PLANITOP INTONACO ARMATO

THE NEW WAY TO STRENGTHEN STRUCTURES

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MAPEI®

ADHESIVES · SEALANTS · CHEMICAL PRODUCTS FOR BUILDING

PLANITOP INTONACO ARMATO

Application of **PLANITOP INTONACO ARMATO** by spray

INNOVATIVE CEMENT-FREE MORTAR WITH DIFFUSED MICRO REINFORCEMENT FOR STRUCTURAL STRENGTHENING OF MASONRY WITHOUT STRENGTHENING MESH.

Enlargement of the fibres in **PLANITOP INTONACO ARMATO**

IN COMPLIANCE WITH EUROPEAN STANDARD EN 998-2 G-M15 MAPEI MASONRY MORTAR

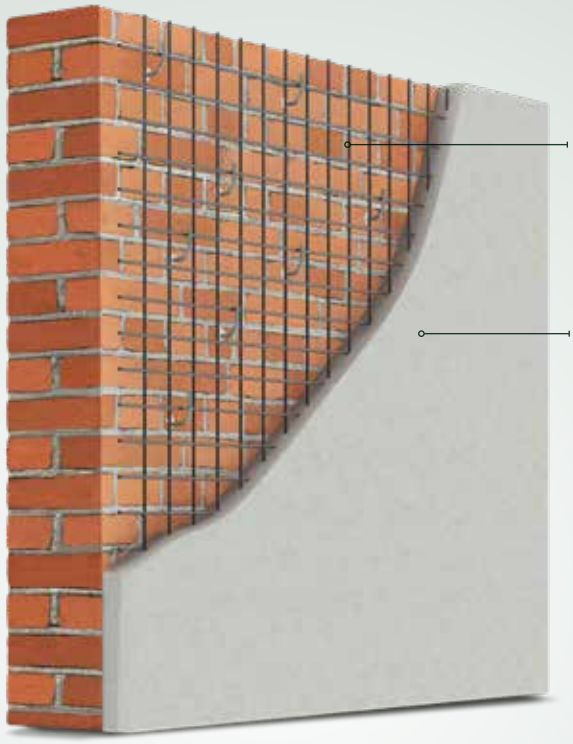
IN COMPLIANCE WITH EUROPEAN STANDARD EN 998-1 GP-CS IV MAPEI RENDERING AND PLASTERING MORTAR

CONTAINS 30% RECYCLED RAW MATERIAL

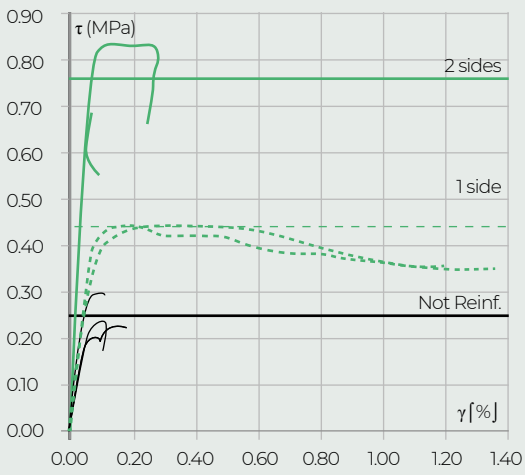
WHY YOU SHOULD USE IT:

- Performance properties comparable with reinforced render
- No strengthening mesh required
- No mechanical connectors required
- No significant increase in stiffness
- No significant increase in mass
- High ductility
- Considerable increase in shear and tensile strength of masonry
- Rapid application
- May be applied with hand tools or with a rendering machine
- No corrosion phenomenon

TOTAL THICKNESS **4 ÷ 6 cm**



TRADITIONAL REINFORCED RENDER

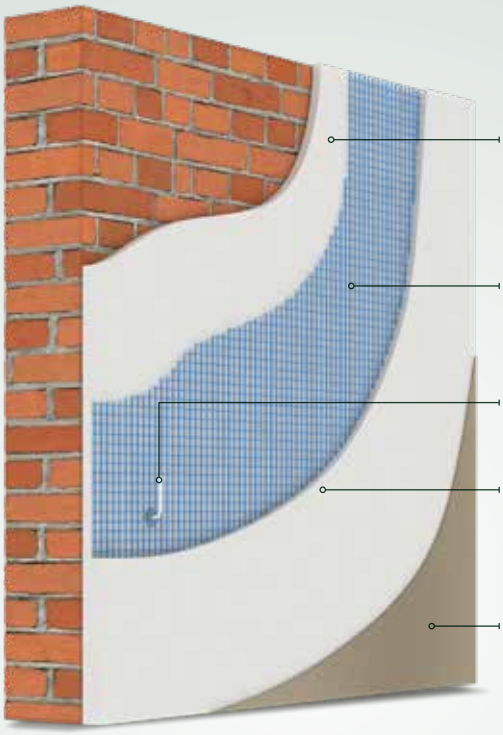


Stress-deformation curves: single-wythe tuff masonry with traditional reinforced concrete (galvanized mesh)

This type of technique has problems that should not be underestimated:

- considerable **increase in stiffness**: irregular distribution of loads / stresses
- considerable **increase in mass** (weight of intervention ≈ **100 kg/m²**): irregular distribution of loads / stresses
- **difficulty** in handling and applying electro-welded mesh
- **transversal connectors** required
- **corrosion** of the mesh

› TOTAL THICKNESS **3 ÷ 5 cm**



MAPEWALL RENDER & STRENGTHEN or **MAPE-ANTIQUE STRUTTURALE NHL**

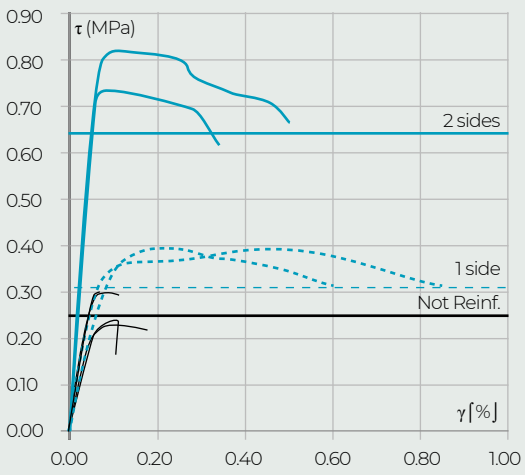
MAPENET EM 30 or **MAPENET EM 40**

MAPENET EM-CONNECTOR

MAPEWALL RENDER & STRENGTHEN or **MAPE-ANTIQUE STRUTTURALE NHL**

MAPE-ANTIQUE FC (internal use) and **SILANCOLOR TONACHINO** (external use)

CRM - *COMPOSITE REINFORCED MORTARS*

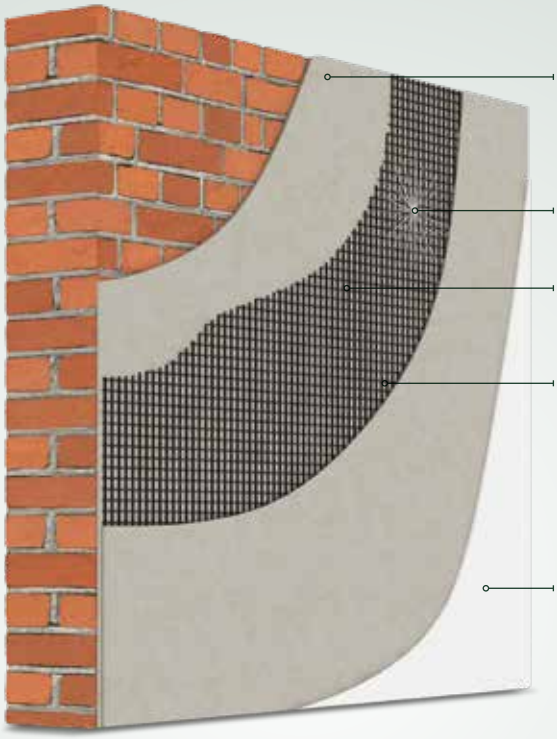


Stress-deformation curves: single-wythe tuff masonry with lime-based mortar and A.R. glass fibre mesh (Mapei CRM)

Unlike the technique of applying reinforced render, CRM systems have the following characteristics:

- **reduction in stiffness** compared with using electro-welded mesh
- **increase in mass** (weight of intervention **≈ 65 kg/m²**): irregular distribution of loads / stresses
- **easier** handling and application of fibre mesh
- **transversal connectors** required
- **no corrosion** phenomenon

TOTAL THICKNESS **1 ÷ 1.5 cm**



PLANITOP HDM MAXI or **HDM RESTAURO**

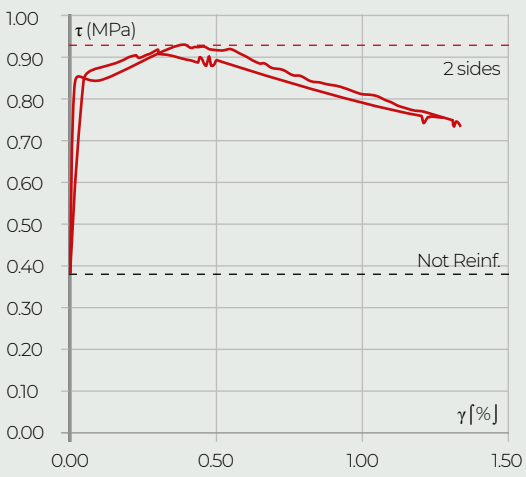
MAPEWRAP C/G/B FIOCCO

MAPEGRID G220/B250

PLANITOP HDM MAXI or **HDM RESTAURO**

MAPE-ANTIQUE FC (internal use) and **SILANCOLOR TONACHINO** (external use)

FRCM - *FIBER REINFORCED CONCRETE MATRIX*



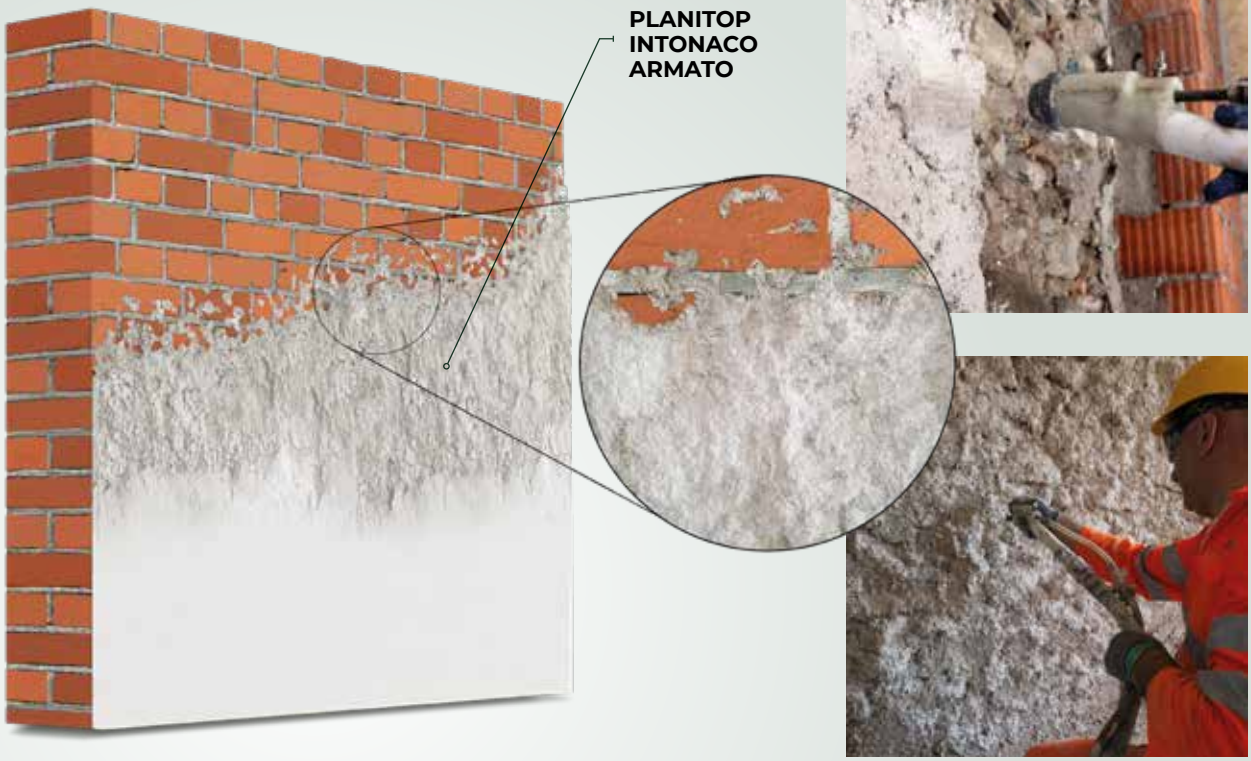
Stress-deformation curves: single-wythe tuff masonry with lime-based mortar and A.R. glass fibre mesh (Mapei FRCM)

Unlike the technique of applying reinforced render, FCRM systems have the following characteristics:

- significant **reduction in stiffness**
- considerable **reduction in mass** (weight of intervention **≈ 28 kg/m²**): intervention has little impact on overall geometry
- **easier** handling and application of fibre mesh
- **transversal connectors** not always required
- **no corrosion** phenomenon

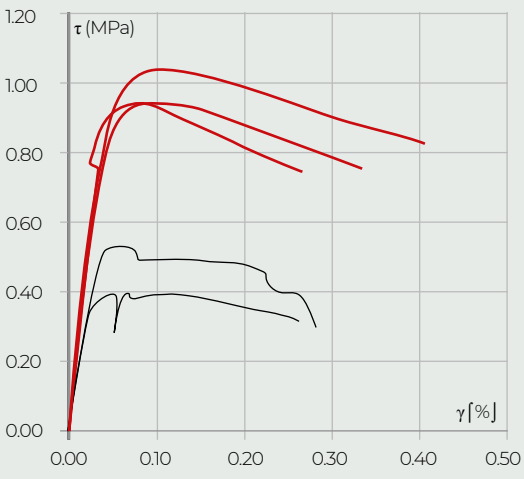
PLANITOP INTONACO ARMATO

TOTAL THICKNESS **1 ÷ 1.5 cm**



PLANITOP INTONACO ARMATO

NEW



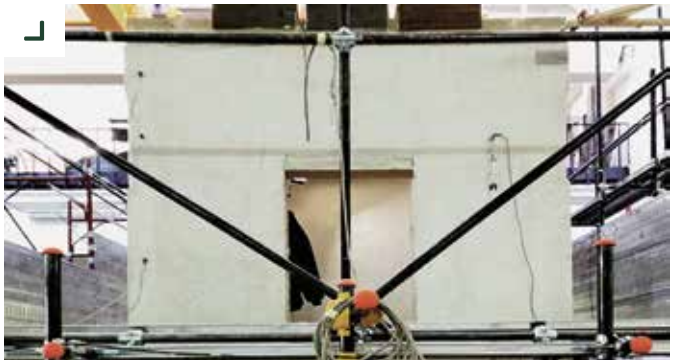
Stress-deformation curves: single-wythe tuff masonry with lime-based mortar with "micro-structural reinforcement" (**PLANITOP INTONACO ARMATO**)

The innovative technology of **PLANITOP INTONACO ARMATO** offers the following advantages:

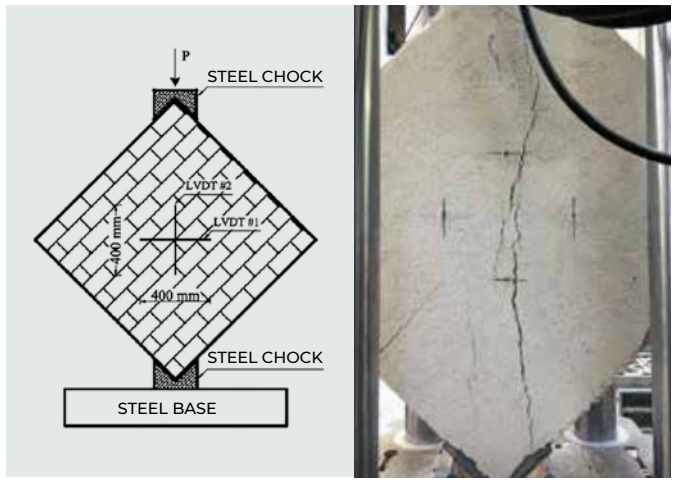
- **no significant increase in stiffness**
- **no significant increase in mass** (weight of intervention **≈ 28 kg/m²**)
- **reinforcement mesh not required**
- **transversal connectors not required**
- **no corrosion** phenomenon
- **lower application time**

EXPERIMENTAL TESTING ON MASONRY PANELS AND STRUCTURES

"Federico II" University of Naples, Department of Structural Engineering and Architecture (DiSt)



METRICS project (MEtodologie e Tecnologie per la gestione e RIqualificazione dei Centri Storici e degli edifici di pregio - Methods and technologies for the management and redevelopment of old town centres and listed buildings): STRESS DISTRICT – Testing of scale 1:2 masonry building on a vibrating table.



Diagonal compression tests on masonry panels

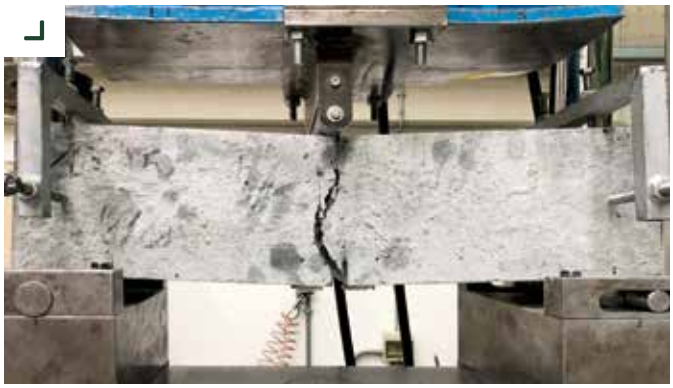
Results of tests to determine the multiplication factor (t = 280 mm)

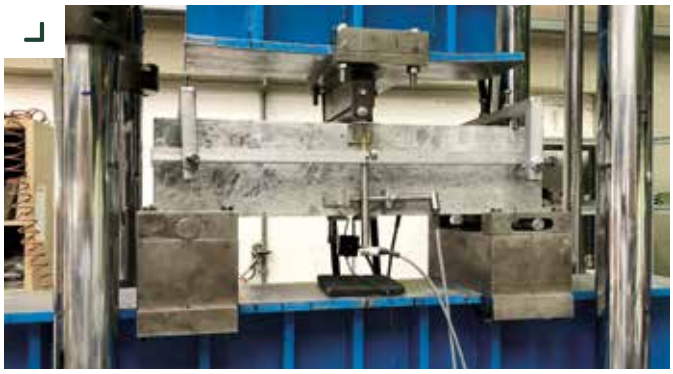
Sample	Type of strengthening	V_{med}	$\tau_{max,m}$	$\Delta\tau_{max,m}$	$Cc(\tau_{max,m})$	G_m	ΔG_m	Cc (G)
		[kN]	[MPa]	[%]	[-]	[MPa]	[%]	[-]
P	-	215	0.46	-	1.00	1270	-	1.00
P(PIA)**	PLANITOP INTONACO ARMATO	485	0.96	110%	2.10	3256	156%	2.56

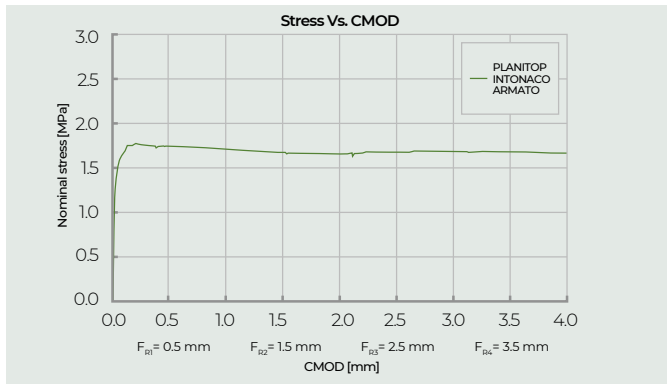
P(PIA)** walls strengthened on both faces

MECHANICAL CHARACTERISATION AS FRC *(Fibre Reinforced Concrete)*

University of Brescia, Department of Civil Engineering, Architecture, Territory, the Environment and Mathematics (DICATAM)







Results of tests to measure residual flexural strength according to EN 14651

Performance characteristics of **PLANITOP INTONACO ARMATO**

Performance characteristic	Test method	Performance	u.m.
Compressive strength after 28 days	EN 1015-11	>15	N/mm^2
Adhesion to substrate (brickwork)	EN 1015-12	≥ 0.8 failure mode (FP) = B	N/mm^2
Compressive modulus of elasticity	EN 13412	8	GPa
Average residual flexural strength: - CMOD 1 = 500 µm: - CMOD 2 = 1,500 µm: - CMOD 3 = 2,500 µm: - CMOD 4 = 3,500 µm:	EN 14651	 f_{R1} 1.75 f_{R2} 1.68 f_{R3} 1.70 f_{R4} 1.69	MPa

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