AFON CASA
BUILDING INNOVATION

NOVOMUR®

Defeating humidity for over 45 years

PATENTED
WORLD'S FIRST
Dehumidifying
Plaster

Dehumidifying Thermo Acoustic Plaster

02_2025

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Introduction to the moisture issue

Novomur® is the first European patent dealing with dehumidification. Conceived and invented in the late 1970s, it now boasts a history of over 45 years, maintaining a truly original and distinctive character.

Patented in 1979, **Novomur®** revolutionized the known dehumidification system and remains unique in its category to this day. It completely dehumidifies masonry, restores basements prone to flooding, earth-retaining walls with pressurized water, environments saturated with moisture, and spaces previously used as stables, while also eliminating and preventing the issue of salt deposits and condensation.

OVER 45 YEARS of Excellence

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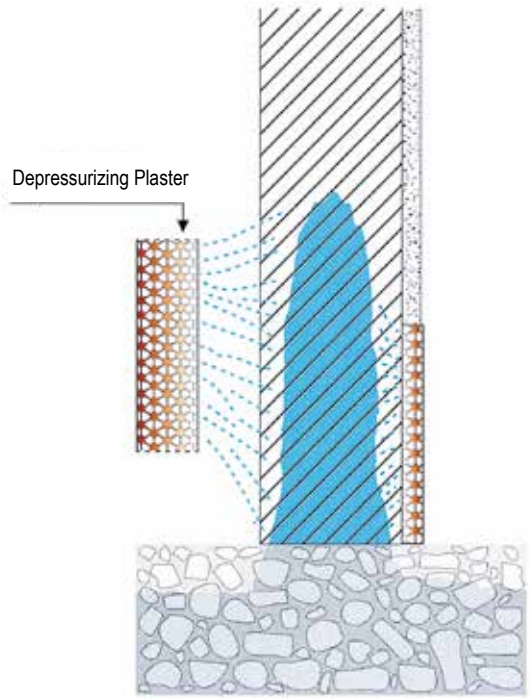
Thermal-Driven Moisture Cycling System

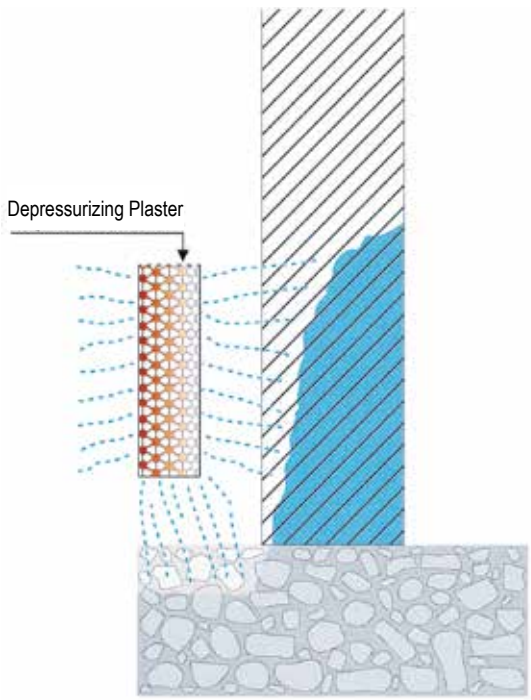
Most of the so-called macro-porous plasters available on the market today are actually waterproof products that merely “hide” the moisture problem for a limited period. By contrast, **Novomur®** does not waterproof the masonry. Instead, it acts like a “warm lung,” continuously and permanently absorbing moisture from any source (masonry or environment) and gradually releasing it through normal air exchange.

Novomur® features an open-cell alveolar structure distributed throughout its mass. The cavities are surrounded by a thermally insulating framework that keeps them separate, protecting their inner surfaces. The cells reach a diameter of 10–20 microns, are interconnected, and ensure capillary transport of water by suction toward larger cells, from which the moisture escapes as vapor.

The depressurizing effect arises from the extremely high contact area between air within the plaster’s thickness and external air, creating micro-vortices that draw in vapor. This allows the wall to dry even during continuous moisture exposure. **Novomur®**, Indeed, has excellent thermal properties; therefore, when applied to a moisture-affected wall, the moisture flows continuously toward the warmer sides, where it is drawn in and evaporated by the product’s depressurizing thermal mass until fully eliminated. This creates a continuous cycle of moisture expulsion and reabsorption, permanently releasing it as vapor when air exchange occurs in the environment.

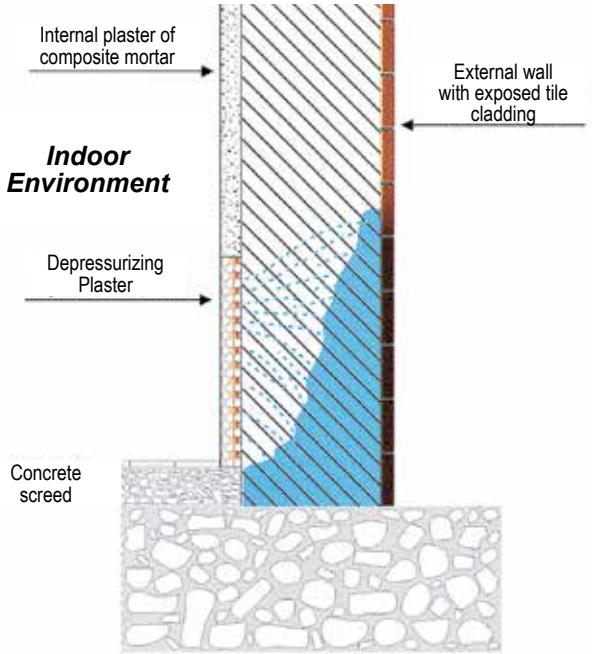


The depressurizing effect reduces the moisture pressure and accelerates its release. The diagram illustrates a wall affected by rising damp during dehumidification with **Novomur®** thermodepressurizing plaster.



Novomur® thermodepressurizing plaster acts as a siphon, drawing in all surrounding vapors and gradually expelling them into the air at the optimal time, in quantities the air can effectively dissipate.

The constant dehumidification process stabilizes at the base of the wall, preventing both rising damp and salt intrusion. As a result, the masonry is no longer moistened by water or damaged by salts.
Thanks to its alveolar mass, **Novomur®**, when applied to damp substrates such as basement and cellar walls (where ambient air is saturated with moisture and air exchange is minimal), **acts both as an absorber and a dryer**.
The same process applies to humid ambient air: **Novomur®**, in contact with the surrounding humid air, absorbs excess moisture and retains it within the alveolar mass, distributing it across the entire treated surface.



A wall with with exposed tile cladding on one side. The depressurizing effect is so effective that treating the wet wall on just one side is sufficient to dry the opposite side as well. This occurs because the vapor transmission rate exceeds the incoming moisture in the masonry. As a result, the walls are dried throughout their entire thickness.

Novomur® has a low vapor permeability value (μ = 5.3) and a high vapor transmission rate: 370 grams per day per square meter (calculated for a 2 cm thickness.
These two outstanding features give the product extremely high breathability, allowing it to expelling vapor faster than the influx of moisture wetting the masonry.
Novomur® also features excellent thermal properties, with a thermal conductivity value of λ = 0.052 W/K, enabling it to prevent or eliminate mold and condensation formation.
Each of these factors, in perfect balance (low resistance to vapor flow, low thermal conductivity, and high vapor transmission speed), plays a specific role in aiding masonry dehumidification: the product's low specific weight allows the formation of a lightweight, sponge-like mass during mixing; its high permeability facilitates vapor passage; its thermal inertia modifies the wall's temperature aiding moisture outflow; and its high vapor transmission speed ensures continuous expulsion of moisture, always exceeding the incoming moisture.
This is why **Novomur®** acts as a moisture release regulator, gradually emitting moisture into the ambient air at a rate the air itself can dissipate without becoming saturated. The cycle of vapor absorption and expulsion is continuous and permanent, resulting in definitive dehumidification.

OVER 45 YEARS of Excellence

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Analysis of the Moisture Remediation Sector

For several decades, the problem of moisture in the construction sector has become increasingly urgent, aggravated by the requirement for thermal insulation, partly because in most cases materials not always suitable for the purpose have been used.

To address this issue, so-called anti-damp plasters are often employed -*osmotic plasters that are stronger, harder, and more impermeable*- in an attempt to withstand the pressure exerted by moisture. New techniques have been tested, but always with the same goal of delaying or diverting moisture from indoor spaces, often worsening the situation, leading to skepticism toward any new product designed to eliminate moisture.

By attempting to resist the force of water vapor pressure with strongly anchoring plasters, no consideration is given to the fact that vapor cannot be trapped but must instead be facilitated in its escape. For example, if we take a damp wall that has been stripped of plaster and left bare, we observe that after a certain period, its surface becomes dry because the vapor, having encountered no resistance from plaster, has dissipated into the air. However, this drying occurs only on the surface; the wall's thickness remains damp. Moisture would continue to evaporate until fully depleted only if the stripped, damp surface remained constantly exposed to air at reasonably warm temperatures.

Chemical or physical cutting techniques in walls force the contractor to wait about six months before applying plaster to the treated areas, allowing residual moisture to be dried by the air. Despite this, a certain percentage of moisture remains trapped under the finishing plasters. The reason moisture accumulates in masonry is that the partial vapor pressure is lower than the resistance it encounters in the wall's capillarity. Moisture rises higher because this resistance is compounded by the greater resistance of the plasters coating the masonry. If the vapor had a partial pressure exceeding these two resistances, it would find an outlet at the base of the masonry, which would remain permanently dry.

To combat moisture effectively, analysis must therefore rest on a fundamental premise: the necessity of reducing the dual resistance posed by both the wall's mass and the plaster's mass.

This can be managed by building the wall with composite mortar and by using depressurizing plasters as a finish.

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Executed Installations

For over 45 years, **Novomur®** has been used to restore and resolve any issues causd by rising damp or water infiltration.
Verifying the earliest job sites, dating back to the late 1970s, holds particular significance because it allows us to see how the product has performed over the long-term.
In recent years, we have undertaken a thorough inspection of all interventions carried out more than 40 years ago, confirming that the product's dehumidifying effectiveness has remained unchanged over the decades, and that the treated surfaces are intact while the underlying walls are perfectly dry through their entire thickness. These findings allows us to assert that **Novomur®** is a unique product, distinguishing itself from from most anti-damp plasters, which create a barrier to moisture without addressing the root cause and are typically guaranteed for only 5 to 10 years.

The cellar shown in photos 1 and 2, before and after the work, belongs to a small building in Senigallia.
Prior to renovation carried out with **Novomur®** in 1990, the floor was permanently flooded by about thirty centimeters of seawater.
Following the renovation, the cellar was used first as a stationery shop and later into an Art Gallery, which now displays paintings by renowned artists.
The second photo, taken during a site inspection in the 2000s, demonstrates the outcome: the wall surfaces are completely dry and free of bulges or saline efflorescence. Notably, the treatment was applied only up to a height of 120 cm. If the product acted as a barrier, the moisture would by now have reached the top of the vault intrados. Instead, **Novomur®**, applied only to a limited area, has acted, and continues to act, like a lung capable of absorbing and expelling a large amount of water, even though the lower part of the wall is still exposed to seawater

Photo n°1 - Cellar in Senigallia (AN) - Prior to renovation

Photo n°2 - Cellar in Senigallia (AN) - After renovation

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Notable Completed Projects

The second equally significant example involves the Castle of the Counts Oliva in Pian di Meleto (PS), where ground-floor restoration work was carried out. The project began in the early 1990s under the supervision of the Fine Arts Superintendency of Ancona.
Prior to the intervention, rising damp had saturated the walls up to a height of 1.50 meters above the floor level; the treatment was performed up to the moisture line, and on the perimeter walls **Novomur®** was applied only on the inside because the external wall was left unplastered with exposed finish. Over 20 years later, an inspection revealed a total absence of moisture. This verification was carried out at every level along the entire height of the wall, revealing that, not only the layer of **Novomur®**, plaster, but the entire thickness of the masonry was dry. Ventilation, essential for the thermo-depressurization process, occurs sporadically through a secondary entrance door. These results confirm the dehumidifying capability of **Novomur®**, which has permanently solved the moisture problem.

Castle of the Counts Oliva - Pian di Meleto (PS)
Prior to renovation

Castle of the Counts Oliva - Pian di Meleto (PS)
After renovation

Technical Data:

Thermal Conductivity	λ= 0,052 W/mK
Vapor Diffusion Resistance	μ= 5
Vapor Transmission Rate	370 g/day/m² (thickness 2.5 cm)
Specific Weight	150 Kg /m³
Dry mass weight	Approx. 475 Kg/m³
Compressive strength	12 kg/cm² after 30 days
Fire resistance	Non-combustible
Behavior against biological agents	Non-combustible
Setting time	24 Hours
Drying time	5 - 6 Days
Packaging	10 Kg Bags
Coverage	5 kg/m² (1 cm thickness)

OVER 45 YEARS of Excellence

NOVOMUR®

- PERMANENTLY ERADICATES MOISTURE
- PROVIDES THERMAL INSULATION, DELIVERING SIGNIFICANT ENERGY SAVINGS
- OFFERS ACOUSTIC INSULATION
- ELIMINATES AND PREVENTS MOLD AND CONDENSATION
- ELIGIBLE FOR TAX DEDUCTIONS
- INSURED BY A LEADING INSURANCE COMPANY

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