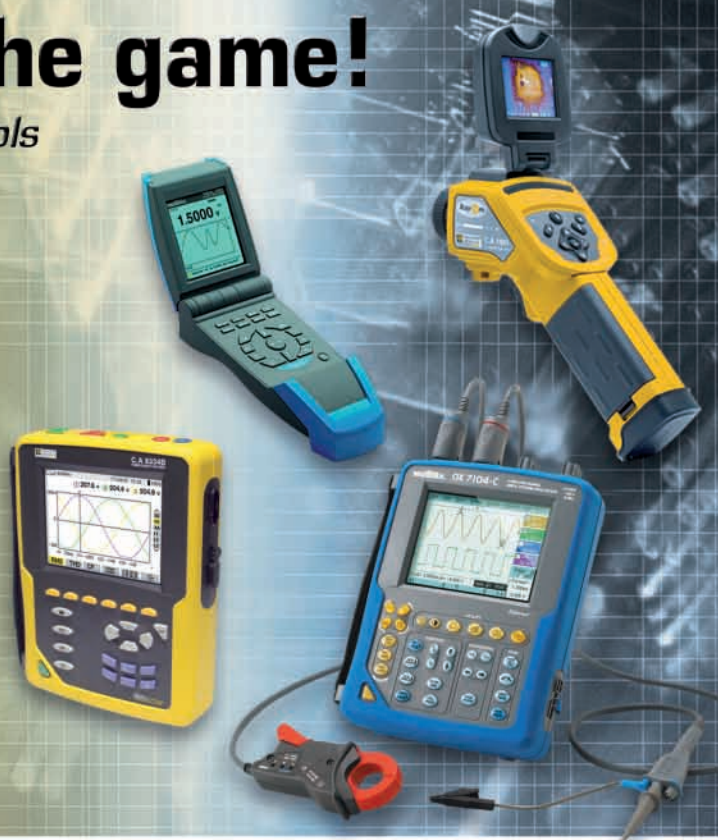


Stay ahead of the game!

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View Identify Solve

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- Three-phase network analysers **QUALISTAR®**
- TRMS recording multimeters **MTX Mobile®**
- 4-isolated-channel portable oscilloscopes **SCOPIX®**

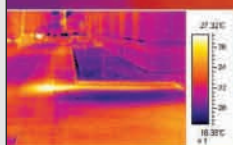
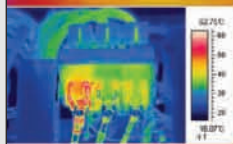
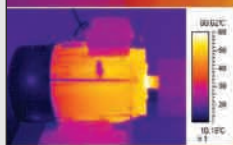


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Simplify your maintenance

RayCam thermographic cameras



Everything you need for industrial use:

- Protected multi-directional screen
- Recording of 1,000 radiometric images
- Measurements starting at 10 cm, -20 °C to +250 °C, resolution 0.1 °C
- Automatic detection of hot or cold points
- Parameterizable visual and audible alarms
- IP54 ingress protection

Unprecedented, adjustment of the measurement conditions:
distance, emissivity, relative humidity and ambient temperature!

RayCam report software for relevant thermographic
analysis and creation of customized reports

Cameras delivered in a case with a large number of accessories



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Measurement > News CONTACT

Winter 2006



SPECIAL REPORT

Industrial maintenance tools

Company News

Calendar
of trade fairs in 2007

New Products

RayCAm®, the new
Chauvin Arnoux
thermographic cameras

Applications

A new service:
comprehensive power
analysis





A new company organization for broader international coverage

The official foundations of Chauvin Arnoux's new organization have been in place since 1st January 2007. **Mr. Axel Arnoux**, former Chairman of the Chauvin Arnoux Group, has set up a Supervisory and Investment Board (CSI en French) which he now chairs. As a result, he has transferred the operational responsibilities of the Group's Chief Executive Officer to **Mr. Winthrop Smith**, previously General Manager of the American subsidiary **Chauvin Arnoux Inc. (AEMC Instruments)**. **Mr. Smith** is thus taking over responsibility for the Group's 14 companies in France and abroad(*).

Why set up a new organization for Chauvin Arnoux?

It's a natural progression which was already under way, designed to optimize the responsibilities of the main operational managers by creating companies affiliated to a group, while also optimizing their coordination in order to support the globalization and development of the company's brand image on the international stage.

In the last few years, the economic situation in general and the measurement market in particular have seen major upheavals. The world of industry and business is constantly innovating and evolving, and it now extends far beyond the borders of France or Europe. Emerging countries in Asia and Eastern Europe are now playing a more significant role in international affairs. This trend is bringing new competitors, but also financial partners and suppliers who are becoming crucial to our business. A number of our former national competitors have disappeared, with some merging with partners to deal more appropriately with these new conditions, while others have been taken over by other groups which have already integrated this international approach. In this context, Chauvin Arnoux contributed significantly to the changes in this business market with its acquisitions in the 1990s. **Metrix**, formerly Chauvin Arnoux's direct competitor before its takeover by the Group in 1996, is now the core brand for the Group's expertise in Oscilloscopy. **Pyro-Contrôle** and **Enerdis**, two companies specialized, respectively, in temperature measurement (sensors and controllers) and electrical equipment and solutions for managing electrical networks and monitoring their quality, are both eloquent examples of this strategy. These rationalized investments, which have been stepped up over the last 20 years, combined with the conquest of new markets, are helping to ensure that our company continues to thrive.

What will change?

Mr. Winthrop Smith, whom I have appointed as the Group's Chief Executive Officer, will give the company an even greater international dimension. Mr. Smith has the advantage of dual French and Anglo-Saxon culture, and his long experience as head of our American subsidiary has given him a clear view of the European and international market, as well as the way it is evolving.

Personally, I am seeking to focus my activity on setting up external and international growth operations while maintaining a long-term investment outlook. This will be one of my tasks as Chairman of the Supervisory and Investment Board (CSI in French). It is essential in this new market context where time is a fundamental aspect for a group like ours.

We need above all to speed up the company's investments and ensure that they are consistent with the major orientations outlined, while also improving our profitability which does not yet match our ambitions. Our capital requirements are considerable, so I will continue to handle relations with our financial partners.

What is your vision of the future for Chauvin Arnoux?

Our future depends on several factors: development of technical expertise, our ability to analyze the markets through strong strategic marketing, and the need to develop new commercial markets. Our industrial activity requires as many outlets as possible so that we can amortize and generate profits from our innovations. Our objectives also include stepping up our efforts to consolidate our initial success on the Chinese market and achieving growth above 10 % in all our subsidiaries, in France and on our Export markets.

Chauvin Arnoux is constantly strengthening its offer by introducing innovative products in its main strategic areas. Innovation remains the best way of staying ahead of our Asian and other competitors, but it needs to be supported by better customer service and high-performance communication.

A winning team is first and foremost a close-knit team with one priority: serving customers and ensuring their loyalty by offering them responsiveness, quality and creativity, which we constantly strive to achieve.

* 10 subsidiaries in Europe, the USA and China plus 4 French companies.

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Axel Arnoux

Chairman of the Chauvin Arnoux Group Supervisory and Investment Board



TECHNICAL INFORMATION JOURNAL

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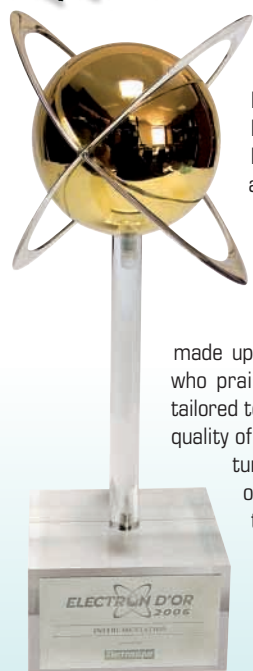
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The ELECTRON D'OR prize goes to the MTX Mobile

After the "design star" this winter at the Cité des Sciences de la Villette in Paris (awarded by L'Observateur du Design), the **Metrix® MTX Mobile** multimeter has won another prestigious prize: an Electron d'Or (golden electron) awarded by the professional magazine "Electronique". For this 9th edition, Chauvin Arnoux is proud to have received this honorary prize awarded by a jury made up of electronics experts and users, who praised in particular "the ergonomics tailored to meet users' requirements and the quality of this product which is still manufactured in France", to quote the master of ceremonies, Philippe Schwartz, the magazine's editor.



A prize for the ENERIUM power monitor



At an official presentation ceremony in front of an audience of industrialists, journalists and designers, ENERDIS was awarded a **Design Star** by the 2007 Observateur du Design jury. The aim of this award is to highlight a company's involvement in the design of a product. The criteria include the aesthetic, economic and pragmatic aspects, but the main focus is on the industrial company's awareness and understanding of users' needs.

Chauvin Arnoux's 1st major trade fair in Shanghai

From 23rd to 26th November 2006, the Chinese subsidiary C.A. China (Shanghai PuJiang Enerdis) took part in the 68th CEF (China Electronics Fair), a major annual gathering for the profession. For the occasion, a 54 m² stand invited visitors to discover the C.A T&M, Enerdis and Pyro-Contrôle brands. The new C.A 8334, C.A 8230 and MTX328X products and the OX 7000 range were given pride of place. This trade fair launched in 1964 was until recently the only electronics fair authorized by the Chinese government, with backing from the Ministry of Information and Industry and the Ministry of Trade. 60,000 visitors were welcomed over 4 days and 2,000 exhibitors



took part. A success for the Chinese subsidiary which took the opportunity to organize a presentation of the Group's new products for its partner distributors.

Exhibitions/Trade Fairs in 2007

EMV	CA GmbH	Stuttgart	06/03/07 to 08/03/07
GETEX	CAMIE	Dubai	11/04/07 to 14/04/07
INTERKAMA	CA GmbH	Hanover	16/04/07 to 20/04/07
ELEKTRA	Export ENERDIS	Moscou	13/06/07 to 16/06/07
ELEC	Export ENERDIS	Antilles Guyane	14/06/07 to 15/06/07
ELTEC	CA GmbH	Nuremberg	20/06/07 to 22/06/07
ELEKTROTECHNICK	CA GmbH	Dortmund	29/08/07 to 01/09/07
INELTEC	CA AG	Basel	04/09/07 to 07/09/07
ELTEFA	CA GmbH	Stuttgart	26/09/07 to 28/09/07
EFA	CA GmbH	Leipzig	24/10/07 to 26/10/07





Contractors, installers or industrial electrical network control technicians: the right instrument for each user to ensure effective preventive maintenance

Meeting the needs of users, whether they are contractors, electricians or industrial process control engineers: that is the permanent objective of Chauvin Arnoux, which is launching two new power analysers this year to complete its already extensive range of dedicated tools for preventive maintenance and the various electrical applications.

The **C.A 8220** and **C.A 8230** power analysers are ingenious, offering complete measurements according to the model (voltage, current, power analysis, harmonics, motor start-up, temperature, rotation speed, etc.), but are nevertheless simple for users to implement. Measurements such as the RMS voltage calculated by half-period and flicker (Pst) are also available.

The ergonomics of these instruments are designed to make them lightweight and easy to handle. Navigation among the various

functionalities is facilitated by keys which can be reached with the thumb of the hand holding the instrument. A large 1/4 VGA or backlit colour LCD screen (depending on the model) simultaneously displays the data or graphs for easy reading by users.

C.A 8220: a power and motor maintenance analyser

More specifically designed for testing rotating machinery in environments involving intensive use of the equipment, the **C.A 8220** power analyser is compact, rugged and shockproof. It provides regular testing of the rotation speed and can measure the temperature of motors and rotating machinery by connection to a terminal block or via a Pt100 probe.

It fits comfortably in one hand and users can navigate intuitively by means of the eight keys offering direct access to the different measurement modes. Voltage or current, single-phase or balanced three-phase power and all the harmonics are easy to access simultaneously.

C.A 8230: a power and single-phase quality analyser

The **C.A 8230** single-channel power and energy quality analyser is geared more towards electrical contractors and installers working in buildings and maintenance departments. The multiple measurements which it offers (VA var, W, PF, COS ϕ) also make it ideal for technical and technological training applications. The other advantages of this analyser include simultaneous access to the different measurement modes, monitoring according to thresholds, a data-logging function, display of motor start-up and phase rotation. Measurements such as the RMS voltage calculated by half-period and flicker (Pst) are also available. Equipped with a single voltage and current input, the **C.A 8230** can also be used to monitor balanced three-phase installations with its dedicated mode.

These two analysers can be delivered with the **DataViewer®** software which significantly boosts their potential in terms of configuration, recovery of the data on a PC and processing in customizable reports. The **PAT (Power Analyser Transfer)** software is supplied free of charge with the instrument as a download from the Chauvin Arnoux Group's "SUPPORT" site (www.chauvin-arnoux.com/support).

The **C.A 8220** is supplied with 6 fitted AA batteries, 2 banana leads (red and black), 2 x 4 mm test probes, 2 crocodile clips (red and black) and 1 RS232/USB optical lead. The standard version of the **C.A 8230** is supplied with a bag, 6 x 1.2 V rechargeable batteries, 1 mains adapter and DataViewer® operating software.

Main technical specifications of the instruments

	C.A 8220	C.A 8230
Max. AC/DC voltage	600 V RMS	600 V RMS
AC current	100 mA to 6,500 A (depending on sensor)	100 mA to 6,500 A (depending on sensor)
Power	W, VA, var, PF, Cos ϕ	W, VA, var, PF, Cos ϕ , Tan ϕ
Harmonics	THD R and THD F for V and A, up to 50 th order	THD R and THD F for V and A, up to 50 th order. Expert Mode for V and A
Other measurements	Frequency, crest factor, Peak+ and Peak- values, resistance, continuity, K factor, phase rotation, temperature, rotation speed	Frequency, crest factor, distortion factor, K factor, Pst flicker, recording, capture, event
Memory	Yes, saving of data	Yes, adjustable with immediate or delayed trigger
Power supply	Mains (option), batteries	Mains, rechargeable batteries
Digital link	Infrared RS232 link to DB9 and USB adapter	Infrared RS232 link to DB9
Software	Power Analyser Transfer available for download free of charge on our site	DataViewer

Reader service n°01



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Ethernet field oscilloscopes, from diagnostics to troubleshooting!

Metrix® has launched a range of 40 MHz and 60 MHz digital oscilloscopes for industrial maintenance, as well as a 100 MHz model for electronic maintenance, including the **first stand-alone 600 V Cat. III portable oscilloscope with 4 isolated channels on the market.**

Innovative, ergonomic design: "Scopix"

Equipped with a colour display, **28 direct command keys** and "Windows-like" menus with 4 accesses, the SCOPIX models can also be controlled using their touch screen. The online help, provided in 5 languages like the menus, is accessible at all times.

5 complementary tools in one, from diagnostics to troubleshooting

The SCOPIX models offer complex trigger functions and a comprehensive range of automatic measurements, as well as oscilloscope, multimeter, FFT analyser, harmonic analyser and recorder functions.

These field tools are easy to implement and can be used with the foolproof Probix "Plug and Play" accessories.

"All-terrain" communication

The 10 MBd isolated Ethernet network interface with built-in web server makes it possible to take control of the instrument remotely and to transfer curves or screen shots without additional software, simply by using its Ethernet address. That means no more problems printing or communicating with PCs.

It is still possible however for users to connect up to a PC via an RS232 or USB link, or to a Centronics printer (depending on model or options).

✦ The SCOPIX® models can be used as hand-held or bench-top instruments, due to their fold-away stand.

✦ The «Probix» system guarantees quick implementation with no risk of errors.



Technical specifications

Screen	Colour LCD with touch screen
Display	Up to 8 curves on screen
Sampling rate	1 GS/s in single-shot mode 50 GS/s in ETS
Number of channels	2 or 4 isolated channels
Vertical resolution	12 bits
Automatic measurements	18 simultaneous measurements

Reader service n°02

metrix

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Simplify your maintenance and optimize your analyses



RayCAM

It should never be forgotten that prevention is better than cure! Perfectly adapted to preventive or even corrective maintenance, the RayCAM thermographic camera is ideal for corrective action before costly system faults occur.

Multiple applications...

Specially designed for industrial use, it provides all the measurements required to produce comprehensive maintenance reports, whether electrical, electronic, mechanical or more geared towards building thermics. The RayCAM can also be used in R&D or production applications, and for technical and technological training.

Ergonomic, compact, rugged and airtight, the RayCAM range of thermographic cameras from Chauvin Arnoux® is exceptionally easy to use. There are 4 models in the RayCAM range: the C.A 1880, C.A 1881, C.A 1883 and C.A 1885.

Ergonomics that make it easy to use

Its pistol-like shape makes it very easy to handle and its direct-access functions mean it can be operated with a single hand. By simply pressing on the trigger, the laser sight quickly and accurately targets the area to be inspected.

The multi-directional colour screen simplifies visualisation of defects in places that are difficult to access. A second LCD screen displays the value of the point targeted by the laser sight for an instant result.

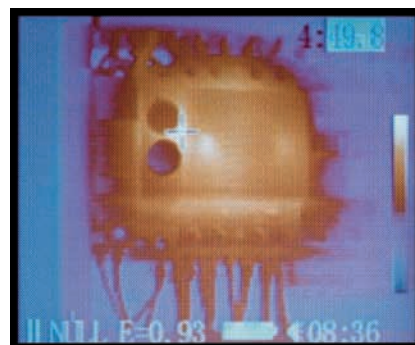
Constantly providing greater advantages

Unprecedented in this category of measurement instruments for greater accuracy: the RayCAM offers the possibility of adjusting the measurement distance, relative humidity, ambient temperature and emissivity.

It can record up to **1,000 radiometric images** and, above all, it starts **measurements at 10 cm!**

Hottest and coldest points are located automatically and it can be used with an audio or visual alarm.

Instant display of thermograms and, thanks to the predefined palette of colours, of all areas exceeding the temperature limit defined by the user.



Accessible software and realistic analyses

The **RayCAM Report** software allows measurement analysis and the creation of customized reports in Word format. It is so user-friendly and simple that it can be used by anybody.

The user selects the thermogram to be analysed from among those recorded and then positions it directly in the place required.

The toolbar provides direct access to all the software's functions:

- > Positioning of cursors,
- > Thermal profile,
- > Colour palette,
- > Isothermal analysis (real-time visualisation of values included in a predefined range),
- > etc.

For accurate, realistic analysis, **RayCAM Report** provides analysis per area (square or circle), ideal for parameterizing the thermogram according to the different emissivity values, which vary according to the material.

Accessories to make your life easier...

Optimum measurements are now possible whatever the environment thanks to the **RayCAM's numerous accessories**.

The **RayCAM** has rechargeable batteries, and a sunscreen for optimum outdoor legibility. A tripod adapter makes it possible to mount the camera on a normal camera stand: ideal for hands-free use or continuous recording of engine heating, or simply for room temperature monitoring. The USB connection lead and the **RayCAM Report** software can be used to process the data on a PC.

The lenses screw directly onto the camera. As the lens cover is attached, it cannot fall off or be misplaced.

Multi-directional screen for easy reading of the thermograms in all circumstances.

Watch our film presenting the product at www.chauvin-arnoux.com/raycam



The ideal tool for analysis and creation of customized reports exported into Word, the RayCAM Report interface software is very easy to use.

Reader service n°03



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Other technical specifications:

Thermal sensitivity: 0.1°C

Response time: 4ms

Detector: microbolometer type

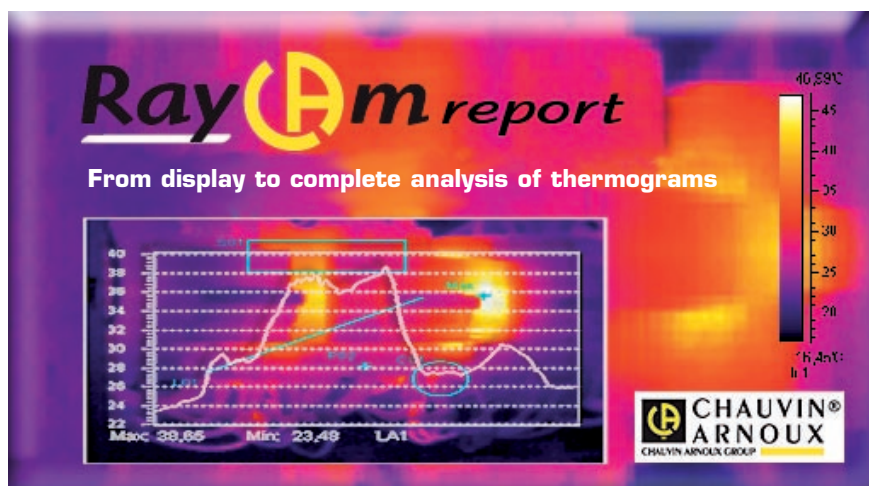
Spectral band: 8 to 14 µm

Temperatures: -20°C to 250°C, and up to 1,000°C as an option

Analysis functions: 1 to 4 movable cursors (depending on model)

Battery life: approximately 2 hrs

Interfaces: USB, Pal/NTSC video output



The C.A 1880

the latest addition to the RayCAm family

RayCAm

C.A 1880 excellent quality/price ratio

Did you know ?

Infrared light was discovered in 1800 by the astronomer Sir William Herschel. Fascinated by astronomy, he used to make his own telescopes and is particularly remembered for his discovery of Uranus and its satellites. Long hours of observation led him to discover and then demonstrate the thermal effect of infrared radiation, a type of electromagnetic radiation whose wavelength is greater than that of visible light but lower than that of microwaves.

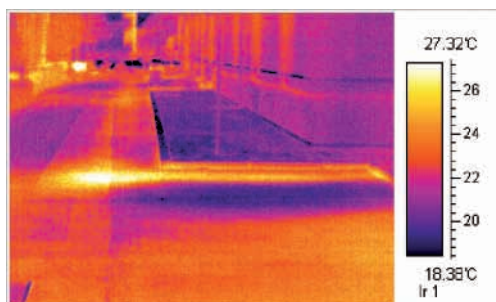
In this way, using only a mercury thermometer and a glass prism, Herschel was able to demonstrate that heat could be transmitted by an invisible form of light.

Raycam enables no-contact detection of a damaged fuse or a faulty connection

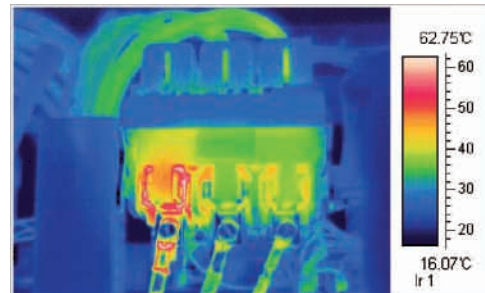
Today, when choosing thermographic cameras specially designed for maintenance purposes, people are increasingly seeking reliability, easy handling, compactness and user-friendliness, particularly for processing the thermal images on a PC.

The RayCAms meet these requirements. Infrared thermography is still too expensive for certain sectors of activity, such as education, but the C.A 1880's price and functionalities make it the ideal solution for contractors and professionals in technical and technological education.

The economical standard version of the **C.A 1880** is supplied with its own PC processing software. RayCAm Report is easy for anyone to learn and operate. In particular, it can be used to link a normal image to the thermogram. This means that users can identify the fault or malfunction and then make the appropriate modifications.



Water leakage can be detected in a single movement with Raycam



Reader service n°04

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3 new compact multi-function digital oscilloscopes for laboratory use



The OX 6062, OX 6152 and OX 6202 are the three new diagnostic tools completing the Scopix® range from Metrix®. Each one offers 3 diagnostic tools in a single instrument: an OSCILLOSCOPE, a RECORDING MULTIMETER⁽¹⁾ and an FFT ANALYZER.

To meet the needs of laboratories and respond to requests from users, Chauvin Arnoux has developed a new range of multi-function digital oscilloscopes combining technical performance, simplicity of use, practical functionalities and competitive prices.

Technical performance

The **OX 6000** oscilloscopes offer **fast, high-resolution sampling** thanks to their **10-bit/1GS/s converter**, **50 GS/s** sampling on periodic signals, and **2 ns transient capture**, thus avoiding under-sampling.

The **vertical resolution** of the 10-bit converter, **four times higher than that of a classic 8-bit converter**, can be exploited using the graphic "Winzoom" function for unrivalled precision. This feature gives an improved dynamic range of **60 dB** and **optimum accuracy** for frequency and amplitude measurements.

They have sophisticated trigger modes, offering the possibility of triggering on rising or falling edges, as well as adjustment according to the pulse width.

The **FFT analysis**, calculated over 2,500 points, can be adjusted automatically using the "Autoset" key. In oscilloscope mode, the **19 automatic measurements** can be viewed simply by pressing the dedicated key.

Simple implementation

The **28 control keys for direct access** to the various modes and parameters and their **"Windows-like" universal menus make the instrument easy to use intuitively**. With the **touch screen** and/or a **magnetic stylus**, it is possible to directly adjust the settings using the graphic elements, such as the plot position, the trigger level, the cursors or the zoom.

A display area in the bottom right-hand corner of the screen provides a constant reminder of the current setting. The LCD display measuring almost 12 cm by 9 cm may be monochrome or in colour, depending on the model, and the standby function is adjustable.

Experts in communication

Effective for both laboratory and remote use, the **OX 6000** models can adapt to new working methods with **their Ethernet interface** (transfer at 10 MBd) and **their Web server**. This means that printing on network printers, remote management and FTP server file exchange are now possible.

This new upgradable range allows new functionalities to be downloaded from the Chauvin Arnoux Group "Support" site.

Practical functionalities

While retaining the well-known design of the Scopix® range from Metrix®, the new **OX 6000** models are lightweight, pyramid-shaped and compact, and include new practical functionalities. Weighing in at slightly more than one kilogram each, they are easy to carry thanks to a built-in handle at the rear. As they are compact (18 x 18 x 23 cm), they are also easy to handle and the ingenious built-in stowage compartment makes it possible to take the accessories and power cable everywhere.

Their compactness is also an advantage on workstations, where space is always in short supply.

⁽¹⁾ except OX6202

Reader service n°05

metrix®

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Technical specifications

Display	4 curves + 4 references
Bandwidth	60, 150 and 200 MHz
Number of channels	2 channels -300 V / Cat. II
Memory depth	200 curves of 2,500 points
Multimeter measurements available	AC, DC and AC+DC voltages / Resistance / Frequency / Capacitance / Temperature / Diode test
Communication interfaces	RS 232, USB and Ethernet with WEB server (depending on accessories)



Improving the reliability of industrial electricity networks:

Chauvin Arnoux Enerdis proposes a new diagnostic and advisory service



Alongside the services already proposed by Chauvin Arnoux Group's subsidiary Enerdis, such as commissioning measurement instruments and equipment and providing training, a comprehensive new service has been available to industrial customers for several months now. A department of dedicated experts is offering industrial companies technical optimization and/or better control of energy costs, based on their requirements, by means of in-depth analysis and diagnosis of their electricity networks.

The head of our troubleshooting team

David Guillot, 45, is a scientific and technological engineer who graduated from IST Paris. He has twenty years' experience in the world of electricity and electronic components and in the field of application processes. Due to his thorough knowledge of measurement tools, acquired in Research and Development for a major industrial company, and his expertise in dealing with electricity networks, he is fully aware of the situation in the field. At Enerdis, (Chauvin Arnoux Group), he has been appointed to lead the Electricity Network Troubleshooting Department.



A service in several stages

Clarifying the requirements and quantifying the problems encountered before finalizing sales. Enerdis systematically proposes a free site inspection based on the customer's requirements, in order to identify and assess the problem encountered. This helps to clarify the requirements, evaluate the situation and the actual operating constraints for planning of the future service, and quantify the amount of work involved. An offer is then sent, outlining the future service, defining the work method and estimating the cost.

Once the customer accepts, the actual service can begin

When they return to the site, the Enerdis experts launch the **preliminary diagnosis phase and draw up a prevention plan**. They analyze the single-line diagram of the site's electricity network and the complexity of the problems encountered (for example, different voltage levels). The problems identified may include disturbance of the network by harmonic pollution, under-compensation of the power factors, resonance or electromagnetic incompatibility

of the installations, and may have both technical and financial consequences for the industrial company. These two operations help to confirm the work method for the next phase of the service.

The next stage of this service is the operational phase. In constant liaison with the maintenance technicians on the site, and often accompanied by them, the Enerdis expert then sets up the test instruments at the measurement points identified beforehand during the preliminary diagnosis. All these operations are naturally carried out in compliance with the industrial company's operating constraints, without disrupting the work on the site.

A debriefing session on this assessment phase is held on site with the customer to present the initial conclusions. A detailed, written assessment report is sent within fifteen days. It lists all the measurements performed, clearly identifies the problem involved and offers recommendations for improvements.

An additional service may be proposed to follow up on this assessment to set up and implement the recommended solutions and equipment (for example, proposal to install a harmonic filter and carry out full-scale testing). The service may also end with the presentation of the final report.

Basic price for assessment, depending on the complexity: € 1,450 to € 1,550 per day. The service can be provided in France and abroad.

Contact: Mr. David Guillot
Tel.: 33 6 80 58 37 08
email: david.guillot@chauvin-arnoux.com



➤ Testing a paper manufacturer's electricity network

Case study 2

Industry: industrial group in the robotics sector.

Stated requirements: problem of capacitor leakage caused by the variable speed drives on the robots, leading to tripping of differential circuit-breakers.

Assessment: carried out on site in one day

Date: December 2005

Diagnosis: measurement of the actual operating current during updating of the robots' cycles.

Recommendation: adjustment of the variable speed drive filters. Regulatory solution changing the site's status so that robots can be used without affecting the circuit-breakers.

Reader service n°06



ENERDIS
CHAUVIN ARNOUX GROUP

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export@enerdis.fr
www.enerdis.com

Case study 1

Industry: SME manufacturing paper.

Stated requirements: problem of financial penalties linked to the power factors due to disturbance of the electricity network caused by tripping of the power factor correction system.

Assessment: carried out on site over a three-day period.

Date: June 2006.

Identification of the problem: harmonic resonance diagnosed.

Work method: measurements on progressive tripping of the modular power factor correction systems.

Diagnosis: measurement to quantify and locate the disturbances on all the points in the network, at several voltage levels (3 levels and 21 low-voltage measurement points identified).

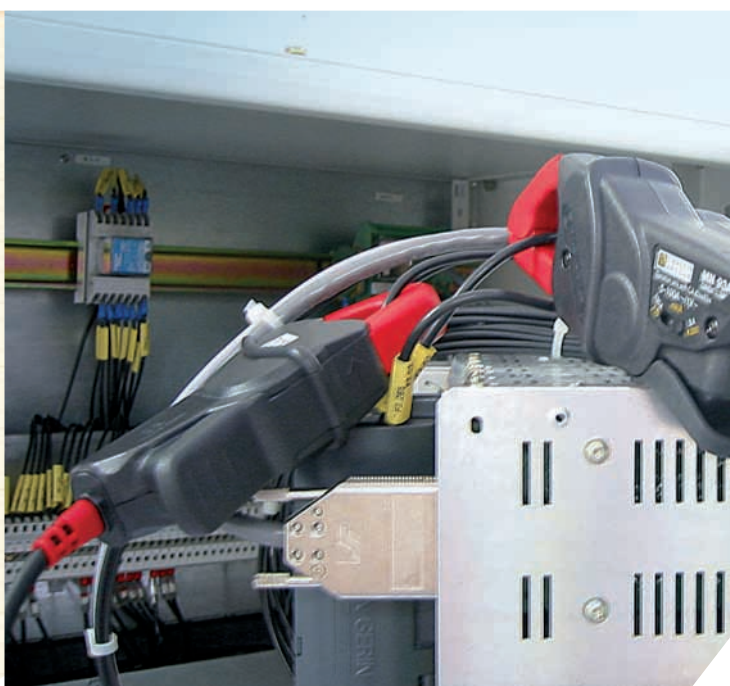
Recommendation: increase in sizing of the systems in place and installation of anti-resonance systems.



➤ Mr. David Guillot setting up the instruments for an on-site assessment

Did you know ?

The Enerdis Electrical Equipment subsidiary uses Chauvin Arnoux® and Metrix® instruments for its troubleshooting services. The instruments used include the widely-praised C.A 8334B power quality analyzer, which is twice as quick to set up as competing products on the market, the Scopix®, the C.A 6115 tester, the champion for the NFC 15-100 standard, and of course Chauvin Arnoux's clamps and AmpFLEX flexible current sensors. A further vector for success combining human expertise and measurement instruments with a long-established reputation for quality.



➤ Testing the electricity network using Chauvin Arnoux® clamps

These comprehensive, top-of-the-range, diagnostic instruments equipped with a colour graphic touch screen and 8 independent channels provide real-time data display for the different measurement modes.

Multi-function

Lightweight and portable, these instruments automatically and instantly detect the type of network and its configuration.

The **C.A 8342** and **C.A 8340** analysers offer a broad range of functionalities, from display of the motor start-up phase (Inrush) to vectorial representation of currents and voltages (unbalance on the inputs). With the automated oscilloscope mode, it is also possible to view the wave forms of the voltages and currents on each channel and instantly display the associated values.

Recording & Analysis

Any anomalies (flicker, harmonics, inter-harmonics, etc.) are detected instantly by the **C.A 8342** & **C.A 8340** and then captured and recorded in their memory.

For real-time analysis, the values of the measurements imposed by the EN 50160 standard are displayed in bargraph form and, for easy reading, the colour coding indicates the values "in the red" which require correction.

The Dranview software (Windows NT, 98, ME, 2000, XP) can be used to analyse the measurement campaigns carried out and transfer them onto a PC.

Standards

The **C.A 8340** and **C.A 8342** comply with all the standards currently applicable: IEEE 1159, EN 50160, IEC61000-4-30, IEC61000-4-7, IEC61000-4-15, etc. The accuracy of all the measurements performed in compliance with IEC61000-4-30 is Class A.

The range comprises 2 models: the **C.A 8340** and **C.A 8342**. The latter also offers a sampling rate of 1 MHz to capture even shorter events.

Reader service n°07



CHAUVIN ARNOUX Tél. : +33 1 44 85 44 86
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www.chauvin-arnoux.com

The "All-in One" instrument for your power and energy measurements



Advantages

- > 8 inputs, 4 voltage & 4 current
- > Developed for all AC/DC applications
- > Isolated voltage and current inputs
- > Signals on the channels may be triggered independently or, on the contrary, may be linked and conditioned
- > Very fast sampling for event capture (up to 1 µs/channel)
- > Configuration of event capture on transients or the RMS value
- > Measurement of harmonics (THD) and inter-harmonics (TID) up to the 63rd order
- > Interfacing with a PC via an RS-232, Ethernet or USB link
- > 128 MB memory depth, or the equivalent of several weeks

Everything you need for physical measurements

Air-conditioning, ventilation, humidity, noise and other types of pollution are all part of our daily environment. In order to limit their impact, the regulations impose regular verification by so-called physical measurements.

Chauvin Arnoux proposes a full range of measurement instruments to handle all these verifications: thermometers, thermo-hygrometers, thermo-anemometers, sound level meters, luxmeters, gas detectors, etc.

With the RayCAM range of cameras, our offer has been extended to include infrared thermography as well.

Furthermore, to make things even easier for end-users, multifunction measurement instruments are also available.



C.A 1051, a single tool for all your environmental measurements

Ergonomic and compact, the C.A 1051 multi-functional physical measurement instrument, designed by CHAUVIN ARNOUX, offers all the measurements necessary to produce comprehensive thermal reports.

Ideal for air-conditioning, heating and ventilation specialists, it can be hand-held and gives easy access to the different measurement functions. As well as serving as a hot-wire or vane thermo-anemometer, the C.A 1051 also measures temperatures and pressures.

For greater security, it is equipped with a function for automatic recognition of the probes when they are connected.

Users no longer need to buy options in order to perform the different measurements, as the standard version includes a complete set of probes delivered in hard case.

Principal Specifications

hot-wire thermo-anemometer	Hot-wire speed Flow	0 to 3 m/s – 3.1 to 30 m/s 0 to 65,000 m ³ /h
vane thermo-anemometer	Ø100 mm vane speed Flow	0.20 to 3 m/s – 3.1 to 35 m/s 0 to 65,000 m ³ /h
thermo-hygrometer	Relative humidity Dew point	3 to 98 %HR -20 to +80 °C
pressure	Mmh ² O, mbar, Kpa, Pa, in Wg, mmHG	0 to ± 1,000 mmh ² O
temperature 2 inputs/K Thermocouple	°C, °F, K	-200 to +40 °C -39 to +999 °C +1,000 to +1,300 °C

Did you know?

New RT 2005 French Thermal Regulations

Their main aim is to achieve a 40% reduction in energy consumption by 2020. This means it is necessary to check the air flow, potential leaks, insulation and equipment, or in other words, all the aspects liable to cause energy losses.

Reader service n°08



Tél. : +33 1 44 85 44 86
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For generating complex signals, the C.X 1651 multifunction calibrator

New concept!

As well as the standard electrical parameters, the C.X 1651 also generates the parameters for specific temperature and energy applications. Accurate, stable and suitable for calibrating instruments, the C.X 1651 has a built-in multimeter. It also offers a programmable tester function allowing the execution of up to 10 test steps.

Ergonomic and equipped with a large LCD screen, the C.X 1651 is very easy to handle. It also offers keys for direct access to the main functions and full display functionalities (menu, parameters, uncertainty, etc.).

The wide range of signals generated by the C.X 1651 makes it particularly attractive for measurement instrument manufacturers, laboratories, after-sales departments and quality certification of instruments...



Reader service n°09



Tél. : +33 1 44 85 44 86
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Controllers

that watch over your setpoints



With the new STATOP 15, 30 and 60 series digital temperature controllers, Pyro-Contrôle is offering a choice of more than 200 referenced models available in stock. They meet most of the control requirements encountered in thermal applications. The 30 and 60 series can be ordered with a "bespoke" range of functionalities. The 60 series is more particularly designed for process applications.

Performance and easy implementation

The **STATOP 15, 30 and 60** series temperature controllers combine performance with easy implementation. The time is long past when it took a control expert to configure a controller! Their auto-adjustment capability means that they can be used without any specialist knowledge. The controller's software determines the appropriate parameters for the application. When the control function is active, the auto-adaptation function constantly adjusts the PID parameters. At the same time, fuzzy logic helps to achieve remarkable control stability.

The **STATOP** are available in all the usual formats: 24 x 48 mm, 48 x 48 mm, 48 x 96 mm and 96 x 96 mm. Depending on the model and the series, three levels of front panel protection are proposed: IP 30, IP 50 or IP 65.

The 15 series has a 10,000-count display and the 30 and 60 series have 2 displays: a red one for displaying the temperature measured and a green one for the setpoint. The temperature values can be parameterized and displayed in degrees Fahrenheit as well as in Celsius.

The 60 series has been developed for industrial process applications.

The term "process" is used to refer to an uninterrupted industrial production process, such as glass or fibre production, etc. In this context, the slightest problem may lead to total shutdown of the production line or even the whole plant. So it is crucial for this equipment to be fitted with safety systems capable of dealing with any incidents.



The full range of STATOP controllers 

The 60 series, designed for process applications

The STATOP controllers in the 60 series have 3 inputs, one control output, one or two alarm outputs and/or a "hot-cold" control channel.

The main input

Intended for measuring the temperature or quantity being controlled, this input can be configured. It is compatible with a large number of thermocouple types, platinum RTD probes and voltage or current process signals from converters or programmable logic controllers. When parameterizing the controller, users simply have to indicate the signal used and define a more restricted measurement range if necessary.

The auxiliary input

One of the 60 series' many advantages is this 2nd input for process signals. This input can be used for analogue remote piloting of the control setpoint or to measure a current from a current transformer (CT) with a 1 A secondary winding. This makes it possible, for example, to monitor load fall detection.

The logic input

Lastly, the 3rd input is a logic input allow-

ing adjustment of the configuration during the process: choice of another predefined setpoint, clearing of an alarm or selection of a second group of PID control parameters.

It is even possible to force one of the control outputs. This logic input is controlled using a very low safety voltage: a voltage between -10 and +1V is seen as the logical "0", while "1" corresponds to a voltage between +2 and +10 V.

2nd alarm or hot-cold control output

The **STATOP 30 & 60** series are equipped with two independent alarms as standard features. Entirely configurable (absolute alarm, difference alarm, symmetrical alarm, timer, alarm with first alarm disabled, latched alarm, etc.), they can be adjusted across the whole measurement scale. But the second alarm output can also be assigned to the cold channel if the "Hot - Cold" algorithm is chosen. Depending on the installation and the heating system, logical or analogue output will be chosen – when ordering – in the same way as for the first control output, which will then be the hot channel.

Networked communication

With the RS485 digital communication option, the **STATOP 15, 30 and 60** series are particularly well-suited to the operation of a supervised network using the ModBus RTU protocol, with a transmission rate of 38.4 kBd. Supervision software can then be used to record the measurements, pilot the setpoints and clear the alarms.


Configuration and dialogue on PC

Specifically developed for STATOP digital controllers, the **STATOP Tools** software makes it easy to configure the 15, 30 and 60 series controllers.

Up to 10 controllers can be connected to dialogue with the PC. The type of controller is recognized automatically. **STATOP Tools** configures and stores the parameters as files. The protocol, ModBus, is secure.

This software can be downloaded free of charge from the Pyro-Contrôle web site.



 15 series digital controller equipped with the automatic adjustment system. It also integrates fuzzy logic for automatic process recovery.

Reader service n°10

 **PYRO
CONTROLE** Tél : +33 1 4 72 14 15 55
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www.pyro-control.com

Simplified selection guide for digital STATOP

STATOP	15 series	30 series	60 series
Format 24 x 48 mm	x		x
Format 48 x 48 mm	x	x	x
Format 48 x 96 mm		x	x
Format 96 x 96 mm		x	x
1 display	x		
2 displays		x	x
1 programmable temperature input	x	x	
1 programmable universal input			x
1 programmable process input			x
1 logic input			x
1 control output	x	x	x
1 alarm output	x	x	x
2 nd alarm or hot-cold control output		x	x
Analogue retransmission			x
Temperature ramp	x	x	x
RS485 communication	x	x	x
STATOP Tools configuration	x	x	x

Economical "hard case" versions of the MX 1 and MX 2B!



Presentation
of the complete
MX 2B kit

To meet the needs of our customers as closely as possible, Metrix® is offering complete kits at a highly attractive price!

These complete kits are delivered in a **metal case** containing a **TX 1** LED tester, along with the leads and batteries required to use them.

The MX 2B kit also includes the **MX 2B** analogue multimeter with its associated **MN 09** clamp, allowing AC current measurements up to 200 A in total safety, while avoiding opening of the main circuit.

Ergonomic, the **MX 1** & **MX 2B** analogue multimeters can withstand use in any environment, notably due to their rugged, moulded, waterproof casings. They are also safe, as they benefit from protection on all the calibres and a safety alarm in ohmmeter mode.

Equipped with a galvanometer and an anti-parallax mirror for accurate reading of the value, the MX 1 and MX 2B analogue multimeters offer instant display of the result, making them ideal for work in the field.

Reader service n°11

metrix®

Tél. : +33 1 44 85 44 86
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www.chauvin-arnoux.com

New experts for testing your equipment!

The testing of electrical appliances and equipment is becoming increasingly regulated. Each type of equipment is covered by a specific standard and must therefore be checked using specific test parameters.

The latest additions to the electrical testing and safety range, the **C.A 6150** and **C.A 6160** from Chauvin Arnoux, two **versatile, high-performance, multifunction instruments**, will enable you to test and certify the electrical safety of all your appliances and equipment, in line with the IEC 60204-1 / 60335-1 / 60439-1 / 60598-1 / 60745 / 60755 / 60950 / 61010-1 / 61029 / 61558-1 / 60065, VDE 701 T1 and VDE 702 T1 standards.

In compliance with the standards, the **C.A 6150** can be used for **dielectric testing** (standard or programmed) and **insulation** measurement (up to 1 GΩ at 1,000 VDC).

With the **C.A 6160**, you can also carry out **continuity** testing (test current up to

25 A), **voltage drop** measurements, **internal and external discharge time** measurements, **leakage current** measurements (operating, residual or contact) and **functional testing** (measurement of power, voltage, frequency, etc.), or in other words, full certification of your equipment.

These testers are easy to use: only 4 keys are needed to parameterize all the measurement criteria. The storage memory offers a capacity of 1,600 recorded measurements. This memorized data can be exported onto a PC and integrated in a measurement report using the application software proposed as an option.



Reader service n°12



**CHAUVIN
ARNOUX**

Tél. : +33 1 44 85 44 86
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www.chauvin-arnoux.com

Test your batteries in one simple operation with the C.A 6630!

To avoid problems with low batteries and ensure effective preventive maintenance, Chauvin Arnoux is proposing the **C.A 6630** tester. This is an instrument specially designed to check your batteries, **measuring the internal resistance** (highly accurate 4-wire method) and the open-circuit voltage. It can be used on various types of batteries: nickel/cadmium, lithium ion or nickel/metal hybrid.

The **C.A 6630** is very simple, safe and quick to use. Weighing in at under 500 g and particularly compact, it fits comfortably in the hand. To use it, all you have to do is connect the "+" and "-" terminals to the corresponding terminals on the battery and the result is displayed automatically.

The "compare" function can be used to quickly detect a battery's deterioration by

comparing the measurements with the theoretical results integrated in the instrument. The result is then displayed automatically on the LCD screen.

In manual mode, the **C.A 6630** allows up to 999 measurements to be memorized. In data logger mode, the values can be measured regularly and displayed in graphic form. The instrument has a battery life of more than seven hours and it instantly switches to standby mode if no keys have been pressed for thirty minutes.

The **C.A 6630** battery tester is delivered in a hard case with a set of two measurement leads equipped with retractable test probes, a tester/PC connection cable and an operating manual. Software for exporting the measurements is also supplied free of charge to make it easier to print reports.



Reader service n°13

**CHAUVIN
ARNOUX** Tél. : +33 1 44 85 44 86
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www.chauvin-arnoux.com

A new range of multi-coloured programmable digital panel meters for industrial applications

The displays of the new range of panel meters proposed by Enerdis, the electrical equipment subsidiary of the Chauvin Arnoux Group, come in red, green or amber. But above all, they are clear and easy to read, with an ADC resolution of ± 15 bits. Very simple to program using just a few keys, they are specially designed for easy implementation in industrial environments. They can be linked up to external measurement or network supervision systems. The **µDIGI 1** and **C.A 2150**, the new range of ENERDIS panel meters, offer a palette of seven different products suitable for each industrial application.

The **C.A 2150-M** is a **3-in-1** panel meter. In a single casing, it offers three different functions: process, temperature and load cell. Its simplified programming never requires more than five steps. It can also be configured remotely using a PC. Customers can choose between three display colours and the

C.A 2150-M offers four alarm thresholds and ten-segment linearization of the input signal.

There are six µDIGI 1 models to cover the entire range of applications: process measurement, AC and DC electrical measurement, temperature measurement and frequency measurement. Programmable with just three keys, they offer four levels of brightness. With their quick mounting system, they are easy to set up without requiring any tools. They are connected using quick-change removable connectors. Some of the products are equipped with the RS 485 option allowing remote programming using a PC.

This range also offers other advantages: these panel meters are entirely remote-configurable using software available for download free of charge from the site www.enerdis.fr, as a standard feature (**C.A 2150-M**) or as an option via RS 485 (**µDIGI 1-ALP**). Their compact format (48 x 96 mm for the **C.A 2150** and 24 x 48 mm for the µDIGI1) minimizes the space required while optimizing visibility.



Reader service n°14

ENERDIS Tél. : +33 1 47 46 78 85
export@enerdis.fr
www.enerdis.com





Ingenious temperature sensors to guarantee the accuracy of your measurements!



A service from Pyro-Contrôle worth discovering: in-situ verification of the accuracy of RTD 100 Ω sensors or thermocouples. A method which allows customers to choose how often the temperature sensors are checked and which significantly simplifies verification operations. These are carried out directly on the production site, without having to dismantle the sensors and, furthermore, without stopping production. This verification method is the subject of a patent filed under no. 0213616.

Verification by comparison

In operation, **temperature sensors age** at varying rates according to the process constraints, which may include thermal shocks, mechanical shocks, chemical attack, abrasion, etc.

The accuracy class of temperature sensor sensing elements is a key aspect for temperature sensor measurement accuracy. When a sensor is new, its accuracy class is defined on the basis of standards.

For example:

- RTD 100 Ω probe - class A = $\pm 0.15 + 0.002 \times (t^\circ)$ according to IEC 751
- Type K thermocouple - class 1 = $375 \text{ to } 1000^\circ\text{C} \pm 0.004 \times (t^\circ)$ according to NF EN 60584-2

As they age, the accuracy of the sensors may deteriorate at varying rates until they no longer guarantee **correct measurements as initially defined**.

With "in-situ" calibration of Pyro-Contrôle sensors, measurement accuracy can be checked quickly and easily:

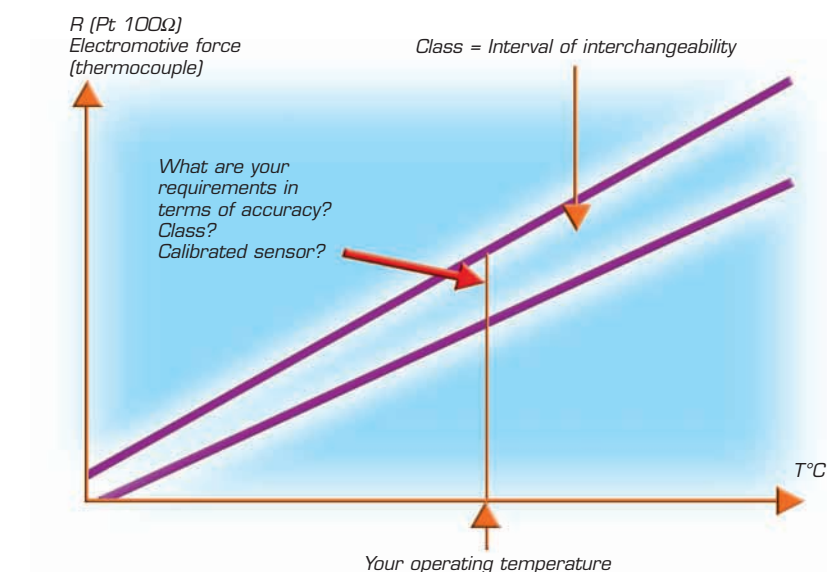
- > the connection head of the sensor to be tested is opened
- > the reference sensor is connected to the calibrator and inserted into the guide tube of the sensor to be tested
- > wait for the temperature to stabilize
- > measurement of the reference sensor with the calibrator
- > verification of the sensor's drift by comparison with the reference sensor

Reader service n°15



PYRO
CONTRÔLE

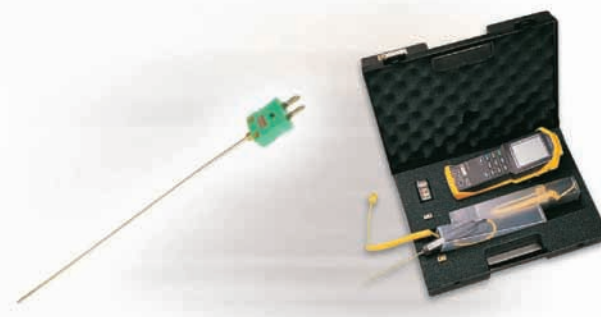
Tél : +33 1 4 72 14 15 55
export@pyro-control.tm.fr
www.pyro-control.com



Measurement loop calibrated by our COFRAC-accredited laboratory



Sensor to be tested



Working reference sensor

Chauvin Arnoux calibrator



Pyro-Contrôle possesses a calibration laboratory for temperature measurements from -20°C to $+1550^\circ\text{C}$, with COFRAC accreditation no. 2-1385.





2007 Metrix Catalogue

This 48-page catalogue contains all the latest products from this electronic and electrical measurement specialist: the OX 6000 series oscilloscopes, the new MTX Compact, the MTX 1050 spectrum analyser, the multi-function calibrator, etc.

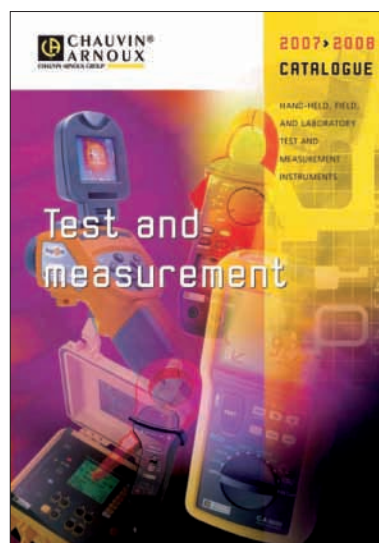
Reader service n°16



Controllers that watch over your setpoints

Pyro-Contrôle offers a choice of more than 200 digital temperature controllers: the STATOP 15, 30 and 60 series. A comprehensive range of formats, simple or sophisticated models, etc. 12 pages in full colour to help you define and choose your temperature controller.

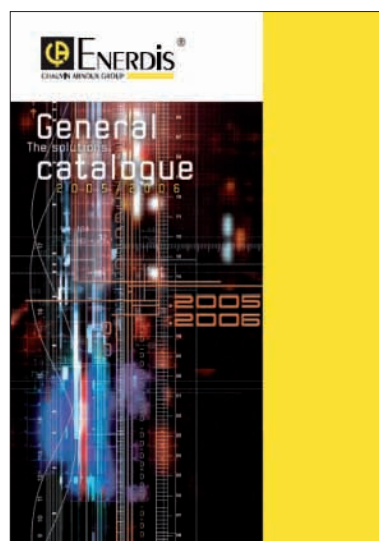
Reader service n°18



Chauvin Arnoux, Test & Measurement 2007, the reference

68 indispensable pages of equipment solutions. This catalogue groups the entire measurement instrumentation offer for professionals in the electrical and electronic sectors: flagship products, new products, accessories, etc.

Reader service n°17



Enerdis general catalogue

All the know-how of Enerdis gathered together, sorted and illustrated in this thick colour catalogue. The contents include energy meters and power monitors, network analysers, analogue panel meters, digital panel meters, converters, transformers and shunts, measurement and controlling, relays and automatic functions, and meteorological equipment.

Reader service n°19