NOVANTICA

for **cement-free** restoration

BIO-ARCHITECTURE

FASSA BORTOLO

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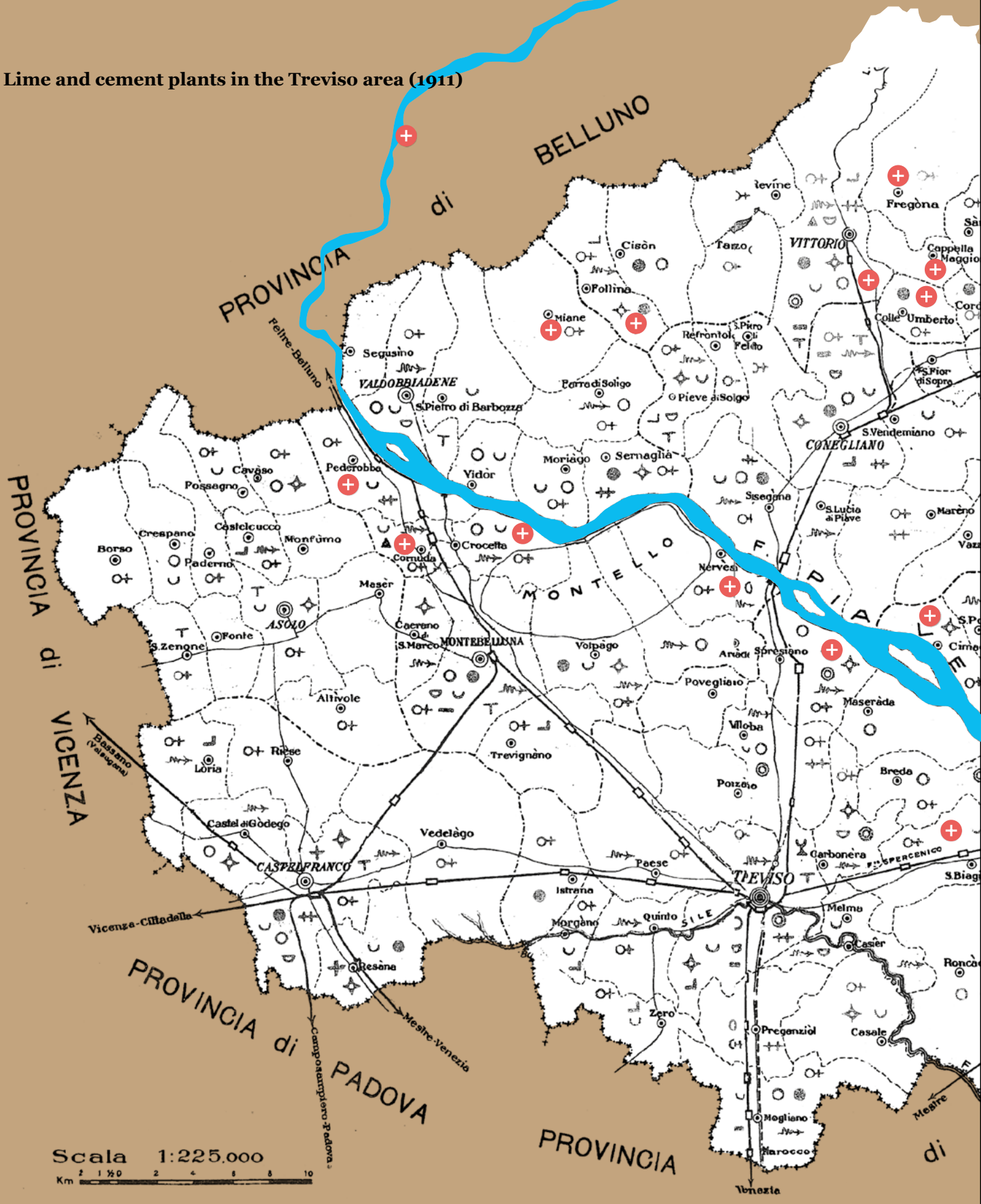
Lime and cement plants in the Treviso area (1911)



“The River Piave... full of stories, myths and symbolism, is the glue binding the communities that over the centuries have shared times of peace and war, of abundance and famine, of invasions and exoduses, of trades, hardships and enterprises.”

by Paolo Fassa *Our history, my passion*

It was on the banks of the River Piave that Fassa’s industrial history began more than 300 years ago.

And the pebbles collected on the bed of what was to become Italy’s sacred river heralded the start of Fassa Bortolo’s production.

PRESERVING THE PAST

Research into the preservation of old buildings is today focused on new materials for renovation and restoration. **New materials whose roots however lie in the history of architecture**, making them compatible both with the materials and techniques used on the existing buildings **and the modern need for environmental compatibility and protection.**

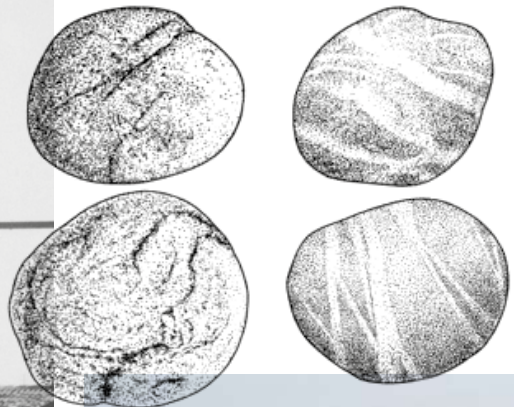
In the past, the quality of render was a fundamental element in the life of the building.

The care paid to selecting raw materials, preparing mixes and applying materials was concentrated on optimising both the quality of the masonry and the relationship between the wall-render system and the surrounding environment.

The materials and techniques adopted were constantly tested and adapted over long periods of time, in conditions of natural ageing that demonstrated the reliability of the application procedures and the correct use of the materials.

Today, durability tests are more commonly based on parameters extracted from artificial ageing processes performed in laboratories than on the acquisition of data from work completed. Moreover, modern render is attacked by atmospheric elements with an intensity that cannot be compared to the past.

Consequently, the product selection, processing and application methods have changed profoundly. More **information and innovations are therefore needed to highlight the specific qualities of materials and create new products capable of preserving the past**.



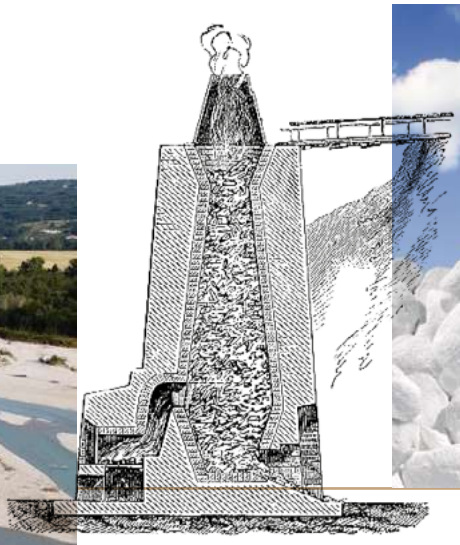
LIME.
NATURAL MATERIAL, ELEMENT OF LIFE

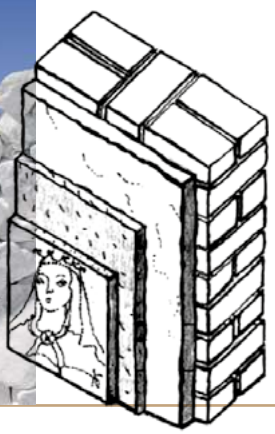
“There’s something magic in picking up a stone from the earth, breaking it up with fire, modelling it by using water and man’s ingenuity and then bringing it back to its original strength and sturdiness under the influence of air.”

from "On Nature" by Empedocles 492-432 BC

This is how Empedocles describes the "mystery" of the lime production process, starting from the basic element: stone. A founding element of construction, stone represents mankind’s first mediation between nature and culture, between force and reason. The "firing" of stone is a demonstration of mankind possessing the art of igniting or extinguishing matter, by removing or adding water. Humans dominate matter, keep it in its natural state, extinguish it by adding water, thus starting the process of “taming” matter for purposes of social utility.
The Phoenicians, Greeks and Romans already knew lime, and used it to build houses, bridges and infrastructure. Lime therefore represents the art and craft of building par excellence, being used in the construction of buildings in masonry, bedding and pointing mortars, plasters and renders, in concrete for foundations, sack masonry, as well as in architectural finishes, stuccos and marmorino finishes, in wall paints and in frescoes.

During production, all construction binders emit large quantities of carbon dioxide into the atmosphere, due to the use of fossil fuels. However, lime, especially air lime, stands out for having lower permanent CO_2 emissions, due to the low burning temperature and the partial re-absorption of carbon dioxide during application. Consequently, by virtue of its lower energy consumption in production, the healthy environment created in buildings, its complete compatibility with historical constructions and its durability and mechanical strength, lime is today considered the construction binder of the third millennium.

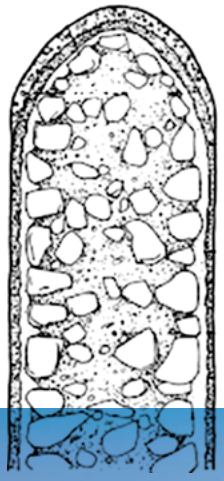




WHAT IS ECO-POZZOLAN?

"There is also a kind of powder which from natural causes produces astonishing results. It is found in the neighbourhood of Baiae and in the country belonging to the towns round about Mt. Vesuvius. This substance, when mixed with lime and rubble, not only lends strength to buildings of other kinds, but even when piers of it are constructed in the sea, they set hard under water."

Vitruvius Pollio, *The Ten Books on Architecture*, Book II, ch. 6



Pozzolan - whose name derives from the town of Pozzuoli - is an incoherent, pyroclastic material emitted by erupting volcanoes and, as such, is mainly made up of very small, glassy granules of varying porosity, together with small crystals of different minerals.

Pozzolan's innumerable and extremely important properties in the building sector have been known since ancient times: indeed, as demonstrated by the many intact buildings that still exist today, **pozzolan mixed with quicklime and aggregates was an excellent binder for masonry work**, both as a mortar for walls and as the main component of *opus caementicium*, a sort of pre-Roman "concrete". It was used by the Oscan-Italic peoples even before the Romans, together with lime and aggregate (usually river sand), the first hydraulic binder able to set even underwater and with extraordinarily long durability. Considered a precious building material, **pozzolan** was used to make the **first ever hydraulic binder**.

The Romans used pozzolan with great skill, making the most of its numerous properties to construct important works, such as domes and buildings in general, especially constructions that required quick setting: one example is the construction of the large domes like the Pantheon. Back then, the mortars made using pozzolan represented what we would today call quick-setting cement: an easy and quick solution capable of solving numerous construction problems and for all hydraulic works (aqueducts, ports, tanks…) in which water run-off would cause a rapid decline in the properties of air-setting mortars.

The Fassa I-Lab Research Centre is where the eco-pozzolans used for the NOVANTICA product line have been developed. These are recycled materials from other processes that have pozzolanic reactivity characteristics and that would otherwise be put into landfill, with inevitable repercussions on the environment.

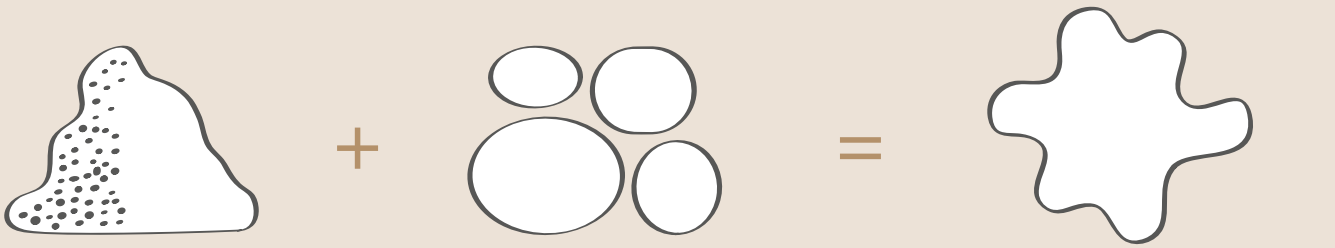
What happens when eco-pozzolans are mixed with lime?

IN CONTACT WITH WATER, THEY ARE AN EXCELLENT HYDRAULIC BINDER

MECHANICAL STRENGTH IMPROVES OVER TIME

THEY DO NOT ADD HARMFUL SALTS TO THE STRUCTURE

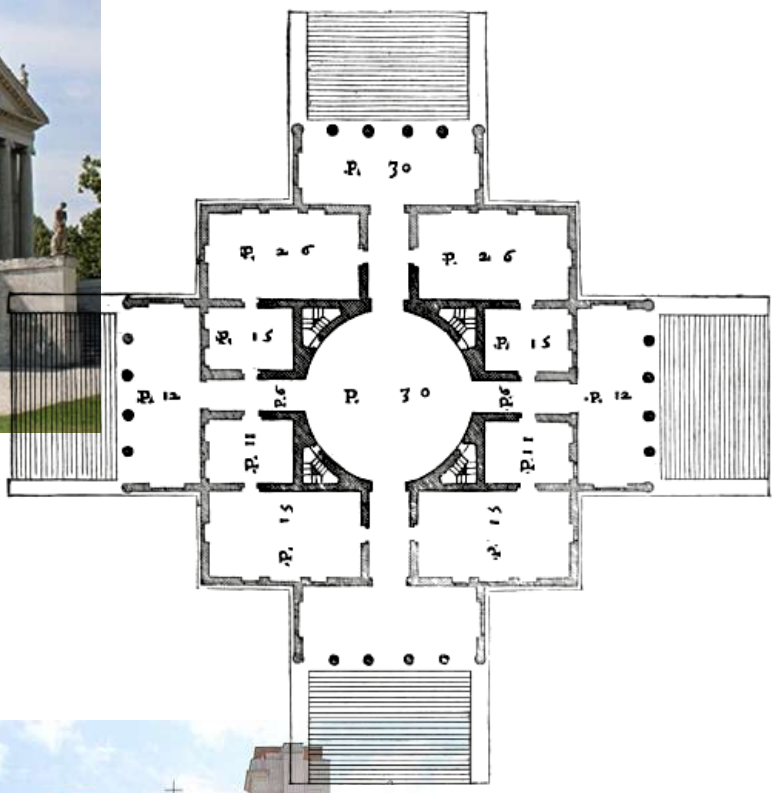
THE RESULTING PRODUCTS ARE MORE BREATHABLE

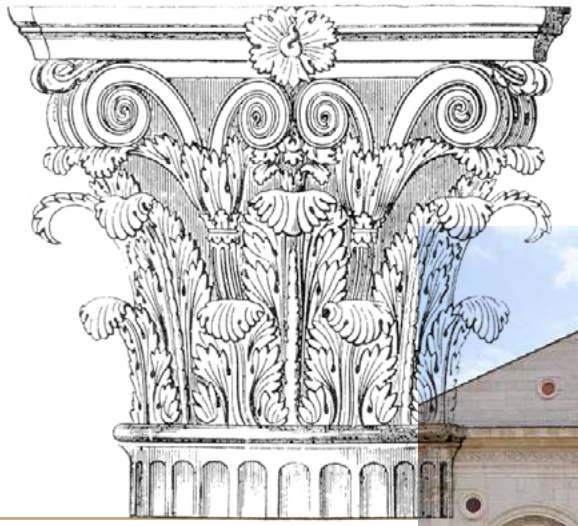


Air lime + Pozzolanic materials = Hydraulic binder

NOVANTICA®
for **cement-free** restoration

The **NOVANTICA line** is the result of combining air lime and eco-pozzolanic materials, developed to meet the latest **sustainable restoration requirements**.
A range of **lime-based products**, completely **cement-free**, with chemical-physical characteristics similar to those of the mortars used in the past, designed for work on **historic buildings** with walls made from **tuff, stone, solid bricks as well as sack walls**.
The NOVANTICA line is the durable solution that is ideal for the restoration of buildings of historical and artistic importance, listed by architectural and landscape heritage protection agencies.





SUITABLE FOR HISTORICAL RESTORATION
due to the total absence of cement in the formulations.

COMPATIBILITY WITH THE ORIGINAL MATERIALS
used in the works, both physically and chemically.

REVERSIBILITY
the applied product can be removed without damaging the substrate.

HIGH BREATHABILITY
as the natural diffused porosity ensures better regulation of indoor humidity, increasing comfort and at the same time protecting against the onset of mould.

COMPLETELY CEMENT-FREE
the products are formulated using lime and eco-pozzolanic materials, making the products fully environmentally-sustainable.

EXCELLENT WORKABILITY
of the mixture, due to the fine grading of the lime used.

EFFECTIVE POZZOLANIC REACTION
over time due to the high specific surface area of lime used.

NATURAL ANTIBACTERIALS
the high alkalinity of lime creates an unfavourable environment for the formation of mould and fungi.

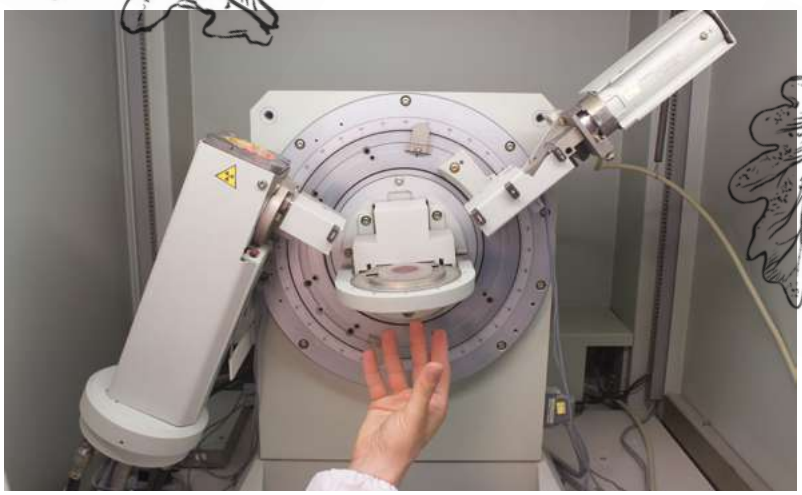
NOVANTICA
BEFORE AND AFTER

Before the work, this farmhouse, dating back to 1769, had been completely abandoned: in the eastern part, the walls, the dovecote and the turrets were able to be rebuilt, while the western part had completely collapsed inside. This partial collapse meant the building was able to be restored to its original form, following the existing traces. The project, presented at the Domus International Restoration and Preservation Prize, involved the use of Fassa Bortolo products, specifically LC7 BIOLISCIO, a smooth bio-finish coat render made from lime and pozzolanic binders.

Enrico Caminoli and Paola Coppola Architects
MASSERIA SERRA DEL FICO - TRICASE (Lecce)

FASSA I-LAB RESEARCH

The answers to modern renovation and restoration needs come from Fassa I-Lab, the Fassa Bortolo Research Centre, before then being applied in the field. For best results, Fassa Bortolo has carried out in-depth analysis on the properties, doses and application of “ancient” materials, **so as to identify products that can be used to preserve existing surfaces and build new ones**.
Fassa I-Lab is a fully-equipped advanced research centre: instruments for fluorescence and X-ray diffraction, electron microscopy and laser particle analysis are used to analyse materials at a microscopic level and identify their chemical-physical properties, so as to be able to select the formulations that best guarantee the quality of our products, and predict, using specific tests, their behaviour in a variety of environmental conditions.
The Fassa I-Lab Research Centre can analyse materials and verify the compatibility of our products both with existing mortars and with the application substrates.
The day-to-day focus on research has gained important recognition with **ISO 9001 certification,** confirming the high quality standards offered to the building industry.

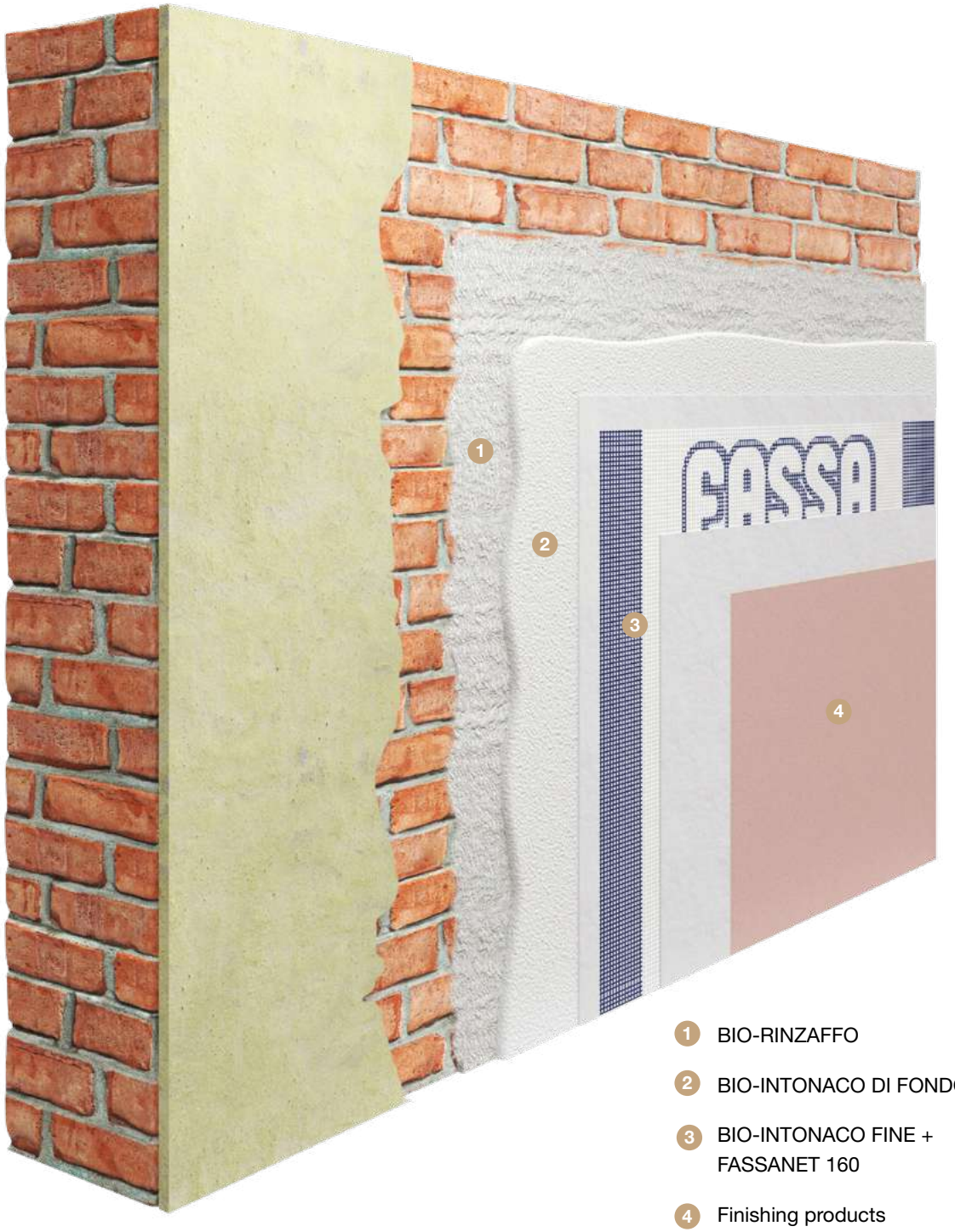


FASSA I-LAB
INNOVATION FOR BUILDING

Country house in Chievo, Verona - Studio Wok associated architects
2019 DOMUS RESTORATION AND PRESERVATION PRIZE

CYCLES INDEX

RENOVATION OF PLASTER/RENDER



1. BIO-RINZAFFO
2. BIO-INTONACO DI FONDO
3. BIO-INTONACO FINE + FASSANET 160
4. Finishing products

ADVANTAGES OF THE SYSTEM:

- **Compatibility with the most common types of historic or high-quality masonry**
- **Healthier and more comfortable environments**
- **Wide range of compatible bio-finishes**
- **Reduces the risk of cracks with the reinforced skim coat technique**

When large rendered surfaces are damaged, the most cost-effective solution is to completely reapply the plaster/render and finishes. The new work will need to be performed on old, often irregular and non-uniform surfaces, thus requiring evaluation of the specific substrate. Adopting a rendering cycle complete with undercoat and reinforced skim coat minimises the typical problems encountered during renovations. The work can be completed using the specific products from the Novantica line, rediscovering the performance of traditional materials.

BIO-RINZAFFO

1

Bio undercoat, cement-free, made from air lime and eco-pozzolanic binders, for interiors and exteriors. **GP-CSIV-W0** mark in accordance with EN 998-1.

BIO-INTONACO DI FONDO

2

Bio base coat plaster/render, cement-free, made from air lime and eco-pozzolanic binders, for interiors and exteriors. **GP-CSII-W0** mark in accordance with EN 998-1.

BIO-INTONACO FINE

3

Bio fine plaster/render, cement-free, made from air lime and eco-pozzolanic binders, for interiors and exteriors. **GP-CSII-W0** mark in accordance with EN 998-1.

FASSANET 160

3

Alkali-resistant fibreglass mesh, 160 g/m^2.

LC7 BIOLISCIO

Bio smooth coat, cement-free, made from air lime and eco-pozzolanic binders, for interiors and exteriors. **GP-CSII-W2** mark in accordance with EN 998-1.

INTERIOR FINISHING PRODUCTS

MIKROS 001 + RICORDI CALCE A PENNELLO
(breathable cycle)

EXTERIOR FINISHING PRODUCTS

Fassil F 328 + Fassil R 336 (silicate cycle)
FS 412 + RSR 421 or SKIN 432 (silicone resin cycle)

FOR A SMOOTH EFFECT

Apply the specific LC7 BIOLISCIO product on the third layer

REPAIR AND REINFORCED SKIM COAT ON PLASTERED/ RENDERED SURFACES

Before starting the work, the substrate needs to be carefully prepared. Where necessary, clean using **ACTIVE ONE**.

1. Patches with BIO-INTONACO DI FONDO
2. MIKROS 001
3. BIO-INTONACO FINE + FASSANET 160
4. Finishing products

ADVANTAGES OF THE SYSTEM:

- **Suitable for restoring rendered surfaces**
- **Compatibility with the most common types of historic or high-quality masonry**
- **Reduces the risk of cracks with the reinforced skim coat technique**

For building renovation work, when the rendered surfaces are damaged locally, the main requirement is to use products that are compatible with the existing ones. The Novantica line products offer a solution for creating uniform surfaces using the reinforced skim coat technique, after having repaired the damaged render and suitably treated the finishes (possibly removing any incompatible products). The process involves applying a fine-grade plaster/render in combination with special fibreglass reinforcing mesh.

BIO-INTONACO DI FONDO

1

Bio base coat plaster/render, cement-free, made from air lime and eco-pozzolanic binders, for interiors and exteriors. **GP-CSII-W0** mark in accordance with EN 998-1.

MIKROS 001

2

Transparent primer in solvent free microemulsion.

BIO-INTONACO FINE

3

Bio fine plaster/render, cement-free, made from air lime and eco-pozzolanic binders, for interiors and exteriors. **GP-CSII-W0** mark in accordance with EN 998-1.

FASSANET 160

3

Alkali-resistant fibreglass mesh, 160 g/m^2.

EXTERIOR FINISHING PRODUCTS

Fassil F 328 + Fassil R 336 (silicate cycle)
FS 412 + RSR 421 or SKIN 432 (silicone resin cycle)

INTERIOR FINISHING PRODUCTS

MIKROS 001 + RICORDI CALCE A PENNELLO (breathable cycle)

NEWLY-CONSTRUCTED WALLS

1. BIO-INTONACO DI FONDO
2. BIO-INTONACO FINE + FASSANET 160
3. Finishing products

ADVANTAGES OF THE SYSTEM:

- **Application by machine for faster completion**
- **Excellent breathability**
- **Healthier and more comfortable environments**
- **Wide range of compatible bio-finishes**

In new buildings, construction and rendering require high quality products that respect health and the environment. The Novantica line products represent the best response to these needs. The solution illustrated here combines the use of carefully selected materials with a system of products designed to maximise the effectiveness of the work, with a formulation that respects tradition. The stratigraphy shown here represents a starting point for designing rendering systems that are suitable for the specific construction site conditions.

BIO-INTONACO DI FONDO	BIO-INTONACO FINE	FASSANET 160	LC7 BIOLISCIO
1	2	2	
			
Bio fine plaster/render, cement-free, made from air lime and eco-pozzolanic binders, for interiors and exteriors. **GP-CSII-W0** mark in accordance with EN 998-1.	Bio fine plaster/render, cement-free, made from air lime and eco-pozzolanic binders, for interiors and exteriors. **GP-CSII-W0** mark in accordance with EN 998-1.	Alkali-resistant fibreglass mesh, 160 g/m^2.	Bio smooth coat, cement-free, made from air lime and eco-pozzolanic binders, for interiors and exteriors. **GP-CSII-W2** mark in accordance with EN 998-1.

EXTERIOR FINISHING PRODUCTS

- On BIO-INTONACO FINE
  Fassil F 328 + Fassil R 336 (silicate cycle)
  FS 412 + RSR 421 or SKIN 432 (silicone resin cycle)

- On LC7 BIOLISCIO
  Fassil F 328 + Fassil P 313 (silicate cycle)
  FS 412 + SKIN 432 (silicone resin cycle)

INTERIOR FINISHING PRODUCTS

MIKROS 001 + RICORDI CALCE A PENNELLO
(breathable cycle)

FOR A SMOOTH EFFECT

Apply the specific LC7 BIOLISCIO product on the second layer

Barchessa Villa Corner Smania - Fiesso D'artico - Venice
Arch. Stefano Sartori

PRODUCT INDEX

BIO-RINZAFFO

Bio undercoat, cement-free, made from air lime and eco-pozzolanic binders, for interiors and exteriors.

BIO-RINZAFFO is a dry mortar made from special **air lime, eco-pozzolanic binders** and graded limestone aggregate from the best quality carbonate rocks. The lime used to make this product, classified according to standard EN 459, is extremely pure with non-measurable heavy metal content. The extreme fineness of the lime used gives the **mixture unique workability**, while its high specific surface area guarantees a more effective pozzolanic reaction over time. The intrinsic properties of the lime, the **high purity of the raw materials** used and the special formulation ensure excellent **breathability** without the addition of soluble salts, which may contribute to the chemical-physical degradation of the mortar.
The high **alkalinity of air lime** creates surfaces that inhibit the proliferation of fungi and mould, **increasing indoor comfort**.
BIO-RINZAFFO is used as an undercoat to improve the adhesion of BIO-INTONACO DI FONDO to the masonry.

BENEFITS:

- **Very high breathability**
- **Excellent adhesion to the substrate**

CE EN 998-1

COMPLIANT WITH EUROPEAN STANDARD EN 998-1 GP-CSIV-W0

Aggregate grading	< 3 mm
Application thickness	4-5 mm
Yield	3-5 kg/m^2
Water vapour diffusion resistance factor	μ ≤ 15 (measured value)
Supply	25 kg sacks

BIO-INTONACO DI FONDO

Bio base coat plaster/render, cement-free, made from air lime and eco-pozzolanic binders, for interiors and exteriors

BIO-INTONACO DI FONDO is a dry mortar made from special **air lime, eco-pozzolanic binders** and graded limestone aggregate from the best quality carbonate rocks. The lime used to make this product, classified according to standard EN 459, is extremely pure with non-measurable heavy metal content. The extreme fineness of the lime used gives the **mixture unique workability**, while its high specific surface area guarantees a more effective pozzolanic reaction over time. The intrinsic properties of the lime, the **high purity of the raw materials** used and the special formulation ensure excellent **breathability** without the addition of soluble salts, which may contribute to the chemical-physical degradation of the mortar.
The high **alkalinity of air lime** creates surfaces that inhibit the proliferation of fungi and mould **, increasing indoor comfort.**
BIO-INTONACO DI FONDO is used as a base coat plaster/render for application by hand or machine on brick and/or stone walls, both old and new.

BENEFITS:

- **Very high breathability**
- **Application also by machine**

CE EN 998-1

EN 998-1 GP-CSII-W0

Aggregate grading	< 1.5 mm
Minimum application thickness	10 mm
Yield	approx. 12.5 kg/m^2 with a thickness of 10 mm
Water vapour diffusion resistance factor	μ ≤ 12 (measured value)
Supply	25 kg sacks

BIO-INTONACO FINE

Bio fine plaster/render, cement-free, made from air lime and eco-pozzolanic binders, for interiors and exteriors

BIO-INTONACO FINE is a dry mortar made from special **air lime, eco-pozzolanic binders** and graded limestone aggregate from the best quality carbonate rocks. The lime used to make this product, classified according to standard EN 459, is extremely pure with non-measurable heavy metal content. The extreme fineness of the lime used gives the **mixture unique workability**, while its high specific surface area guarantees a more effective pozzolanic reaction over time. The intrinsic properties of the lime, the **high purity of the raw materials** used and the special formulation ensure excellent **breathability** without the addition of soluble salts, which may contribute to the chemical-physical degradation of the mortar.
The high **alkalinity of air lime** creates surfaces that inhibit the proliferation of fungi and mould **, increasing indoor comfort**.
BIO-INTONACO FINE is used as a finish coat plaster/render with marmorino effect, for interiors and exteriors.

BENEFITS:

- **Sponge float finish**
- **Excellent workability**
- **Very high breathability**

CE EN 998-1

EN 998-1 GP-CSIII-W0

Aggregate grading	< 0.6 mm
Yield	approx. 1 kg/m² per mm in thickness
Water vapour diffusion resistance factor	μ ≤ 9 (measured value)
Supply	25 kg sacks

LC7 BIOLISCIO

Bio smooth finish coat, cement-free, made from air lime and eco-pozzolanic binders, for interiors and exteriors.

LC7 BIOLISCIO is a dry mortar made from special **air lime**, **eco-pozzolanic binders** and graded limestone aggregate from the best quality carbonate rocks. The lime used to make this product, classified according to standard EN 459, is extremely pure with non-measurable heavy metal content. The extreme fineness of the lime used gives the **mixture unique workability**, while its high specific surface area guarantees a more effective pozzolanic reaction over time. The intrinsic properties of the lime, the **high purity of the raw materials** used and the special formulation ensure excellent **breathability** without the addition of soluble salts, which may contribute to the chemical-physical degradation of the mortar.
The high **alkalinity of air lime** creates surfaces that inhibit the proliferation of fungi and mould, **increasing indoor comfort**.
LC7 BIOLISCIO is used as a smooth coat for interiors and exteriors.

BENEFITS:

- **Very fine (150 µm)**
- **Optimum workability and spreadability**
- **Workability time > 3 hours**
- **Low water absorption and excellent permeability**

CE EN 998-1

EN 998-1 GP-CSII-W2

Maximum aggregate size	150 µm
Minimum application thickness	2 mm
Yield	0.7-0.9 kg/m^2 per mm in thickness, depending on the substrate
Water vapour diffusion resistance factor	µ ≤ 8 (measured value)
Supply	20 kg sacks

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FASSA BORTOLO
QUALITY FOR BUILDING

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