



brochure tergomatic



TERGOMATIC

Bioconstruction technology, totally reversible and non-invasive, against capillary rising damp.

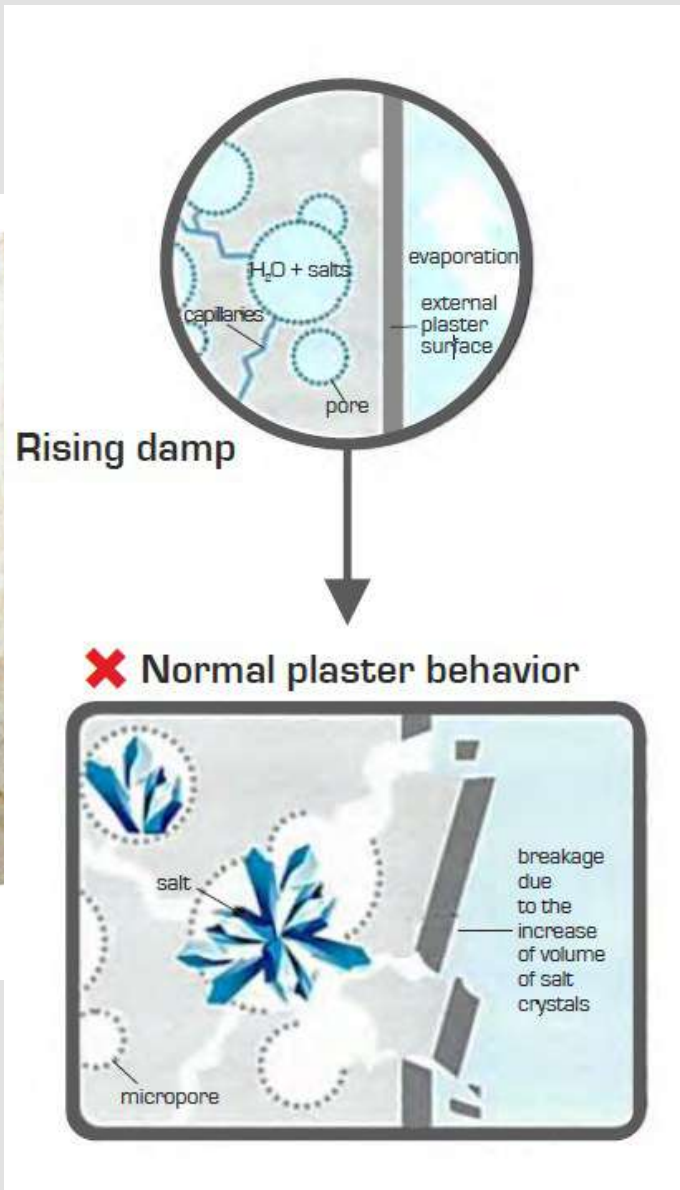
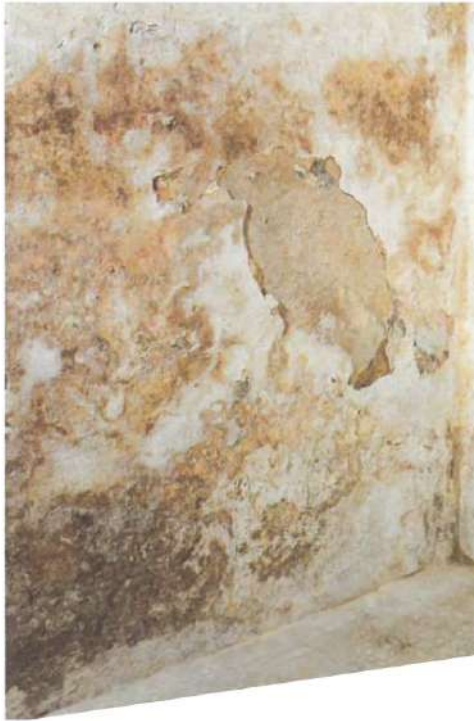
No wires, cables or electrodes in walls .

Certified by a leading institute legally recognised at national level

DAMAGE CAUSED TO WALLS BY RISING DAMP

Rising damp in all walls in direct contact with damp ground or groundwater.

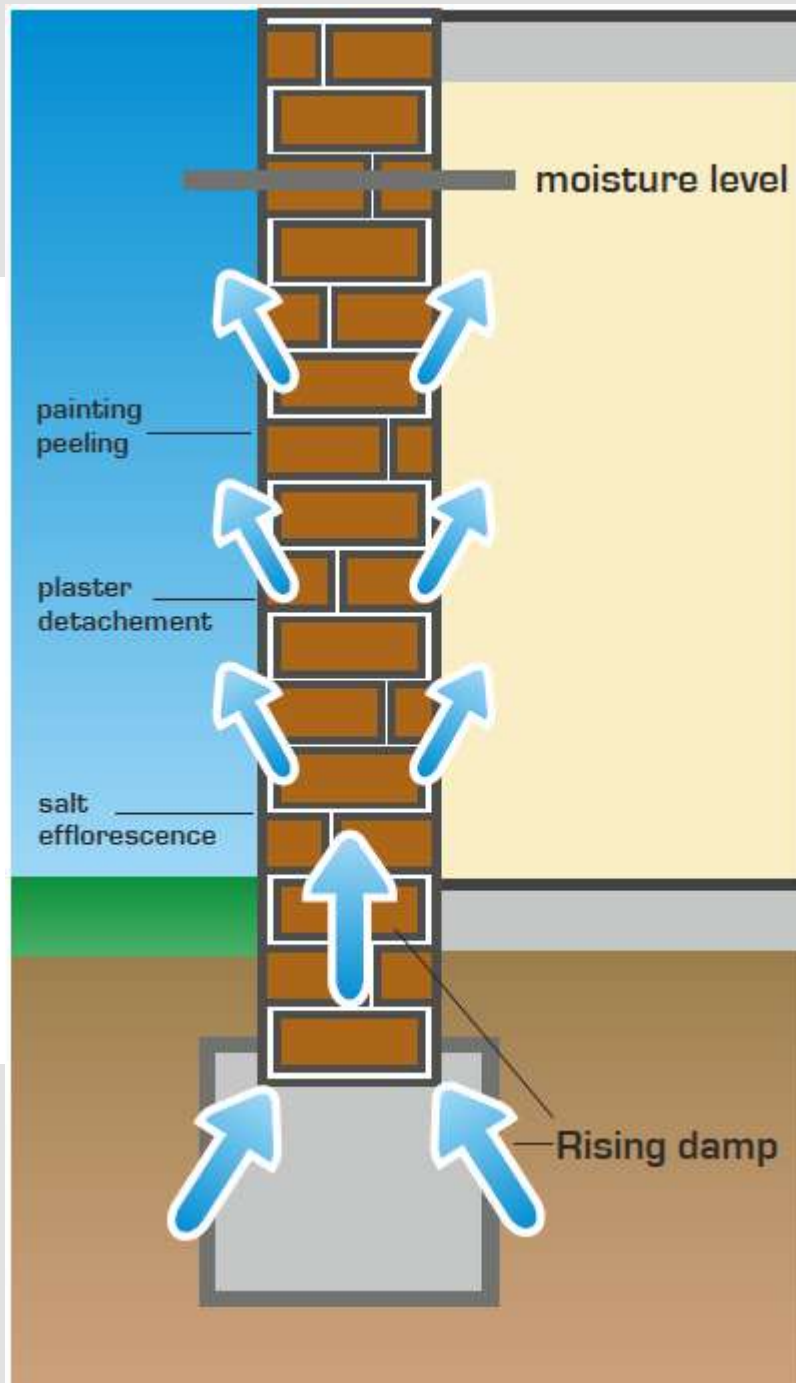




DAMAGE CAUSED TO WALLS BY RISING DAMP

This is the damage caused to walls:

- Stains at the base of the building.
- Destruction of plaster.
- Growth of mould.
- Increased heat dispersion from the building.
- Colder walls and formation of condensation.
- Detachment of the superficial layer of some types of stones and in bricks due to crystallization of salts.
- Possible freezing of humidity and water contained within the capillary system in the walls, which increases in volume and produces damaging pressure.
- Chemical and physical reactions between substances carried by the humidity and those present within the building; these, introduced by water and damp, penetrate and spread inside the walls and the plaster, producing damaging reactions.
- Production of biological formations through the presence of humidity, which enables their growth.



DAMAGE CAUSED TO WALLS BY RISING DAMP

EFFECT OF WATERBORNE SALTS

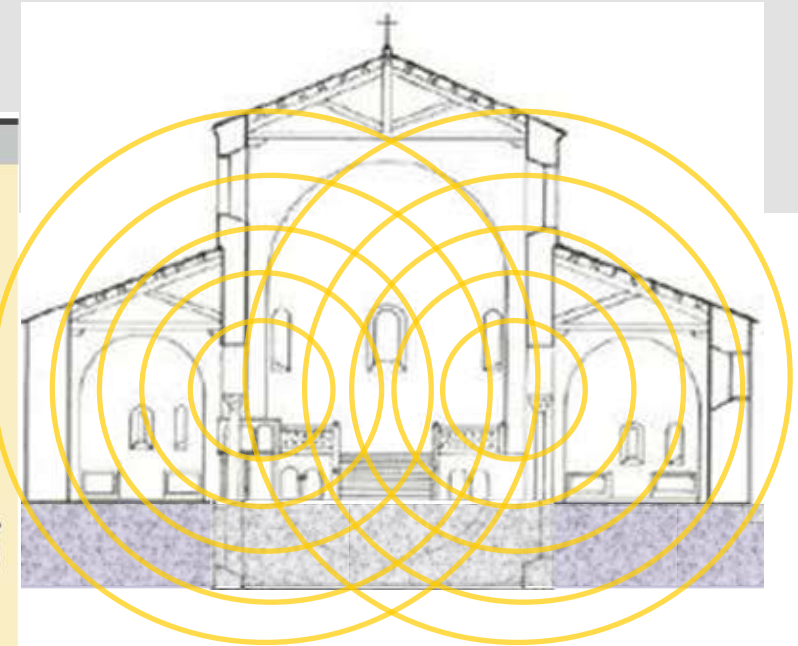
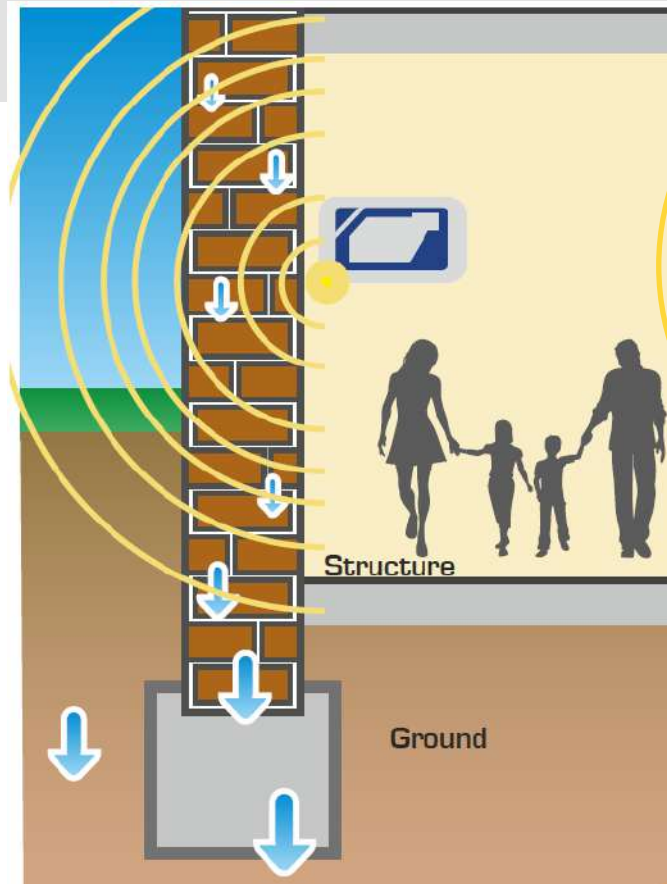
When any type of salt is dissolved in water, single molecules of (salt) solution spread uniformly in the liquid mass (solvent) so that each unit of volume of the solution (mix) dissociates forming many positive and negative ions which remain in the solution together with other non-dissociated molecules.

This is the phenomenon known as electrolytic dissociation and the solutions are known as electrolytic solutions.

These have the characteristic property of letting electric current through via ionic conduction, which is known as electric conductivity, in contrast to distilled water (pure water) which behaves as a perfect insulator.

OPERATION

Sophisticated technology at the service of any building made by human beings for their own needs. The Tergomatic system, based on the system for the “control of capillary rising damp”, is used, without any limitation, for the recovery and redevelopment of buildings for worship, monumental buildings, educational buildings, residential buildings, hospital buildings, public buildings, industrial buildings, etc., affected by capillary rising damp within their walls.



The Tergomatic equipment works on the wall structure of buildings, independently from the material used for their construction: bricks, stone, tuff, rubble masonry, mixed reinforced concrete, etc. The field generated, with spherical wavelengths with a radius of 8, 10, 15 and 20 metres, allows uniformly to dehumidify the structure treated, including in this way all variously oriented surfaces, including horizontal surfaces in direct contact with the ground.

SUMMARY OF PHYSICAL PRINCIPLE OF OPERATION



The Tergomatic equipment is placed directly on walls and contains, in a small piece of machinery, innovative circuits, digital microprocessors and last generation components. In this way it activates the emission of an electromagnetic field which can be defined as an inductor; affecting and therefore interacting with the walls, it induces the presence of an electromagnetic field in the same, so influencing the behaviour of electric charges (water anions, cations and dipoles) present in the walls. This phenomenon is defined as: “System for the control of capillary rising damp”, because it acts on the potential difference between water dipoles and the walls themselves. What is reported above is a simplified summary of the operating principle of our exclusive “System for the control of capillary rising damp” technology.

THE MELLONCELLI TERGOMATIC TECHNOLOGY

IMPROVES ENVIRONMENTS:

Making them more liveable

A dry house without damp makes for an environment that is healthier and more pleasant for people, especially elders and children, and pets.

Giving it a greater economic value

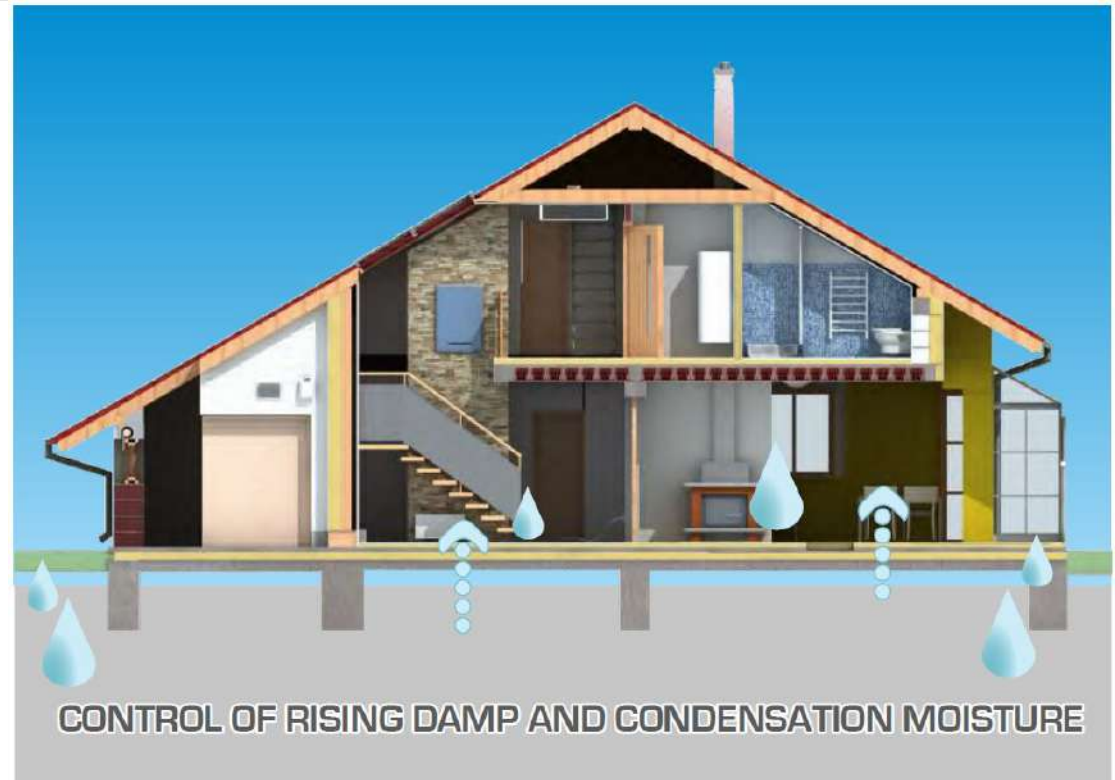
A restored building without damp acquires, clearly, a greater economic value.

Allowing for savings in its management

A dry environment means less heat dispersion and therefore a significant saving in electricity; furthermore, it will not need repeated and costly interventions for the repair and decoration of damaged plasterwork.

Making environments healthier and more attractive

A building without damp is more attractive, without annoying stains on walls, flaking plasterwork and bad smells caused by mouldy growths typical of a damp environment.



BENEFITS OF TERGOMATIC RENEWAL

ELECTROPHYSICAL DEHUMIDIFICATION OF WALLS

- 1.** It completely blocks damp in a permanent manner, without any interruption in this process.
- 2.** It impacts on the whole building, including floors and foundations.
- 3.** The Tergomatic installation takes a few minutes and does not require building work of any sort.
- 4.** No injections of resins or chemical substances of any type are required for the walls..
- 5.** No “traumatic” cutting interventions on the walls or structural changes to the same are necessary.
- 6.** There is no need to insert any wires, various electrodes or elements of different types in the walls of the building.
- 7.** The results obtained with Tergomatic are guaranteed independently of the thickness and type of the walls treated.
- 8.** The Tergomatic system consumes approximately 5 Euros of electricity per year.
- 9.** The Tergomatic equipment has a pleasing appearance and its dimensions are comparable to those of a small domestic electrical board.
- 10.** As the Tergomatic system is entirely digital, once installed it does not require any periodical intervention for recalibration or extraordinary maintenance.
- 11.** The Tergomatic technology and its results are in no way affected by the quantity of humidity nor the salts present in the walls.

ELECTRICAL AND MAGNETIC FIELDS

(DOES NOT CAUSE SICKNESS OR INJURY TO
HUMAN BEINGS)

Indicative values for the electric and magnetic fields generated by
some household appliances at different distances from the body
in comparison with the emission from Tergomatic equipment.

Examples of field intensity with varying distances (value of B in
microTesla μT).

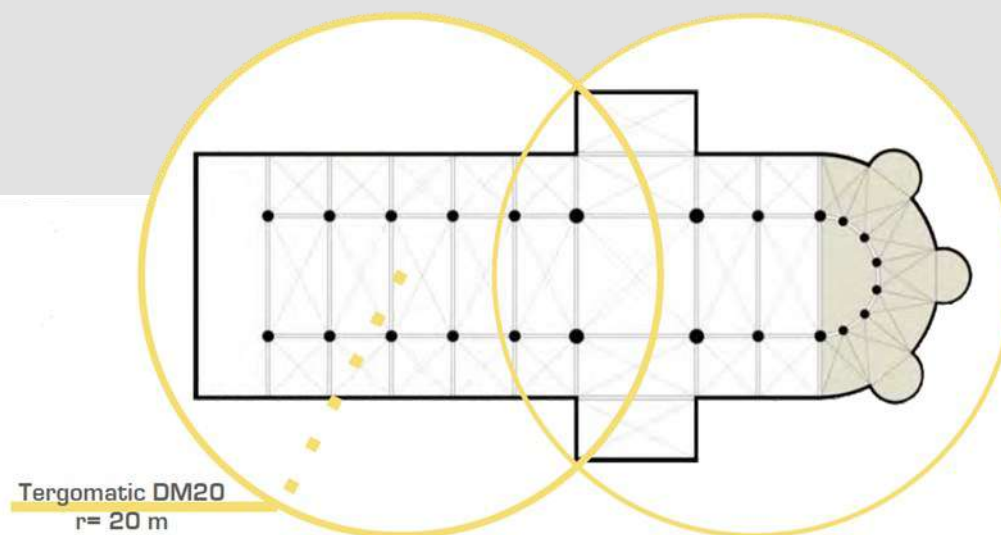
ELECTRICAL APPLIANCE	IMMEDIATE PROXIMITY	10 cm	20 cm	30 cm	THE VALUE IS GREATER THAN	
TERGOMATIC		0,8	0,3	0,14		
Refrigerator	0,5 ÷ 1,7	1,5	1	0,25	2	times
Radio recorder	0,3 ÷ 15	2	0,8	0,4	3	times
14" television	2 ÷ 7	2,5	1	0,5	3	times
Electric fan	30 ÷ 50	2,9	0,4	0,15	4	times
Incandescent lamp	60	3,8	0,85	0,27	5	times
Washing machine	0,1 ÷ 27,5	12,6	10	7,2	16	times
Food mixer	50 ÷ 230	14	3,5	1,5	18	times
Vacuum cleaner	2 ÷ 235	20	7	3	25	times
Razor	50 ÷ 1300	20	5	1,7	25	times
Hair dryer	40 ÷ 100	40	5	1,5	50	times

INSTALLATION EXAMPLE

Equipment field of action

(possible action ranges: a spherical radius of
8–10–15–20 m)

Maximum building dimensions with a single
piece of equipment



Tergomatic DM10
r= 10 m



TERGOMATIC		
	RADIUS	
DM8	8 m	m. 11 x 11 = mq. 121
DM10	10 m	m. 14 x 14 = mq. 196
DM15	15 m	m. 20 x 20 = mq. 400
DM20	20 m	m. 28 x 28 = mq. 784

8 m

10 m

15 m

20 m

TERGOMATIC

SMALL DIMENSIONS FOR MINIMAL FOOTPRINT



The dimensions of our machines allow them to be installed even indoors or behind your furnishings so as to become invisible.

Dimensions: Approx. 200x120x90 mm.

TERGOMATIC TECHNICAL SPECIFICATIONS

TECHNICAL SPECIFICATIONS	
Electrical supply	230 V - 50 Hz
Consumption	approx. 3 Wh
Insulation	class II according to CEI EN 60335-1 (1998) standards
Level of protection	IP 66 according to CEI EN 60529 (1997) standards
Action range	from 8 – 10 – 15 – 20 metres depending on the model
Marking	 confirms compliance with EEC 73/23 (safety of electrical products) and EEC 89/336 (electromagnetic compatibility) directives

TERGOMATIC TECHNICAL SPECIFICATIONS

Only four 6 mm holes required
in the wall

Plugged in a Schuko socket

Powered 24/7



RED error indicator

GREEN correct operation indicator

DISPLAY PANEL:

- TIMER indicator with operating hours
- VOLT used indicator
- Frequency indicator

ADVANCED DIAGNOSTIC TECHNOLOGIES

IN SUPPORT OF TERGOMATIC TECHNOLOGY FOR EVERY NEED

DIAGNOSTIC METHODS



Hygro LAB by IBIX



Mobile LAB by IBIX

**Measuring system with
Thermal Camera**



**Measurement taken with CM
hygrometer**
(calcium carbide method)



**Non-invasive method:
Electromagnetic induction
measurement
and termographic investigations**



DIAGNOSTIC METHODS - Mobile LAB by IBIX



**DIGITAL
MICROSCOPE**

Digital microscope
analysys



**SOFTWARE TO
CARRY OUT
REPORTS**

Mobile Lab for Linux –
v.1.0



**THERMO-
HYGROMETER**

Portable
Termohygrometer



**QUANTITATIVE ANALYSIS
OF NITRATES, SULPHATE
AND CHLORIDES**

UNI 11087:2003 - Beni
culturali - Materiali lapidei
naturali ed artificiali –
(Cultural heritage – Natural
and artificial stones –
Determination of soluble
salt content)



**MEASUREMENT OF
TOTAL SOLUBLE
SALTS and PH**

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**HUMIDITY MEAS.
USING WEIGHT
METHOD**

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**REFLECTANCE
SPECTROPHOTOME
TERS**

EN 15886:2010
“Conservation of cultural
property - Test methods -
Colour measurement of
surfaces”



HYGROMETER

Measure surface
temperature
Infrared pyrometer



**LOW PRESSURE
WATER**

NORMAL 44/93
“Measurement of water
absorption under low
pressure”



**SAMPLES FOR
LABORATORY
ANALYSIS**

Sampling



**LASER
THERMOMETER**

Photometer for
transmission
measurements

DIAGNOSTIC METHODS - Hygro LAB by IBIX



QUANTITATIVE ANALYSIS
OF NITRATES, SULPHATE
AND CHLORIDES

UNI 11087:2003 - Beni culturali - Materiali lapidei naturali ed artificiali – (Cultural heritage – Natural and artificial stones – Determination of soluble salt content)



HYGROMETER

Measure surface temperature
Infrared pyrometer



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THERMO-
HYGROMETER

Portable Termohygrometer



HUMIDITY MEAS.
USING WEIGHT
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SOFTWARE TO CARRY
OUT REPORTS

Hygro Lab for Linux – v.1.0



LASER
THERMOMETER

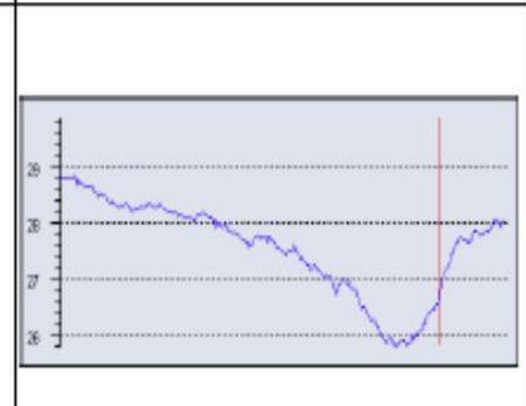
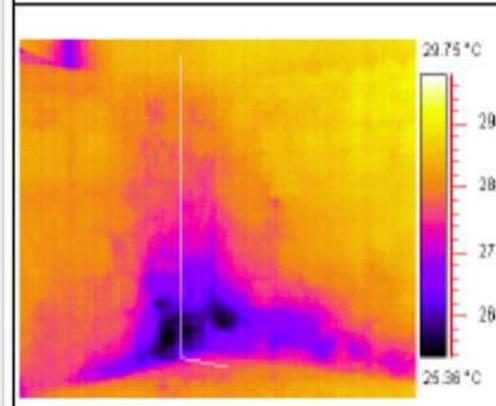
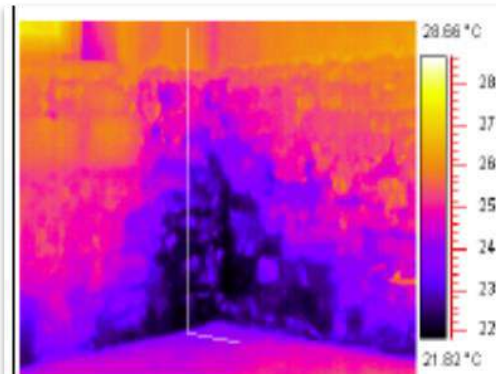
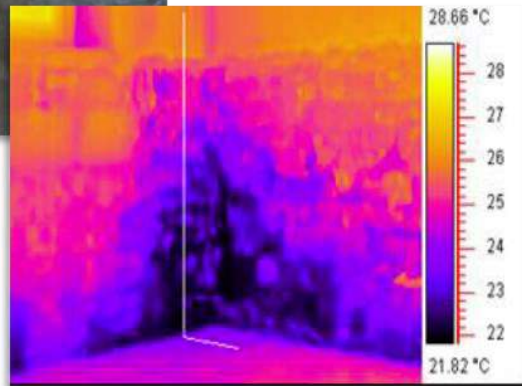
Photometer for
transmission measurements



SAMPLES FOR
LABORATORY
ANALYSIS

Sampling

DIAGNOSTIC METHODS - THERMOCAMERA FOR THERMOGRAPHIC TESTING



DIAGNOSTIC METHODS - DIAGNOSTIC METHODS MEASUREMENTS TAKEN WITH CM HYGROMETER (CALCIUM CARBIDE METHOD)



CCM Hygrometer Technical data	
Pressure range	0 ÷ 1.6 bar
Breakdown	0.05 bar
Safety Pmax	2 bar
Precision	± 1.6 %
Operating temperature	-10 ÷ 80 °C
Pressure gauge case	Steel plate
Casing protection	IP32 Class

Rapid humidity measurement of a loose wall sample through a process of calcium carbide hydration.

UNI 1121 normative of May 2004

“Cultural property – Natural and artificial stone materials –

Determination of water content:

Calcium Carbide Method”

Calcium Carbide reacts when it comes into contact with water or humidity contained in materials and, as a consequence of this reaction, pressure in the form of gas (Acetylene) is generated. On the basis of the weighed quantity of the material sample in examination as well as through the generated pressure, it is possible to determine the relative humidity content in CM % using the table.

DIAGNOSTIC METHODS - NON-INVASIVE METHOD:

ELECTROMAGNETIC INDUCTION MEASUREMENT AND THERMOGRAPHIC INVESTIGATIONS



Non-destructive electromagnetic induction measurement which utilises the ability of water molecules to weaken, and therefore modify, magnetic fields. The electric field penetrates the material through the instrument's contact tabs and creates a measurement field approximately 5 cm deep. The instrument determines the water content in percentage weight in relation to the dry mass (%) on the basis of curves that are characteristic for every material.

Values are measured on a geometrically defined grid on the wall to be analysed, with the production of humidity maps in false colours realised through "contour plot" type graphics.

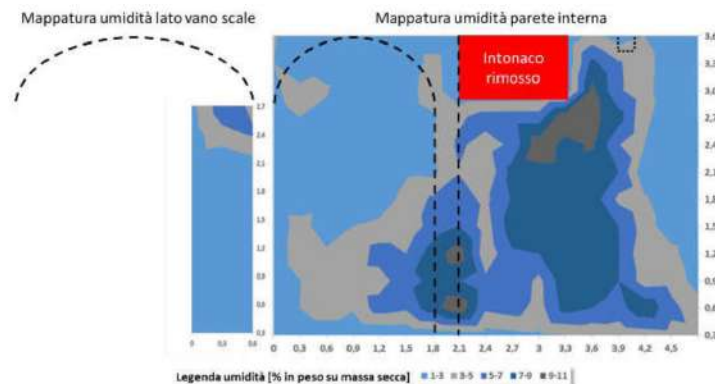
- Instrument used: **TESTO 616**
- Measurement field on wood: <50%
- Measurement field on construction materials: <20%
- Resolution: 0.1%

Measurement depth: up to 5 cm (NB: external layers of the material have a greater impact on the measurement result than internal layers).

THERMOGRAPHIC INVESTIGATIONS

Thermographic investigation inside buildings carried out on plastered wall surfaces and not by the identification, evaluation and relative geometrical rendering, on a graphic report previously prepared by the client, of hidden architectural features, of building materials, and the presence of humidity.

The whole done with portable infrared instruments after thermal stimulation of the elements to be tested with warm air generators. The whole done according to the requirements of UNI 9252 and ISO 6781 standards, returned with photographic evidence of the anomalies and deteriorations according to UNI 9124, IR images, posttesting computerised evaluation of video-recorded on site IR images and detailed summarised technical report



MEASUREMENT OF HUMIDITY AND EVALUATIONS:

- ◇ THE FIRST MEASUREMENT WILL BE CARRIED OUT BEFORE THE INSTALLATION OF THE SYSTEM.
- ◇ THE FIRST EVALUATION 6-9 MONTHS AFTER THE INSTALLATION.
- ◇ THE SECOND EVALUATION 18-24 MONTHS AFTER THE INSTALLATION.
- ◇ THE THIRD EVALUATION WILL BE CARRIED OUT AT THE END OF THE 36TH MONTH, ONLY IF THE SAMPLE VALUES FROM THE PREVIOUS EVALUATION ARE ABOVE NORMAL VALUES (BY NORMAL VALUES WE MEAN VALUES UNDER 2.5% - 3.0% MAX).





REDUCTION OF HUMIDITY

- ◇ In a **STONE** building there will be an average reduction of humidity of around 20% after only 3-6 months
- ◇ In a **CONCRETE** building there will be an average reduction of humidity of around 30% after only 3-6 months
- ◇ In a **BRICK** building there will be an average reduction of humidity of around 45% after only 3-6 months
- ◇ In a **SANDSTONE** building there will be an average reduction of humidity of around 50% after only 3-6 months

The process will continue more slowly after this period, until normal values of humidity are reached, which will happen after around 12-18-24 months and, in the most difficult cases, after 36 months, depending on the type of material and the quantity of water contained in the walls

TERGOMATIC INSTRUMENTS ARE INSTALLED IN:

- PRIVATE HOMES
- RESIDENTIAL BLOCKS OF FLATS
- CHURCHES
- CATHEDRALS
- MONASTERIES
- ORATORIES
- CONVENTS
- SANCTUARIES
- MUSEUMS
- SCHOOLS
- HOSPITALS
- OFFICES
- HOTELS
- PALACES
- VILLAS
- BANKS
- LIBRARIES
- COUNCIL HOUSING



DECLARATION OF CONFORMITY

Melloncelli S.r.l.

Via Argine Po, 174
46028 Sermide (MN)
Italy

declares that:

TERGOMATIC

is compliant
with EEC directive

- 73/23 safety of electrical products
- 89/336 electromagnetic compatibility

Standards to which it has
been declared conform to:

- **Safety CEI EN 60335-1 (2002)**
- **EMC**

Emissions

CEI EN 55011 (2009) - CEI EN 61000-6-3 (2007)

Immunity



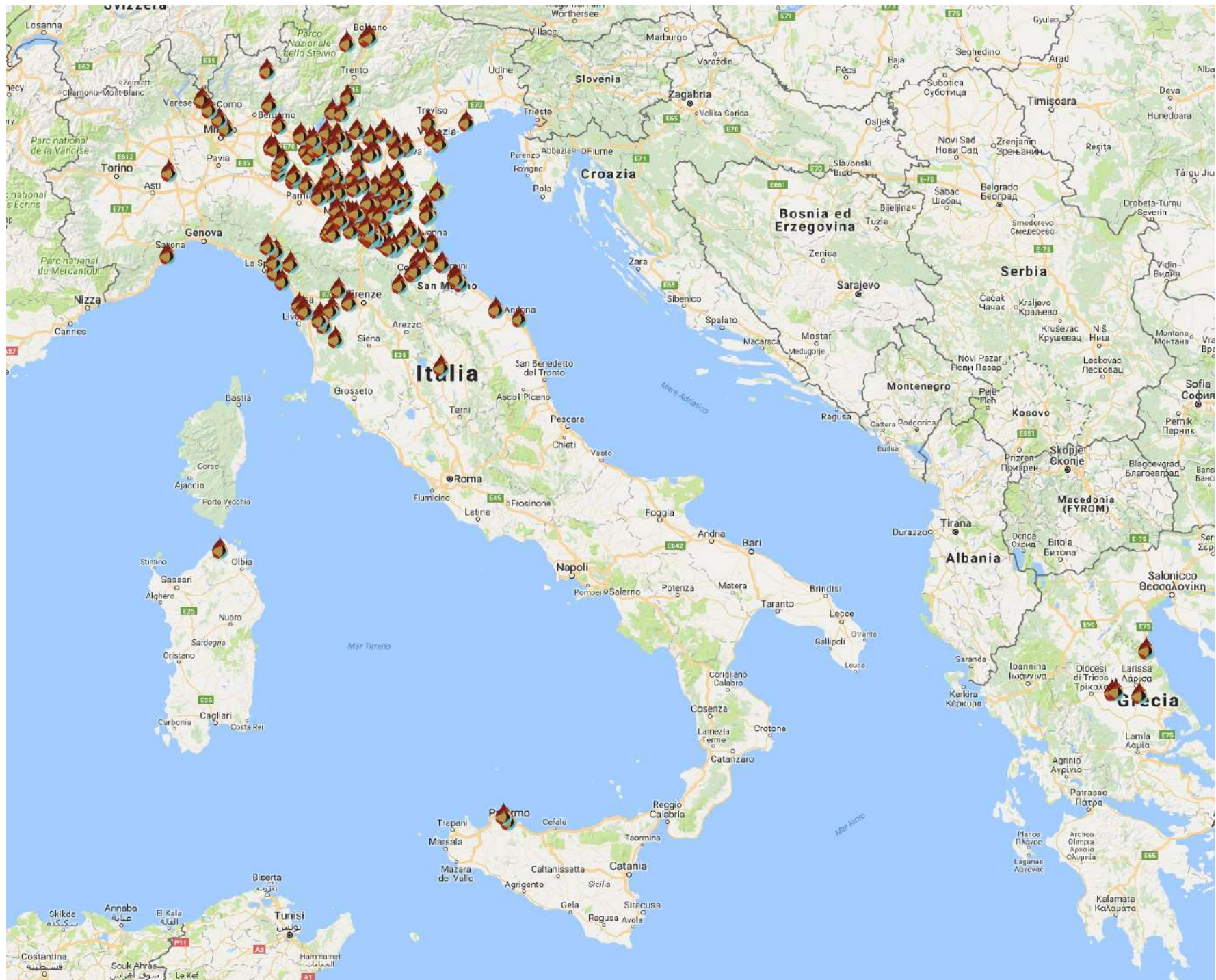
CEI EN 61000-3-2 (2007) - CEI EN 61000-3-3 (2009)
CEI EN 61000-4-2 (1996) - CEI EN 61000-4-3 (2007)
CEI EN 61000-4-4 (2006) - CEI EN 61000-4-5 (2007)
CEI EN 61000-4-6 (2009) - CEI EN 61000-4-8 (1997)
CEI EN 61000-4-11 (2006) - CEI EN 61000-6-2 (2006)
• **Safety for Human Exposure to Electromagnetic Fields**
CEI EN 62233 (2008)

in partnership with: IBIX S.r.l. - Via La Viola, 2 - 48022 Santa Maria in Fabriago (RAVENNA) - Italy

REFERENCES

DEHUMIDIFICATION

TERGOMATIC



Tergomatic

Dehumidification of rising and environmental damp

RIISING DAMP DEHUMIDIFICATION

Bioconstruction technology, totally reversible and non-invasive, against capillary rising damp. No wires, cables or electrodes in walls.

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HygroLAB

Pre-diagnostics and diagnostics

DIAGNOSTICS

Portable laboratory for carrying out diagnostic investigations on materials in historical buildings. The analytical methods used are conform to the Italian (U B I C u l t u r a l p r o p e r t y) and European (EN— Conservation of Cultural Property) normatives.



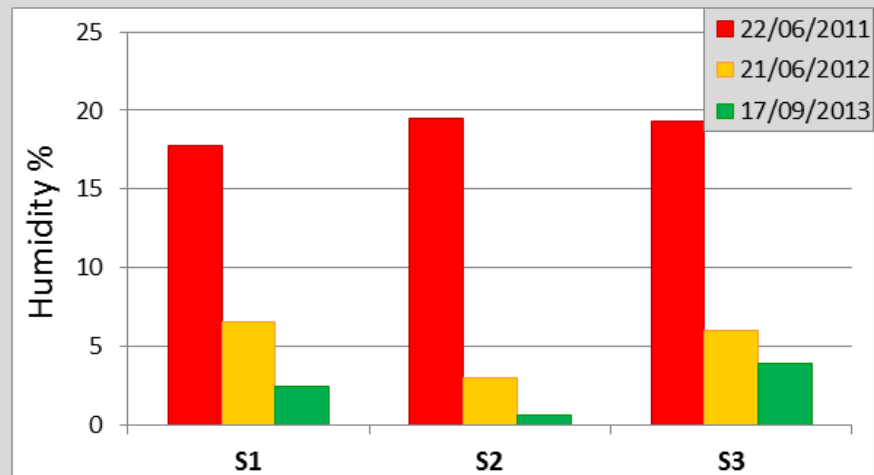
Tergomatic DM20

PALAZZO MAGNANI

BOLOGNA—ITALY

TERGOMATIC INSTALLATION AND DIAGNOSTIC INVESTIGATIONS

June 2011 ÷ September 2013



Initial average humidity: + 18,87%
Final average humidity: + 2,3%
REDUCTION HUMIDITY: - 87,81%

Tergomatic

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CM Hygrometer

Calcium carbide method

DIAGNOSTICS

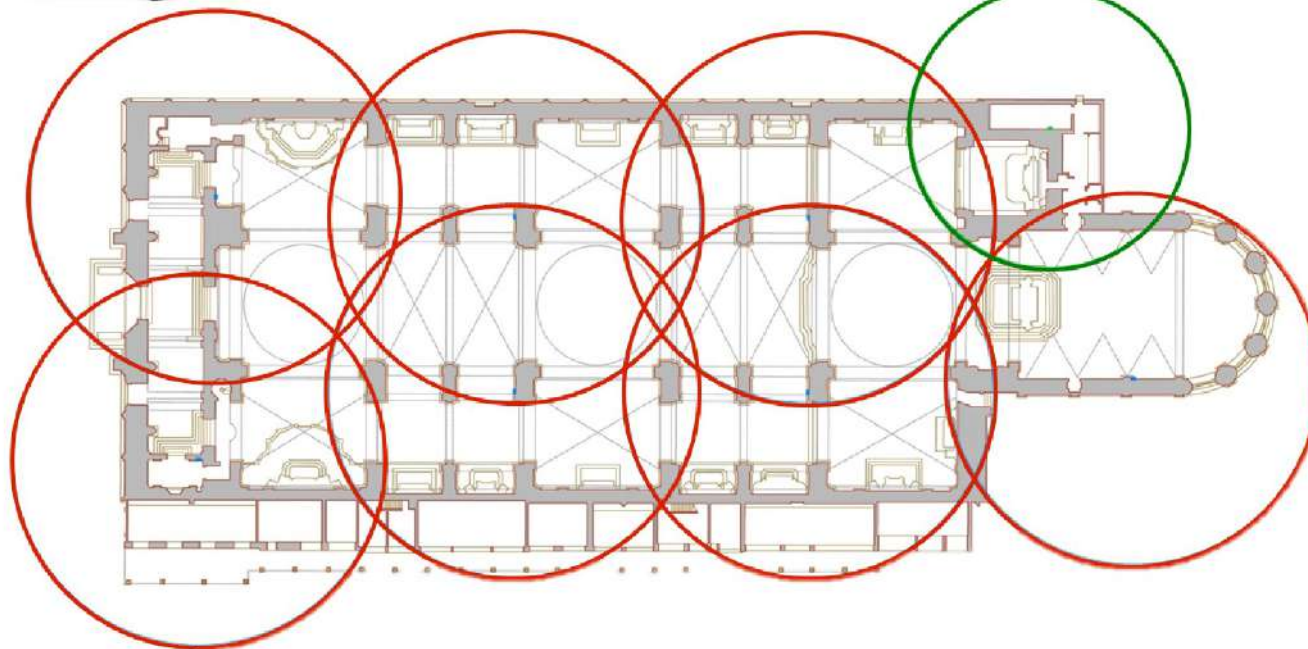
Rapid humidity measurement of a loose wall sample through a process of calcium carbide hydration.

(UNI 1121 normative of May 2004 “Cultural property – Natural and artificial stone materials – Determination of water content: Calcium Carbide Method”).



TERGOMATIC
DM20

TERGOMATIC
DM15

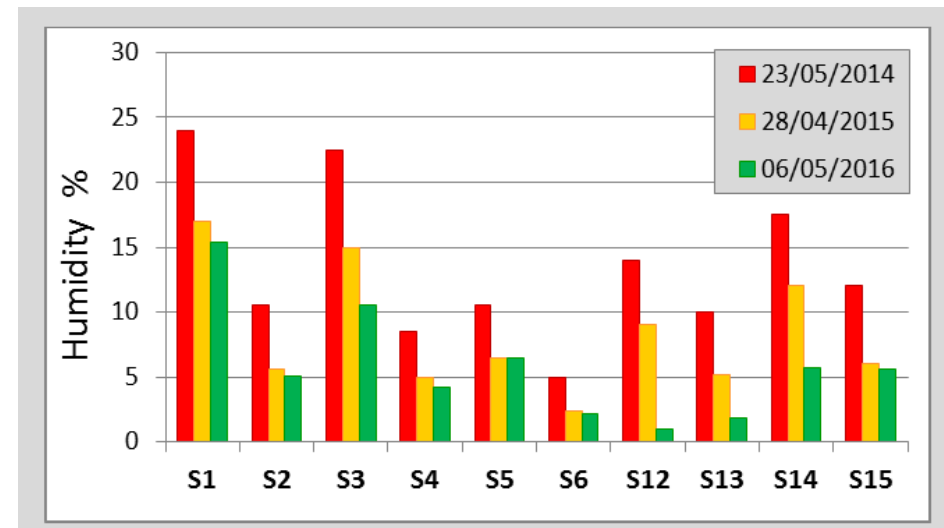


S. GIORGIO CATHEDRAL

FERRARA—ITALY

TERGOMATIC INSTALLATION AND DIAGNOSTIC INVESTIGATIONS

May 2014 ÷ May 2016



Initial average humidity:

+ 13,45%

Final average humidity:

+ 5,08%

REDUCTION HUMIDITY:

- 58,09%

Dehumidification of rising and environmental damp



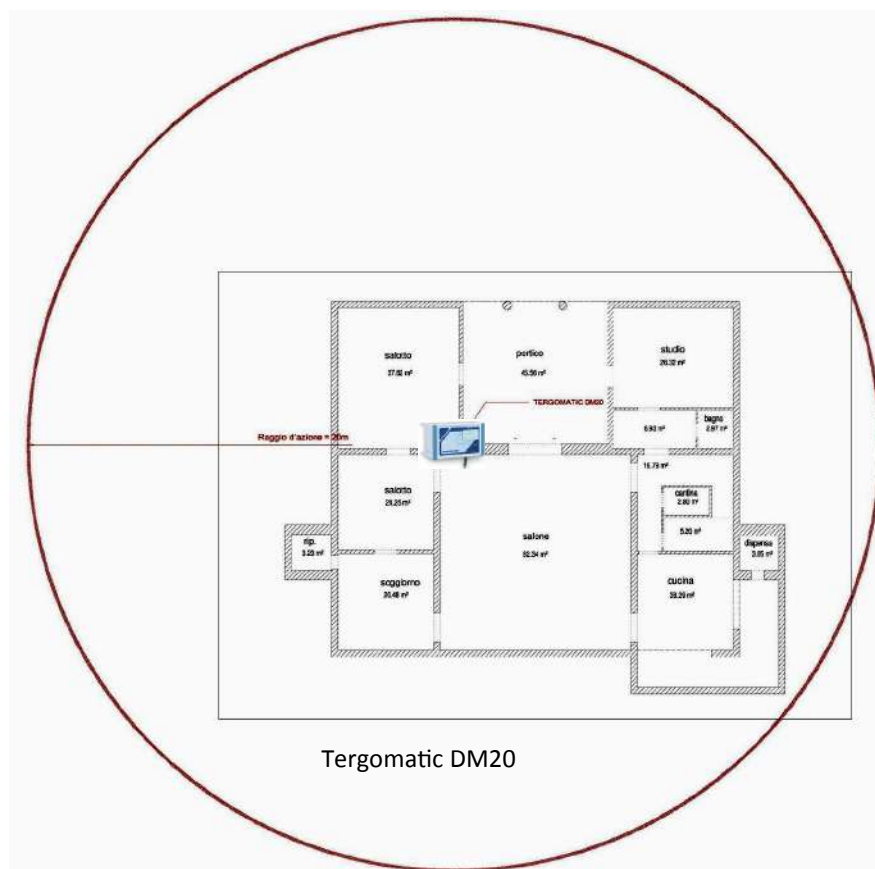
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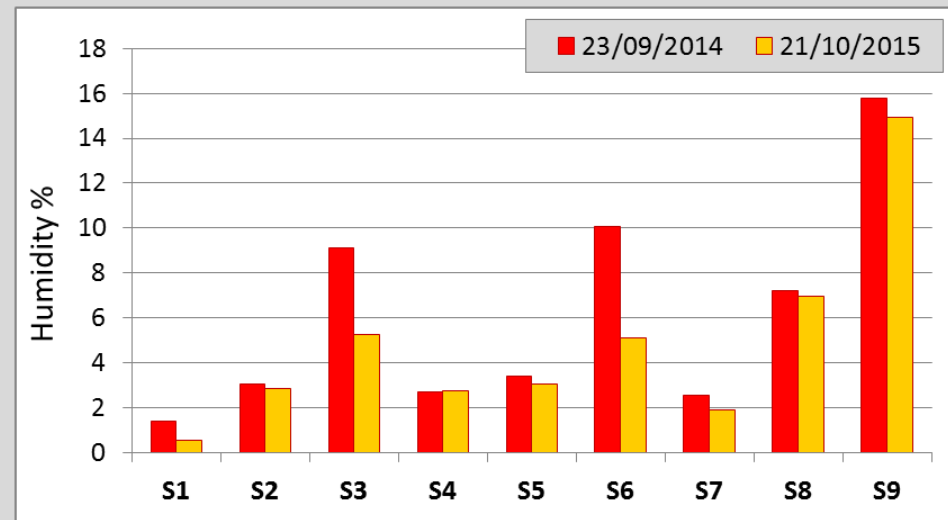


VILLA BELVEDERE

SASSUOLO (MODENA) - ITALY

*TERGOMATIC INSTALLATION AND DIAGNOSTIC
INVESTIGATIONS*

September 2014 ÷ October 2015



Initial average humidity: + 6,13%
Final average humidity: + 4,80%
REDUCTION HUMIDITY: - 22,57%

Tergomatic

Dehumidification of rising and environmental damp

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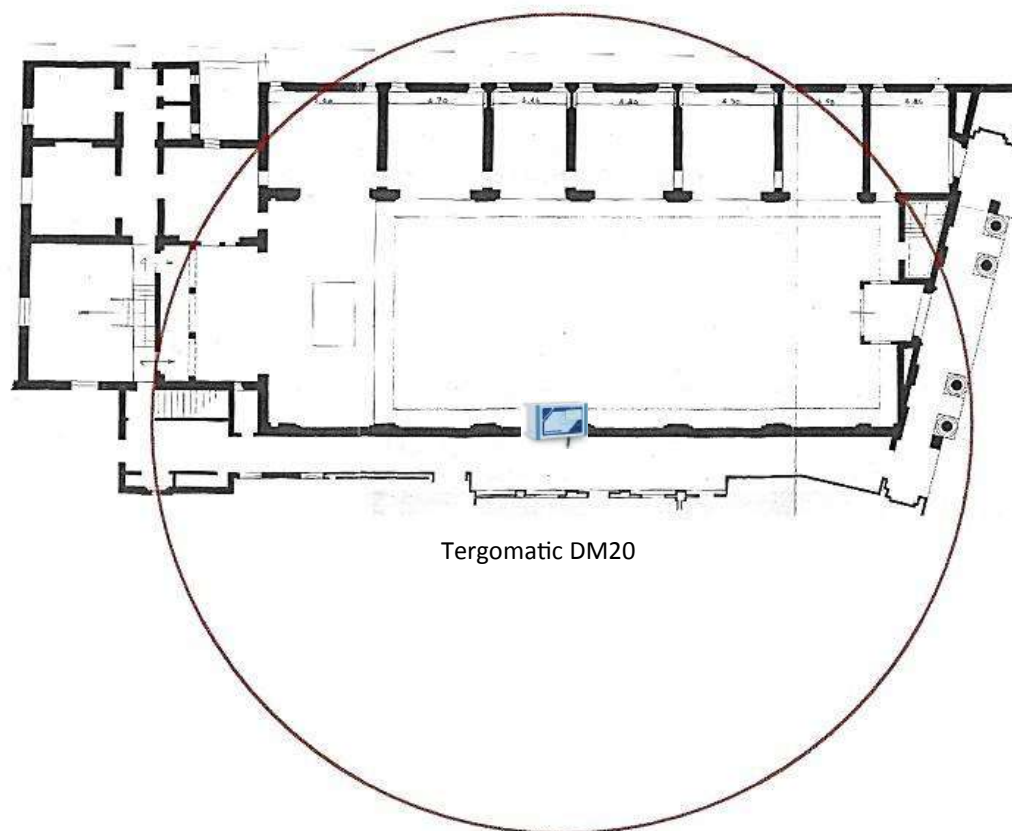
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Calcium carbide method

DIAGNOSTICS

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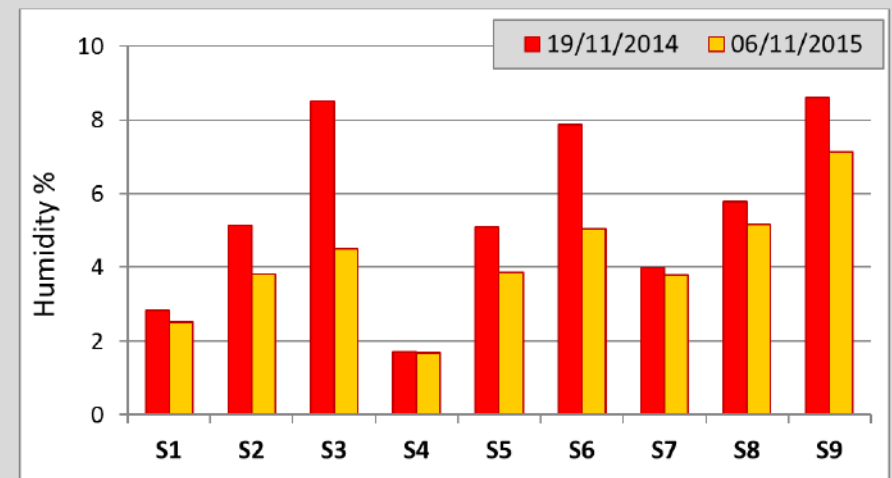
Tergomatic DM20

DUOMO S. CASSIANO MARTIRE ALL'OSSERVANZA

IMOLA (BOLOGNA) - ITALY

*TERGOMATIC INSTALLATION AND DIAGNOSTIC
INVESTIGATIONS*

November 2014 ÷ November 2015



Initial average humidity: + 5,50%
Final average humidity: + 4,16%
REDUCTION HUMIDITY: - 24,27%

Tergomatic

Dehumidification of rising and environmental damp



RISING DAMP DEHUMIDIFICATION

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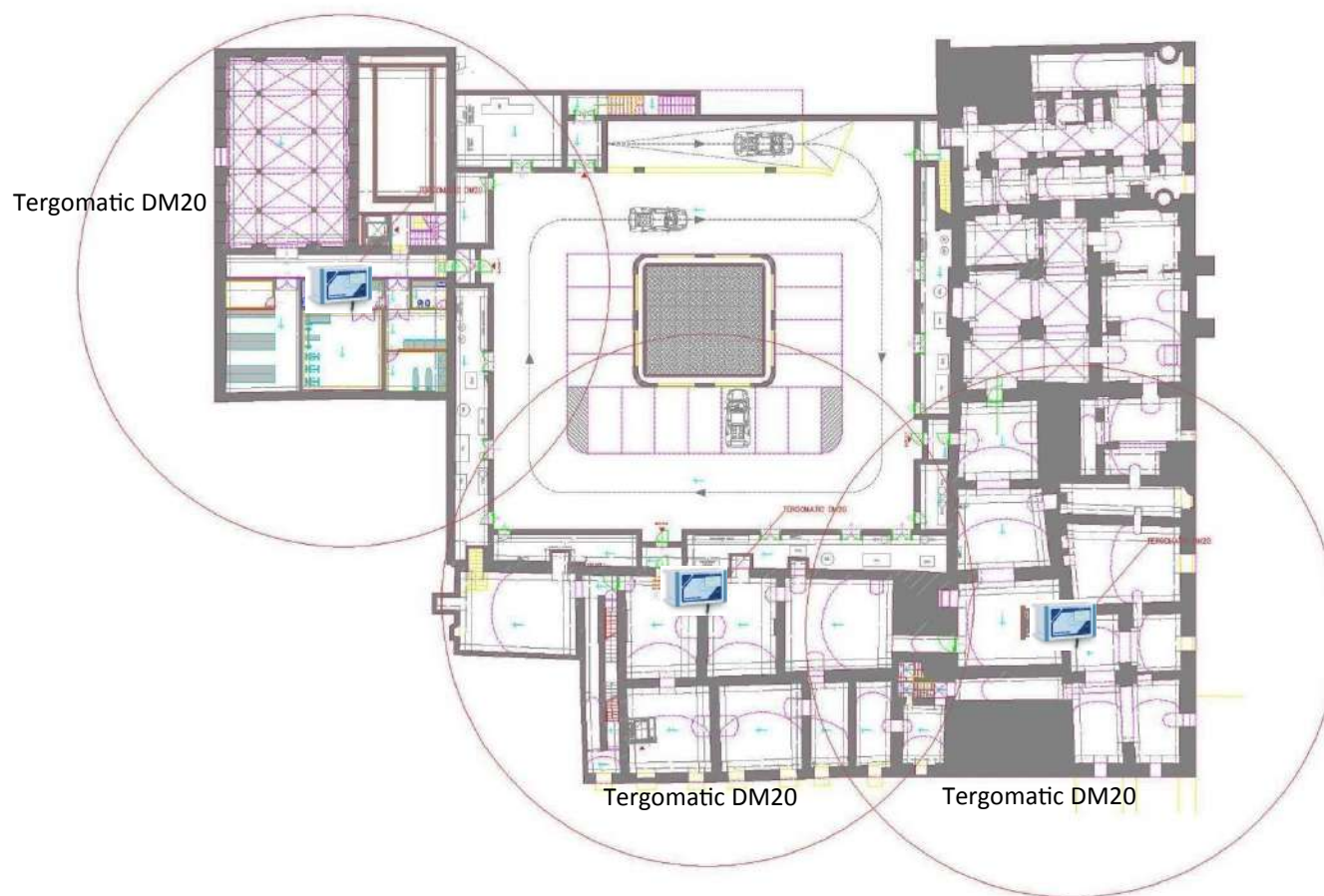
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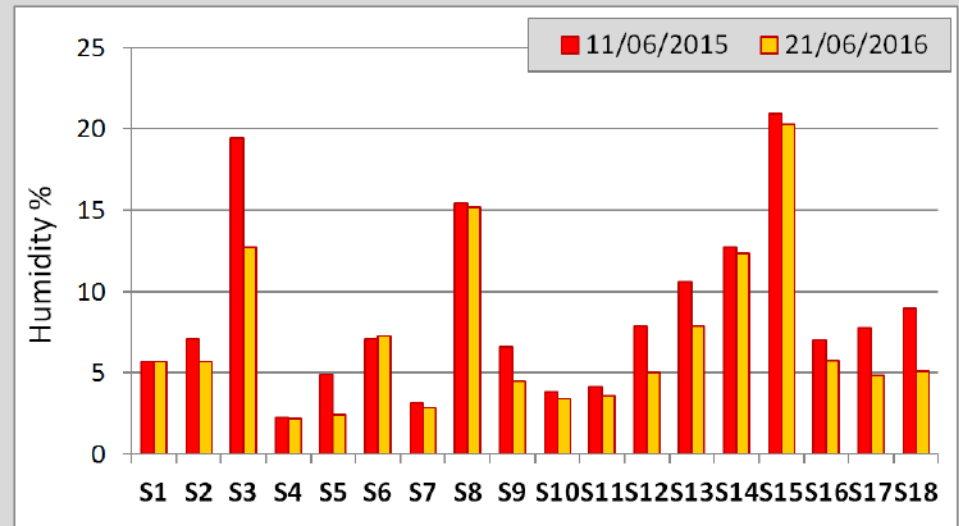


PALAZZO CANOSSA

MANTOVA - ITALY

TERGOMATIC INSTALLATION AND DIAGNOSTIC INVESTIGATIONS

June 2015 ÷ June 2016



Initial average humidity:

+ 8,63%

Final average humidity:

+ 7,03%

REDUCTION HUMIDITY:

- 19,06%

Dehumidification of rising and environmental damp

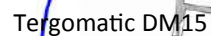


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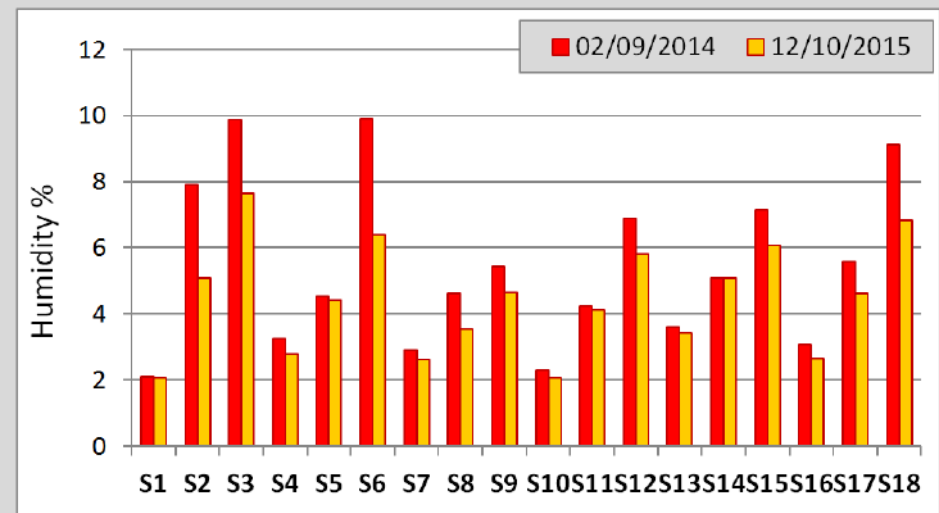


MONASTERO CORPUS DOMINI

FORLÌ - ITALY

*TERGOMATIC INSTALLATION AND DIAGNOSTIC
INVESTIGATIONS*

September 2014 ÷ October 2015



Initial average humidity: + 5,42%
Final average humidity: + 4,44%
REDUCTION HUMIDITY: - 18,14%

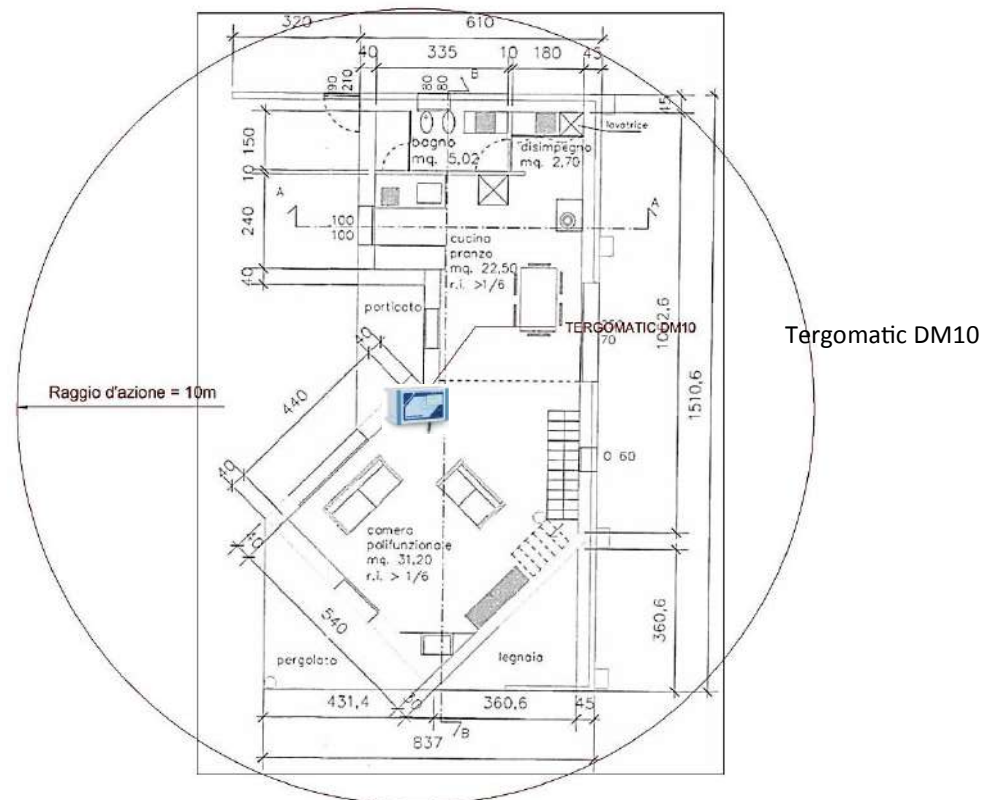
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Bioconstruction technology, totally reversible and non-invasive,
against capillary rising damp. No wires, cables or electrodes in walls.
Certified by a leading institute legally recognised at national level.

Electromagnetic induction measurement and thermographic investigations

Non-destructive electromagnetic induction measurement and thermographic investigation inside buildings carried out on plastered wall surfaces and not by the identification, evaluation and relative rendering.



EDIFICIO

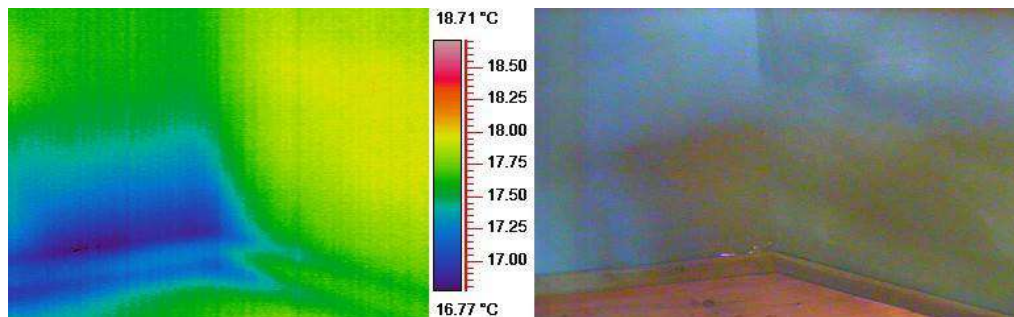
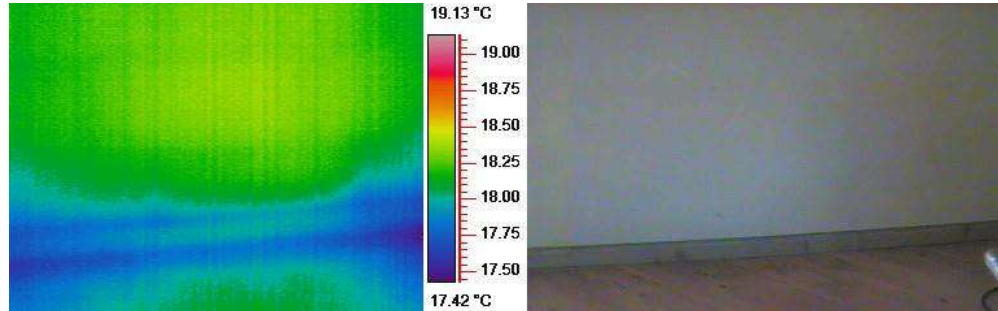
BAGNOLO SAN VITO (MANTOVA) - ITALY

TERGOMATIC INSTALLATION AND DIAGNOSTIC INVESTIGATIONS

FEBRUARY 2016



THERMOGRAPHIC DATA ANALYSIS



ELECTROMAGNETIC INDUCTION MEASUREMENT - M5 calibration

0-1 1-2 2-3 3-4 4-5 5-6 6-7 7-8 8-9



1,2	3,8	3,3	2,9	3,8	4,9	3,0
0,9	3,3	3,0	3,6	4,4	4,0	3,4
0,6	4,3	4,8	4,8	5,2	4,2	4,4
0,3	7,8	8,5	7,8	8,2	7,6	6,2
	0,3	0,6	0,9	1,2	1,5	1,8

Tergomatic

Dehumidification of rising and environmental damp



RISING DAMP DEHUMIDIFICATION

Bioconstruction technology, totally reversible and non-invasive, against capillary rising damp. No wires, cables or electrodes in walls.

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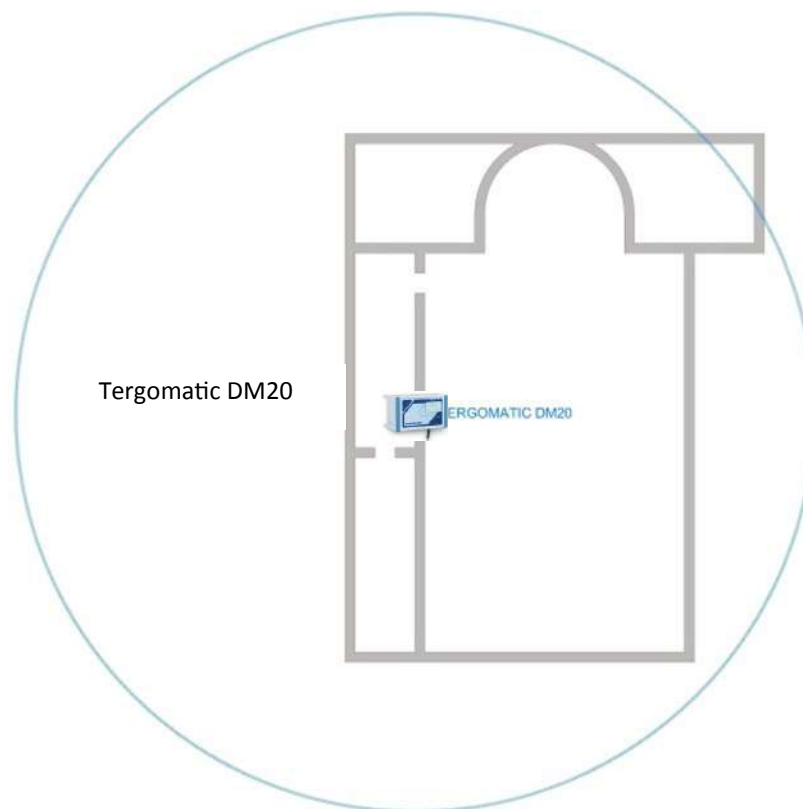
CM Hygrometer

Calcium carbide method



DIAGNOSTICS

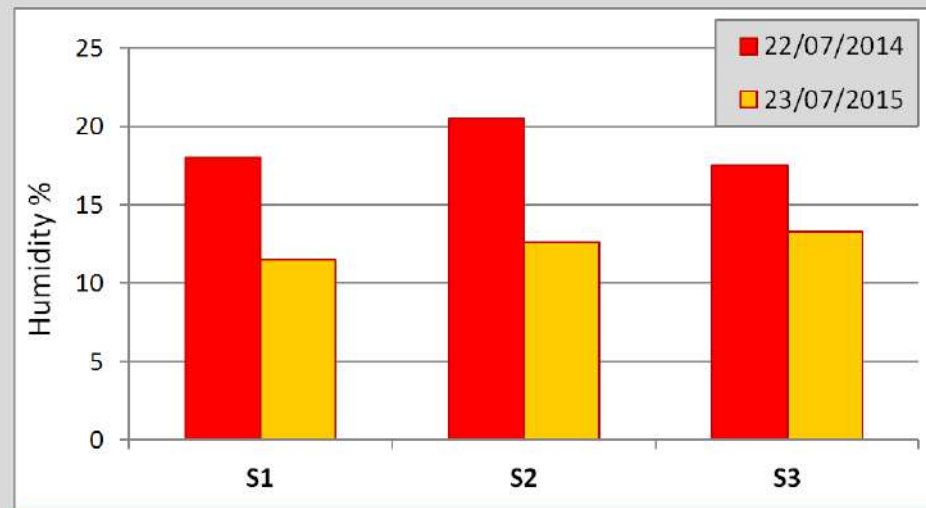
Rapid humidity measurement of a loose wall sample through a process of calcium carbide hydration. **(UNI 1121 normative of May 2004 “Cultural property – Natural and artificial stone materials – Determination of water content: Calcium Carbide Method”).**



CHURCH OF S. APOLLINARE
BAGNACAVALLLO (RAVENNA) - ITALY

*TERGOMATIC INSTALLATION AND DIAGNOSTIC
INVESTIGATIONS*

July 2014 ÷ July 2015



Initial average humidity: + 18,67%
Final average humidity: + 12,47%
REDUCTION HUMIDITY: - 33,21%

Tergomatic

Dehumidification of rising and environmental damp



RISING DAMP DEHUMIDIFICATION

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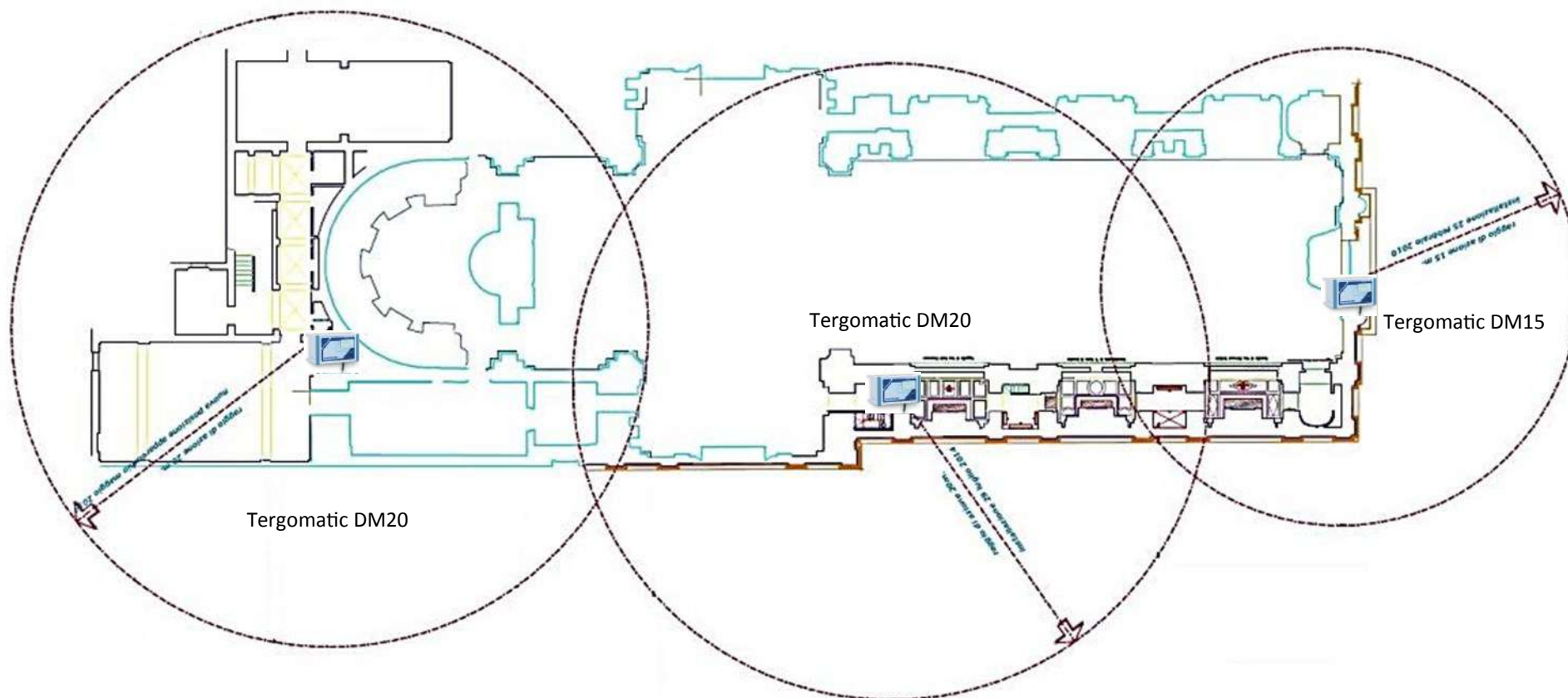
HygroLAB

Pre-diagnostics and diagnostics



DIAGNOSTICS

Portable laboratory for carrying out diagnostic investigations on materials in historical buildings. The analytical methods used are conform to the Italian (U B I C u l t u r a l p r o p e r t y) and European (EN—Conservation of Cultural Property) normatives.

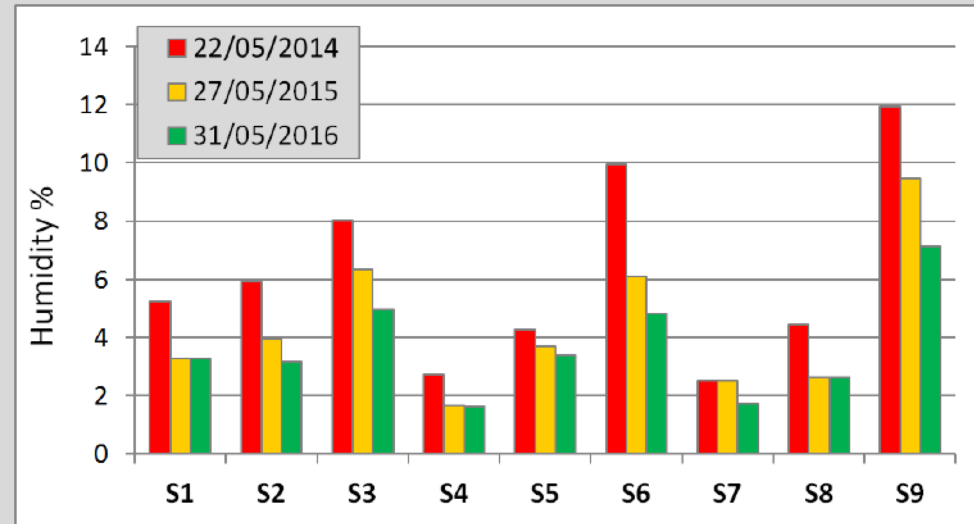


CHIURCH OF S. PAOLO MAGGIORE

BOLOGNA - ITALY

*TERGOMATIC INSTALLATION AND DIAGNOSTIC
INVESTIGATIONS*

May 2014 ÷ May 2016



Initial average humidity: + 5,42%
Final average humidity: + 4,44%
REDUCTION HUMIDITY: - 18,14%

Tergomatic

Dehumidification of rising and environmental damp

RISING DAMP DEHUMIDIFICATION

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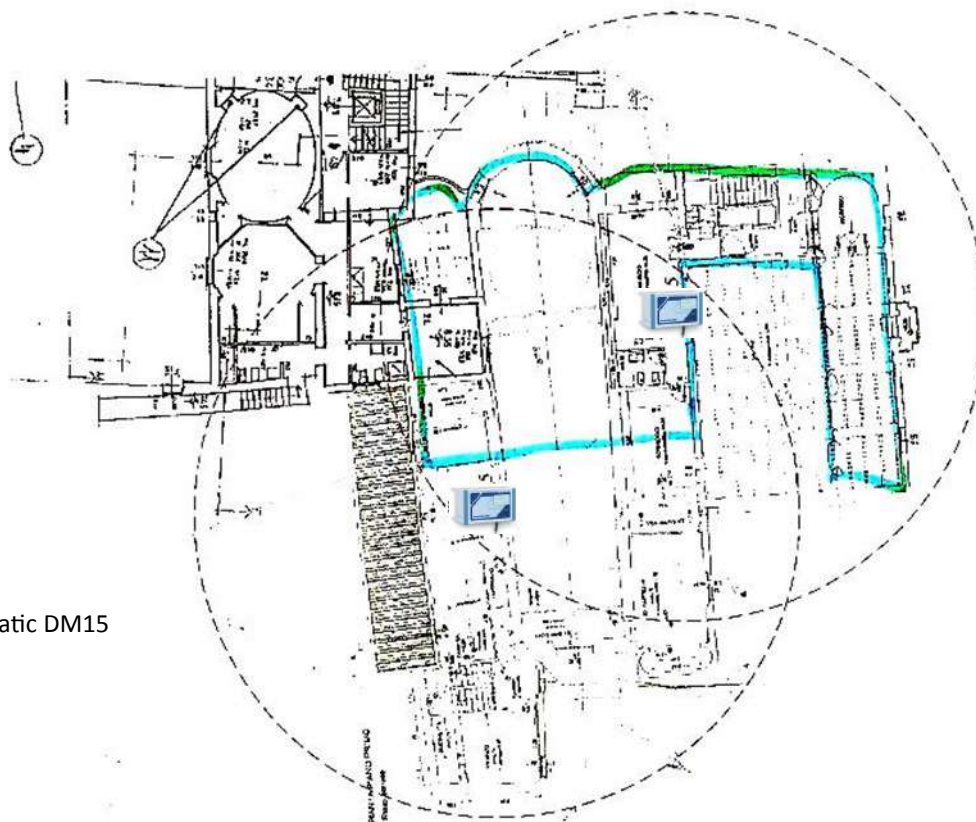
CM Hygrometer

Calcium carbide method

DIAGNOSTICS

Rapid humidity measurement of a loose wall sample through a process of calcium carbide hydration.

(UNI 1121 normative of May 2004 “Cultural property – Natural and artificial stone materials – Determination of water content: Calcium Carbide Method”).



Tergomatic DM15

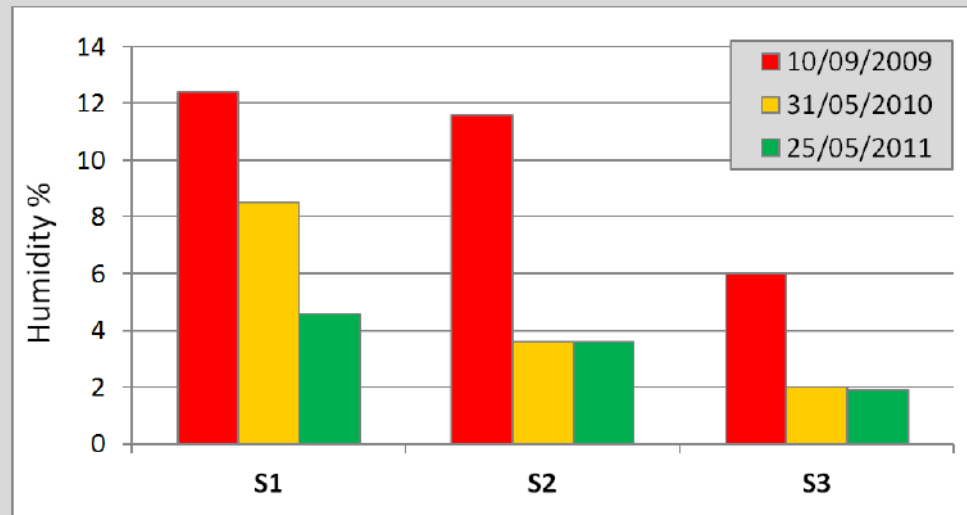
Tergomatic DM15

SAN COLOMBANO

BOLOGNA - ITALY

TERGOMATIC INSTALLATION AND DIAGNOSTIC INVESTIGATIONS

September 2009 ÷ May 2010



Initial average humidity:

+ 10%

Final average humidity:

+ 3,37%

REDUCTION HUMIDITY:

- 66,73%



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Tecnologia per l'arte dal 1843

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