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# rotronic Humidity news

ISSUE 1/2004

*How ROTRONIC products help*

## Rainforest Conservation



*Engine testing in Sweden*



*Conserving Rodin in Japan*



*Cheese production in France*

**WIN a HygroLog NT**

**NEW PRODUCTS**  
**HygroLog & HygroGen**



## FAX BACK INFORMATION REQUEST/COMPETITION ENTRY FORM

Which model HygroLog NT docking station can accept four combined humidity/temperature probes?

- ☐ a) DS-U  
☐ b) DS-P  
☐ c) DS-T

How long does a HygroGen take to change from 25°C to 45°C?

- ☐ a) 2 minutes  
☐ b) 4 minutes  
☐ c) 20 minutes

Which types of probe have been used to protect Rodins sculptures?

- ☐ a) HygroClip IC05  
☐ b) HygroClip S  
☐ c) HygroClip IE

What is the accuracy of the HygroPalm 0?

- ☐ a) ±1.0%rh  
☐ b) ±2.0%rh  
☐ c) ±1.5%rh

What is the optimum range for maturing cheese?

- ☐ a) 10...20%rh  
☐ b) 50...70%rh  
☐ c) 85...95%rh

**WIN a NEW  
HygroLog NT  
Data-logger!**



### CONTACT INFORMATION

Name: Telephone:

Company: Fax:

Address: Email:

City: Website:

Country:

### ACTION REQUEST

- ☐ Please send me your new catalogue  
☐ Please send price lists  
☐ Please can your local sales representative contact me

**FAX BACK TO: +41-1-837 0073**





**Robin Farley**  
Business Development Manager  
ROTRONIC AG

It is my pleasure to edit this Humidity News, and I hope that you will profit from reading its contents. This issue includes a wide range of fascinating articles that describe just some of the diverse applications where ROTRONIC humidity measurement instruments are used, and introduces some important new products to our range.

For every Humidity News we receive many ideas for articles from our colleagues around the world, and those we have included this time cover a diverse range; from cheese production in France, to engine testing in Sweden, and on to seed research for the Brazilian rainforest! A particularly interesting application from Japan describes how a Rodin statue is protected from variable climatic conditions whilst being isolated from the significant risk of earthquakes!

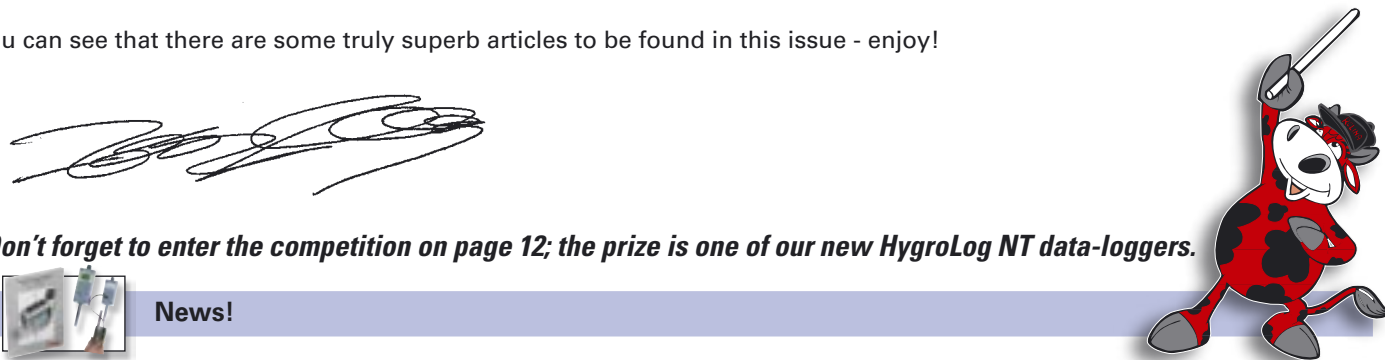
This issue of Humidity News sees the introduction of three very significant new products from ROTRONIC:

The **HygroLog NT** must surely be the most technically advanced humidity and temperature logger in the world! High measurement performance is combined with the very latest digital technology such as flash memory cards, a USB interface and Bluetooth wireless connectivity. Our development team has combined its wealth of experience in designing humidity instrumentation with the most convenient features of the IT market, to create a product that is second to none!

The **HygroGen** is set to become the market leading portable humidity and temperature calibrator. It generates constant %rh and temperature conditions where any type of humidity probe can be tested. With integrated temperature control, the HygroGen provides a means of calibrating at constant conditions at a temperature that can be set by the user from 10 to 50 °C. Careful and innovative design has produced a unit which has a wide range of features and a high specification.

The new generation of **RS ventilated radiation shields** for meteorological applications described on page 9 have been jointly developed by ROTRONIC and the Swiss Meteorological Service. The level of performance they achieve will increase expectations of measurement data right across this highly important market.

So you can see that there are some truly superb articles to be found in this issue - enjoy!



**PS. Don't forget to enter the competition on page 12; the prize is one of our new HygroLog NT data-loggers.**

3		News!
4		Testing seed water activity values helps in the conservation of the Brazilian rainforest
5		The New HygroGen™ portable humidity and temperature calibrator.
6/7		Introducing the HygroLog NT, the best humidity/temperature data logger in the world?!
8		Humidity measurement at the Saab engine test centre
9		New RS ventilated shields for meteorological applications, jointly developed with Meteo Swiss
10		How ROTRONIC transmitters help in the production of some of the world's finest cheese
11		Protecting Rodin's «Adam and Eve» from Japan's climate and earthquakes!
12		Details of our world-wide sales team and our competition.



**Peter Müller**  
Product Manager  
ROTRONIC AG

## ROTRONIC CATALOGUE, NOW AVAILABLE

Our NEW catalogue for 2004/2005 is now available and includes the full range of instrumentation available from ROTRONIC, as well as the very latest products and services featured in this Humidity News. The format is now well established and well liked by our customers and distribution team. In each issue we try to incorporate all the information and features our clients require.



Our catalogue project is coordinated by Peter Müller, who has the huge task of combining input from various ROTRONIC sales, technical, and marketing experts, whilst checking all the technical data and organising versions in four languages.

To receive a priority copy of the new catalogue, why not fax back the request on the last page of Humidity News; at the same time you could enter our great competition to win a new HygroLog NT!

## LOW COST HANDHELD NOW AVAILABLE!



ROTRONIC has a world-wide reputation for producing some of the most accurate and reliable %rh instruments available. But in the handheld market, there are many manufacturers who provide very low cost products, and these sell in high volumes through catalogues and the internet. For the first time purchaser of humidity measurement equipment, the first choice is often these lower quality instruments, which often provide poor performance, have poor long-term stability and often can not even be calibrated. ROTRONIC recognise that the market defines the price; so to provide a higher quality option at a lower price point, we have introduced a new value engineered product to be more competitive at this level.

The HygroPalm 0 is the new low cost handheld instrument from ROTRONIC with a fixed probe. It retains the high accuracy of the HygroPalm series ( $\pm 1.5\%$ rh,  $\pm 0.3^\circ\text{C}$ ), and also includes the dew-point and wet-bulb calculation functions. A single point calibration adjustment option on the keypad controlled menu is also integrated.

## COMPETITION WINNER

Pictured receiving his prize of a Nokia 6610 mobile phone from ROTRONIC's Area Sales Manager, Mike Hibbert, is David Robertson of Ibstock Brick, Staffordshire, UK.

Ibstock Brick is one of the largest brick manufacturers in the UK, with factories located across the country producing a huge range of brick types.



David is a user of ROTRONIC's industrial humidity and temperature transmitters for optimised control in brick drying applications. Effective control of the drying cycle can have significant benefits on productivity, product quality and scrap rates. It's a demanding application, with wide temperature and humidity variations. ROTRONIC's transmitters have been used successfully throughout this industry for more than 20 years.



David Robertson, Ibstock Brick with Mike Hibbert, Area Sales Manager, ROTRONIC UK

## EXHIBITIONS

You can visit any ROTRONIC at the following exhibitions in 2004:

<b>11...13.05</b> FCE-Pharma São Paulo, Brazil	<b>14...17.09</b> BIAS Milan, Italy
<b>06...19.05</b> Drupa Düsseldorf, Germany	<b>27...29.09</b> Analytica Latin America São Paulo, Brazil
<b>11...13.05</b> HBA South America São Paulo, Brazil	<b>14...17.10</b> Automation 2004 Mumbai, India
<b>13...16.07</b> IFT 2004 Las Vegas, NV USA	<b>19...21.10</b> Mesurexpo Paris, France
<b>31.8...3.9</b> Go Basel, Switzerland	<b>06...10.12</b> Elee - Mesucora Paris, France





**Niek Jan Bink**  
Sales Manager  
ACIN instrumenten b.v.

## TESTING SEED WATER ACTIVITY VALUES HELPS IN THE CONSERVATION OF THE BRAZILIAN RAINFOREST

**Jo s e**  
**Mar cio**  
Faria from  
Brazil is  
doing a PhD  
in the Nether-



lands on storage protocols for seed drying. In this research water activity plays a major role. His supervisor, Dr. Henk Hilhorst, saw the water activity measurement system of ROTRONIC for the first time with colleagues in the USA. There he became convinced of the capabilities of the ROTRONIC HygroLab system. He insisted on having one himself, and now they are using it enthusiastically in this project on desiccation sensitivity in legume seeds. Both Dr. Hilhorst and Jose are very satisfied with the ROTRONIC system. Jose hopes to finish his dissertation next year.



Riparian forests are those that grow alongside rivers, and they are tightly associated with water, helping in maintenance of water quality and quantity (Figure 1). In Brazil, these forests belong to the most threatened

ecosystems, mainly because of agriculture, grazing and flooding due to formation of lakes for hydroelectric power generation. In a world where the decrease of water supply is of great concern, the importance of the ecological restoration of such kind of forest becomes even more evident. In Brazil, several programs of reforestation with native species have been carried out, attempting to diminish the problem, and seeds are, in practice, the basis of these programs. Thus, the importance of storing in seed banks for use in the future to restore these damaged or destroyed environments is obvious.

One of the main tree species used in ecological restoration of riparian forests in south-eastern Brazil is *Inga vera* (Leguminosae), whose seedlings can withstand up to 3 months of total submersion. Its seeds (Figure 2) are shed with a high moisture content (MC), around 60% (fresh weight basis) and they are recalcitrant, i.e. they die if dried to MCs low enough to allow storage. Fresh *Inga vera* seeds attain 100% of germination, but upon desiccation they quickly lose viability. If MC drops to 30%, they cannot germinate anymore (Faria et

al., 2002). Intolerance to desiccation is a serious problem with regard to the long-term storage of seeds of this species, as well as other recalcitrant species.

The main objective of this study is to better understand what causes the death of the seeds during drying. This is

the first step towards the development of storage protocols for seeds of this species and other recalcitrant seeds.

Traditionally, most of the work on seed desiccation deals with water in seed by assessing only MC, but, as shown by Vertucci and Roos (1990) and others, water activity ( $a_w$ ) of seeds provides a much better measure of their physiological level, since it relates to the energy status of the water, i.e. the availability of the water to participate in chemical and physical processes. Thus, in these studies  $a_w$  is measured, as it is a much more relevant parameter than MC to assess when desiccation damages start to appear. Another advantage of working with  $a_w$  is the possibility of comparing different species, since a number of physiological processes that are relevant to desiccation tolerance or damage have been shown to occur within a narrow range of  $a_w$  values (Sun, 2002). Moreover, determining the  $a_w$  in single seeds or populations is essentially non-destructive. This is a great advantage when dealing with rare species of which only small numbers of seeds are available.



### References:

- Faria, J.M.R.; Davide, A.C. and Hilhorst, H.W.M. (2002) Desiccation sensitivity in *Inga vera* subsp. *affinis* seeds. In: Thanos C.A. et al. (eds.). Tree Seeds 2002, Book of Proceedings. Chania, Greece. p. 82.
- Vertucci, C.W. and Roos, E.E. (1990) Theoretical basis of protocols for seed storage. Plant Physiology 94: 1019-1023.
- Sun, W.Q. (2002) Methods for the study of water relations under desiccation stress. In: Black, M. and Pritchard, H.W. (eds.) Desiccation and Survival in Plants: Drying without Dying. CABI Publishing, Wallingford, Oxon, UK. pp. 47-91.



**Robin Farley**  
Business Development Manager  
ROTRONIC AG

## INTRODUCING THE NEW HYGROGEN PORTABLE HUMIDITY/TEMPERATURE CALIBRATOR

**H**ygroGen is a generator of controlled % relative humidity and temperature environments, primarily used for calibrating humidity instrumentation. It is completely self-contained, requiring no external resources except mains power, and is light enough to be portable for use on-site.

The HygroGen uses a mixed flow method for generating the %rh required by the user; a desiccant cell provides low humidity, a saturator high humidity, and a control system mixes these two together to create a constant environment within a well insulated chamber. Temperature is controlled using a Peltier thermoelectric heat pump. Set-points are easily adjusted using the front panel mounted controller keypad, or via a PC using the standard RS232 interface and optional software.

Chamber control measurements are made using a standard HygroClip S interchangeable humidity/temperature probe. Within the chamber there are two further probe connection points; these are connected to the rear panel of the HygroGen, where the digital output of all three probes is available. This feature allows the user to more easily confirm chamber temperature stability and uniformity along the axis where most temperature gradients may occur.



The **key advantage** of the HygroGen is its speed to reach equilibrium of the set %rh values, typically in **two minutes**. This means that multiple point calibration checks can be performed in minutes, rather than hours. Of course, temperature changes require longer to reach equilibrium, but as an example the change from 25 °C to 45 °C takes around four minutes.

With fully integrated temperature control, calibration is performed at a defined and constant temperature, irrespective of ambient conditions. This makes the HygroGen ideally suited for use on-site, where calibrations using salts can be inconvenient and time consuming. A typical use would be to check the performance of transmitters whilst they are still connected to the control or measurement system, therefore validating the whole 'loop'.



The HygroGen also makes it possible to calibrate instruments over a wide range of temperature and humidity conditions, which validates that correct measurements will be achieved over the instruments likely range of use. Again, these checks can be performed in a short time, with minimal cost and inconvenience when compared to removing the transmitter to a workshop or external laboratory.

Calibration traceability can be achieved in a number of ways; a calibrated control probe, a calibrated hand-held instrument, or an external reference, such as a condensation hygrometer can be connected. The optimum choice will depend significantly on the users requirements, and ROTRONIC are available to advise on the most cost effective option.

Full technical specifications are detailed in our new catalogue and on our website [www.rotronic.com](http://www.rotronic.com) or [www.hygrogen.com](http://www.hygrogen.com).





# WELCOME TO THE FUTURE OF HUMIDITY/TEMPERATURE DATALOGGERS

## — THE NEW *HYGROLOG NT*

### Why?

Before a new instrument is developed, there has to be a reason why the manufacturer invests time and money to introduce a new product. It's especially interesting to know this when the manufacturer already offers two class leading products, the original HygroLog and the Agent series! The explanation is quite simple; current and future customer demands! An obvious and simple answer, but in the case of the HygroLog NT, it is worth focusing on precisely what those demands are.

Monitoring humidity and temperature conditions is so important in so many applications, and there are ever increasing demands for higher precision and improved documentation to comply with the latest regulations. Existing technology must be upgraded to meet these demands, or a new product must be developed.

The key issues that formed the basis of the development of the HygroLog NT were:

- **Measurement performance, flexibility and traceability**
- **Compliance with regulations such as CFR21 Part 11 and GAMP 4**
- **Compatibility with the latest IT data storage and communication technology**
- **Increased range of application**

Built on the very latest technology, and with a brand new software package, the HygroLog NT includes all the features and benefits demanded by the industrial and commercial markets. With IT standard communications options, modular electronics design and in-house developed software, the new series is also future-proof.

### Measurement performance

The saying 'rubbish in rubbish out' applies to dataloggers as well as computers. It doesn't matter how advanced the data logging system is; if measurement performance is poor, the recorded data will be of little or no use to the user. ROTRONIC are first and foremost a manufacturer of humidity and temperature measurement products, and quality of measurement is always our highest priority.

The HygroLog NT is compatible with the famous HygroClip range of probes, which have been on the market for a number of years and have been the subject of continuous development. They offer exceptional performance in terms of accuracy, measurement range and long-term stability, as well as the convenience of probe interchangeability without recalibration. The digital output from the HygroClip probes is perfect for data logging applications; no analogue to digital conversion is required, so overall system accuracy is improved.



The basic version HygroLog NT1 also includes a 'first' for ROTRONIC, an integrated humidity/temperature sensing module which is low cost, high performance and has low power consumption. Yet its specification still allows the most economic version of the HygroLog NT to be very competitive.

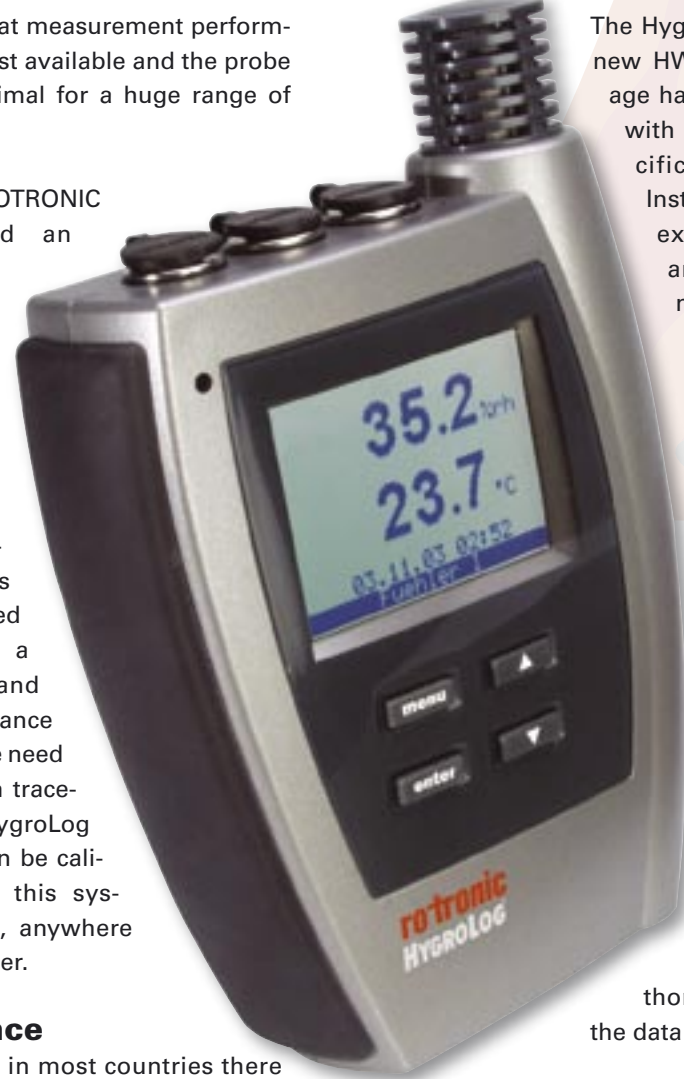
Whichever version of the HygroLog NT is chosen for the application; you can

be assured that measurement performance is the best available and the probe design is optimal for a huge range of applications.

Since 1990 ROTRONIC have offered an end-user calibration system which is traceable to National Standards. Our non-saturated salt calibration system is widely accepted as providing a convenient and high performance solution to the need for calibration traceability. The HygroLog NT probes can be calibrated using this system, anytime, anywhere and by any user.

### Compliance

20 years ago, in most countries there wasn't even a National Standard for humidity. 10 years ago, measurement traceability and calibration certificates were beginning to become the norm. Today, almost every measurement must be performed with equipment which has traceable calibration, and every stage of data acquisition and handling in critical applications must comply with regulations which govern data security, audit trails and validation. Regulations such as CFR21 Part 11 and GAMP4 demand records of every configuration change, data transfer and operator manipulation.



The HygroLog NT and the new HW4 software package have been designed with compliance specifically in mind. Instead of validating existing software and firmware, a new development designed to meet these requirements guarantees that all aspects of compliance are fully met. For example, the data format can be defined by the user; a protected mode means that measurement information can only be read by HW4 software, and therefore unauthorised changes to the data are prevented.

Compliance is now a critical requirement in an ever increasing range of industries and applications. The HygroLog NT fully meets these demanding specifications and provides a secure platform for future developments.

### Compatibility

One of the disadvantages of data-loggers is the need to periodically connect them to PC's for data transfer and programming. Typically this would have entailed an



RS232 serial communications cable which would need to be connected to the back panel of the PC. It could also be inconvenient to have to remove the logger from the measurement position in order for the data to be transferred. With the introduction of the HygroLog NT, a number of improvements have been introduced to make the data logger even more convenient for the user.

Flash memory cards are now widely used in a large number of applications such as cameras and PDAs thanks to their compact size, low cost and large capacity. Data storage in the HygroLog NT uses flash memory cards, and this provides three important benefits:

- Data transfer can be carried out on-site by simply removing and replacing the card, or by transferring the data on to a PDA or laptop with a compatible card reader/slot.
- HygroLog NT has a standard 16 MB memory card which can store up to 752,000 measurements. The maximum card size is 1 GB! (47 million measurements)
- The cards are available worldwide from IT dealers and resellers.

The USB (Universal Serial Bus) interface has become the standard cable communications format for end user IT products. The HygroLog docking station is now available with a USB interface together with the traditional RS232/485 formats still widely used in industry.

Wireless communication is also now becoming a widely used tool, thanks in part to the Bluetooth™ format. The HygroLog NT2 can be specified to include this option, so that communication between the data loggers and the PC can be wire-free.

### Range of applications

Commercially of course it makes sense to expand the application range of any product. The benefit for the user is a protection of their investment. It's the same in our day to day lives, we purchase products on the basis of our current need, with perhaps some future planning in mind.

The basic HygroLog NT is a simple data logging solution; it satisfies the needs of a good number of applications. But with the addition of plug in options, its use can be expanded significantly if your future needs change.



There are many different versions of the HygroLog's DS docking station, with features such as power connection, RS232, RS485 and USB. These can be combined with two types of multiple probe input formats, either four combined humidity/temperature probes (DS-U) or four Pt100 probes (DS-PT) can be connected simultaneously. Typical applications might include climatic chamber mapping, profiling the %rh around a cold store, or checking the temperature gradients in a water bath.

### Overview

We trust this introduction to the HygroLog NT has provided you with a good insight into this great new product. For further information, request a copy of our catalogue from your nearest ROTRONIC office or distributor (see page 12). In future issues of Humidity News we look forward describing how some of the instrument's features have been applied to real applications.





## ENGINE TESTING AT SAAB RELIES ON ROTRONIC HUMIDITY TRANSMITTERS

**E**ngine testing at Saab relies on ROTRONIC Humidity Transmitters

Saab Automobile Powertrain AB is a part of Fiat-GM Powertrain, working on the development and testing of the highly advanced engines used within the Saab range. At its engine test facility in Trollhättan, Sweden, ROTRONIC's HygroFlex Industrial transmitters are used to measure the test conditions.

### Engine Power Test

Engines are mounted in test cells (see photo) where the power output is measured. Engine power is influenced by environmental conditions, so to make sure that the power output is correctly stated, the dewpoint and temperature of the engine's inlet air is measured. Testing is supervised by an external accredited company such as TNO in the Netherlands, or AVL from Austria.



### Emissions Testing

Car exhaust emissions must be tested to according to different test cycles for different markets. Examples include the FTP75 (FTP-Federal Test Procedure) for the US market, and EUDC (Extra Urban Driving Cycle) for the European market. Cars are run on a dynamometer simulating highway conditions, and the environment is controlled to maintain air temperatures of 20...30 °C and dewpoints of 10...15 °C using humidification systems. Humidity measurement transmitters are part of the control system which maintains the correct throughout the testing cycles.



### ROTRONIC Transmitters

Saab recently selected ROTRONIC HygroFlex transmitters with HygroClip IM-1 probes to replace another manufacturer's equipment.

The HygroFlex was chosen because of ROTRONIC's reputation for measurement accuracy and long term stability in industrial applications. Another advantage of this instrument is the interchangeable probe which could be calibrated in Saab's calibration facility where a Thunder Scientific two-pressure generator is used. This means that the probes can be quickly and easily removed and calibrated whenever required, and to meet validation requirements.

As the test specifications define the humidity in units of dewpoint, the HygroFlex HTM32D unit was specified. This unit has three analogue outputs which can be freely configured to give %rh, dewpoint and temperature signals simultaneously.



## NEW VENTILATED RADIATION SHIELDS CO DEVELOPED WITH METEOSWISS

**T**he measurement of climatic humidity and temperature for environmental research, weather forecasting and pollution control is essential. Improvements in the precision and reliability of measurement data will continue to be demanded, especially as our knowledge of the climate and our need to forecast its behaviour continues to grow.

ROTRONIC meteorological probes have been one of the mainstays of climatic humidity measurement for over 20 years, in all applications their precision and long-term stability are well respected. Of course it is the case that in some circumstances even the best equipment doesn't always provide the results that the user needs, and in these situations it is essential that further development work is carried out to improve the product. An example of this is the recent development of a new series of ventilated radiation shields to improve measurement performance in some of the harshest conditions.



The new RS ventilated shield has been developed in close cooperation with the Swiss National Meteorological

Service (Meteoswiss). It is a highly advanced product, designed to minimise the influence of thermal radiation on humidity and temperature measurements, whilst maximising protection from the very worst weather conditions, including horizontally driving wind and rain. The performance of the RS shield in combination with the latest ROTRONIC meteorological probes is such that in comparative tests, measurement performance was practically identical to chilled mirror condensation hygrometers which are used by many National Meteorological Organisations as a reference.

Ventilation of measurement sensors is not a new concept, but it is worth mentioning why this may be a useful feature. At high %rh values or saturation, measurement becomes difficult. Small changes or differences in temperature can cause large changes in actual or measured relative humidity. The thermal mass of the humidity probe and its mounting hardware is quite large, and as a result its response to temperature change is slow and condensation may form as a result. This doesn't present a problem for ROTRONIC probes, as they



recover well from periods of saturation, but for a period of time, maximum %rh values may be measured by the probe and the data recorded incorrect. In situations where the condensation takes many hours to evaporate, this can mean incorrect measurements are given for a significant period of time. **By actively ventilating the measurement sensors, the measurement part of the installation will return to actual %rh more rapidly.**

Ventilation can also be useful where ambient temperatures are higher. The effects of solar gain are minimised by careful shield design and specialist paints, but in combination with active ventilation, measurement performance can certainly be superior to naturally ventilated designs.

The new shields are detailed in our new catalogue together with the full range of compatible Meteorological probes.





**Thomas Ryan**  
Manager  
ROTRONIC sarl.

## HOW ROTRONIC PRODUCTS HELP IN THE PRODUCTION OF SOME OF THE WORLD'S FINEST CHEESE

The Courlaoux Cheese Dairy has been part of the Unicopa group since 1996. Unicopa is a large organisation with over 5000 employees active in a diverse range of high quality food activities such as poultry, pork butcheries, saltings, as well dairy products such as cheese from the Jura Courlaoux. Under the management of Messieurs Bouchet and Duchaux, the plant managers/directors, the Jura Courlaoux transforms 17 million litres of milk into 1600 tons of cheese! The final product is 90% Comté and the remainder Emmental, sold under the Rippoz brand.

Milk is skimmed on arrival, and then stands for 32 minutes while curds form before being heated to 55°C in 30 minutes. The curd is then extracted, and over the next 24 hours is pressed and formed into the familiar shape. The cheese is put in pre-maturing cellars for two months, and then another two to six further weeks in maturing cellars before being put into final storage.

The conditions during the maturing process play an essential role in the quality and weight of the cheese. The pre-maturing cellars are controlled to 92/93 %rh at 10/12 °C. It is imperative that the cheeses remain within an environment of 85...95 %rh to ensure optimal maturation, so control systems using ROTRONIC humidity and temperature transmitters are used.

For many years the factory has used ROTRONIC FT transmitters, and recently these have been upgraded to the latest M2 series with HygroClip-S interchangeable probes. Their

improved performance provides a better measurement accuracy of  $\pm 1.5$  %rh and  $\pm 0.3$  °C, and an improved IP65 enclosure gives better protection to the electronics in extreme conditions.

Of even more benefit in this application is the flexibility of maintenance options that the M2 series provides. Interchangeable probes and digital technology allow the Jura Courlaoux to carry out a more rigorous maintenance schedule to achieve best possible measurement results, but without



Maturing cellar

increased costs. A HygroPalm 3 handheld instrument is used to carry out calibration checks, and when necessary used to make adjustments at one or multiple points of temperature and humidity.

The HygroPalm 3 handheld instrument/calibrator is also used by M. Duchaux to spot check the absolute humidity. This information allows him to make sure that the conditions in each area are comparable. The combination of the M2 series and the HygroPalm gives M. Duchaux the tools to ensure that humidity control can have the best possible impact on the quality of the cheese.



Mr. Duchaux in front of cheese vat



**Masaru Kawanishi**  
Sales Representative  
Shinyei Kaisha

## PROTECTING RODINS «ADAM AND EVE» FROM JAPAN'S CLIMATE AND EARTHQUAKES

The National Museum of Western Art ([www.nmwa.go.jp](http://www.nmwa.go.jp)) in Tokyo has recently installed a number of ROTRONIC HygroClip IC05 'mini' probes for use in the conservation of the Rodin statues 'Adam' and 'Eve'.

Masaru Kawanishi, of ROTRONIC's distributor in Japan, Shinyei Kaisha worked closely with the staff of the museum to provide a measurement solution which would integrate with very specialised measurement and protection technology to preserve the Rodin statues.



Humidity in Japan is often very high, especially during the summer months. Adam and Eve are sculpted in bronze, so with high %rh values the rate of bronze corrosion can increase significantly, and permanent damage could result - especially inside the statues. To prevent this from occurring, the museums conservators designed a basic ventilation system and measured conditions with ROTRONIC probes.

To further complicate the application, the statues were also mounted onto a 'seismic isolator' to protect them from the frequent earthquakes in the region. The complexity of this mounting platform meant that the humidity probes used needed to be of the highest quality and smallest dimension. The 5 mm diameter probe and cable of the HygroClip IC05 was therefore ideal.

The picture shows staff from the NMWA installing the HygroClip IC05 probes into the base of one of the Rodin statues. They are connected to HygroFlex transmitters which take the digital measurement information that is output from the probe, and convert it to an analogue signal for NWMA monitoring requirements.

The NWMA curator, commented - 'The HygroClip IC05 works very well, especially during the summer months when humidity can be very high. Its very small size means it can fit into the limited space inside the statues without a problem. Humidity is very important to the conservation of works of art, especially paintings, and in future I want to use the HygroClip IC05 to measure between the canvas and backboard'.

The HygroClip IC05 is one of a range of different probe types that are available to connect to the HygroFlex. The digital electronics retain the probe calibration data so they can be interchanged without loss of measurement performance.

