

News > Measurement CONTACT

Spring 2010



Special Report *The New Energy Regulations*

Company News

**Educ-Éco
Partnership**

Market

Diagnostics
According
to NF C 15100

Application

**Power Factor
Correction**





2010 will be a year under close surveillance! 2008 was an excellent year for our Group. Sales of all our product ranges were up. 2009 clearly ended on a darker note, but we are facing 2010 with every hope that our activities will soon take off again. Even though the Chauvin Arnoux Group appears to have suffered less from the economic crisis than some related industries and sectors, recording only a limited fall in business thanks to its prudent approach, while others have seen sales drop by 40%, 2009 nevertheless remained a difficult year for us.

To overcome this, Chauvin Arnoux is relying on **a policy of consolidating its activity** among its customers in France, while continuing its international development.

Our Chauvin Arnoux®, Metrix®, Enerdis® and Pyro-Contrôle® brands are **all well-known on the French market** and we are certainly the only European industrial company currently proposing such a broad product offering on the electrical instrumentation market. From Pyro-Contrôle's temperature sensors and controllers for cutting-edge industries to the solutions from Enerdis for metering and controlling energy losses, while not forgetting the regular launches of flagship measurement instruments by our subsidiaries on their markets, such as the relays manufactured by our Italian subsidiary AMRA or the data loggers launched by our American subsidiary AEMC, the Chauvin Arnoux Group covers the whole range of measurement, metering, logging, energy efficiency, temperature control and electrical installation testing requirements.

Today, thanks **to our international dimension** (10 subsidiaries in Europe, America and Asia), we are able to pool the in-house expertise of our six R&D centres and the local market experience of our subsidiaries to offer instruments which are a perfect match for European and international users' expectations, while fulfilling the regulatory requirements in each country. For example, the C.A 8335 Qualistar+® 4I, 4U network analyser, with its ingenious colour-coding system, its multilingual interface and its DataView® data processing platform, offers technology suitable for all markets in more than 21 languages, including Chinese and Thai. In this magazine, you can read about the Metrix® MX 435D and the Chauvin Arnoux® C.A 6116 installation testers. These are two all-round diagnostic instruments, the first in response to the NFC 15-100 standard and the second, which we are launching this year, to handle all the European standards (IEC 60364-6, XP C 16-600, etc.). For some years now, we have also been developing DataView®, a single software platform common to several of our top products, offering users an ideal tool for retrieving the results, analysing the data and instantly generating reports in compliance with each country's standards.

Today, **55% of the company's sales revenue is earned outside France**. We are proud of this international dimension, but it does not mean we are yielding to the temptations of relocation. I like to remind people that our products are developed in our own R&D centres, including all the mechanical, electronic, technological and firmware aspects, and 85% are manufactured on our own production sites in Normandy or in Lyon. In this way, we have control over the whole chain of productivity and the various quality control phases.

The confidence that you have shown us for many years now is what keeps us going, and remaining worthy of that confidence is the ambition shaping our future.

I would like to wish you and your families an excellent year rich in opportunities in 2010.

Winthrop SMITH

PRESIDENT & CEO
CHAUVIN ARNOUX GROUP

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AN EXCEPTIONAL PARTNERSHIP

By co-sponsoring this first Educ-Éco challenge, Chauvin Arnoux has boosted its image as a company closely involved both in the education sector and in industrial research for energy saving.

This challenge, backed by the French Ministry of Education, was held from 4th to 6th June 2009 on the Paul Armagnac motor-racing circuit at Nogaro. The organizer of this competition combining energy-saving and motor vehicles is the association **AD3E**, set up to develop educational initiatives around environmental themes. The goal is to travel the longest possible distance with minimum fuel consumption.

Chaired by **Jean-Paul Chassaing**, Honorary General Inspector of Education and Honorary President of the Chauvin Arnoux Measurement Club, this challenge also aims **to give teachers and students an opportunity to set up and carry out a scientific and technical project with an environmental theme**. It allows each team to put theory into practice and check whether their ideas work in the field.



For this first edition, the **Educ-Éco Challenge brought together 56 participants, representing 15 regions, 32 French "départements" and 52 schools.**

Each of the projects presented was the result of several months' work and pooling of skills. A first step on the road to the vehicles of tomorrow...

METERING EUROPE 2009

For the second year running, via its subsidiary Enerdis, the Chauvin Arnoux Group took part in the Metering trade fair, held this year in Barcelona (Spain) from 6th to 8th October. Compared with the previous year, this fair registered 11% growth, with 130 exhibitors and 2,800 visitors welcomed over 3 days. The results of this fair were not so good for Enerdis, however,

as they only had thirty or so visitors to the 18-square-metre area which they reserved, even though the meetings and conferences proposed were top-quality. Vienna has already been chosen as the venue for the 2010 edition, but despite the organizers' claim that 50% of the exhibition space has already been reserved, it seems very likely that Enerdis will not be joining them next year.



EDUCATEC 2009 FAIR: A SUCCESS!

After a low-key edition in 2008, this year's Educatec fair was more positive for Chauvin Arnoux, with more than 150 visitors over the three days of the exhibition (18th to 20th November). It is worth pointing out that the Chauvin Arnoux Group was the only measurement instrument manufacturer present at this latest edition of

the well-known trade fair for the world of education. The position of the 38-square-metre Chauvin Arnoux stand opposite the entrance also helped to contribute to this success. So Chauvin Arnoux will be present again in 2010 at the *Porte de Versailles* in Paris, even though other competing trade fairs are beginning to emerge.



ISO 14001 CERTIFICATION

An environmental policy reaps its reward!

All the Chauvin Arnoux Group's French sites, in Paris, Antony, Reux, Vire, Villedieu-les-Poêles and Meyzieu, have been certified ISO 14001. This environmental management certification, **obtained after an audit by an independent accredited organization, is the result of a policy of involvement first set in motion several years ago.**

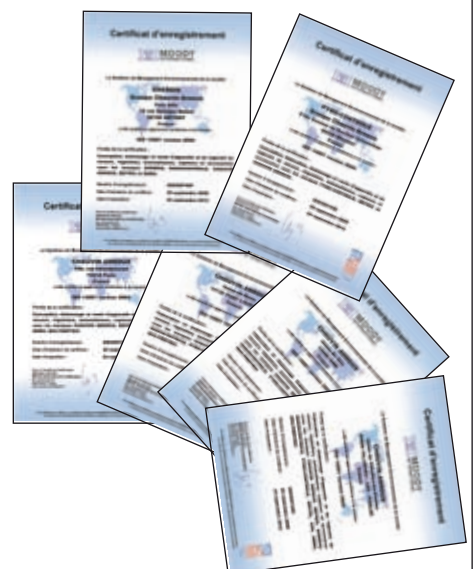
The on-site audit was carried out by the **international agency MOODY** in January 2009, leading to certification of the six Chauvin Arnoux sites in November.

Although the contribution of such standards is very often imperceptible in our day-to-day lives, their importance mainly becomes clear when they are not respected, in terms

of product reliability, hazards or poor health and safety conditions in our working environment, as well as the possible environmental impact of our activities.

For Chauvin Arnoux, **this ISO 14001 certification rewards the teams' commitment to dealing with the environment as a factor for quality**, identifying the aspects requiring improvement, scheduling the necessary improvement work, carrying out the improvements, checking that the objectives are fulfilled – and then starting all over again (the principle of the continuous improvement loop applied to protection of the environment and preservation of natural resources).

A fine example of successful teamwork which deserves to be highlighted.





ULYS:

energy meters

for every type of use



*Single or three-phase networks, multi-tariff management for energy imports and exports, direct connection or via a current transformer, remote reading of the information: **the new range of ULYS** meters from the Enerdis® brand is suitable for all present and future applications involving electrical consumption measurement.*


The **ULYS** range of meters is ideal for any applications involving new environmental regulations, tax incentives for investments in energy savings or renewable energy, a communication strategy promoting responsible environmental attitudes or the search for greater profitability by optimizing consumption or, more simply, by allocating the energy costs per cost centre. These applications are based around three main functions:

- metering;
- network monitoring and sizing;
- improvement of energy performance.

The standard IEC-compliant versions in the new **ULYS** range can be used to map your energy spending by type of consumption, use and geographical location, and to view and monitor the main electrical parameters in industrial or tertiary environments at the point of supply or on the terminal distribution system.

With the **ULYS** meters compliant with the EN 50470 standard and certified according to the Measurement Instrument Directive (MID), you can rebill the energy consumed on a private network in a commercial context (rental of office space, shops, market-stall space, etc.) or residential context (leisure hotels, marinas, university halls of residence, etc.), incontestably and in compliance with the applicable regulations. The MID, voted by the European Parliament in 2004, guarantees reliable, traceable metering for users and consumers.



 **ULYS three-phase**

Product advantages

- Accuracy class 0.5 (IEC) / C (MID).
- Communication via pulse output or RS485.
- 2 or 4 tariffs, for energy imports and exports.
- Memory depth of at least 60 days' consumption.
- Direct input: 65 A or 100 A.
- Connection to CT: 1 A or 5 A.
- Measurement of energy and power values, as well as the main electrical parameters.
- Management of min./max. and alarm values.

The new range

The new **ULYS** meters are particularly accurate (IEC Class 0.5 / MID Class C) and offer direct measurements up to 100 A without a CT or auxiliary power source, thus cutting installation costs. They are also available connected to a 1 or 5 A current transformer for more industrial applications. Equipped with an RS485 output, the **ULYS** three-phase meter allows the instantaneous, average, maximum and minimum values to be read remotely. Some models can also generate an alarm and calculate load curves. The exhaustive LCD screen enables you to view the main electrical quantities and operating parameters.

Reader service no. 1



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Two new Metrix® generators-frequencymeters offering high performance and ergonomic design

The multi-purpose **GX 310 (10 MHz)** and **GX 320 (20 MHz)** models are ideal for the requirements in education (technical training, physics, etc.) and scientific research, as well as for designers and manufacturers of electronic products (mass-consumer goods, medical sector, automotive industry, etc.).

Based on the **DDS (Direct Digital Synthesis)** technology, these models offer much better frequency stability and accuracy than traditional generators, as well as **lower phase jitter and excellent spectral purity**. These generators sweep a wide frequency range while maintaining a constant phase during frequency hopping. The duration of the linear or logarithmic sweeps (triangular or sawtooth) can be adjusted from 10 ms to 100 s.

The GX models can be used to **generate precise signals**: waveforms, sine, triangle, square & LOGIC signals with direct adjustment of the high and low levels, as well as TTL output. They also include a 300 V-CAT I external frequencymeter (5 Hz to 100 MHz).

The **GX 320** includes **internal and external modulation functions (AM/FM), PSK** (phase hopping) or **FSK** (frequency hopping). Equipped with a **BURST** function, the **GX 320** is used to generate signals with very low duty cycles from a single short-duration pulse. It is possible to synchronize several **GX 320s** in a cascade configuration, in particular to simulate a three-phase signal or Fourier synthesis. The **GX 320** can also store and retrieve up to 15 instrument configurations.

The ergonomic rectangular casing makes them stackable. The unrivalled legibility and size of the LCD screen are further improved by adjustable backlighting which accentuates



the contrast. All the signal's parameters are displayed simultaneously. On the front panel, 19 directly-accessible commands and a 100%-digital encoder wheel ensure that the instrument is easy to use. Full calibration of the instrument with the "casing closed" is possible on its front panel.

Reader service no. 2

metrix®

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New functions for ENERIUM®



Launched in 2006, the ENERIUM® range of power monitors remains the reference on the market and represents a major advantage for any operations related to energy efficiency. Constantly striving to adapt to the market requirements, Enerdis is now proposing even more innovative functions on the two power monitors in its range.

ENERIUM® 100 and ENERIUM® 200 benefit from the very latest functional innovations to deal with the technical and economic constraints faced by companies committed to an energy management approach.

Up to 8 analogue and on-off inputs for multi-energy measurements and up to 8 on-off outputs and 4 analogue outputs to monitor, alert and act more effectively.

The inclusion of $\tan \varphi$ in ENERIUM means that users can be warned if there is a threshold overrun. It can also be recorded to make it easier to check the bill and any penalties applied by the supplier. The inclusion of the THD on the neutral current completes the qualimetric functions already available on these two power monitors.

ENERIUM® 200 is available in Class 0.2s, thus guaranteeing more accurate measurements.

Whether you are seeking energy efficiency, network monitoring, installation sizing or qualimetry, there is always an **ENERIUM®** solution.

Reader service no. 3

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Management systems

Standardization comes to energy efficiency!

"Energy efficiency" has been a particularly popular term in recent years among both environmental organizations and industrial companies. Overused in the press, copied by everyone whatever the sector of activity, it eventually joined "sustainable development" as one of the key concepts for the next few years.

In the current economic and environmental context, **energy efficiency is naturally one of the top-priority strategic objectives for organizations and companies.** It helps to cut costs and reduce the greenhouse gas emissions resulting from their activities. Aware of the potential hazards of such enthusiasm and seeking to structure this approach, which is seen as "exemplary" in environmental and economic terms, the European standardization organization has recently published **the new NF EN 16001 energy standard.**

Entitled "Energy Management Systems", this new standard has the advantage of being clear. Its aim is to support and structure companies' energy efficiency initiatives. Published at the beginning of July 2009, it is designed to help any organization, whatever its field of activity and size, to develop method-based energy management so that it can improve its energy efficiency.

Like the ISO 14 001 environmental standard (see page 2), this standard is based on the principle of looped phases for continuous improvement, summarized by "plan – do – check – act" (PDCA).

This means that the two standards are compatible with one another. ISO 14001-certified since 2009, all of the Chauvin Arnoux Group's French sites have already implemented a responsible environmental policy. The Enerdis and Chauvin Arnoux brands are determined to achieve rapid compliance with the new EN 16001 standard, which appears to be appropriate for the measurement instruments and energy solutions developed by their respective teams and is also serving as the template for the future ISO 50001 international standard scheduled for the end of 2010.

This head start in terms of environmental management systems is an advantage that the Group intends to maintain.

The 4 steps in the EN 16001 standard: the continuous improvement loop.

- 1 • Plan:** establish what the objectives are and what resources will be necessary to achieve results in line with the company's energy policy.
- 2 • Do:** implement the process
- 3 • Check:** monitor and measure the new processes in terms of the energy policy, the objectives, the targets, the obligations and the company's other requirements, and then report on the results.
- 4 • Act:** take the necessary action for continuous improvement of the energy management system.

Focus on EN 16001

- Publication of the NF EN 16001 standard defining the precise requirements regarding energy management on 1st July 2009.
- It is aimed at all private or public organizations whatever their field of activity or size.
- It is compatible with the ISO 14001 environmental management standard due to its approach based on the continuous improvement loop.

ENERDIS, your energy partner

Because good advice is essential when setting up an Energy Management System, Enerdis has energy efficiency experts ready to help you choose the solutions best suited to your situation and your environment.

Energy management is a growing concern for many company bosses and managers faced with the continuous rise in direct and indirect energy costs linked to environmental legislation and constraints introduced by new standards. **As you can only manage properly what you can measure**, it quickly becomes vital to set up an "energy management system". This has not escaped the standardization organizations as they have just published the EN 16001 standard on "Energy Management systems" to provide a reference framework for certification, in the same way that you can obtain quality certification (ISO 9001) or environmental certification (ISO 14001).

Managing energy is Enerdis's business

In this context, **the measurement system is a key element for the definition**, success and long-term sustainability **of any energy management system**. It cannot be improvised, but requires thorough planning and implementation. This is why the "Audit and Troubleshooting" Department proposes auditing services for electrical networks (industrial, tertiary or infrastructure) to identify the main features of the network and determine the appropriate sizing. If necessary, they also identify and analyse any dysfunctions. At the end of this process, **our experts recommend solutions to meet your energy quality requirements**.

Once this optional audit/investigation phase has been completed, Enerdis proposes advice on implementing the permanent energy management system. As a precursor in this field with nearly fifteen years' experience, Enerdis possesses global solutions which are adaptable, flexible and upgradable to ensure that companies' technical and economic constraints are taken into account. To achieve this, Enerdis draws on a comprehensive range of innovative measurement and communication products: current transformers, energy meters, power monitors, multi-mode communication systems (RS485, Ethernet, STN, GSM, GPRS, radio, etc.), network analysers and energy management/supervision software.

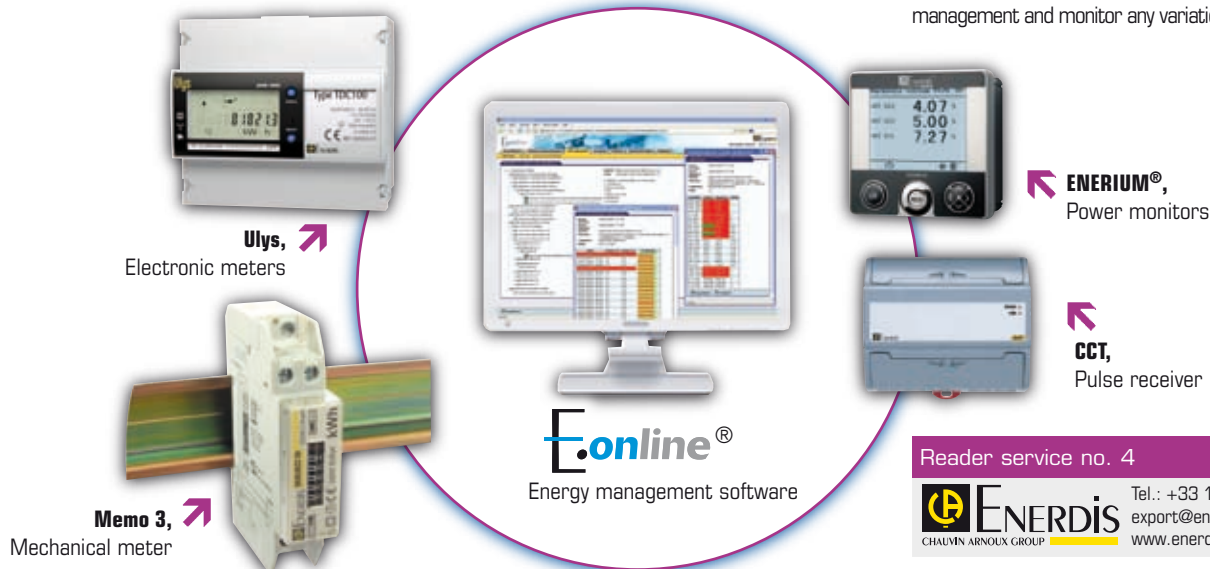
Different solutions, but one global system

Gaining an all-round view of a project and **proposing a response taking into account the products and the associated system for managing energy consumption** (electricity, water, gas, steam, etc.), whether in the context of standardization (EN 16001) or not, is an approach which Enerdis has applied in numerous business sectors, including process industries, infrastructures (roads, airports and ports), rented property management (office buildings, shops, etc.), refrigerated warehouses and even technical equipment at ski resorts.

To achieve this, Enerdis relies on some of the top products in its catalogue:

- **Enerium®** power monitors for supervising, sizing and managing.
- **Ulys and MEMO 3** energy meters for metering and monitoring.
- **CCT** pulse receivers, Ethernet and modem gateways, etc., for communicating.
- **E.online® multi-energy**, multi-utility, multi-site, multi-user management software for remote reading of the electrical and metering parameters, data storage and protection, formatting and transmission of information (analytical ratios, reports, alarms, etc.) and customizable presentation of the information via a secure Ethernet link and a simple web browser.

E.online® is the ultimate tool of reference for any company seeking to optimize its energy management and monitor any variations over time.



Reader service no. 4

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Instruments for saving energy!

*There are many simple ways of saving energy. Switching off lights or turning off the heating when you open the windows represents a good start. Reducing energy losses in a home, an office block or an industrial building is just as easy, particularly if you have the right tools. Today, **thermography** can be used to identify these losses and immediately assess their severity.*



↗
C.A 1879

On the ground or in the air, with a thermographic camera, users can target the building to be tested. The **DiaCAm**

C.A 1879 thermographic camera instantaneously displays a thermal image of the target. This image shows the temperature differences by means of colour coding. The DiaCAm can be used to view all the energy losses from housing, roofs, windows, etc.

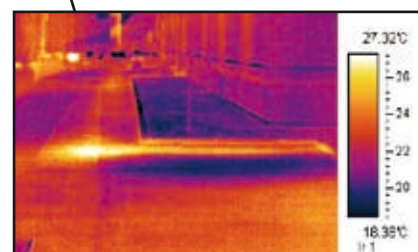
These measurements therefore help to reveal points requiring action in order to improve the energy efficiency of the home, building, etc. The DiaCAm is ideal for inspections in the context of **real-estate survey work**.

In the industrial sector, it can also be used to detect overheating on transformers or in electrical cabinets. As such overheating may lead to excess

consumption, the technicians can intervene rapidly as soon as they have the thermographic images.

The **DiaCAm Report** software supplied with the camera can be used to analyse all the images and measurement results. In image analysis mode, users can correct parameters or add text and vocal comments on the instrument. There are also measurement tools to help with image analysis, such as display of the min./max. values or the addition of cursors.

In report creation mode, users can print a full report including customization of the inspection, a table of contents to list the operations, the image analysis pages with comments, and a summary. The inspection report is generated automatically.



↖
Here, inspection with the thermographic camera reveals an underground water leak. By pinpointing the leak, it helps to map out the scope of intervention to solve the problem.



↖
C.A 1879

Reader service no. 5



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Network analysers and energy efficiency



With rising energy prices and growing environmental concerns, network analysers are ideal instruments for energy surveys.

With its measurements and its continuous recording of consumption on the network, the **Qualistar+** can be used to determine the sources of any disturbances. Such disturbances are usually accompanied by energy losses.

An energy survey involves the following steps:

- > a full audit of the site;
- > analysis of the network with evaluation of possible savings;
- > implementation of the solution and follow-up.

The **Qualistar+** allows you to record the parameter variations over very long periods (active and reactive energy values, power factor, overvoltages, dips and outages, etc.). It includes trigger functions and functions for capturing events outside the specifications defined, as well as very brief voltage and current events.

The **Qualistar+** also calculates the energy consumed or returned. It is then possible to observe consumption habits and dysfunctions. These metering measurements will indicate the high and low power consumption levels, the inrush current when certain machines are started up, etc. They also reveal the times when consumption is highest.

The **DataView®** software can be used to process the data recorded, analyse them and print a report. Any anomalies detected are analysed in order to propose a solution for consumption optimization. This may cause customers to requalify their transformer or install an active or passive filtering system, etc.

↖ C.A 8335

Did you know?

For a lift controlled by variable speed drives, consumption varies according to its load and its counterweight. When the load on the lift is heavier than the counterweight, the mechanical energy supplied by the descending lift is transformed and then returned to the network by the variable speed drive rectifiers. In such cases, energy consumption is zero. With the **Qualistar+**, it is possible to perform all the necessary measurements (active power, reactive power, Min, Max, etc.). By analysing the results, you can then size the installation (transformer, cables, etc.) correctly and set up a system for reactive energy compensation, if necessary.

All these measurements are therefore intended to reduce disturbances and consumption, thus cutting your electricity bill.

Reader service no. 6



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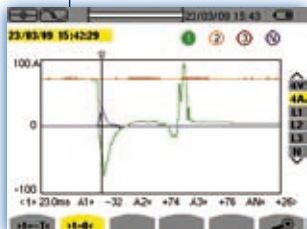


Qualistar+ Even simpler to use! Even more functions!

In response to customers' remarks, the Qualistar+ C.A 8335 is being upgraded and now offers new functions. The number of languages available (menus and online help) has increased regularly, with 25 currently provided. These frequent upgrades allow us to respond to the needs of our subsidiaries and international customers. Mains voltage and frequency monitoring, particularly useful for work on electrical generator sets or other generators, has been added to the inrush mode.

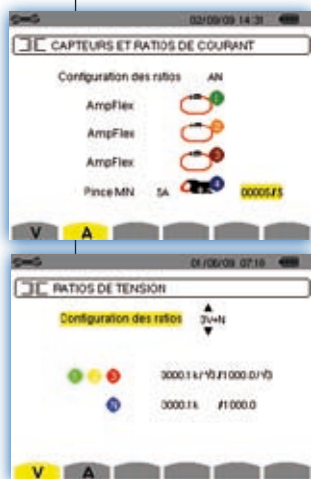
Mixing current sensors

The C.A 8335 now accepts new current sensors for measuring low DC currents. This is particularly useful for measurements on solar panels. With a memory depth of more than 2 GB, often used in recorder mode, the Qualistar+ operates with different types of sensors simultaneously. The instrument automatically recognizes the sensors connected. Users are free to measure AC or DC currents.



Voltage and current ratios

Work on electrical installations is potentially hazardous. To ensure that the operations carried out with the Qualistar+ are safe, users can automatically include a voltage ratio in their calculations and thus obtain a direct measurement reading, even for high voltage values. At the same time, the range of current ratios already provided has been extended and now supports display of values from a few mA to 60 kA.



Transients

Ideal for monitoring an electrical network, the **Qualistar+** can stream-record the selected measurements simultaneously. In transient mode, the **C.A 8335** can be used to record and/or view the transients. At the same time, it triggers measurement acquisition on the basis of predefined alarm thresholds and captures rapid transients over the same period. The C.A 8335 compares each period with the previous period. It can thus detect any differences and trigger acquisition of the measurement at time "t", as well as in the previous period "t-1" and the 2 periods which follow. In this way, users have the reference value for immediate comparison. Users can also perform selective sorting, such as displaying the current transients or those on the neutral.

The Man-Machine Interface

In addition to its improved MMI, the **C.A 8335** includes in particular new help screens designed to guide the user, as well as other new features:

- Improved display stability of highly disturbed signals;
- Neutral current measurement in Inrush mode;
- Voltage and frequency measurements in Inrush mode (for diagnostics on electrical generator sets);
- Integration of 120 V/60 Hz networks for flicker measurement.



C.A 8335

A new memory occupation bar, displayed at the top of the screen, can be used at any time to locate the position of the active memory area required. This saves additional time when retrieving the recording of a fault, for example.

And that's not the end of it! The Qualistar+ is evolving and will continue to evolve to meet our customers' needs...

Reader service no. 7



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MTX 162, the uncompromising oscilloscope

Following on from its *SCOPEin@BOX* models and drawing on its know-how in oscilloscopy, Metrix® is launching a new virtual oscilloscope, the MTX 162. **The economical MTX 162** can be connected directly to a PC. Its ergonomic design makes it compact and very simple to set up. Its high performance makes it ideal for laboratory applications in education, R&D and design departments in the electronics sector, etc.



The compact MTX 162 is equipped with 2 isolated input channels (300 V CAT II) and offers a 60 MHz bandwidth. It includes a real-time FFT analyser and a recorder (untriggered direct Roll mode). When it is coupled with the MTX1032-B model, users obtain 600 V CAT III differential inputs.

This **double time-base** oscilloscope can display 2 windows of 2,500 points simultaneously. Digital but with analogue persistence,

it offers two display modes: normal or **remnant** display (like on an analogue oscilloscope).

The MTX 162 has a memory depth of **50,000 points** and a wide range of sensitivities from 5 mV/div to 100 V/div. Simple and effective, it includes selectable "Vertical Autorange" and "Horizontal Autorange" functions, as well as the possibility of 19 simultaneous automatic measurements and manual cursors. Its sampling rate is 20 GS/s in repetitive mode and 50 MS/s in one-shot mode.

For communication, it has a USB connection with automatic detection of the instruments connected to the PC and an ETHERNET port with detection of the instruments available on the network. The MTX 162UEW model is also equipped with a built-in WiFi communication mode.

Reader service no. 8

metrix

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Quick identification of your components – even the smallest!



Sorting components.

With component miniaturization, it has become increasingly difficult for users to identify them without risking mistakes. The TCX 01 automatically recognizes whether the component is a resistor, a capacitor or a diode and displays its value.

Its high performance and simple operation help to save considerable time for electronics customer support technicians, production testers, storekeepers of electronic equipment, R&D technicians or engineers, teachers, etc.

With its design optimized for easy handling, the TCX 01 is particularly simple to use. **To display the result with the TCX 01, all you need to do is grip the component with the probe tips!**

The **TCX 01** offers a **wide dynamic range for measurement**, with a 6,000-count LCD screen. This means it has one of the widest measurement ranges on the market for this type of instrument: **resistance** from 600 Ω to **60 M Ω** , **capacitance** from 6 nF to **60 mF**.

It includes 2 direct-access "function" and "range" keys. The "Range" key can be used to change the measurement range in automatic or manual mode. In this way, for sorting operations or other requirements, it can be useful and even more efficient to lock the TCX 01 onto a particular type of component and a particular value range.

The **TCX 01** also offers audible connection and continuity tests. This function is particularly useful for checking, maintaining or repairing boards, as well as for transistor testing.



TCX 01 closed.

Delivered ready to use, complete with its case, the TCX 01 is also equipped with a rigid cover to protect the probe tips.

Reader service no. 9

metrix

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Measurements to limit environmental nuisance



Air-conditioning, ventilation, noise and lighting, humidity and pollution are all features of our environment today. To limit the nuisance caused by them, these aspects are governed by regulations which are frequently updated. To comply with these rules, you need to carry out "physical" measurements on the corresponding systems. Alongside handling measurement instruments and interpreting the results (curves, diagrams, charts, etc.), setting up environmental measurements is an integral part of the job for electricians, heating engineers, air-conditioning experts, etc.

Chauvin Arnoux is completing its range with the addition of 4 new products: C.A 1224 & C.A 1226, C.A 1244 & C.A 1052.

C.A 1224 & C.A 1226, two dual-display thermo-anemometers

Ergonomic and easy to use, the C.A 1224 and C.A 1226 allow you to check that your ventilation and air-conditioning systems are functioning correctly. They include a dual display so that you can view 2 values simultaneously, chosen from among the temperature, speed and flow rate. The difference between these 2 models lies in their respective sensors: a rotating-vane sensor on the C.A 1224, hot-wire sensor on the C.A 1226.

The functions available are similar: speed and ambient temperature measurement, choice of units, HOLD function, display of min./max., automatic calculation of the average, calculation of the flow rate with or without a cone. In addition, they benefit from an automatic shutdown function and adjustable backlighting.

C.A 1244 thermo-hygrometer with remote probe

This compact tool offers excellent accessibility due to its remote probe. The adjustable backlighting makes the dual display even easier to read. The C.A 1244 is a 3-in-1 instrument capable of measuring the humidity, ambient temperature and dew point.

C.A 1052, a single tool for comprehensive testing

For thorough verification your heating, ventilation and air-conditioning, the C.A 1052 has merged several instruments into one. The multi-function C.A 1052 offers a wide range of possibilities:

- speed measurement (rotating vane and hot wire) and ambient temperature measurement;
- measurement of relative humidity and pressure;
- temperature measurement by contact;

- choice of units;
- HOLD function;
- min./max. display;
- automatic calculation of average for any type of measurement;
- flow rate calculation with or without cone;
- recording of up to 8,000 points;
- adjustable automatic shutdown function and adjustable backlighting.

The instrument is delivered complete with its accessories and software for processing the data.

Reader service no. 10



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Electrical installation testing



MX 435D



C.A. 6116

*Internationally, low-voltage electrical installation testing is governed by the IEC 60364-6 standard. Alongside this, the NF C 15 100 standard, designed to ensure safety and better comfort in new buildings, is considered the reference framework for the construction of electrical installations in France. **Compliance with the standard guarantees that the installation is not hazardous for property or people, who are fully protected in the event of a fault. Thus, in each country, the local standard is based on the international standard, using the same criteria but not systematically (different thresholds for measurement validation, different voltages applied, etc.). Depending on the legislation in the country, the electrical testing obligations may differ in terms of the time between tests and the types of buildings tested (housing, industry, public buildings, etc).***

These tests are carried out in the following cases:

- initial electrical testing of new installations;
- periodic testing of an installation;
- maintenance and repairs on an installation.

The professionals authorized to carry out these tests are certification organizations (commissioning and periodic testing), construction and electrical maintenance companies, self-employed electricians, etc. To do so, they use an installation tester.

C.A 6116

The brand new **C.A 6116 multi-function installation tester** - designed, developed and manufactured in France - can be used for verification and testing in accordance with the applicable international and national standards: IEC 60364-6, NF C 15-100, VDE 100, XP C 16-600, etc.

The rugged C.A 6116 is specially designed to make it simple and effective to learn, with a large backlit screen for excellent legibility. Its display enables users to view all the essential results at a glance.

A rotary switch on the front panel gives **direct access** to all the functions. A large number of audio signals and visual symbols are provided for **quick interpretation of the results according to the standards**. For more effective operation, **contextual help** is available for each function.

The comprehensive C.A 6116 is particularly reliable thanks to its excellent measurement stability, even in disturbed industrial environments. The inclusion of **current measurement** with a current clamp means in particular that a second instrument is no longer needed to measure leakage currents. In addition, the spread of electronic equipment liable to pollute the electrical network has led to the inclusion of power and harmonics measurements in the instrument.

MX 435D

The compact, lightweight Metrix® **MX 435D** tester is ideal for **intensive use**.

The MX 435D has all the essential functions needed to check the safety of electrical installations in compliance with the applicable standards. It automatically measures the voltage before beginning any tests and checks the installation to which it is connected. That way, measurement is impossible if there is any danger.

Reader service no. 11

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TRIAD 2, the new reference for measurement transducers

*Drawing on more than thirty years' experience as a manufacturer of industrial measurement transducers, Enerdis is now launching the second generation of **TRIAD** models offering innovative functions and even greater accuracy.*

The multi-function configurable digital transducers for single and three-phase applications in the **TRIAD 2** range are now even more accurate, as they are available in **Class 0.1**. Configurable in the factory and delivered ready to use with your network specifications, the range can also be configured using the **TRIADJUST 2** software so that the instruments can be adapted immediately on site to deal with the installation and operating constraints.

Extra functions

The **TRIAD 2** range now offers 1 to 4 isolated one-way or two-way analogue outputs (4-20mA, -20+20mA, 0-10V...) which are totally configurable individually, allowing the conversion of four electrical quantities among **41 quantities available**. In addition to the quantities already provided on the previous range (Vac, Uac, Iac, F, P, Q, S and cosφ), the models now offer FP, φ fundamental, tanφ and the phase shift between two voltages (U or V).

TRIAD 2 benefits from two additional communication options via an RS 485 or Ethernet output (ModBus RTU protocol).

TRIAD 2 can also be used to define the measurement accuracy (0.1% to 1%) according to the analogue output response time (50 ms to 1 sec).

Examples of applications

Due to their design specifications (compliance with the most demanding standards and market requirements), **TRIAD 2** transducers

are intended for use in environments considered difficult in terms of EMC and operating safety:

- > Transformer substations, so that the dispatching centre has access to the electrical quantities needed to control the transmission and distribution networks
- > Medium-voltage cells on industrial production sites for the operation and supervision of installations
- > Power production plants, cogeneration installations or back-up generator sets in cases involving coupling to the distribution network, for example.

Dedicated software

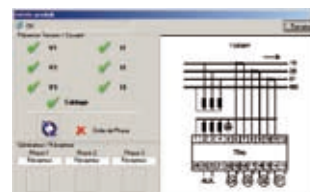
The **TRIADJUST 2** software is designed for configuring or modifying the parameters of these programmable transducers. These operations can be performed locally via the optical head or remotely via the digital communication network (RS485 or Ethernet). In this way, **TRIAD 2** transducers can be modified very simply to deal with changes to the network supervision or modification of its operating mode. The functions offered by **TRIADJUST 2** include:

- > Configuring each of the transducer's input/output parameters
- > Checking the consistency of your installation in relation to the connection diagram defined
- > Checking whether the transducer is wired correctly
- > Printing the installation's configuration and connection diagram on a label (with a standard laser printer)
- > Simulating operation of the transducer before commissioning
- > Viewing and recording the electrical quantities measured



Configuration

- Inputs/outputs
- Communication
- Connection diagram
- Response time
- Configuration parameters: CT or VT ratios, transfer function



Diagnostics

- Voltage inputs
- Current inputs
- Wiring
- Phase order
- Analogue outputs
- Fresnel diagram



Display

- Instantaneous value (digital or analogue)

Recording

- In real time in an exported file

Reader service no. 12



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New 200 MHz SCOPIX® II, specially designed for applications in electronics

Drawing on the experience gained in the field with the first generation of SCOPIX® oscilloscopes, METRIX® has designed and manufactured 2 new "top-of-the-range" models, the OX 7202 and OX 7204, dedicated to applications in electronics, laboratories, R&D, electronics maintenance, etc.

Models with even better performance

They benefit from the versatility of **SCOPIX®**, **with 5 tools in 1**: oscilloscope, multimeter, FFT analyser, harmonic analyser and recorder. Offering even higher performance, they now have a **bandwidth of 200 MHz** and a **sampling rate of 2.5 GS/s** per channel in one-shot mode or **50 GS/s** in repetitive mode. Equipped with a 12-bit converter, **the OX 7202 and OX 7204** offer a large dynamic range for input from 156 $\mu\text{V/div}$ to 200 V/div.

In oscilloscope and multimeter modes, the SCOPIX® II models allow triggering and acquisition according to measurement thresholds. In this way, users can analyse the trigger signal or event or search for a condition on automatic measurements (according to the level, duration, etc.).

The only difference between the two models is that the OX 7202 has two **600 V CAT III** isolated input channels, whereas the OX 7204 has four.

Ergonomic

Specially designed for use in the field, ultra-compact, with a battery life of up to four hours, the design of the casing has not changed except for the small hatch which now protects access to the **μSD card**, capable of storing up to **2 GB of data** in addition to the instrument's existing 50 k memory depth.

The new **TFT screen** is even **more luminous** and the **LED backlighting** is more **economical**. For quick implementation in total safety, all the models in the **SCOPIX®** family are equipped with **PROBIX®** accessories recognized automatically when they are connected.

New communication mode

The OX 7202 and OX 7204 can access an FTP server, which is very practical in the field, for exchanging data with a remote PC or for storage on the PC disk (unlimited capacity). A 10 MB remote Ethernet mode and web server mode (remote control, "real-time" trace, automatic cursors and measurements) are also available.



Reader service no. 13

metrix®

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Checking the consumption of industrial machines with the **ENERIUM® power monitor**

Or how to achieve 20% savings by installing less energy-hungry industrial machines. At a time when energy savings represent a major concern for any company, measurement is a prerequisite for optimizing the energy efficiency of electrical installations. Checking the electrical data indicated by the manufacturer, and particularly its contractual commitment concerning power consumption by new machines, is a key part of this approach.

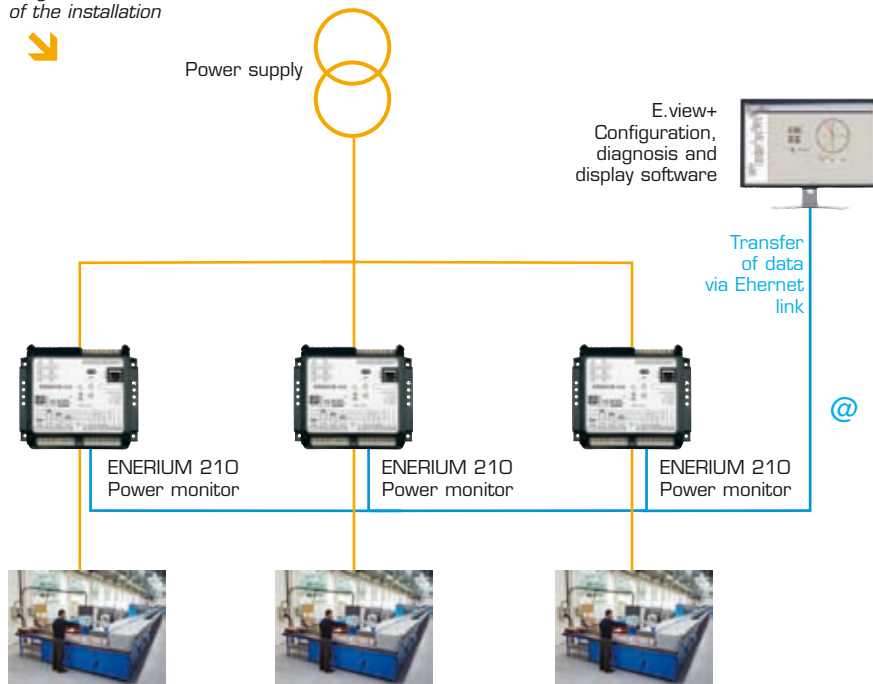
This means checking the energy consumed by each machine by installing an **ENERIUM® power monitor** in order to:

- > **Measure the active power values** and energy values to ensure that the manufacturer's contractual commitment is respected. The power monitor reconstitutes the load curves and calculates the index differentials.
- > **Protect the machines from malfunctions and electrical damage** by disconnecting the machines if there is an alarm due to a problem on the network. For this, the power monitor's on-off outputs are used as protection relays which trigger a threshold alarm when the relay's status changes.

Advantages of the solution

- A comprehensive product with up to 4 relay outputs as standard features.
- A screenless power monitor that transfers the information via an Ethernet link.
- Up to 8 "and/or" alarm outputs for monitoring threshold overruns on the installation.
- Energy accuracy class 0.5s (according to the IEC 62053-22 standard) to guarantee precise active energy measurements.

Diagram of the installation



↑
Enerium in position



←
Relay outputs as standard



↑
Ethernet link

E.view+, comprehensive software

for configuration, diagnostics and display of the electrical data concerning the installation. Its major advantage is display in the form of histograms, curves, diagrams and graphs. These tools facilitate processing and analysis of the data measured on the installation.

Reader service no. 14



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Preventing reactive power penalties in polluted environments with ENERCAP

In the present industrial environment, the spread of loads causing disturbances on the electrical distribution networks is leading to a deterioration of the power factor. To avoid oversizing its network due to an increase in the subscribed demand, the power distributor applies financial penalties to consumers of reactive energy above a certain threshold. For economic reasons, it is therefore crucial to compensate this energy as close as possible to the over-hungry receivers. One of the solutions recommended by **Enerdis** is to install an **ENERCAP power factor correction cabinet**.

Example

> Calculate the reactive power to be compensated for a target tanφ of 0.40

With the figures from the annual management spreadsheets, the following formula should be used:

$$Q_c \text{ (kVar)} = P \text{ (kW)} \times (\text{measured tan}\phi - \text{required tan}\phi)$$

Example for September: $Q_c = 954 \times (0.932 - 0.4) = 508 \text{ kVar}$

	Actual power (kW)			tanφ measured	kVar to be compensated (tanφ = 0.40)
	P	HP	HC		
January	313	476	337	0.935	255
February	395	481	357	0.963	271
March		532	374	0.972	304
April		488	315	0.967	277
May		524	334	0.987	308
June		578	396	1.029	364
July		594	483	1.04	380
August		522	542	0.99	320
September		954	943	0.932	508
October		975	980	0.888	478
November		763	801	0.921	417
December	369	558	538	0.895	276

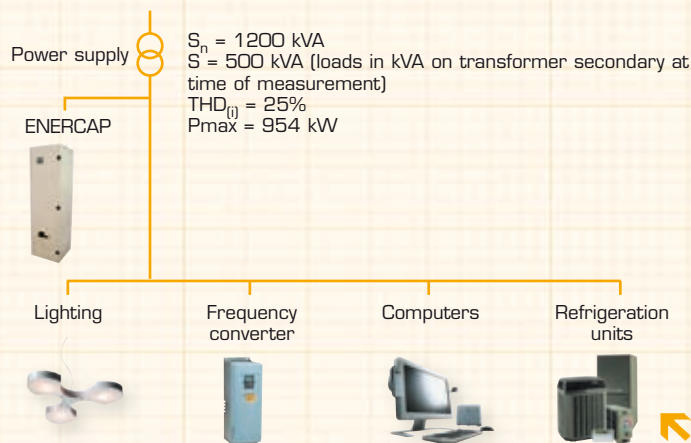
> Determine the type of capacitor bank reinforcement needed according to the level of harmonic pollution.

The total harmonic distortion on the current $THD_{(i)}$, as measured by the C.A 8335, is 25%.

The ratio $THD_{(i)} \times \frac{S}{S_n}$ is between 10% and 20% and the ratio $\frac{S}{S_n}$ is approximately 41%.

↳ Installation of an "SAH" capacitor bank equipped with anti-harmonic inductive circuits is strongly recommended.

So we will install an SAH-type ENERCAP automatic power factor correction cabinet with a power of 600 kVar at 400 V (CAPSAH228, code CAPSAH 228).



Proposed strategy

In the case of an industrial company billed for reactive power throughout the year, you can size the power factor correction cabinet to be installed by **determining the month of the year with the highest reactive power consumption**.

Due to the large number of compression units and equipment with variable speed drives on the electrical network generating 5th and 7th-order harmonics, (ballast lamps, UPS, refrigeration units), **a survey of the installation must be carried out**. This measurement campaign is performed using a Chauvin Arnoux C.A 8335 power and energy analyser from the Qualistar® range.

Lastly, **the power and technology of the power factor correction equipment to be installed need to be determined**.

Reader service no. 15


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Aluminium foundries: optimize your production process!

For the aluminium foundry market, Pyro-Contrôle, the French leader in temperature measurement, proposes a complete temperature measurement line:

- the temperature sensor;
- the temperature controller;
- the electrical actuator;
- the temperature recorder.

The temperature sensor: Temperature measurements in melting baths and holding baths

The temperature of aluminium alloy baths is between 680 °C and 820 °C. This temperature range is ideal for the K thermocouples equipping the 3 types of temperature sensor assemblies presented opposite.

1. Test or monitoring measurement using a measuring lance.
2. Bath control measurement using an elbowed sensor assembly which may be fixed or movable, to avoid breaking the protective sheath when the furnace is loaded with aluminium-alloy ingots.
3. Bath control measurement using a fixed straight sensor assembly in the refractory, with a known temperature gradient.

Temperature measurements in hardening, annealing and stabilization furnaces

These measurements are taken using straight sensor assemblies also equipped with K thermocouples. Installed in the furnace refractories, these are usually protruding sensors to facilitate measurement of the ambient temperature in the furnace.

Longer sensor life span

It is possible to significantly increase sensor life spans by carefully choosing the components implemented, particularly in terms of the materials of the protective sheaths. The overall performance of the sensor assemblies proposed by Pyro-Contrôle for aluminium foundries stems from a combination of several different features:

- Excellent resistance to corrosion;
- Good capability for withstanding thermal shocks;
- Good mechanical resistance at 800 °C;
- No maintenance required.

Improved measurement accuracy and stability

Pyro-Contrôle proposes temperature sensor assemblies with "in-situ calibration" for checking the accuracy and stability of your measurements over time. This offers 2 major advantages:

- Improved end-quality of the parts cast;
- Energy savings on furnace heating

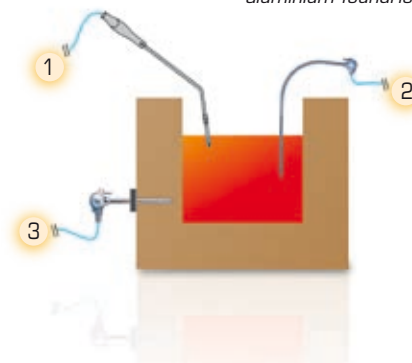
The "in-situ" calibration method* is particularly quick and simple to implement.

- The connection head of the sensor to be tested is opened.
- The standard sensor is inserted into the guide tube.
- The standard sensor is connected to the precision thermometer.
- The temperature is left to stabilize.
- Calibration is carried out by comparing the respective temperatures of the standard sensor and the process sensor.

* Patent no. 0213616



Elbowed temperature sensor assembly for aluminium foundries.



The temperature controller



More than 1,000 temperature control solutions can be set up with the STATOP Series 15, 30 & 60. More than 200 referenced models are available in stock.

The electrical actuator



The THYRITOP ranges offer a wide choice for power control. THYRITOP 20 static relays are ideal for resistive loads from 16 to 350 A. THYRITOP 30 and THYRITOP 40 power controllers are suitable for all types of loads, from 16 to 3,000 A.

The temperature recorder



The PYROTRACER VIDEO temperature recorder helps to optimize the traceability of your production runs. Depending on the requirements, it is possible to configure up to 18 measurement channels. It has a very high-definition TFT screen with data backup on compact Flash memory. It is equipped with an Ethernet link as a standard feature and is delivered with PC processing software.

Reader service no. 16



**PYRO
CONTROLE**

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Active energy efficiency

16 pages containing:

- A reminder of the 4 phases in the energy optimization approach;
- The main functions of a Measurement and Verification Plan;
- The sectors covered by Enerdis and the associated solutions offer;

- Examples of applications in the 3 main sectors of activity (industrial, tertiary and public authorities).



Reader service no. 17 (16 pages)

The new DiaCAM thermographic camera

Find out the details about this thermographic camera offering an excellent price/performance ratio.

It is so simple to use that you can start surveying your energy losses immediately.



Reader service no. 18 (2 pages)

Energy efficiency in action

8 pages based around the innovative systems recently launched on the market, including the **Enerium®** power monitors and **E.online®** management software. This guide focuses on global solutions: products, software and services.



Reader service no. 19 (8 pages)

Effective network analysis

The new **Simple Logger® II** range of data loggers offering a host of useful functions for your applications. They record everything: AC/DC current, AC/DC voltage, temperature, etc.



Reader service no. 20 (16 pages)

ENERDIS® general catalogue

328 pages and 3 major themes: **Energy Performance – Network Quality – Measurement and instrumentation**. Enerdis constantly positions itself as a provider of global energy efficiency solutions by proposing a **permanent measurement system** including everything from the measurement instrumentation to the energy management software.



Reader service no. 21 (328 pages)

Improve the performance of your production process with *in-situ* calibration

PYRO-CONTROLE proposes temperature sensor assemblies with *in-situ* calibration to check and guarantee the accuracy of your temperature measurements over time.



Reader service no. 22

The reference for measurement transducers

Drawing on more than thirty years' experience as a manufacturer of industrial measurement transducers, Enerdis is now launching a totally "redesigned" range offering innovative functions, presented in this document.



Reader service no. 23

MTX II: the MTX Mobile models have evolved

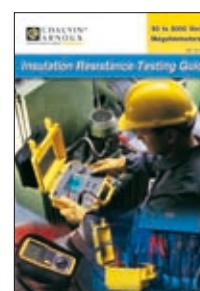
The MTX Mobile range of 100,000-count TRMS multimeters offers LED backlighting for easier reading and lower consumption. In addition, the battery-charging time has been halved with the new wall-plug mains power pack.



Reader service no. 24 (8 pages)

How to measure insulation

What is insulation measurement? Covering both theory and practice, this guide explains the various aspects of insulation measurement: formulae, diagrams, applications, etc.



Reader service no. 25

C.A 6116 Electrical Installation Tester

Testing has never been so simple, quick and intuitive.

PERFORMANCE

DESIGN AND ERGONOMICS

QUICK AND ACCURATE



IEC 60364-6, VDE 0100, NF C 15-100, XP C 16-100
600 V, Cat. III

Concentrated measurement capabilities:

- continuity, insulation (50/ 100/ 250/ 500/ 1,000 V),
- earth with and without voltage, with and without stakes,
- power and harmonics,
- RCD tests,
- loop measurement with calculation of short-circuit current,
- current/leakage current measurement,
- phase rotation.

For greater comfort and quicker results:

- extra-wide backlit graphic screen,
- measurements interpreted according to the European standards,
- help menu for each function,
- customization of your measurement reports.

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With diagnostics at this price, you won't believe your eyes

DiaCAm

C.A 1879 infrared thermographic camera

LARGE LCD SCREEN



IP 54

SIMPLE

RUGGED

LOW-COST

Low cost, high performance:

- Variable merging of real and infrared images
- Voice annotation of images
- Creation of analytical reports
- Storage on SD Card
- Automatic detection of Max. / Min. temperature spots.
- Visual and audible alarms



REMOVABLE HANDLE

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