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In situ performance evaluation of chemical injections against rising damp: a case study in Italy

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Abstract

Rising damp is one of the most relevant cause of deterioration in historic buildings and its presence may trigger and intensify damage processes such as biodeterioration and decohesion linked to freeze-thaw and salt crystallization cycles.

Treatment against rising damp is generally advised and several products are currently available in the market, whose efficiency, durability and compatibility with building materials are unfortunately still not exhaustively verified. For a proper evaluation of these features aiming at a sustainable protection and conservation of cultural heritage, test directly on site in addition to laboratory investigations is increasingly recommended.

Within this work we illustrate and discuss results obtained during a test on site for the efficiency evaluation over time of treatments against rising damp based on chemical injections performed in one of the case studies in the JPICH Project EMERISDA.

Key words

Industrial Heritage, Masonry, Gravimetric Method, Moisture Content, Hygroscopic Salt

1. INTRODUCTION

The presence of water in masonry structures is one of the most relevant problems affecting architectural heritage all over the world; it consists in the movement of water through a permeable material whose water content is non-uniform [1]. This presence may be ascribed to different origins, but rising damp is surely the most widespread phenomenon leading to moisture presence in building structures and it severely threatens both performance and conservation of ancient and recent masonries. Furthermore, it can strongly affect the climate indoor with consequences on degradation of building materials (timber, wallpaper and plaster), thermal performance of masonries, frost action, salt

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