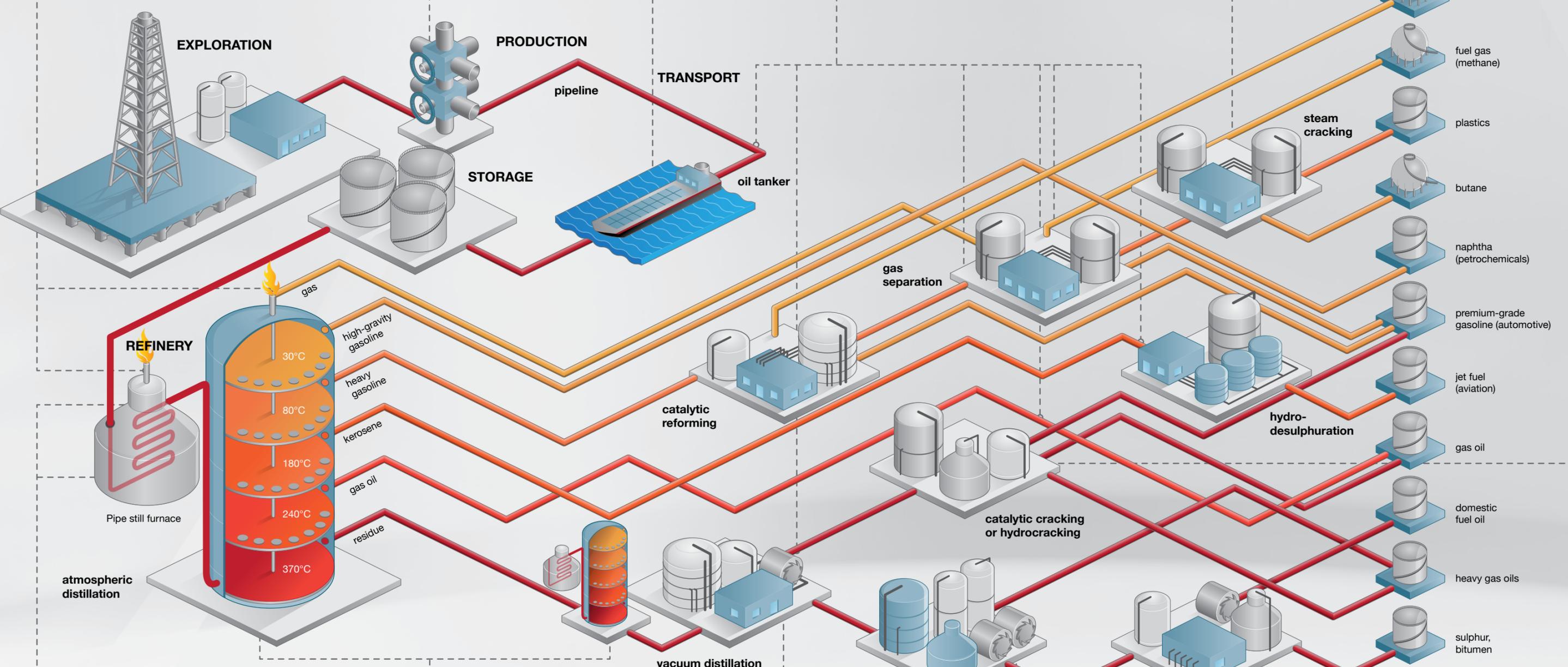
These thermometers, equipped with a dial or digital, are used for direct measurement of temperatures in reservoirs or storage tanks.

id50 Process sensors with thermowells

Designed for in-line temperature measurement, these sensors comprising a thermowell fixed by a flange or by bossing on the pipework are equipped with interchangeable temperature measuring elements to avoid any risk of losing tightness on the installation, thus halting the process.

Temperature sensors for high pressures

Our sensors are designed for temperature measurement at high pressures up to 4,500 bars with a time constant under one second, as encountered in low-density polyethylene production, for example.



Skin temperature sensors

These contact surface-temperature sensors are non-intrusive and are equipped with exclusive technology allowing replacement of the sensitive part of a sensor without removing the knife-edge support, if necessary.

Multi-point sensors for reactors

Our sensors are installed inside reactors or furnaces to perform precise multi-temperature mapping.

Motor/pump-bearing temperature sensors

Essential safety equipment for preventing excessive temperatures in pumps and bearings.

## Modulatable sensor **id50**

### PYROmodules id50, the modular system for ATEX temperature SENSORS

- **New installations**

With its wide range of references, the id 50 modules system enables you to define a tailored ATEX ia/d sensor for your in-line temperature measurement application.

- **Maintenance work**

For maintenance of your sensors, the id 50 system allows you to replace only those parts which are faulty, whatever the sensor brand, at a competitive price.

### **id50** A **UNIVERSAL** solution

id50 modules adaptable to any sensor brand!



**id50**

**Simplified maintenance**

**Adjustable extension for adaptation to the depth of your thermowell!**

## Advantages of **id50**

**GUARANTEED ATEX CERTIFICATION**



**ECONOMICAL SOLUTION**



**SHORT DELIVERY LEAD TIMES**



## Guaranteed safety

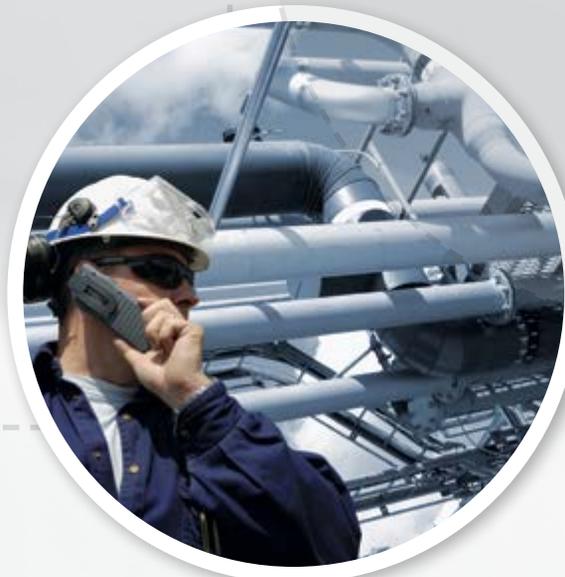
The id50 modules system offers numerous protective features guaranteeing a high level of safety.

- ATEX certification is maintained, even in the event of partial replacement of an existing sensor



- All the thermowells are covered by a design calculation note compliant with the ASME PTC- 19.3 TW 2010 standard.

- All materials are SIL certified.



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The Chauvin Arnoux Group, with its seven brands (Chauvin Arnoux<sup>®</sup>, Metrix<sup>®</sup>, Multimetrix<sup>®</sup>, Enerdis<sup>®</sup>, Pyrocontrole<sup>®</sup>, AEMC<sup>®</sup> and AMRA<sup>®</sup>) and its service subsidiary Manumasure, is one of the European leaders in measurement, energy performance, industrial thermography and metrology.



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