CHAUVIN ARNOUX®
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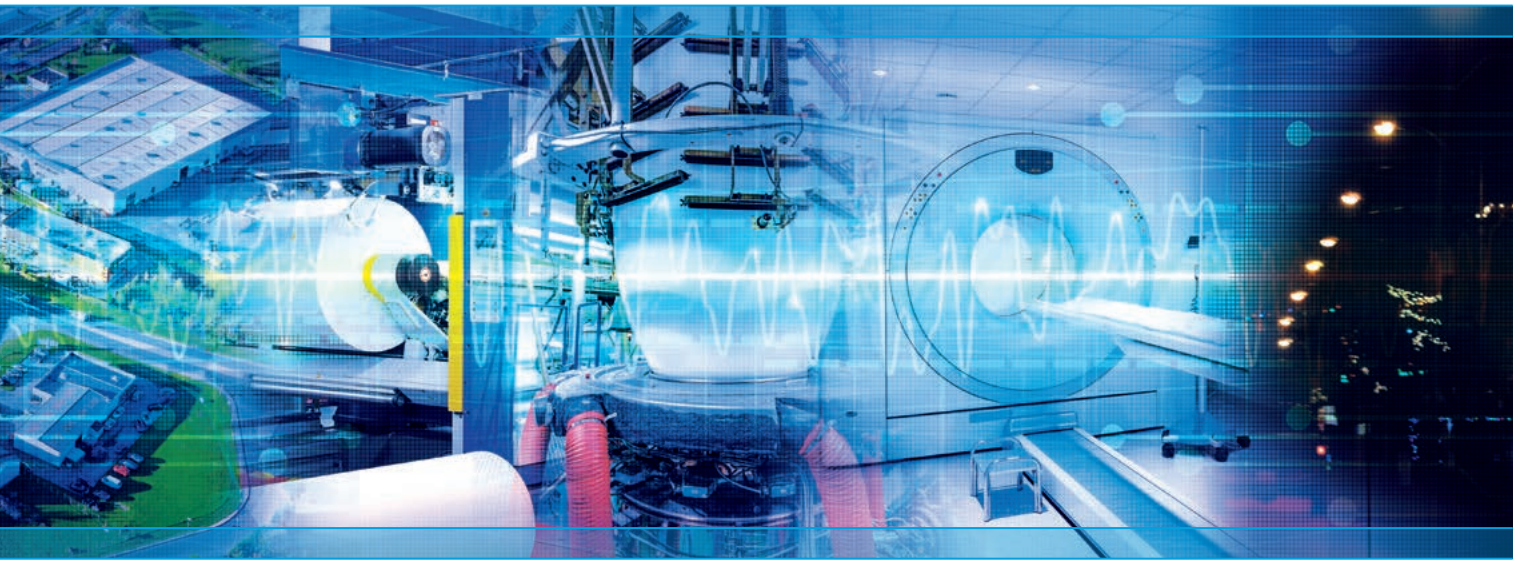
USERS' EXPERIENCES WITH **QUALISTAR+**



It's all very well to have a QUALISTAR+ power and network quality analyser, but what can you use it for?

In this Case Study, we present the experiences of user-customers in various contexts. The **Qualistar+** three-phase network and power analyser is a measuring instrument for diagnosing anomalies and performing preventive or corrective maintenance. It can be used to measure the power and energy values for energy surveys, carry out voltage audits on an installation in compliance with the EN50160 standard, quantify the harmonics present on the network, capture voltage surges in order to investigate the causes of malfunctions and determine the currents drawn in order to check the sizing of the protective electrical devices, etc.

Maintenance & Versatility

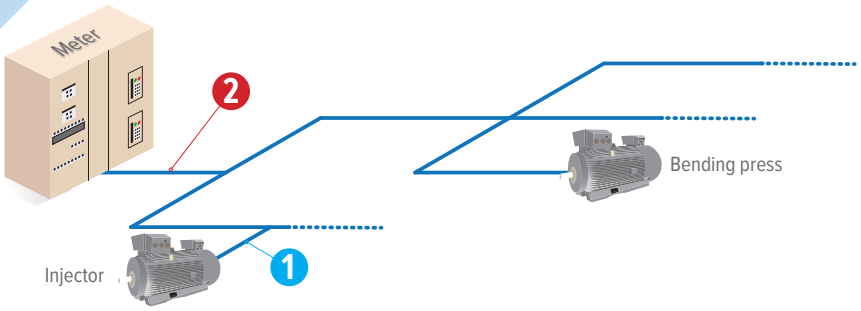
Power Survey

Harmonics

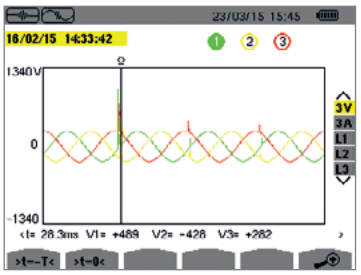
Measure up

CASE No. 1 - Untimely shutdown of PLCs

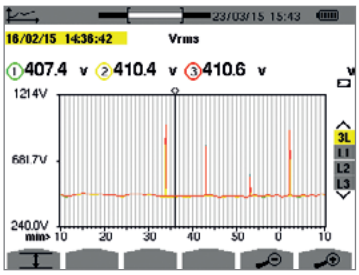
In a plastics factory, the PLCs controlling the production lines register an error. It turns out that the unit for injecting plastic into the moulds has broken down. The same problem had already occurred a few weeks earlier. The electronic board in the injection unit was replaced under the terms of the warranty. This time, the board is sent for repair but is no longer covered by the warranty. Inspection of the board shows that it was damaged by a voltage surge. Convinced that the product is unreliable, the supervisor of the plastics workshop decides to perform the measurements himself and therefore borrows the Qualistar+ electrical network monitoring equipment.



1 The instantaneous no-load voltages are OK. The Qualistar+ is then set up to record over several days. Analysis of the recording shows that voltage surges are occurring. These surges happen regularly on all three phases.
This quickly calls into question the electricity supply, so monitoring is immediately resumed just downstream of the meter.



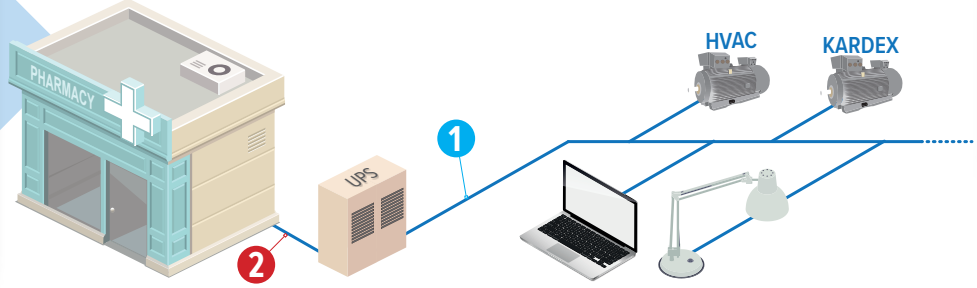
2 The new recording shows the presence of inrush currents and, above all, voltage spikes: each transient corresponds to a peak in the current. Only an old bending press is used in this workshop to manufacture the metal frames for boats.
Suggested initially by the workshop technicians present, this line of enquiry was abandoned prematurely because the interruptions were not systematic when the bending press was in operation.



Solution : set up a corrective system on the electrical feeder of the bending press.

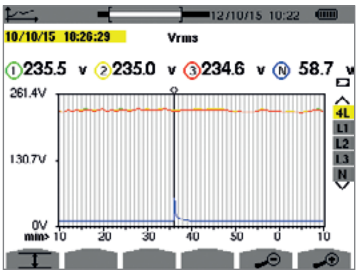
CASE No. 2 - Abnormal startup of a UPS

An all-night pharmacy open 24/7 is equipped with an uninterruptible power supply with a battery. The UPS starts up on its own, even though the operation of the equipment connected has not changed and no loads have been added on the network.
A technician from the inspection organization responsible for the site comes to take the measurements.



The first series of measurements 1, a trend recording, is performed on the output from the UPS. All the characteristics of the energy supplied are recorded and no anomalies are detected.
The same characteristics are then measured upstream of the UPS 2. This time, the recording clearly shows a significant rise (several tens of Volts) in the Neutral/Earth voltage. The technician has noticed that these peak values occur when the street light comes on! In winter, the lights come on earlier!

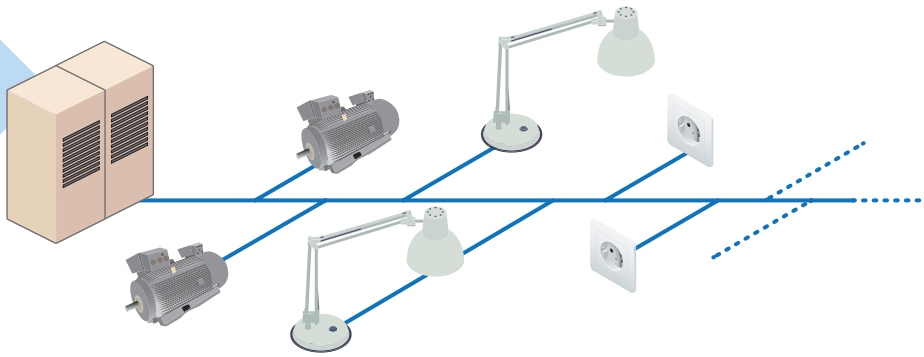
After the installation of new lights in the street, the 2 earth connections (lamp post and building) are very close to one another, leading to interference.



Solution : move the earth connection of the building

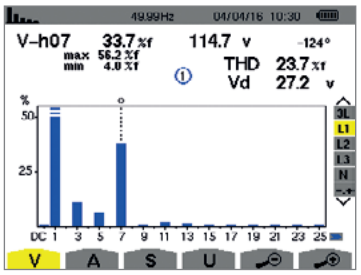
CASE No. 3 - Lighting problems

A printing company with 4 workshops working shifts round the clock, as well as administrative offices, has encountered difficulties with its lighting. The RCDs protecting the electrical feeders for the lighting keep tripping and bulbs burn out at random. This problem only occurs in winter, but not in summer.



First, the technician takes measurements on the power supply for the lighting. He measures the harmonics on the voltage and current, as well as the transients. The results show that there are no transients and that the level of harmonics present is satisfactory.
He then repeats the same measurements with different combinations:
- Workshops 1 and 2 powered
- Workshops 2 and 3 powered
- And so on.

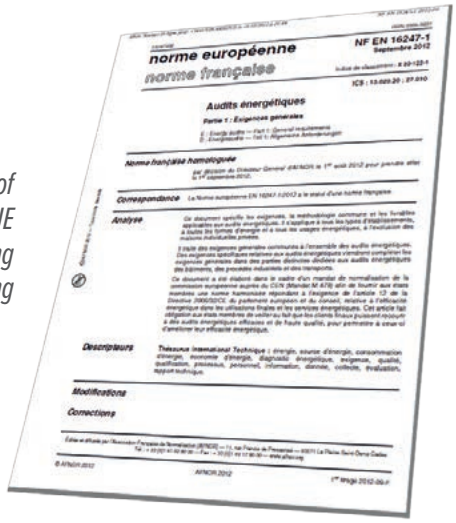
When workshops 2 and 4 are powered, 7th order harmonics appear. This increase in the level of the harmonics is considerable. The technician then suspects resonance with the capacitor banks for power factor correction positioned upstream of the electrical feeders for the motors.



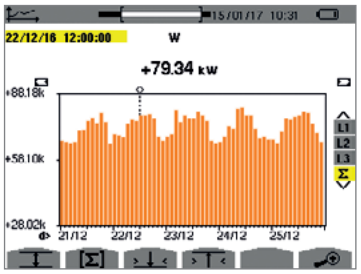
Solution : set up an anti-harmonic filter sized for the distorting current causing the fault.

CASE No. 4 - Energy survey

With the implementation of European directive 2012/27/UE of 25th October 2012 concerning energy efficiency, energy auditing has become mandatory.


norme européenne
norme française
NF EN 16247-1
Audits énergétiques
Partie 1 : Exigences générales

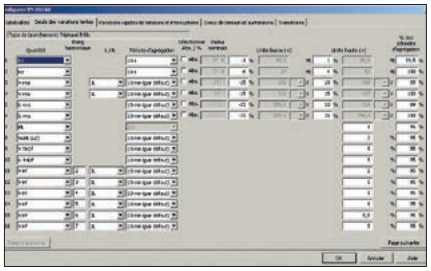
As it has more than 250 employees, this company producing synthetic washing powder has to carry out an audit. After considerable work identifying current billed consumption (bills, meter readings, efficiency, etc.) and the plans of the installations which consume energy, the technical team begins dynamic analysis based on measurement campaigns.
The measurement points and the recording durations were determined by analysing the site's operating rhythms and modes in order to obtain representative consumption trends in normal operation. The Qualistar+ instruments were positioned in recording mode for the required time.
All the recordings were then downloaded and an automatic report, generated for each measurement location, was appended to the energy audit report.



Solution : A comprehensive report was generated automatically and sent to the Ministry.

CASE No. 5 - EN 50160

In a hospital, they have just made a major investment, buying a PET SCAN. The manufacturer of the equipment imposes certain characteristics in terms of the electricity supply to ensure that the equipment can operate correctly, without damage.



This concerns the following characteristics:

- Maximum value of the earth connection
- Quality of the voltage according to the EN50160 standard: no harmonics or unbalance

Before installation and commissioning, a full measurement campaign is performed.

- With a C.A 6116N: verification of the electrical installation as per the IEC 60364 standard (earth, insulation, etc.)
- With a Qualistar+ C.A 8336: verification of the voltage quality (events, unbalance, harmonics, flicker, etc.)

These measurements confirmed the quality of the electricity supply and the compliance of the hospital's electrical installation with the applicable standards. In this case, the aim is to protect an investment in expensive equipment, as the warranty will not apply in the event of problems if the specified constraints are not respected.

Solution : the report has been generated automatically and sent to the manufacturer of the Petscan.

Our Products

C.A 8336

- Recorder & alarms
- Monitoring of harmonics
- Capture of transients
- Energy efficiency
- Audit as per EN 50160

C.A 6116N

- Multi-function inspection of electrical of electrical installations with storage of the results
- Earth, insulation, continuity
- Suitable for all neutral systems (TT, TN, IT)
- Measurement of the voltage drop for correct sizing of the conductor diameters

906 211543 - Ed.1 - 02/2017 - BS - Non-contractual document. Please confirm specifications when ordering.

FRANCE
Chauvin Arnoux
190, rue Championnet
75876 PARIS Cedex 18
Tél : +33 1 44 85 44 85
Fax : +33 1 46 27 73 89
info@chauvin-arnoux.fr
www.chauvin-arnoux.fr

UNITED KINGDOM
Chauvin Arnoux Ltd
Unit 1 Nelson Ct, Flagship Sq, Shaw Cross Business Pk
Dewsbury, West Yorkshire - WF12 7TH
Tel: +44 1924 460 494
Fax: +44 1924 455 328
info@chauvin-arnoux.co.uk
www.chauvin-arnoux.com

MIDDLE EAST
Chauvin Arnoux Middle East
P.O. BOX 60-154
1241 2020 JAL EL DIB - LEBANON
Tel: +961 1 890 425
Fax: +961 1 890 424
camie@chauvin-arnoux.com
www.chauvin-arnoux.com

CHAUVIN ARNOUX GROUP