MEASUREMENT • NEWS

CONTACT

ENERGY AUDITS: NEW EUROPEAN STANDARD

ELECTROCHEMISTRY MARKET: NEW PROSPECTS

APPLICATIONS: FIRE SAFETY & ELECTRICAL HAZARDS

CHAUVIN ARNOUX GROUP

N°67

EDITORIAL

Engineers - manufacturers; two words engraved in the marble of Chauvin Arnoux's original company sign 120 years ago.

Two words that have a had a strong influence on the development of our company, which has grown internationally while remaining a family-owned firm proud of its roots in France.

Two words which highlight two important pillars of our company, the engineers and R&D departments who design and develop our measuring instrumentation and the production teams at our industrial sites in Normandy and abroad, who give them substance. Although our instruments have followed the different technological developments and are now communicating and connected, they continue to embody the same concern for compliance with the standards, rugged design and simplicity of use.

We have maintained and developed our in-house skills and know-how, while occasionally completing our business scope through external growth. The most recent operation of this type was in 2015, when we took over the electrochemistry branch of Heito, a French manufacturer of electrochemical equipment and probes, adding a new area of expertise to the company's already vast offering while remaining within the measurement field. Alongside this industrial focus, our customers have naturally always remained at the core of our strategy for product development and performance.

The sales teams of each of our companies, Chauvin Arnoux, Enerdis, Pyrocontrole and Manumesure, maintain a strong presence in the field to provide expert advice, custom accompaniment and technical support in order to achieve the best possible response to your requirements.

Our website, renovated in 2015, has been designed to provide the backing which our customers have the right to expect, as simply and quickly as possible: precise product information, documentation, software upgrades, concrete case studies, training modules, etc.

Today, CHAUVIN ARNOUX is a major player in electrical measurement. Our ambition is to become a leader in fields which are peripheral to our core business too.

A new future to build…

Patrick YAICLE
Managing Director, Chauvin Arnoux

CONTENTS

The new ASYC IV multimeter range from Metrix® wins Gold in the 2015 Électro Magazine Trophies and is exhibited at the "Design Observer" show at the Cité des Sciences in Paris

The new Asyc IV multimeter from Metrix® has won Gold in the 2015 Electro Magazine Trophies in the Measurement and Tooling category. The jury was chaired by Richard Chery (FGME), alongside professionals from the electrical distribution and measurement sector. The ASYC IV range, comprising four multimeters in total, is particularly attractive, it has to be said. They are the first multimeters for industrial use to be equipped with wide colour graphical screens.

They include all the performance features and expertise developed by Chauvin Arnoux's in-house R&D teams. These ASYC IV models are also innovative, challenging habits in industry while offering proven technology. Their innovative design also won them a place in a major exhibition at the Paris Science and Industry Park (Cité des Sciences et de l'Industrie) alongside other items such as furniture by the designer Stark.

Discover their functions here:

https://www.youtube.com/watch?v=ry9SFwUHWY8

Technical Information Journal
190, rue Championnet
75876 Paris Cedex 18 - France
Tel: +33 1 44 85 44 85 / Fax: + 33 1 46 27 73 99
www.chauvin-arnoux.com
Contact: info@chauvin-arnoux.com
for further information, or visit our website
www.group.chauvin-arnoux.com

Elssue no. 67-2016-Print run: 45.000 copies
Publisher: Patrick Yaicle
Editorial Director: Marlyne Epaulard
Editorial Board: Sandrine Ala, Sibylle de Beaucé, Marlyne Epaulard, Laurent Grignon, Fulya Huet, Patrick Yaicle
Translation: Thomas Landon
Layout: B-EST Communication

COMPANY NEWS:

The PEL 105 Power and Energy Logger elected 2015 Product of the Year in the USA.

The **PEL 105** portable logger, supplied in a site-proof case for all-terrain use, has been chosen as Product of The Year by the well-known American magazine **Electrical Products & Solutions.** The PEL 105 is the latest in our range of portable loggers, alongside the PEL 102 (without display) and PEL 103 (with display), completing the range with a rugged instrument presented in an **IP 67 hard case** which is shock-resistant and withstands high temperatures. It is ideal for energy audits (ISO 50001 standard) or one-off measurements of the power and energy values on low-voltage electrical networks (1000 V CAT IV). Specially designed for outdoor use in the field, the PEL 105 communicates the data in real time via Wifi, Bluetooth, USB or SD card, by means of the DataView® software, which allows you to use both tablets and PCs. The recorded measurement results can also be recovered via the USB connection or the SD card.

The Chauvin Arnoux Group's Austrian subsidiary has celebrated its twentieth birthday.

Founded in April 1996, our Austrian subsidiary has grown steadily thanks to the launch of major products such as the C.A 6115 installation tester, which has been a great success on the Austrian market, followed by the C.A 6472 & C.A 6474 pylon earth testers, providing unique expertise in portable instruments since they were first marketed in 2007. The C.A Gesmbh subsidiary covering the Austrian and Hungarian markets is acknowledged for its extensive, high-performance offering of portable instrumentation combined with its teams' expertise and support for all its customers' projects.

Discover the new website:
http://www.chauvin-arnoux.at/de

A new sector of expertise for the Chauvin Arnoux Group as it launches its electrochemistry probes and measuring instruments offering under its own brand name.

After purchasing in 2015 the electrochemistry branch of **HEITO**, one of the last French companies in the electrochemistry field, Chauvin Arnoux is extending its offering with a new range of analogue and digital measuring instruments: pH-meters, redox meters, conductivity meters, oxygen analysers, probes and electrodes.

These instruments are mainly designed for the Education market, laboratories, R&D centres, industries and environmental testing organizations. Similarly, in the electrochemical sector, MANUMESURE, the Chauvin Arnoux Group's subsidiary specialized in metrology and regulatory testing, is the only French company which **proposes COFRAC-certified buffer solutions for pH measurement as reference materials.** By purchasing this new expertise, Chauvin Arnoux is seeking to develop its French and international sales of these products manufactured on its own sites, and particularly in its factories in Normandy, where this new product range is made.

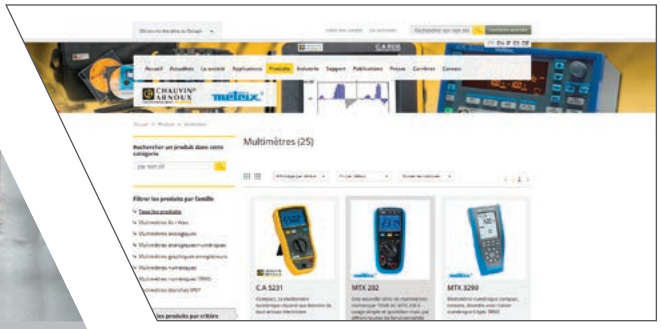
Launch of the Chauvin Arnoux Group's new website: a year and a half down the road.

The Chauvin Arnoux Group's new website, launched in February 2015, presents its core activities: portable instrumentation (Chauvin Arnoux), electrical equipment and energy efficiency software (Enerdis), temperature sensors and control systems (Pyrocontrole) and metrology and regulatory testing (Manumesure).

This website focuses on the products and services offering to clarify and group customer information within clearly-identified areas. Selection guides, facetted search engine, case studies and videos help you understand the measuring instruments. Since its launch in five languages, the site has seen a 24 % rise in visitor numbers, nearly 70 % more page views and a 46% increase in the average time spent by visitors on the site, while reducing the bounce rate by 30 %. The websites of our Spanish, Austrian and British subsidiaries have also been redesigned and will soon be followed by those of our Italian and Chinese subsidiaries.

Visit: www.chauvin-arnoux.com

The product offering and the facetted search engine help users to narrow down their choices.



NEW PRODUCTS

INNOVATION & DESIGN FOR SIMPLER USE

DiaCAm C.A 1950 thermal camera

100 % French! The DIACAm2 C.A 1950, the brand new thermal camera designed and developed by Chauvin Arnoux, is particularly **simple to use.** It has been specially designed to be easy to learn and use, with direct access to the functions with only one hand.

It offers **an exceptional battery life of 13 hrs** and starts up in just 3 seconds. It is equipped with a wide 2.8-inch screen whose brightness is adjusted automatically it is **focus-free** with a 20°x20° field of view, ensuring **a clear image** in all circumstances.

The C.A 1950 camera can also **communicate,** recovering the necessary measurements instantaneously via Bluetooth from current clamps and multimeters.

The emissivity table can be enhanced as required. It is also possible to rename the images and thermograms per site and record voice comments for easier follow-up.

This **rugged IP54** instrument withstands fall from up to 2 metres, so you don't have to worry if you throw it into your toolbox.
The C.A 1950 is ideal for all applications in the **building, electrical maintenance and mechanical maintenance sectors**, including:

- Thermal audits
- Troubleshooting: thermal bridges, presence of humidity
- Electrical maintenance: detection of faulty contacts, unbalance, etc.
- Mechanical maintenance: detection of wear points, motor overheating, lubrication problems, etc.

It is possible to **record** and store configurations according to the applications involved (building, electrical cabinet, etc.), helping to save time.

The CAmReport software, supplied free of charge, can be used to generate automatic reports which can be exported in Word or pdf format.

It also enables thermal images to be merged with the real images.

Eco-Design: the C.A 1950 camera from Chauvin Arnoux is environmentally friendly and its spare parts are recyclable.

CHAUVIN ARNOUX READER SERVICE N°1

ASYC IV, the first multimeters with graphical colour screens

These multimeters for industrial use also offer innovative design: wide backlit graphical colour screen, ergonomics for unrivalled easy handling, etc. They integrate all the performance features and expertise developed by Chauvin Arnoux's in-house R&D teams on our METRIX-brand multimeters. Compared with their competitors on the multimeter market, the ASYC IV models are innovative and challenge many preconceptions in the industrial sector while offering proven technology.

Ideal for work both in the laboratory and in the field, the multiple graphical display with its multiple parameters allows users to check all the measured values at a glance. The top-of-the-range MTX 3292 and MTX 3293 models offer a display resolution of 100,000 counts.

The storage capacity of up to 6,500 values and the wide range of analytical tools provided enable time/date-stamped monitoring. With multiple quantities measured around the main function, specification, relative measurement and mathematical functions as well as the possibility of measuring currents directly with a clamp, these multimeters offer expert-grade measurement capabilities.

The battery life is up to 400 hours in operation, depending on the models. Their IP67 watertight casing includes IEC 61010 1,000 V CAT III/600V CAT IV safety measurement terminals. And they also communicate via USB or **Bluetooth**! The ASYC IV multimeter was awarded the gold prize in the 2015 Electro magazine **Trophies** in the "Measurement and Tooling" category.
https://www.youtube.com/watch?v=ry9SFwUHWY8

metrix READER SERVICE N°2

NEW PRODUCTS

COMPLETE SOLUTIONS FOR EVERY USER

New range of C.A 6500 process recorders

Constantly keep an eye on your process!

An expert in thermal control, **Pyrocontrole** is strengthening its offering of video recorders with its new-generation **PYRO*tracer* C.A 6500 models with touch screens.** This new range of three paperless recorders benefits from the **very latest technological developments:**

- Faster recording rate,
- Improved data security,
- Customized configuration
- Intuitive operation,
- Multiple recording channels,
- Access to the data on site and/or remotely,

All these advantages help to optimize your results in the field!

These three recorders, from the standard model to the most powerful, **cover every requirement, whatever the budget.**

For fully-intuitive handling, these recorders are configurable and therefore adaptable to match each customer's industrial environment. **With the Panel STUDIO software, users** can recreate their own **applications.** The screens customized in this way allow you to monitor all or part of the installation on the recorder.

Configurable as simple stand-alone units for unique data acquisition applications, **these C.A 6500 recorders can also be set up in Master communication mode** for supervising an entire installation. This configuration enables users to take full advantage of the recorder's performance features (secure data storage, supervision on a touch screen, remote viewing of the data, etc.).

Particularly compact with a depth of just **170 mm,** the C.A 6500 models are easy to flush-mount in a cabinet. Depending on the applications, a **portable version** with a handle is also available.

PYRO CONTROLE READER SERVICE N°3

Whatever your submeter requirements, we have the right one for you!

Single-phase, three-phase, with direct connection or on CT, the Enerdis® **range of communicating submeters is the widest on the market.**
For advanced processing or simple metering of active energy, each user can choose the ideal meter.

➤ Comprehensive solution

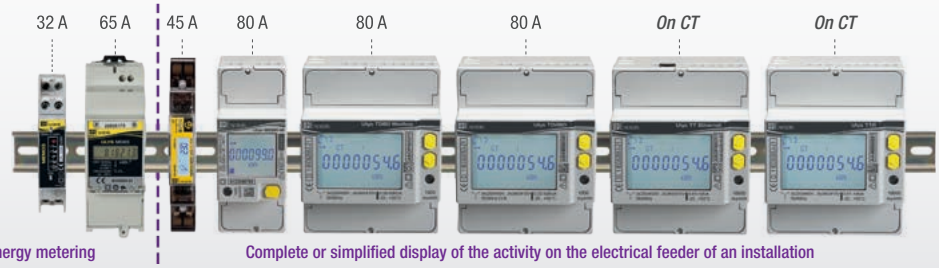
Metering, submetering, energy rebilling: the meters in the **MEMO** and **ULYS** ranges are a perfect fit for an energy performance project.

- On single and three-phase networks
- Whatever the sizing of the electrical feeder: direct 32, 45, 65 or 80 A and on CT
- From the simple need to display the active energy consumption to a more comprehensive solution for retrieving the data concerning the activity on the electrical feeder of an installation

➤ Multi-protocol communication

Whatever the communication protocol, whether **Modbus RS485, M-bus or Ethernet,** the meters can be incorporated into existing installations. This means **interoperability** is **guaranteed.** ULYS meters with integrated Ethernet communication offer **functions which are unique on the market, in a compact 4-DIN-module format:**

- Recording of any activity on an electrical feeder, covering a selection of up to **80 or more electrical quantities** (instantaneous and indices)
- Easy parameter setting for the recordings via **integrated web pages**
- **Autonomous, automatic** transmission of all the **recordings** made by the product to a remote FTP server. This means use is no longer "limited" by the size of the product's memory because all the consumption data and trend curves are regularly stored online
- **Standardized format of the recordings** (.csv) so that any user can process them in a simple spreadsheet. The data grouped and stored in this way are made available for energy management software which can process and format these data.



Active energy metering

Complete or simplified display of the activity on the electrical feeder of an installation

ENERDIS READER SERVICE N°4

NEW PRODUCTS

MEASURING AND MONITORING

CHAUVIN ARNOUX READER SERVICE N°5

Industrial maintenance, electronics, telecommunications, avionics: a Chauvin Arnoux® megohmmeter for each application

➤ Designed for the field: simple and effective

No need to be an expert! All the main measurements and functions are accessible on the instrument's front panel at the press of a button.
The backlit LCD screen simultaneously shows the **logarithmic bargraph** of the insulation measurements, the main display of the numeric values and the secondary measurements.
The rugged rotary selector can be used to choose the measurements performed and the data recorded. Direct access to the TEST button makes it simple to start measuring insulation values. The practical Pass/Fail LED changes colour (red/green) according to the value measured in relation to the alarm thresholds programmed.

There is also a special button for **compensation of the resistance of the measuring cables**.

The remote-control probe, also equipped with a torch function, is a useful accessory specially developed to make insulation testing simpler and quicker in the field. Three of the models include Bluetooth communication.

➤ A complete range of six models to cover every type of use

This new range of insulation testers can be used for **continuity measurements** at 200 mA / 20 mA with active fuseless protection.
Test voltages from 10 V to 1,000 V are available for **insulation measurements up to 200 GΩ.**

A locked test mode has been added for easier use. The **CAT IV 600 V** safety rating ensures hazard-free use in all circumstances.

The fact that the measurements comply with the **IEC 61557** standard means the measurements produced are reliable and repeatable.

The complete range:
C.A 6522, C.A 6524, C.A 6526, C.A 6532, C.A 6534, C.A 6536.

Let E.Qual premium server supervise your network

Load modifications and disturbances generated by certain equipment or faults due to external causes are often seen on electrical networks. Such sources of deterioration hinder the operation of the electrotechnical devices and equipment and may lead to particularly high costs: production losses and/or stoppages, unscheduled maintenance on production facilities, costs linked to disputes between consumers and energy suppliers for non-fulfilment of energy quality commitments, loss and corruption of data on IT equipment, etc

When used with a fleet of Enerdis® MAP network quality analyzers, **the E.Qual Premium Server software** enables **extremely precise analysis** of the extent **of the disturbances** encountered on **your network,** helping you to identify their origins and their causes.

E.Qual Premium Server is a simple, user-friendly tool capable of processing the most complex data, allowing you to go to the heart of the problems and understand them more clearly so that you can take the necessary action, thus boosting performance and reliability.

➤ E.Qual Premium Server gives you the keys to:

- Quickly identify the locations of disturbances by means of precise mapping of your electrical network and intuitive sorting systems
- Generate comprehensive, incontestable inspection reports at the network connection points using data from IEC 61000-4-30 Class A analysers
- Analyze energy quality on the basis of acknowledged benchmarks (ITIC profile, SEMIF47 profile, UNIPEDE, etc.)
- Receive notification of the shortest network disturbances (up to 1 microsecond) by email generated automatically by the system

ENERDIS READER SERVICE N°6

ELECTROCHEMISTRY: COMPLEMENTARITY BETWEEN CHAUVIN ARNOUX AND MANUMESURE FOR NEW PROSPECTS

A new range of measuring products…

To enhance its offering, the Chauvin Arnoux Group has launched a new range of electrochemical measuring products: **pH-meters, redox, conductivity meters, oxygen analysers, probes and electrodes. At the beginning of 2015, Heito and Chauvin Arnoux** signed an agreement transferring Heito's electrochemistry business to **Chauvin Arnoux.**

A wide range of electrodes is also being proposed: pH combination electrodes, separated electrodes (glass, platinum, silver, references) and electrodes for conductivity cells.

This agreement is more than a simple takeover of Heito's electrochemical measurement branch; it is a **partnership for the transfer of know-how and expertise** between the two companies.

This new technological expertise, particularly in **pH measurement,** for which the products were totally redesigned at the end of 2015, is now marketed under the **Chauvin Arnoux** brand.

The **Chauvin Arnoux** industrial group, founded in 1893, produces these products on its own sites, and notably in its factories in Normandy where the new product range will be manufactured.

CHAUVIN ARNOUX READER SERVICE N°7

Manumesure: a complementary offering for pH measurement

In 2014, **Manumesure** became the **first producer** of pH-certified reference materials **(buffer solutions)** accredited by **COFRAC** (French accreditation committee). **Certified reference materials,** or reference standards, are used to trace and ensure the quality of measurement results. They can be used to **calibrate pH-meters and thus qualify their measurements,** with a direct impact on the quality of the results.

These pH reference standards are produced in accordance with the NIST and IUPAC recommendations and comply with ISO Guide 34. The value of the reference material is traceable to the hydrogen electrode through the primary pH reference standard produced by the French National Metrology and Test Laboratory (LNE).

The COFRAC accreditation obtained by Manumesure's production laboratory in Meyzieu, France, guarantees that you use reliable, traceable buffer solutions, enabling you to comply with the standards while ensuring monitoring of the measurement and test lines.
In addition, to cater to the needs of Chauvin Arnoux's electrochemical instruments, Manumesure is also working on the launch of new ranges of electrolytic solutions.

New prospects…
This complementarity between Chauvin Arnoux and Manumesure is therefore a major advantage for winning new markets in the electrochemistry field: **education, laboratories, R&D centres, industry and environmental testing organizations…**

cofrac
MATERIAUX DE REFERENCE
Accréditation N° 1-5650
Portée disponible sur www.cofrac.fr

MANUMESURE READER SERVICE N°8

WINNING RELAYS FROM ENERDIS® AND AMRA® NOW ON SHOW!

Present on the rail market since the early 1960s, the Chauvin Arnoux Group's automation relays have become essential references for all professionals in the sector. Rolling stock, infrastructures, substations, network power supply stations: there are relays everywhere.

POKS, BIPOKS, OK SFcUIC, OK TmF, RGMZx, FOK-B: these are all names of **relays acknowledged** and used **for many years** by the major players in rail transport **in France and internationally.**
Instantaneous or time-delay, monostable, with up to 12 changeover contacts and programmable in the case of certain models, Enerdis® and Amra® relays comply with the specific standards and certifications of the rail sector.
Their performance levels are regularly praised by the French rail operator SNCF, acknowledging the Group's expertise on this market.

Ferroviaria 2016 Trade Show

From 5th to 7th April in Turin, Italy, the Group's relays were exhibited at this trade show, a major event for all the latest advances in terms of rail equipment, products and services.

Nearly 7,000 visitors, engineers, managers and purchasers filled the aisles of the trade show over a 3-day period to discover the latest developments and in particular the Chauvin Arnoux Group's products.

InnoTrans 2016

Don't miss the major worldwide event for the rail sector on 21st, 22nd and 23rd September in Berlin, Germany.

Chauvin Arnoux will be there with its latest innovations, in particular previewing **a brand new range of Enerdis® relays with forcibly guided contacts.**

InnoTrans
International Trade Fair for Transport Technology
20.–23.09.2016

Visit us on stand **610,-Hall B.**

Full information on the website: **www.innotrans.de**

Success Story

Enerdis® relays stem the flow!

To highlight Enerdis's expertise through concrete applications in France and internationally, Enerdis has developed a new communication tool.
This single-page A4 document takes a customer requirement as its starting point before presenting a suitable solution, along with its advantages.

EDF's CIH Hydraulic Engineering Centre faced problems with untimely switching of the PLC input/output optocouplers during the storm season on the dam at Serre-Ponçon (Hautes Alpes, France).

This switching of the optocouplers, which are particularly sensitive to electromagnetic disturbances, caused significant operating losses. Enerdis® therefore proposed **a long-term solution using relays** to avoid the effect of induced EMC disturbances and installed nearly 200 RCME12F relays with their PAIR085F sockets on the dam. In the two years since installation of the solution, no faults have been observed and no untimely switching of the PLC optocouplers has occurred.

Read all the Enerdis success stories on our website in the Publications section:

www.enerdis.com, publications section.

ENERDIS READER SERVICE N°9

THE SOLUTIONS FROM ENERDIS® AND PYROCONTROLE®

Like rail transport and aerospace, the nuclear sector is one of France's major industrial assets. The sector is acknowledged internationally for the quality of its engineering, its safety culture and its contributions to fundamental and applied research. In addition, faced with climate change, increasing needs and the necessity of reducing certain countries' dependence on fossil fuels, nuclear power represents a viable response. Enerdis and Pyrocontrole supply ever-improving products and proven expertise in this field.

Because reliability and performance are the keywords at the heart of any nuclear power plant, the products from the Chauvin Arnoux Group's two flagship brands fulfil all their promises in this sector. Transducers, panel meters, relays, temperature sensors, from the reactor building to the machine sets, as well as the auxiliary buildings, our experts have designed solutions based on reliable, innovative technology.

New range of T82N transducers

The 4 new models of transducers for converting AC electrical quantities into DC signals (current or voltage) fulfil the requirements of nuclear applications, notably through the use of totally analogue technology.

Configurable as required (input quantities, transfer curve, output signal, etc.), these transducers comply with the requirements of the latest applicable IEC 60688 standards (EMC).

We share the same exacting standards as the nuclear industry

Entirely analogue

High reliability

Made in France

K3 qualification

… as well as relays and analogue panel meters

Enerdis® relays are recommended for use in nuclear power plants. Including instantaneous models (RE3000N, RE3000D and OKB184, all three K3-qualified) and 4-contact time-delay models (TOK), these electronic relays without programmable digital components have a high break capacity and a particularly long mechanical and electrical life span. With its Normeurope range, Enerdis® also offers analogue panel meters for severe environments which are highly appreciated in sectors involving such operating constraints.

A French brand

Enerdis, a French company which is part of the Chauvin Arnoux Group, meets the specific needs of the nuclear sector by providing its experience built up over more than thirty years.

We entrust the entire product manufacturing process, from design through to final inspection of the equipment, to our own teams. Experienced and qualified, they guarantee quality, reliability and durability.

ENERDIS READER SERVICE N°10

Pyrocontrole and its qualified measurement solutions for the nuclear industry

Pyrocontrole®, a Chauvin Arnoux Group subsidiary based in Rhône, France, has been manufacturing temperature sensors for the nuclear industry for more than forty years.

It specializes particularly in the production of solutions qualified to withstand the most extreme conditions in terms of irradiation, earthquake, temperature and pressure.

These sensors also enable highly reliable temperature measurements on the installations in all circumstances.

Pyrocontrole®'s temperature sensors are qualified as K1, K2, K3 or NC and are installed on the REP 900 MW,1300 MW and N4 series and in the 3rd generation EPR power plants.

PYRO CONTROLE READER SERVICE N°11

SAVE MONEY BY PERFORMING AN ENERGY AUDIT!

To implement Article 8 (4-6) of the EU Energy Efficiency Directive (2012/27/EU), the UK government has set up ESOS (Energy Savings Opportunity Scheme) which requires large companies to carry out energy assessments in order to identify cost-effective saving measures.

This concerns **any company** which:

- employs more than 250 people,
- has an annual turnover in excess of €50 million (£38,937,777),
- has an annual balance-sheet total in excess of €43 million (£33,486,489),
- is not covered by an Energy Management System certified as complying with the **EN ISO 50001** standard

The goal

By analysing the structures (building, insulation, etc.), users will seek to assess **passive energy efficiency.** Then, using high-performance equipment and smart measurement, test and control systems (variable speed drives or load-shedding devices), it will be possible to optimize operation and, more generally, improve **active energy efficiency.**

Once all the areas of energy consumption have been analysed, it becomes simple to identify where savings can be made and implement solutions to achieve improvement in those areas.

The regulatory framework

By 5th December 2015, the companies concerned must have carried out an audit covering 65% of their energy bills in order to identify the potential sources of energy savings and, eventually, the audit must cover at least 80% of their energy spending.

The energy audit must be performed in line with the general methodological and quality requirements regarding preparation, execution and reporting, as defined by the EN 16247-1 standard.
This will all be done within the framework of an environmental management system compliant with the **EN ISO 14001** standard. Subsequently, the audit will have to be repeated every four years, covering 80% of energy bills.

If improvements are made, new measurements must be performed to assess their impact. Measurement plans will be implemented for this regular monitoring, in compliance with the requirements of the ISO 50001 standard.

Auditors

The audit may be performed by an **external service provider** or a person in the company. External service providers are considered competent for this type of audit if they hold a quality label in the areas covered by the energy audit (buildings, industrial processes or transport).

In-house staff are considered competent if they have the appropriate skills to fulfil the requirements of the audit methodology (training, experience, etc.).

EN 16247 standard

The EN 16247-1 standard defines the general methodological and quality requirements for preparation, execution and reporting of the audit.
These methods are defined according to the activity audited:

- for buildings: EN 16247-2:2014
- for industrial processes: EN 16247-3:2014
- for transport: EN 16247-4:2014

In all cases, measurement campaigns are necessary to check the efficiency of the equipment, the periods when it is used and the real condition of the building shells.

The report

When the audit is finished, a report must be presented to the company and the UK Environment Agency. It must indicate:

- the scope of the audit performed
- consumption and the type of energy used (electricity, gas, etc.)
- the possibilities for improvement in terms of energy efficiency, as well as the cost of the improvements and the extent of the potential annual energy savings, thus giving an idea of the **payback period** for these improvements.

Electricity consumption

An **electricity consumption profile** will be established to identify the improvements needed to reduce consumption.
This can be done by positioning loggers at different points in the electrical installation.

They should be set up:

- At the level of the main meter
- On the feeders of electrical switchboards or low-voltage general switchboards
- At the level of the end-equipment (machines, desktop workstations, heating, etc.) The quality of the electrical energy is important for limiting overconsumption.

The following values are measured:

- Voltage and current
- Active power and energy
- Reactive and distorting power and reactive energy
- Power factor (cos φ)

These various values are recorded over different representative periods (one day, one month, etc.), at a sampling rate which depends on the system audited (machinery, desktop computing, etc.).

Various measuring instruments can be used to perform these measurements:

- Current, voltage, power and energy loggers
- Clamp multimeters for measurements on three-phase or single-phase systems
- Meters

When the audit is finished, a permanent installation must be set up to ensure regular energy monitoring. This makes it possible to make targeted improvements and then measure their impact .

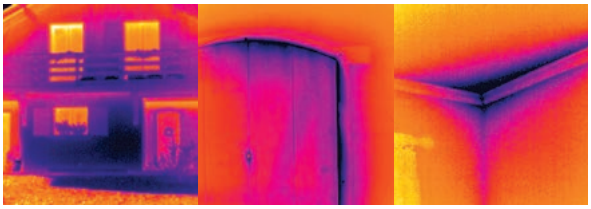
The results are then processed by all the departments concerned (maintenance, production, finance, general management) to reduce and allocate the genuine cost of the energy.

Thermography to assess the building's energy efficiency

Infrared thermography can be used to reveal **heat losses** and deduce the useless extra energy consumption which they represent. These losses are a potential source of savings. Thermal cameras are ideal for quickly detecting faults and irregularities such as insulation faults, air infiltration at openings (windows, doors), thermal bridges, leaks, excessive humidity, etc.

It can also be used to detect faults on electrical installations or mechanical equipment. In this way, the auditor can quickly diagnose any points which may cause **overconsumption.** For example:

- Electrical problems: faulty contacts, overloads, unbalance, etc.
- Mechanical problems: wear points, adjustment errors, poor lubrication.



CHAUVIN ARNOUX'S OFFERING FOR YOUR MEASUREMENTS

Qualistar+ three-phase network and power analysers

- To record and quantify electrical consumption

DiaCAm and RayCAm thermal cameras

- To optimize energy consumption for heating, etc.

Flow-rate / air-speed measurement
C.A 1224, C.A 1226 or the multi-function C.A 1052

- To match the flow-rates to the real requirements in order to achieve savings

PEL102 and PEL103 power and energy loggers

- To identify the causes of overconsumption by equipment or overbilling.

The energy logger measures the voltage, current, power and energy parameters useful for comprehensive surveys of electrical installations.

C.A 811 / C.A 813 luxmeters

- To ensure that the lighting is correctly sized.

C.A 1510 logger

- To assess performance and comfort: Temperature / RH / CO2 monitoring.

F405 clamp multimeters

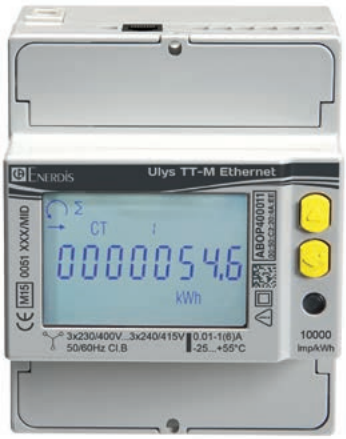
- active power measurement and measurement of the THD which contributes to overloading of the electrical power sources.

THE PERMANENT MEASURING SYSTEM

Once you have identified the points requiring improvement, **you can set up a measurement and metering plan.** A permanent measuring system is then necessary to monitor energy **performance** over time. It can be used to identify the deviations with regard to the reference framework defined by the organization's energy policy after the decisions concerning improvement or monitoring resulting from the survey. According to ISO 50001, **the measuring system must be part of a continuous improvement process.**

ENERDIS proposes a comprehensive solution for energy performance monitoring with its meters, power monitors, pulse concentrators and E.online software Energy Information System. This guarantees long-term control and monitoring of the energy data and Energy Performance Indices (EPI).

Rational testing of the effectiveness of the energy-saving and optimization operations undertaken is guaranteed by means of clearly comprehensible information: graphs and dashboards present the hourly, daily, monthly and annual data. All the targets highlighted (CO2, EUR, kWh , M3, etc.) are constantly monitored.



THE ENERDIS OFFERING

Memo 4 - Submeter

- Metering, submetering, energy monitoring and rebilling

ULYS meter

- Energy management applications

E.Online2

- Software for remote retrieval of the recorded data, display, alarms and generation and distribution of analyses and reports

ELOG Web Box Data Logger

- To collect and centralize the data in various formats from multi-brand, multi-function equipment (meters, sensors, power monitors, PLCs, etc.)

ENERIUM 300

- Monitoring of the electrical quantities' compliance with EN50160

NEW CHAUVIN ARNOUX TRAINING COURSE: MEASUREMENT FOR ENERGY AUDITING IN INDUSTRY

Developed in 2015, the aim of this training course is to provide a professional foundation for seeking possible energy savings in one or more buildings so that trainees can then propose solutions. It lasts one day and ends with the award of a training certificate.

Main points addressed:

- Why perform an energy audit? Economic and regulatory constraints.
- Energy auditing according to the EN 16247 standard.
- Towards a continuous improvement process: ISO 50001 standard.
- Choice of measurement methods.
- Methodological aspects.
- Solutions to be implemented.

formation@chauvin-arnoux.com

CHAUVIN ARNOUX READER SERVICE N°12

CEMENT MANUFACTURING MARKET

PYROCONTROLE DEVELOPS A COMPREHENSIVE RANGE OF MEASURING INSTRUMENTS FOR CEMENT MANUFACTURERS

The cement manufacturing sector is undergoing significant changes. Worldwide consumption is growing, driven by demand from emerging countries. As an essential material for construction, it is one of the world's leading business sectors.

Keeping as close as possible to the operating requirements of the cement industry, which is a major consumer of heat energy, the temperature measurement specialist Pyrocontrole has a developed a range of specific temperature measurement instruments in response to the constraints of this severe environment.

Reliable, rugged, dust-resistant, shockproof and capable of withstanding extreme temperatures, these temperature sensors have been entirely designed and developed at Pyrocontrole's production plant near Lyon in France.

Already used by the major players on this market, **these sensors offer astonishing performance in terms of durability, quick implementation and measurement accuracy.**

Smoke-box sensor, flue sensor, conditioning tower sensor, cyclone sensor for the preheater tower, fuel storage sensor, motor-bearing sensor... from milling through to storage, these measurement solutions for cement plants can be used to monitor and control the temperatures at each stage in the cement production process.

Alongside this temperature measurement offering, in order to provide a global solution, Pyrocontrole also proposes temperature controllers and transmitters to keep the whole thermal process under control.

As well as monitoring the manufacturing process, these measurements also help to reduce energy spending and maintenance costs.

With this cement manufacturing offering, Pyrocontrole is once again demonstrating its determination to remain at the cutting edge and find appropriate solutions for each environment, backed by its expert R&D team.

Smoke-box temperature sensor

Installed in the cement plant's smoke box, this sensor can be used to monitor the temperature of the hot gases recovered from the rotary kiln and from the preheater tower, where the temperatures are close to 1,000°C.

Exceptionally resistant to heat and corrosion, **this thermocouple can withstand temperatures up to 1,300°C when installed in a protective sheath.**

PRODUCT FOCUS

Multi-point sensor for fuel storage

Fixed onto the process by a flange, the **ATEX / IECEx**-qualified multi-point sensor comprises several Pt100 probes of different lengths.

This multi-point assembly makes it possible to gather enough information on the thermal gradation to map any overheating of the tank sufficiently quickly.

PYRO CONTROLE READER SERVICE N°13

TEST & MEASUREMENT APPLICATIONS

FIRE SAFETY
ELECTRICAL HAZARDS: AVOID HOTSPOTS!

The main causes of fire are ignition of electrical origin (faulty installations, etc.), mechanical overheating, works causing hotspots (welding, etc.), heating (air circulation, flashback, etc.) and outbreaks of fire on work sites.

Most causes of fire can be avoided by performing measurements in the context of preventive maintenance.

Electrical continuity

Any electrical circuit or element presents a resistance to the current flowing through it which generates heat. This is called the Joule effect.

Some companies have drawn up mandatory procedures for the inspection of electrical cabinets to avoid any problems due to loose or worn terminals.

Connections are affected by many factors, such as vibrations and corrosion. The regulations stipulate that connections must be checked and inspected visually.
The continuity between 2 elements in an installation must show a low resistance. Otherwise, the current continues to cause overheating until the cables and connectors involved deteriorate, creating a hotspot which significantly increases the probability of fire breaking out.

MEASURING INSTRUMENTS FOR THESE VERIFICATIONS:

- **Installation testers** which measure continuity.
- **Infrared cameras** or **thermometers** for detecting isolated hotspots.

Overloads

The critical points in older electrical installations are caused by ageing of the protective devices and, above all, overloading of the circuits.

Overload currents cause the temperature to rise in the conductors, thus degrading their insulants and ageing them prematurely.

The function of protective devices is to protect installations against overloads, but they are sometimes oversized compared with other elements in the installation, so they become weak points.

DEDICATED MEASURING INSTRUMENT:

- **Infrared camera:**

the quickest and simplest solution is to inspect electrical installations by means of infrared thermography.

A thermal camera can be used to detect any abnormally hot areas which could cause fires, as well as any temperature disparities on production lines.

Insulation

The insulation between any terminals which do not have the same potential (phase/earth or phase/phase) must be measured.

Insulation failure may lead to arcing between two points involving sparks which could set light to the materials around the point of failure.

MEASURING INSTRUMENT USED:

- **Insulation tester**

Voltage drop

A voltage drop on an installation may mean that the cross-section of the cable is insufficient. The conductor cable may then overheat until it melts or catches fire.

MEASURING INSTRUMENT USED:

- **Installation tester** such as the C.A 6117

DID YOU KNOW?

*When a current flows through a circuit, the circuit presents a resistance to the current which may cause overheating. This is called **the Joule effect.***

TEST & MEASUREMENT APPLICATIONS

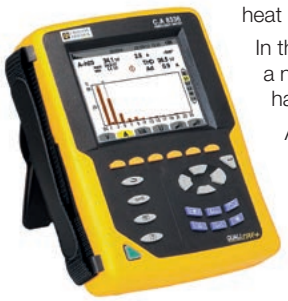
Electric machines

All electrically-powered machines may cause fire. AC dielectric measurement can be used to check the behaviour of these machines in the event of a voltage surge.

MEASURING INSTRUMENT USED:

- **C.A 6155 multi-function machine tester**

Harmonics



If a harmonic current is flowing in the cables, the heat loss due to the Joule effect will increase.

In the case of a three-phase installation including a neutral conductor, the loads may cause triplen harmonics.

A distorted signal due to a "non-linear" load, such as a computer, includes multiple harmonics with multiple frequencies.

Triplen harmonics corresponding to the 3 phases are added together and create a current in the neutral. There may even be a higher current in the neutral than in the most heavily loaded of the phases. These harmonics may cause heating of the transformers, cables, motors, generators and capacitors connected to the same power supply as the devices generating the harmonics.

This type of phenomena has already caused fires in poorly-protected factories.

MEASURING INSTRUMENTS USED:

- F407 **power and harmonics clamp**

- **Network quality analysers:** determine the total harmonic distortion. These instruments decompose the voltage and current signals and then calculate the RMS value of each frequency in the signal. A Qualistar will also indicate the total distorting current (or voltage) to allow correct sizing of an anti-harmonic filter.

Smoke ventilation

Smoke is one of the major harmful consequences of fire and controlling it should be therefore be considered just as important as extinguishing the fire, due to the dangers and hazards which it causes… Extractor fans are commonly installed in structures such as shopping centres, tunnels, car parks and other buildings with large areas, as well as in industrial warehouses where the risk of fire is relatively high…
The air safety and quality standards are the most important factors for ventilation projects in tunnels and other underground premises, whether they involve new structures or the improvement of older buildings to ensure compliance with the standards.

The air flow-rate of a ventilation system needs to be measured to check its actual operation and ensure that the flow-rates required from the installation are achieved, so that any faults can be identified.
The tests are defined by the manufacturers of the smoke control systems, but the inspection intervals are clearly defined in specific standards.

MEASURING INSTRUMENTS USED:

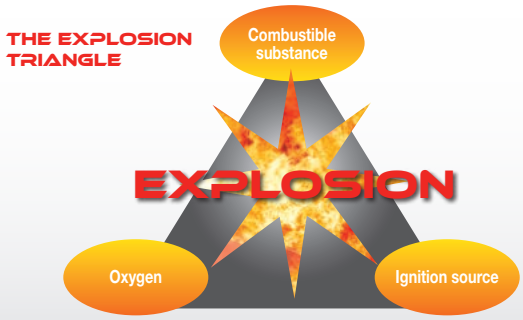
- C.A 1224 **thermo-anemometer:** air flow-rate measurement.
- **C.A 1510 CO2 logger:** continuous measurement of CO2 levels in ambient air with alarm if the thresholds are exceeded.

ATEX environment

For an explosion to occur, three elements need to be present: **combustible gas or dust, oxygen** and **an ignition source.**

The purpose of a secondary explosion prevention system is to avoid ignition sources.

For manufacturers of protective devices and systems, this means that they must develop and build their equipment and installations so that they cannot generate an ignition source, even in the event of a fault.



Hazardous substances are used in a range of industries: petrochemicals, agri-food, pharmaceuticals, recycling, chemicals.

In the European Union, **all aspects of protection against explosions are governed by the ATEX directives on explosive atmospheres.** ATEX is not the name used for a single directive. It is a generic term covering the two directives on protection against explosions: 94/9/CE (ATEX 95) and 1999/92/CE (ATEX 137).

European directive 94/9/CE concerns instruments, components and protective systems intended for use in explosive zones.
Only **ATEX-certified equipment** can be used in "Explosive Atmosphere" areas. ATEX compliance can be assessed by an ATEX Notified Body or self-certified as compliant by the manufacturer itself, depending on the instrument category. Instruments present in areas in explosive areas must fulfil specific conditions.

ATEX-CERTIFIED MEASURING INSTRUMENTS:

- The **MX57Ex multimeter** can be used for professional measurements, giving accurate results even in difficult environments.

With its IP67 protection and various certifications for explosive areas, the M57Ex is ATEX-certified and designed for use in hazardous environments, including gas and dust explosive environments in the following conditions: Mines: category **I M2,** Surface industries: category 2 (gas and dust) **I I 2GD,** etc.

METROLOGY

MANUMESURE'S ACCREDITATIONS AND CERTIFICATIONS

The Chauvin Arnoux Group subsidiary Manumesure is equipping itself to meet customers' requirements by gaining numerous **COFRAC accreditations, as well as ISO 9001, ISO 14001 and MASE certifications (Reux and Meyzieu agencies in France).**

MANUMESURE READER SERVICE N°15

Several areas of expertise are covered:

- Repair and maintenance of measuring instruments,
- Management and metrology of fleets of measuring instruments in laboratories or on customers' sites,
- Regulatory testing to protect the environment (emissions of atmospheric pollutants, noise, etc.), to ensure people's safety (inspections of electrical installations, etc.) and prevent risks (thermography, etc.),
- Tests concerning electromagnetic compatibility and the low voltage directive,
- Production of reference materials.

Its COFRAC accreditations in laboratories and on sites confirm its teams' technical competence and impartiality, as well as their compliance with the related reference standards (ISO IEC 17025 for testing and calibration and ISO IEC 17020 for electrical inspections).
With its travelling teams of expert technicians, MANUMESURE covers the whole of France from its **12 technical centres**.

In this way, Manumesure can guarantee quick service, with more than 100 staff working daily to ensure your satisfaction.
Its service offering is structured around three major market segments: **Industry, Health and the Environment.**

MANUMESURE has ISO 9001, ISO 14001 and MASE certification, and is also approved by the French Ministry for the Environment, Energy and Maritime Affairs.

In addition, MANUMESURE is a certified training organization, proposing training courses for your needs in a wide range of technical fields.

CALIBRATION

Services performed in the laboratory and on site.

Electricity and magnetism	Time and frequency	Dimensional	Temperature	Pressure	Micropipettes
In laboratory	In laboratory and on site (centrifuge)	In laboratory	In laboratory	In laboratory	In laboratory

TESTS

Services performed in the laboratory and on site.

Temperature mapping	Air quality analyses
Furnaces, thermostatic chambers and baths, refrigerators, etc. As per French standard NF X 15-140 As per European standard EN 60068	Analysis of atmospheric pollutant emissions. Automatic measuring systems, QAL 2 and AST procedures.

PRODUCTION OF REFERENCE MATERIALS

Services performed in the laboratory.

COFRAC Reference Materials Accreditation
Production of pH-certified reference materials used to trace and ensure the quality of measurement results.

REGULATORY TESTING

Services performed on site.

COFRAC Inspection Accreditation	Insurance approval no. 146/18 CNPP reference document D18	APSAD certification CNPP reference document D19
Periodic checking of electrical installations in the workplace.	Checking of electrical installations with regard to fire hazard. Issue of technical document Q18.	Checking of electrical installations by infrared thermography. Issue of technical document Q19.

SAFETY

Management of safety on hazardous industrial sites.

MASE Certification no.: N 2012-40	MASE Certification no.: RA 2012-249
MANUMESURE Pont-l'Evêque Technical Centre	MANUMESURE Lyon Technical Centre

MASE certifications in Normandy and Rhône-Alpes for management of safety, health and the environment on hazardous industrial sites.

ISO 9001 AND ISO 14001 STANDARDS

MANUMESURE's 12 centres techniques are certified ISO 9001 (management of quality) and ISO 14001 (management of the environment) by the international organization INTERTEK.

Intertek

Further information available at **www.manumesure.com**
Contact: Tel. : +33 2 31 64 51 55 - info@manumesure.fr

MANUMESURE: KNOW-HOW SERVING THE ENVIRONMENT

The control of environmental impacts has become a strategic issue for industrial companies as they seek to reduce their ecological footprint, their energy consumption and their use of raw materials while improving their competitiveness.

MANUMESURE READER SERVICE N°16

MANUMESURE has been developing its environmental measurement expertise concerning air, noise and water for many years.

➤ Air quality measurement

MANUMESURE works on site to test atmospheric emissions, with COFRAC Tests accreditation.

MANUMESURE approved by the Regional Environmental Agency of France's PACA region

At the beginning of 2016, **MANUMESURE** was added to the list of laboratories approved by the DREAL Regional Environmental Agency of the Provence-Alpes-Côte d'Azur region of France for **unscheduled atmospheric emissions testing campaigns.**
Manumesure benefits from **25 years' experience** in the **measurement of atmospheric emissions** and possesses COFRAC Tests accreditation (as per the reference document on "Air Quality and fixed-source emissions - LAB REF 22" and the QAL2 and AST procedures):

cofrac ESSAIS Accréditations N° 1-1318 N° 1-2000 Portées disponibles sur www.cofrac.fr

- Speed and temperature measurement
- Humidity measurement (EN 14 790)
- Continuous gas measurement: O2, CO2, CO, NOx, VOC, CH4
- Measurement of dust, PM10 and PM 2.5, granulometric analysis
- Measurement of metals, HF, HCl, SO2, NH3, N2O, acidity and alkalinity
- Measurement of dioxins and furans (PCDD/PCDF)
- Measurement of polycyclic aromatic hydrocarbons (PAHs)
- Specific molecules on requests (benzene, tar, specific VOCs, etc.)

MANUMESURE also offers verification of "QAL2 and AST" measurement lines with COFRAC Tests accreditation and measures diffuse atmospheric deposition around sites (dust, dioxins, VOCs, benzene or any other molecule on request).

➤ Measurement of noise levels

MANUMESURE performs regulatory noise-level tests on environmentally-sensitive installations.

The regulations impose measurements at the property lines of sites and in regulated emergence zones (near housing).

➤ Measurement of water quality

MANUMESURE performs on-site sampling in order to analyse water quality (waste water, rain water and underground water).

The regulations oblige industrial companies to monitor the quality of their water.

➤ Mobility and proximity to serve customers better

With its technicians willing to travel and its fleet of mobile laboratories, Manumesure covers the whole of France from its 12 technical centres, guaranteeing quick action.

Further information available at **www.manumesure.com**
Contact: Tel.: +33 4 81 76 01 90 - info@manumesure.fr

NEW PRODUCTS

HEATING CABLES AND HEATING CUFFS...

Pyrocontrole launches its PHR range of heating products

To handle the thermal constraints encountered by industrial companies, **Pyrocontrole has developed a range of heating elements called PHR** (Pyrocontrole Heating-Resistor).

➤ Diverse applications

This new range of simple-to-use products covers a large number of applications requiring **temperature stabilization, freeze protection and heating of solids or static and moving fluids.**

From heating cables and cuffs to barrel heaters and other heating resistors, this new offering provides complementary solutions for diverse heating problems.

➤ Global solution

The PHR range is ideal for use with the Statop range of temperature controllers and the Thyritop range of thyristor power controllers.

Drawing on its acknowledged know-how in pyrometry, Pyrocontrole is thus strengthening its mastery of the whole thermal process to support industrial companies.

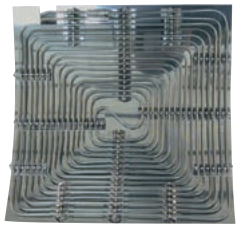
PYRO CONTROLE READER SERVICE N°17

A VARIED OFFERING

Examples of heating resistors

- **PHR-HT-201 heating cuff**
  for surface temperatures up to 200°C
- **PHR-HV vacuum-sealed heating cable**
  for temperatures up to 1,000°C
- **PHR-HJ-CF heating cuff**
  for flanges for temperatures up to 350°C

PHR-HT-201



PHR-HV

PHR-HJ-CF

TRI 700S TRANSFORMERS FOR TARIFF METERING

Wrong definition of the accuracy class for a measurement winding inevitably leads to incorrect energy billing and therefore financial losses either for the distributor or for the customer.

The Enerdis® transformers in the TRI 700S range offer a 0.2s accuracy class and are approved by ENEDIS (EDF's distribution arm) for tariff metering.

Designed to meet ENEDIS's tariff metering requirements, the TRI 700S range of current transformers is particularly suitable for electronic meters (3.5 and 7.5 VA power ratings).

These three-phase transformers are **compliant with the IEC 60044-1 standard** and are available in bi and tri-rating versions up to 500 A / 5 A.

For distributors, this helps to optimize storage space and, for operators, there is no longer any need to change your transformer if your installation evolves.

Manufactured entirely in our factories in Normandy, France (electronics in Villedieu-les-Poêles, plastics in Vire), **these transformers benefit from exceptional quality features.**

- Primary connection by 50 to 240 mm² cable clips
- Copper or aluminium primary conductor
- Built-in short-circuit
- Individual test certificate supplied as a standard feature

The wrong accuracy class can cost you a lot of money!

The example below illustrates the financial impact of a CT's accuracy class. If your consumption is 12,000 MWh/year at a rate of €0.10/kWh:

- Class 1 CT: ±120,000 kWh or ±€12,000
- Class 0.5 CT: ±60,000 kWh or ±€6,000
- Class 0.2S CT: ±2,500 kWh or ±€2,500

Note: the calculation does not take into account the accuracy class of the measuring instrument or the line losses in the network cables.

CONCEPTION FABRICATION FRANÇAISE

ENERDIS READER SERVICE N°18

PYROCONTROLE WINS A MAJOR CONTRACT WITH TOTAL REFINING & CHEMICALS

Pyrocontrole has won a three-year framework contract with Total Refining & Chemicals for the supply of in-line temperature measurement assemblies and associated services.

This contract covers all Total's sites in Europe and concerns in-line temperature sensors, thermowells and the associated services.

During the term of the contract, Pyrocontrole will supply ATEX temperature sensors for both new projects and revamping operations, guaranteeing the delivery of specially-designed subassemblies to Total's maintenance teams.

For this part of the contract, Pyrocontrole's R&D teams overcame the challenge from their competitors by innovating.

Pyrocontrole has developed unique, revolutionary technology for ATEX temperature sensors: the id50 modular system.

This system makes it possible both to create made-to-measure sensors tailored to handle the specific features of each application and, on existing sensors, to replace only the obsolete module(s) on the sensors while maintaining their ATEX certification, thus avoiding replacement of the entire sensor.

This solution helps to optimize overall equipment costs and reduce maintenance spending for these instruments.

In terms of the roll-out, as Pyrocontrole benefits from an international presence, local teams will support each site in France and across Europe.

Alongside this local roll-out, a contract-specific website has been set up to keep Total staff informed at all times.

The services covered by this contract include engineering, technical assistance, co-ordination and the activities linked to supply of the equipment.

This contract illustrates the confidence of Total Refining & Chemicals in Pyrocontrole's know-how for engineering R&D and temperature measurement management.

With this contract, the French company Pyrocontrole has entered a new phase in its transformation into an international brand, demonstrating its ability to handle large-scale calls for tender.

PYRO modules id50

➤ id50 modular system: an adaptable, upgradable solution!

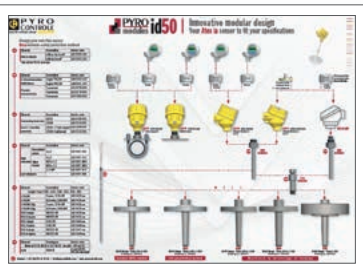
Developed for ATEX d/ia sensors, this revolutionary modular system covers both new sensor requirements and renovation work.

It is possible to create a new ATEX sensor tailored to match your need, but it is also possible to replace certain parts only on an existing ATEX sensor, while retaining its ATEX certification.

Unique, economical technology applicable to all brands of ATEX sensor!

Discover the id50 system

Design your own Atex d/ia sensor to match your specifications! To receive the desk pad presenting the solution, send your request to info@pyrocontrole.com



ATEX: European directive covering products for use in explosive atmospheres.

PYRO CONTROLE READER SERVICE N°19

NEW PRODUCTS

MANUMESURE, FIRST COFRAC-ACCREDITED PRODUCER OF PH-CERTIFIED REFERENCE MATERIALS

cofrac
MATERIAUX DE REFERENCE
Accréditation N° 1-5650
Portée disponible sur www.cofrac.fr

MANUMESURE, the French metrology specialist and subsidiary of the **CHAUVIN ARNOUX Group,** has become the first producer of pH-certified reference materials certified by **COFRAC,** the French accreditation committee.

Certified reference materials are used to trace and ensure the quality of your measurement results.
They can be used to calibrate and qualify your measuring instruments, which means they have a direct impact on the quality of your results.

➤ Technical mastery

Manumesure's pH-certified reference materials are manufactured in compliance with the **NIST/IUPAC recommendations,** ISO Guide 34 and the ISO 17025 standard. The property value is directly traceable to the primary pH standards produced by the French National Metrology and Test Laboratory (LNE). Manumesure's accreditation as a producer of reference materials ensures that you use **the only pH buffer solutions whose storage duration, homogeneity, uncertainty and traceability to the international standards are acknowledged by COFRAC.**

➤ An offering to match your needs

Manumesure's aim is to meet your needs in terms of metrological quality and practical use. The conditioning has been designed to be functional and the reference materials are supplied in **25 ml single-dose flasks.**

This means that Manumesure's reference solutions offer:

- **Safety:** guaranteed pH without any risk of contamination for a period of 1 to 2 years until opened.
- **Practical use:** time savings, more effective calibration, no waste or spillage.
- **Economy:** no wasting of buffer solutions thanks to conditioning in single doses.
- **Traceability:** flask labelled with the batch number, expiry date and COFRAC reference materials producer logo.
- **Accuracy:** property value and related uncertainty certified by COFRAC.

Further information available at **www.manumesure.com**
Contact: Tel. : +33 4 72 65 77 60 – info@manumesure.fr

NEW C.A 3420 UNIVERSAL TRANSMITTER

Thanks to its universal input, the brand new **C.A 3420 transmitter from Pyrocontrole** can be used to convert all your input signals into stable, standardized output signals, even in difficult industrial environments. When used with the **C.A 3401** removable programming panel, it offers **an economical solution** which is both **effective and user-friendly.**

Multi-function instrument for process industries.

➤ Universal solution

The C.A 3420 can be mounted on a DIN rail and accepts a **wide range of inputs:** RTD, TC, Ohm, potentiometer, mA and V. But it is just as universal in terms of its **power supply: AC** (22...250Vac) **or DC** (19...300Vdc). For its outputs, as well as a standardized current or voltage system, **it is equipped with two relays.** These two versatile relays can do several jobs, including indicating sensor breakdowns and high or low alarms. They are programmable and offer a large number of trigger modes: on threshold, with latching, with time-delay or on rising or falling edge of the input. Another advantage is that this transmitter is equipped with **triple galvanic isolation** between the input, the output and the power supply, guaranteeing optimum operating safety.

➤ User-friendly solution

When used with the C.A 3420, **the C.A 3401 programming panel is effective,** user-friendly and packed full of functionality:

- **Simplified programming:** clipped onto the front panel, it can be used for easy configuration of the C.A 3420 without the need for a manual or a PC, by means of an intuitive drop-down menu. The texts are available in 7 languages: English, French, German, Spanish, Italian, Swedish and Danish.
- **Simple copying:** this removable panel can also be used to save and copy parameters. It offers the possibility of duplicating configurations from one transmitter onto another by a simple transfer.
- **Supervision application:** thanks to its alphanumeric LCD screen, this panel can be used as a display, allowing you to read the real-time values at a glance: inputs and outputs, plus the process statuses (relays and error diagnostics).

➤ Reliable solution

For high-level protection of the configuration and the data, access to the C.A 3401 programming functions can be password-protected. The rugged design of **the C.A 3420** makes **it ideal for SIL applications (level 2).**

Further information at **wwww.pyrocontrole.com**
Contact: Tel. : +33 4 72 14 15 40 – info@pyrocontrole.com

ESSENTIAL TOOLS FOR ELECTRICAL MEASUREMENT

B-ASYC MTX 200 multimeters: getting back to basics!

The Metrix® brand is staying close to its customers' expectations and launching a range of multimeters which are so simple that anyone can use them: the MTX 200 Series, which are **simple to use for day-to-day work** but also offer all the crucial functions of a multimeter: current, voltage and resistance measurements. These essential tools will find a place in everyone's toolbox, from installers and self-employed electricians to simple amateurs!

Their compact casing with magnetized sheath fits in one hand and can be used **hands-free,** even in electrical cabinets. The patented Multifix mounting system is ideal for use with these multimeters, allowing you to hook it onto a cabinet door or your belt or suspend it...

The stand ensures easy reading however the multimeter is positioned. Readings are made even clearer by the blue backlighting of the display (**4,000 or 6,000 counts** depending on the model). The built-in torch means the multimeter can be used even in the dark.

The rotary switch offers one function per position. On the front panel, 3 keys are all you need to access all the various functions.

The **600 V CAT III, IP54** double-well input terminals are easily accessible.

Safe working is guaranteed in all circumstances by the **NCV function:** the screen becomes red if a voltage is present. Electrical maintenance is optimized thanks to the V_{LowZ} **low-impedance voltage measurement function** which eliminates stray voltages. This function is particularly useful for maintenance work in offices or tertiary buildings, where there is a lot of computer equipment present.

In addition to the traditional measurements (voltage, current, resistance, capacitance, etc.), the **MTX 200** models can measure temperature via a K thermocouple contact sensor delivered as standard.

This means users can perform:

- electrical maintenance
- initial troubleshooting on PCBs
- verification of radiator control, etc.

metrix

READER SERVICE N°20

PEL105 all-terrain power & energy logger

Chauvin Arnoux® is completing its range of PEL Series loggers with the latest model for energy auditing or spot measurements on electrical networks.

The **PEL 105** logger is particularly simple to use with an all-terrain **IP67** casing capable of withstanding shocks, UV rays and extreme temperatures. It is ideal for outdoor installation directly on an electricity pole. This logger was developed in the Group's R&D laboratories in France and manufactured on the production sites in Normandy, like the Group's other product ranges. With its **1,000 V CAT IV safety rating,** it can be used for measurements on all LV networks, including measurements of the neutral-earth voltage and the neutral current.

This stand-alone instrument is equipped with a **self-powering system** via its voltage inputs up to 1,000 V. The PEL 105 offers **5 voltage inputs and 4 current inputs.** Compatible with a large number of current sensors to make it easier to use, it also **recognizes the sensors automatically.**

The PEL 105 can be used to **measure, record and analyse the power values** (W, var, VA) and energy values (kWh, kvarh, kVAh). At the same time, it records the PF and the DPF. Recording is continuous with a sampling interval of 200 ms.

To improve **energy efficiency according to ISO 50001** or carry out the audits required by the regulations, the PEL 105 can be set up on the different electrical feeders. It can then be used, simply and without downtime, to assess the relative weight of each line as a proportion of overall consumption, define a load profile for the installation and thus determine the priorities for improvement.

The measurements can be analysed and reports can be generated via the DataView® software platform.

CHAUVIN ARNOUX

READER SERVICE N°21

MANUMESURE TRAINING COURSES

MANUMESURE, a certified training organization with the reference number 11920714292, proposes professional training courses around the themes of quality, metrology, use of measuring instruments and electrical safety in many technical fields. To quickly gain a skill or refresh your knowledge, our training instructors bring all their competence and expertise to bear in their specific fields.

Training for electrical works authorization is provided both for beginners who are not electricians and for expert electricians, who may be site managers, operating staff or people responsible for specific tasks, such as measurement, verification or other operations. At the end of these training courses, an assessment and a pre-drafted authorization certificate are sent to the employer, along with the training attestation and the attendance sheet.

MANUMESURE also provides training **in measurement implementation methods on electrical installations** to enable trainees to acquire an acknowledged level of professional aptitude in electrical hazard prevention while ensuring that they are capable of complying with the safety instructions defined by **French standard NF C 18-510.**

There is also a theoretical and practical training course on **use of the Qualistar+ C.A 8336 electrical network analyser.**

MANUMESURE READER SERVICE N°22

CHAUVIN ARNOUX TRAINING COURSES

Chauvin Arnoux has been a certified training organization (reference number 11.92.06217.92) since 1993. It offers complementary training courses for electricians.

➤ Understanding and overcoming harmonics

- Learn the basics about harmonic phenomena, identify and characterize the sources of disturbances, in order to measure and detect the phenomena in experimental conditions using an industrial harmonic analyser.
- Understand the effect of harmonics on electrical equipment on the basis of real cases.
- Learn how to overcome harmonic disturbances.

➤ Electrical installations and energy quality by means of case studies

- Resonance in electrical networks.
- Installation testing in IT systems.
- Untimely tripping of circuit-breakers protecting industrial electrical equipment.
- Untimely tripping of RCDs.

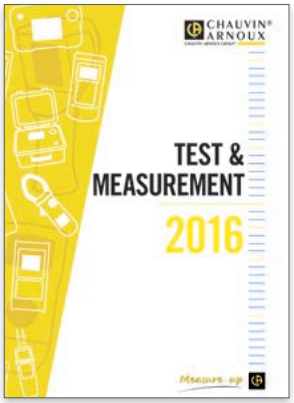
➤ Thermography

- Understand heat exchange phenomena.
- Perform measurements with an infrared thermographic camera.
- Interpret the measurements.
- Gain an overview of thermography applications and the current obligations.

And the brand new Chauvin Arnoux training course: **Measurement for energy auditing in industry,** as described on page 10. A training certificate will be provided to the employer after each of these training courses.

CHAUVIN ARNOUX READER SERVICE N°23

OUR PUBLICATIONS: CATALOGUES, DOCUMENTATION, VIDEOS...



CHAUVIN ARNOUX® Test & Measurement Catalogue

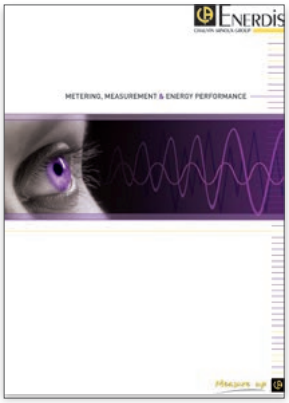
Discover our portable measurement offering in the 2016 edition which has been redesigned to make it clearer, more structured and more consistent. For all electricians, installers, R&D departments, maintenance teams, industrial companies, distributors... in other words, for you.

ENERDIS® Relays Catalogue

More than 200 automation relay references to meet all your industrial needs. Nuclear, petrochemicals, rail transport, industry: there are relays for every sector. 140 pages, bilingual French/ English.

METRIX® Test & Measurement Catalogue

Measuring instruments for electronics and electricity professionals, scientific and technical education, etc. Oscilloscopes, multimeters, function generators, spectrum analysers and a whole range of other instruments.



ENERDIS® corporate brochure

Specialized in fixed measuring, testing and metering equipment, electrical network supervision and energy control solutions for all utilities. Discover its extensive know-how, its business sectors and its references.

WATCH OUR VIDEOS ON THE CHAUVIN ARNOUX YOUTUBE CHANNEL

www.youtube.com/user/chauvinarnoux

METRIX® ASYC IV multimeters

1 kV insulation testers

PEL100 range of power and energy loggers

CHAUVIN® ARNOUX
CHAUVIN ARNOUX GROUP

metrix®

3 EXCLUSIVE OFFERS

from 1st September to 31st December 2016

more than **20%** *discount*
depending on the pack

AUTUMN PROMOTION

Energy performance & electrical safety solutions!

€ 2,990 ex-VAT
~~€ 3,688.50 ex-VAT~~

DataView® *processing software*
FREE

Energy logger
PEL 103 + MA193
with adapter for power supply via the phase
FREE

Thermal camera
C.A 1950

€ 2,446 ex-VAT
~~€ 3,135.50 ex-VAT~~

IP67 Energy logger
PEL 105 + A196 A

DataView® *processing software*
FREE

Mains power pack
PA30W
FREE


FREE

Android tablet
8" - 16 GB

€ 390 ex-VAT
~~€ 490 ex-VAT~~

TRMS AC multimeter
MTX 203

Megohmmeter 1,000 V
MX 407

Measure up

Offer only valid in France and the countries involved in the 2016 promotion