EDITION 2010

HUMIDITY

ROTRONIC **NEWS**

ROTRONIC MAKES FRENCH ROADS A LITTLE SAFER.

France has a road network of well over 893,300 kilometers, which are subject to the most varied environmental conditions.

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ROTRONIC IN THE SERVICES OF DENTISTRY.

A research project has investigated the effects of moisture within the mouth in dentistry.

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THE NEW HYGROLOG HL 20/21 SERIES.

Though very modest in comparison with its big brother, the HygroLog NT, it still offers highest precision and reliability.

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GREAT "HUMIDITY NEWS" COMPETITION.

Just solve the puzzle and win an iPad!

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rotronic
LEADING IN HUMIDITY MEASUREMENT

Dear Customer,

The 1st of June 2010 was the big day. Rotronic Italy opened officially, and the 9th Rotronic branch office was a reality. Viva Italia! Viva Rotronic! With this step, we hope for more active marketing, closer customer relations and increased presence in the Italian market.

The integration of the new AirChip3000 technology, with the new generation of products that it makes available, has been well received by our customers.
The large OEM customers in particular are enthusiastic. We have received a lot of praise for the simplified adjustment and the possibility to make adjustments at any point.

Since the start of 2010 we have added three stalwarts in our portfolio:
The HygroGen2, with unprecedented stability and precision. Its PC functionality makes this portable generator a real high-tech unit. The other ace is the HygroFlex8. It has 2 probe connections, and the customers get two units in one, so to speak.
The "third man" is the HygroLog HL20/21, a completely new data logger which, has a more unassuming manner than its "big brother", the HygroLog NT. It nevertheless offers highest precision and reliability, though at considerably lower cost. Read more about it on Pages 10 and 11.

Don't forget our competition on Page 15. Who knows - maybe you will soon be the proud owner of an Apple iPad. But you can only win if you take part. Good luck!

Best regards, and enjoy your reading.

ROTRONIC AG

Gary A. Gähwiler

Department Manager, Humidity and Temperature Measurement/Sales

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ROTRONIC MAKES FRENCH ROADS A LITTLE SAFER.

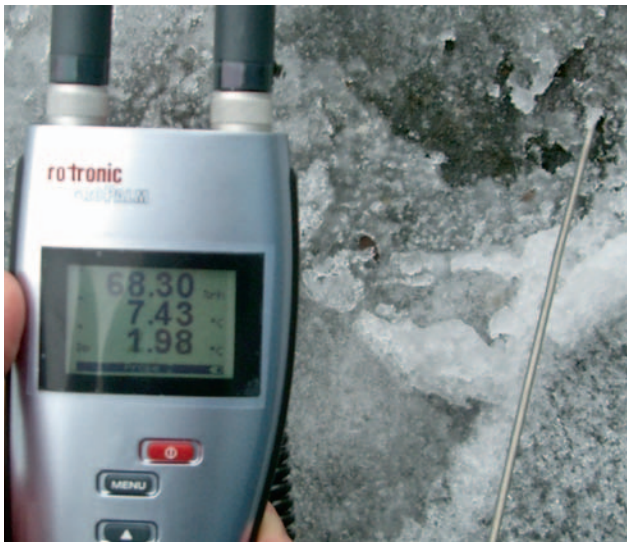
France has a road network of well over 893,300 kilometers, which are subject to the most varied environmental conditions: rain, snow, sun and wind, and extremes of temperature from – 40°C to +50°C. To guarantee motorists a maximum of safety, the roads must be monitored, either by continuous measurements (e.g. on bridges or motorways) or by spot-checks (e.g. on main roads).

The MORS sensor - in touch with the road

Météo Omnium, a supplier of meteorological solutions, have developed and patented the roadway sensor "MORS" (Météo Omnium Road Sensor), which is the only one of its kind. It allows precise measurement of the prevailing temperature, and gives reliable information about the condition of the road network. The MORS sensor is integrated directly in the roadway, and functions completely independently, thanks to its integrated battery. It measures the acquired data and transmits them to a weather station, which forwards the values to a collection point via mobile phone or modem.

The goal: ice-free roads

But the sensor doesn't just register the temperature at the road surface. It gathers many different data from the asphalt: dryness, moisture, wetness, water channels, salt-thawed water, quantity of snow, black ice, frost, the freezing point down to - 20°C, and the ground temperature to a depth of 4 cm.



But the greatest benefit of the sensor is its capability to recognize the concentration of salt in the solution on the roadway. Why is this important? Snow- and ice-covered roads can put whole road networks out of action in next to no time.

Thanks to the ability to predict temperatures, today's weather experts can forecast snowfalls 72 hours in advance, in the best case, or 48 hours in advance, in the worst case. What really matters is the point in time at which salt must be spread. Salt combined with sand makes the snow melt more quickly, and ensures better grip. In addition, the salt lowers the freezing point of water.

If it is possible to lower the freezing-point to – 4°C using the correct mixture of salt, and should the temperature actually drop below – 3°C, the road will remain free of ice. The MORS sensor permits precise monitoring and measurement of the current salt content, so that the spreading of the salt can be planned.

"We have been working with Rotronic for almost 6 years now, and for Météo Omnium, reliable material is the top priority. Rotronic have met this requirement right from the start."

Benoît Lebret
Technical Director

Since 2002, Météo Omnium and Rotronic have been working together, and all the weather stations have been gathering data with the Hygromer sensors (MP400), reliably passing on precise data to the weather stations.

France is too big for all areas that are threatened with frost to be equipped with stationary weather stations at a reasonable cost. This is where the HygroPalm comes into its own, making it possible to collect data manually. This unit is designed for measuring the air temperature and the relevant roadway values. With its tolerance of ± 0.1°C, it is regarded as very precise, and thanks to a back-lit display, data can be acquired even at night without difficulty.

The Type HP23 is also used as a supplement to the HP22. Fitted with 2 inputs, it has the advantage of being able to acquire several parameters simultaneously. With one input, the HP23 can measure the humidity (±0.8%) and the air temperature; the other input measures the surface temperature, and these together can be used to determine the freezing point and dew point. In short: precise information on whether the roadway will freeze over or not.

THE PHARMACEUTICAL SHELF LIFE MONITORING SYSTEM FROM AMEBIS.

This flexible, standards compliant shelf life monitoring system relies on Rotronic's AirChip3000 technology.

Introducing new products into the preventive medicine sector is a long complex and costly process. Research to develop new products requires considerable investment. Any reduction of costs or time saving in product development is a crucial factor in the financial success of the product and of the manufacturing company.

The ability to determine the shelf life of the product's constituents at an early stage in development is decisive. This ensures that when small scale production commences the formulated product is resistant to temperature and humidity.

The FDA 21 CFR Part 11 compliant software ensures perfect data transfer

The Amebis monitoring system offers a completely new approach to shelf life studies without necessitating major investment in controlled humidity environment systems. A wide range of combinations of humidity and temperature can be generated easily in the Amebis system.

The system consists of a small, disposable chamber containing the test material, and a humidity capsule. This generates the fixed RH value that the shelf life researchers require for model tests. The sensor cap containing the Rotronic AirChip3000 sensor seals the chamber. The logger cap is then attached to allow recording of the temperature and humidity values and wireless transmission to the FDA 21 CFR Part 11 compliant software for analysis.

Humidity capsule with test material

About Amebis

Amebis is a technology company located in County Meath, Ireland. It specializes in the development and production of stability testing products for the healthcare and food industries.

"The sensor is the most important component in the Amebis shelf-life monitoring system. It is essential to record the temperature and humidity readings precisely. Amebis specifies Rotronic AirChip3000' technology because of its unrivalled precision, reliability and ease of handling. This sensor is also easy to calibrate, extremely stable and robust."

Nigel McSweeney
Technical Director of Amebis

TEMPERATURE AND HUMIDITY MONITORING AT STORA ENSO.

The figures are impressive: Stora Enso in the Langenbrugger Mill in Ghent, Belgium, processes 3,500 tons of paper a day, and the storage sheds are beehives of activity. 200 trucks bring huge rolls of paper; other trucks heave the rolls onto their platforms and transport the valuable freight to the world outside.

Touch-screen terminals as a monitoring system

The 200 trucks need to be dispatched quickly and efficiently. That's why modern terminals by the Ultimedia company were installed at the entrances and exits.

On arrival, trucks must first check in, and the drivers themselves enter all relevant data such as reference number, number-plate information and container and customer numbers. After successful check-in, the barrier opens and the drivers can unload their goods. Each kiosk has two PCs, working independently of each other, with 19" touch screens and fingerprint scanners. This ensures that there is always a system ready for use.

State-of-the-art terminals for quick check-in

Sensitive terminals

There is a lot of sensitive electronics packed into the Ultimedia kiosks, and this calls for monitoring. To make causal analysis as quick as possible in the case of a failure, there was a desire to record humidity and temperature values continuously. Stora Enso was looking for the right solution and the first contact with Rotronic was made via our distibutor in Belgium: Krautli. After a short evaluation phase and convincing presentations, the decision to use Rotronic datalogger was made.

Network integration as a must-have criterion

All data registrations take place via the intranet, so the specifications were clear: the measuring units had to be able to communicate with Stora Enso's own company software. Rotronic's HW4-OPC software met these requirements, and connection to the company's own interfaces was no problem. After an exhaustive test phase, Stora Enso decided in favor of the Rotronic HydroLog NT data logger. In a short time, the first data loggers and docking stations with TCP/IP interfaces were integrated in the first kiosks.


Benny T'Jaeckx
Projectmanager, Stora Enso

Stora Enso relies on Rotronic

Five further kiosks are being equipped with Rotronic's data loggers - this time with the latest HygroClip HC2-S, combined with the direct TCP/IP connection, or with the HygroLog NT2 and TCP/IP docking-station solution.

About Stora Enso

The Stora Enso company is active worldwide in the areas of wood processing and packaging and paper manufacturing. Its products include paper for newspapers and magazines, and fine papers.

ROTRONIC **IN THE SERVICE OF DENTISTRY.**

A team of students at the "University of the Pacific - Arthur A. Dugoni School of Dentistry," Stockton, California under the guidance of Dr. Jessie Vallee and Dr. Foroud Hakim, recently received funds for the purchase of HygroLogNTs and HygroClip SC05 probes. Their research project investigated the effects of humidity in the mouth during dental treatment.

The proven coffer-dam method versus the new Isolite system

The intent of the study was to compare the control of the relative inter-oral humidity achieved by the Isolite™ system [1] for dental drainage and isolation with that of the gold standard - the coffer dam [2]. A further objective of the study was to measure the consistency of the humidity control during restorative dental treatment. The results of this research can be used to evaluate the effectiveness of the Isolite™ system for use both in dental surgeries and in dental research.

Old-school dentistry

Dental drainage and isolation is a standard dental-school process as a precautionay measure during restorative treatment, and was formerly achieved by using a coffer dam. Or, if it was not possible to use coffer-dam isolation, by other methods, such as swabs or gauze.

The Isolite system - perfect drainage of the oral cavity

In the "Journal of Dentistry" in 1994, it was shown that the use of the coffer dam could significantly reduce inter-oral humidity during dental surgery. Another study in the "Journal of Dental Research" in 1992 again showed that there is a close correlation between inter-oral humidity and the adhesion of dentin [3].

Why Rotronic products?

The hand-held HygroLog NT was chosen because of its mobility and logging capability. The HygroClip SC05 probe is used because of its slim profile and stainless-steel housing.

The less humidity in the oral cavity the better

The average inter-oral humidity in a patient without isolation is in the upper 90s. In studies of the coffer-dam method, humidity values of 47-57 %rh were achieved In the case of Isolite™, the figure was 47-52 %rh, which is roughly the same as room humidity. The rule is: The less humidity the better.

The humidity measurements were carried out while Isolite™ and the coffer dam were in use. This was repeated after preparations had been completed. The probe of the SC05 was placed over the isolated teeth for at least 30 seconds, in order to record the measurement. The parameters were entered in the HygroLog NT, and then analysed by the Rotronic HW4 software. With each measurement, the HygroLog NT also recorded the room humidity for comparison.

"HygroLog NT and the HygroClip probe were important elements in this research," says Project Manager Dr. Jessie Vallee.

There have hitherto been no published studies on the control of humidity with the Isolite™ system. However, the earlier data on humidity control, that have already been registered, and Isolite™, demonstrate extraordinarily efficient humidity control throughout the treatment.

Win on points for the Isolite system

This study demonstrates to dentists the advantages of the Isolite™ system, and proves that a lower humidity value can be achieved using the HygroLog NT logger and the HygroClip SC05 sensor. The collected information will encourage dentists who are aware of the influence of moisture in dental treatment either to bank on the Isolite™ system instead of the coffer dam, or to re-evaluate the latter's use in specific forms of treatment. The study will show all those dentists who would gladly do without the awkward coffer-dam treatment that the effectiveness of the Isolite™ system offers a genuine alternative.

HygroClip SC05 probes

[1] Isolite™ is a dental isolation system that has been approved for use by the FDA. It is a device that draws back the tongue and cheeks. It suctions off liquid continuously during the entire dental treatment session. Isolite™ illuminates the oral cavity, protects the windpipe and throat, and includes a bite block to ensure maximum opening of the patient's mouth. It is currently on sale in the dental-technology market, is available to dentists immediately, and has been in use for 6 years.

[2] In dentistry, a coffer dam - often a coffer-dam cloth or a rubber band - serves to screen the tooth being treated from the rest of the oral cavity.

[3] The tooth consists mostly of dentin. Despite its lower mineral content compared with enamel, dentin is harder than bone tissue but very much more susceptible than enamel to acids and bacteria.

3 STALWARTS FROM ROTRONIC
THE HYGROGEN2, THE HYGROFLEX8

A fully programmable, portable generator for calibration of humidity and temperature. The HygroGen2 brings the calibration lab to the customer, and allows simple, flexible calibration with the advantage that the calibrated units can quickly be integrated in the operative processes again. More performance and even more ease of use - with these attributes, Rotronic sets standards in the area of portable calibration.

THE HYGROGEN2

Strong, because ...

- Fastest portable generator on the market
- Target value reached within 5 minutes
- Multiple user selected calibration points
- Calibrates up to 5 probes simultaneously
- Integrated PC functionality
- Touch-screen operation
- DVI interface for external monitor
- Calibration is traceable

Usable range:	0...60 °C	Precision:	± 0.05 K
Relative Humidity:	5....95 %rh	Temperature:	0...60 °C
Response time, relative humidity:	3 min. (35 to 80 %rh)	Response time, temperature:	5 min. (20 to 30°C)
Probe Specifications:	±0.8 %rh (23 °C ±5) ±2 %rh (0...60°C) ±0.1 K (23 °C ±5) ±0.3 K (0...60 °C)		
Typical calibration error:	±1.5 %rh (k=2) at 23 °C ±0.15 °C (k=2) 15...50 °C		

THE HYGROFLEX8

Strong, because ...

- Excellent long-term stability and resistance to chemicals
- Wide temperature measurement range
- Different power supplies available
- HygroClip2 probes can be exchanged without adjustment
- 2 exchangeable digital or analog HygroClip2 probe inputs
- Highest possible precision of measurement: 0.8 %rh and 0.1°C

Technical Corner

Usable range:	0...60 °C	Precision:	± 0.5 K
Relative Humidity:	5....95 %rh	Temperature:	0...60 °C
Response time, relative humidity:	3 min. (35 to 80 %rh)	Response time, temperature:	5 min. (20 to 30°C)
Measurement range:	-100...200 °C / 0...100 %rh, depending on probe		
Probe specification :	±0.8 %rh (23 °C ±5) ±2 %rh (0...60°C) ±0.1 K (23 °C ±5) ±0.3 K (0...60 °C)		
Typical calibration error:	±1.5 %rh (k=2) at 23 °C ±0.15 °C (k=2) 15...50 °C		

AND THE **HYGROLOG HL20/21**.

The new ROTRONIC HygroLog HL20 and HL21 series uses the latest data logger technology to measure relative humidity, temperature, dew point or frost point. The data loggers are precise and reliable enough to measure and record the necessary data in pharmaceutical clean rooms, stores, production sheds, office buildings, museums or other critical areas. With the HW4 software, the measured data can be either displayed immediately in graphics or read out as statistics. With memory capacity for up to 20,000 measurement pairs, data can be recorded for up to 20 months. The data loggers conform to FDA and GAMP, and support the user in validation.

THE HYGROLOG HL20/21

Strong, because ...

- High-precision measurement: 0.8 %rh and 0.2 °C
- High memory capacity: up to 20,000 measurement pairs with date and time
- Excellent long-term stability
- Programmable alarms
- Calculation and display of dew point and freezing point
- UART on USB interface
- Configurable logging interval
- Long battery life
- Conforms to FDA CFR 21 Part 11 / GAMP 4

Technical Corner

Measurement range:	0...100 %rh / -10...60 °C
Precision at 23 °C:	±0.8 %rh / ±0.2 K
Reproducibility:	0.3 %rh / 0.05 °C
Long-term stability:	‹ 1 %rh per year / ‹ 0.1 °C per year
Response time:	Relative humidity: 3 min. (typically) Temperature: 10 min. (typically; depends on the air flow)

You will find all the details of the 3 stalwarts at www.rotronic-humidity.com

THE HUMIVENT HELPS PRESERVE VALUABLE CULTURAL HERITAGE.

All old, historic buildings have one thing in common: their masonry is moist, musty and threatened with decay. Conventional methods of solving this problem have proved futile. Vasco Peixoto de Freitas and his team, at the "Faculdade de Engenharia da Universidade do Porto" set out to develop a new technology based on the principle of ventilating the plinth of the wall. This technical innovation, under the name of "Humivent," has received Portuguese Patent No. 104.385.

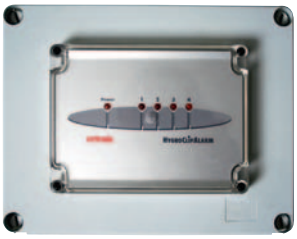
One of the buildings that it was possible to restore with the help of the Humivent

The problem

Rising dampness is one of the main causes of decay in the masonry and stone walls of historic buildings. The level to which the humidity rises, and the associated potential for damage, in particular the dissolution and crystallisation of salts, depends on many different factors. These include the hygrothermal properties of the materials used (for example: the permeability of the individual strata and layers of the wall for water vapor) and the internal and external climatic conditions.

Working principle

Through active ventilation of the wall plinth, the maximum possible damp level can be regulated and lowered. The system uses a guided current of air as a transport medium for the moisture, and requires ducts to be installed below ground level in the area of the plinth. The air flow in the U-shaped ducts is monitored and regulated by a control unit, called the "Humivent." The construction of the system to be used is determined by the composition of the wall structure, the type of building and the geometry and dimensions of the duct profile.



The Humivent - a small but highly efficient system

The "Humivent" - a small but exquisite fan

Actually, the Humivent is nothing more than a simple fan with different speeds, controlled by a set of temperature and humidity probes in dependence on the hygrothermal conditions prevailing in the air flowing in and out.

Vasco Peixoto de Freitas
Faculdade de Engenharia
da Universidade do Porto

Developed and produced in Portugal

The Humivent was developed by the Laboratory of Building Physics, Faculty of Engineering , University of Porto. The prototype was developed by ITISE / ROTRONIC.
More information at www.itise.pt or www.rotronic-humidity.com

ENVIRONMENTAL RECORDING
IN THE CHUR FUNERAL CHAPEL.

The Archaeological Service and the Cantonal Care of Monuments are departments of the Cultural Office of the Canton of Graubünden. In co-operation with the Canton's Office for Structural Engineering in the context of urgent renovation work on the Cantonal School buildings, it was possible to create an improved presentation environment for the tombs of the Chur Bishops, dating from the 5th to the 9th century and conserved there under a protective roof. Periodic crystallisation of salt, caused particularly by extreme variations of humidity and temperature, was damaging the murals in the building, which are unique in Switzerland. By means of rigorous environmental recording, which is then used to control intervention in the interior climate by way of passive climate-control measures ("natural drafts"), attempts are being made to prevent such damage in future. To collect these data, it was decided to use the HygroLog NT3 series by Rotronic. We wanted to learn more about this interesting project, so we talked to Arthur Gredig, Excavation Technician for the Archaeological Service of the Cultural Office of the Canton of Graubünden in Chur.

Archaeological digs
in the funeral chapel in Chur

"Rotronic's measuring units have already proved themselves in actual practice. Prompted by conspicuously high humidity values, we immediately checked the surroundings, and found that someone had closed the air flaps of the natural draughts."

Arthur Gredig
Cultural Office of the Canton of Graubünden

Why did you decide on the Rotronic solution?

Arthur Gredig: We decided on Rotronic following the recommendation of the conservation and restoration specialists involved, who have had years of experience with Rotronic units. The office itself has been monitoring parts of its archive with the same system for some years now, with success.

Could you briefly describe Rotronic's (technical) solution?

Arthur Gredig: The core of the monitoring system is a HygroLog NT3 mounted in a docking station. This records the data from three HygroClip2 probes. The docking station supplies the logger and the probes with power and also transmits the gathered data to the LAN. The data is conveniently read out and evaluated in the office, using the HW4 software.

What exactly is measured, and what do you need the measurements for?

Arthur Gredig: Temperature and humidity are measured. The prime objective is to ascertain how the interior climate interacts with the exterior environmental via the natural draughts. The most important thing for the monument is that the exchange of climate is as gentle as possible, with no extreme, short-term variation in the measured values. Experience has shown that the relative humidity inside should not drop below 70% or rise above 85%, otherwise we must reckon with increased crystalline efflorescence. The measured data help us to keep the processes permanently under control.

Where do you see the main benefits of the Rotronic measuring devices?

Arthur Gredig: It is vital to keep the interior climate under surveillance at all times, so as to be able to react quickly in the case of undesirable environmental anomalies. Because what we are monitoring here is a unique ancient monument, monetary criteria are not paramount. It is important to be informed of the status of the environmental conditions "live," so to speak, without carrying out periodic inspections on site.

TURKISH PHARMACEUTICAL COMPANY RELIES ON ROTRONIC MONITORING SYSTEM.

The leading pharmaceutical company IE Ulagay (Topkapi near Istanbul), subsidary of the Italian Menarini group, produces mainly topical forms of medicine (gels and creams), all of which fulfil the guidelines of GMP (Good Manufacturing Practices) and GLP (Good Laboratory Practices).

HygroFlexTF52/53

Ulagay was looking for a reliable monitoring system with which the temperature and relative humidity could be registered in the entire production environment. Rotronic was invited to tender, and was able to offer a convincing measuring transducer concept. After carrying out exhaustive tests, Mr. Suat Cingiler, responsible for technology, was most enthusiastic about the proposed concept, and Rotronic was awarded the contract.

Implementation was begun in May 2009, and today a network of HygroFlex5, HygroFlex4 and HygroFlexTF52/53 units provides precise, reliable measurements of the production environment at Ulagay.

Suat Cingiler
IE Ulagayi

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35 YEARS OF ROTRONIC IN SWEDEN.

What began on the 9th of July 1975 with a gentlemen's agreement has grown into a successful business partnership.
For 35 years now, Swema has been marketing Rotronic products successfully all over Scandinavia.

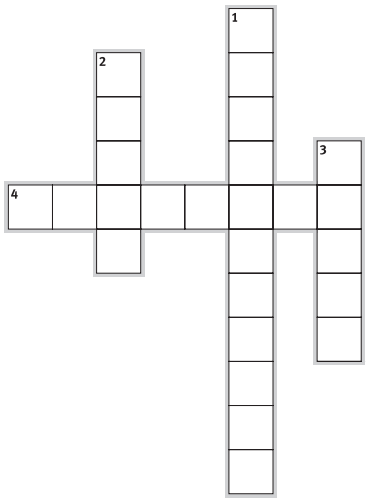
Heartiest congratulations!
Here's to the next 35 years, and Tack så mycket, Svema!

GREAT "HUMIDITY NEWS" COMPETITION.

Just solve the puzzle and win an iPad!

It's easy to enter. Complete the cross-word puzzle below, add your contact information, and fax it to +41 44 838 13 07 by the **31st of December** 2010 at the latest.

PS. Here's a hint: You will find all the answers in this brochure.



Down

1. In what town are the Rotronic headquarters?
2. Which Rotronic distributor is celebrating 35 years with Rotronic this year?
3. In which country did a new Rotronic branch office open in June 2010?
4. What device prevents rising damp in Portugal's historic buildings?

First name	Last name
Company	Position
Street,	City Postcode
Telephone	Fax
E-mail	Date/Signature

Competition Conditions

Closing date for entries is the 31st December 2010; the winner will be informed by the 10th of January 2011 Participation is voluntary, and implies no obligations. The winner will be informed personally, and their name may be published. Payment of the prize as cash is not possible. No correspondence will be entered into about the competition, and recourse to courts of law is excluded. Rotronic employees and members of their families are excluded from participation. Personal data will be treated in confidence, and will not be disclosed to third parties.

◯ Please send me the current catalog.

◯ I would like your local representative to get in touch with me.

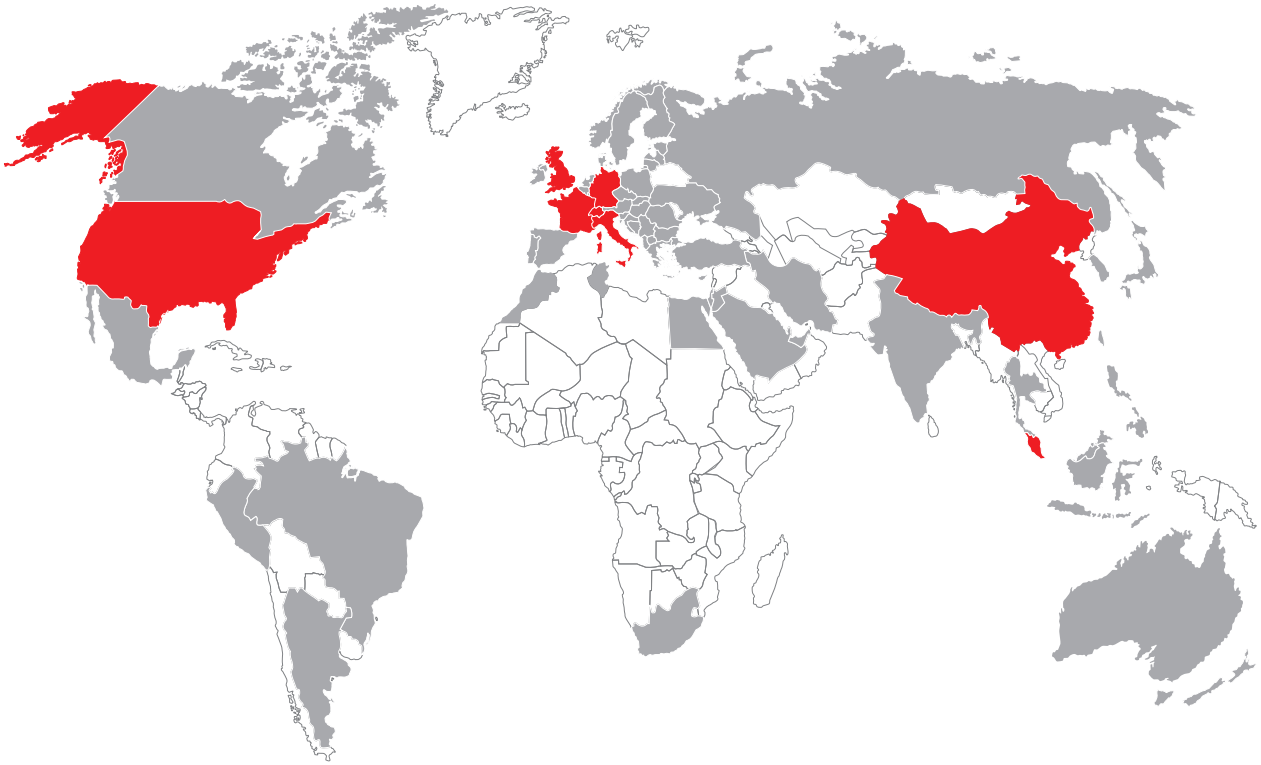
Fair	Location	Date
SIPEC	Orleans (F)	28th-30th September 2010
MUTEC	Leipzig (D)	18th-20th November 2010
AHR Expo	Las Vegas (USA)	31st January - 2nd February 2011
Clean Room Lounge	Karlsruhe (D)	15th-17th February 2011
INTERPHEX 2011	New York (USA)	29th-31st March 2011
INTERPHEX ASIA 2011	Singapore (SG)	30th-31st May 2011
Sensor+Test 2011	Nuremberg (D)	7th-9th June 2011
Ineltec	Basel (CH)	13th-16th September 2011
Congrès de Métrologie	Paris (F)	3rd-6th October 2011

ROTRONIC **WORLDWIDE.**

ROTRONIC is represented in over 40 countries around the world. You will always find a complete, up to date list of our partners at **www.rotronic-humidity.com/international**

ROTRONIC International

ROTRONIC Partners



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