

“Mortar solutions for buildings retrofitting ”

Vasco Pereira

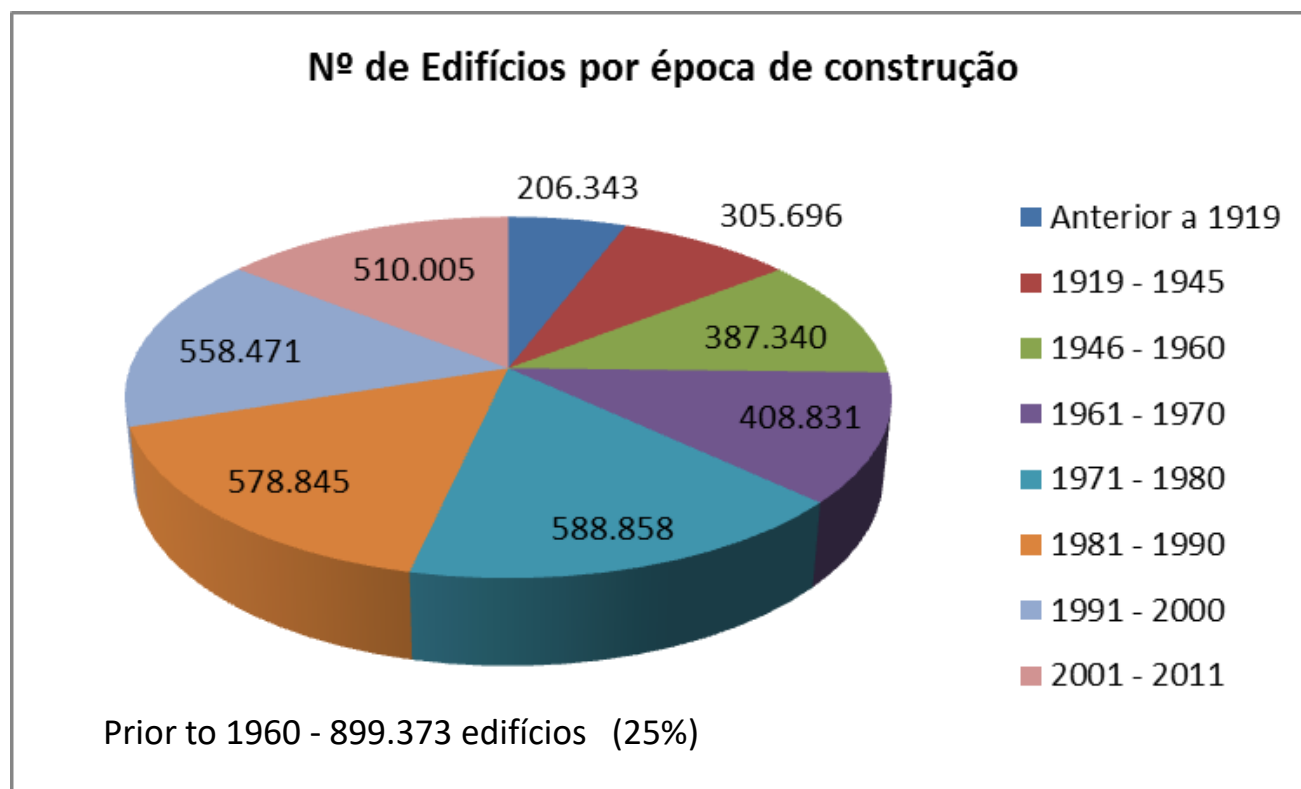
Saint-Gobain Weber Portugal

vasco.pereira@saint-gobain.com

Agenda

- Building retrofitting context – ancient buildings
- Contribution of industrial mortars
- Product range
- Jobsite examples

Buildings Stock in Portugal



Source: Pordata / Censos 2011

Main drivers of investment



Public Buildings



Private Housing Buildings



Touristic Buildings

Main types of works with mortars

- Mainly walls
 - Exterior walls
 - Recovery/improvement of structural performance
 - Renders for levelling, protection and finishing
- Partial or complete substitution of renders and finishes
- Usually renders are the most damaged materials, fulfilling a sacrificial mission of masonry protection



Problems/pathologies in recent interventions

- Adhesion incompatibility
- Irreversibility of interventions
- Severe reduction of the systems porosity characteristics
- Difficulty in the durability of rehabilitation materials due to too weak mechanical resistance



Specific requirements are needed for retrofit interventions

- Use of materials with compatibility properties – Technical Entities and Regulation standards
- Application procedures adapted to the characteristics of the materials
- Alignment with expectations of construction agents
 - Promoters, builders, applicators
 - Cost (materials and execution) and durability



Contribution of industrial mortars

- Make available to the construction market materials for application in the rehabilitation of ancient walls that:
 - Guarantee the use of controlled components and regular properties performance
 - Allow application processes familiar to diversified and less specialized actors
 - Propose/offer properties adapted to the context of use
 - Allow for expected durability and cost for promoters



- Use of specific materials and components that seek to achieve performance in properties similar to traditional mortars:
 - Increase and stabilization of porosity and porometry: cellulose derivatives (water retainers) and olefin sulfonates (air introducers) instead of blood, eggs, etc.
 - Initial retraction control: Acrylic fibers instead of animal hair or straw.
 - Surface mechanical resistance and control of water penetration: polymers and hydrophobic agents, instead of waxes, olive oil, etc.



Materials and components in industrial mortars to be used in ancient buildings retrofit

- Main binder: **lime**
- It allows to obtain mortars with ...
 - porous structure that allows intrinsically ...
 - mechanical and physical compatibility with existing substrate masonry systems
- Situations of additional mechanical requirement and control of hardening:
 - Addition of pozolan
 - Hydraulic lime
 - Cement as addition (very controlled quantities)



Leveling renders

weber.cal classic



Render for leveling and protecting ancient walls in current buildings



weber.cal antique



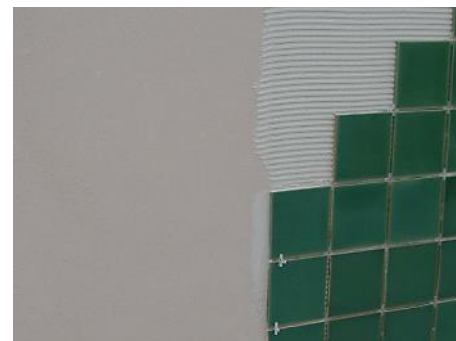
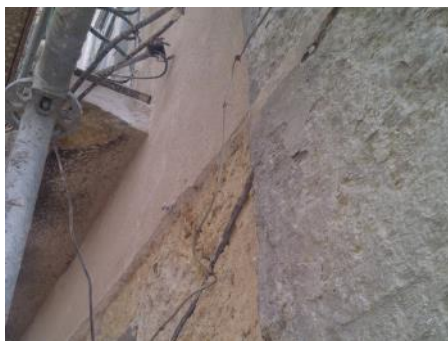
Render for leveling and protecting ancient walls in historical buildings



weber.cal dur



Render for leveling and ceramic substrate in ancient walls



Special use renders

weber.cal sane



Render for ancient walls with soluble salts rise




weber.therm aislone



Thermal insulating render for ancient walls




Substrate preparation and finish

weber.cal chapisco



Mortar to prepare and consolidate ancient walls as a substrate for rendering




weber.cal decor



Mineral colored finish for ancient walls




Jobsite examples



Bank of Portugal Headquarters, Lisbon
2011



House of Architecture, Matosinhos
2016

Image in www.archdaily.com.br



Rural Touristic House, Vale de Cambra
2015

Bank of Portugal Headquarters, Lisbon

- Full quarter building, dating from XVIII century (project Arch. Gonalo Byrne)
- 11 000 m² faade and internal walls retrofit
- Lime based render, mineral finish mortar, with special color
- Training on jobsite to application team

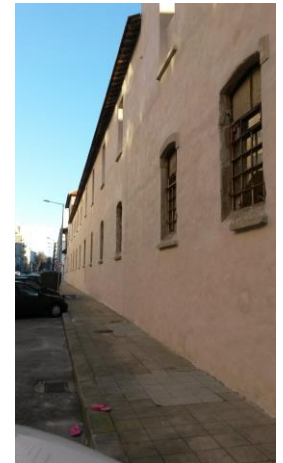


House of Architecture, Matosinhos

- Late XIX century building, built as wine warehouse and trading center
- Adapted to Cultural Center and House of Architecture (Arch. Guilherme Vaz)
- External and internal walls render
- Structural reinforcement of specific walls, using steel bars and mesh, together with substrate consolidation mortar
- Colored mineral finish, applied by brush to uneven surface



Image in www.archdaily.com.br



Rural Touristic House, Vale de Cambra

- Rural house inside a productive farm, adapted to touristic use (Ach. Alexandre Silva)
- Request for thermal insulation improvement of façade walls
- Solution:



- Thermal insulating render (4cm)
- Thin coat lime based render reinforced with glass fiber mesh
- Mineral colored finish



“Mortar solutions for buildings retrofitting ”

THANK YOU!

See more SG Weber Projects in weber-cultural-heritage.com

Vasco Pereira
Saint-Gobain Weber Portugal
vasco.pereira@saint-gobain.com