

SealEco EPDM Membrane

Domus Aurea, Rome, Italy



“Haec autem ita fieri debent, ut habeatur ratio firmitatis, utilitatis, venustatis.”

(“Now these [structures] should be so carried out that account is taken of strength, utility, grace.”)

- Marco Vitruvio Pollione, De Architectura, liber I, 2

After reading the treatise on architecture written in the XV century B.C. by the Latin author and architect Marco Vitruvio Pollione, Claude Perrault conceived in the XVII century the formula of the so-called “Vitruvian Triad”, which expresses the three essential conditions that architecture must pursue in order to obtain a well-executed and enjoyable work of art. These conditions are firmitas, which means strength, utilitas, which can be translated as utility or purpose, and venustas, that is beauty.

The respect of these canons and other rules of proportion made it possible for buildings – or important parts of

them – to last until now, despite the materials’ natural deterioration, and to survive human destructive activities. An undeniable technical mastery and a deep knowledge of the materials’ characteristics are two features that can be found in almost all Roman works of architecture. Dealing with these artefacts implies the possession of scientific, theoretical and practical knowledge and means acting with respect, understanding and awareness that any mistake – even a small one – can alter beyond repair the characteristics of the materials. Most importantly, however, it means knowing the absolute and unquestionable historical goals with which these buildings managed to survive over the centuries until the present days.

It was not easy to deal with the high technical level of Roman architecture, especially when the building involved was the Domus Aurea (Golden House in Latin), one of the most important - as well as

most threatened, plundered and altered until buried – monuments in the world. This urban villa was built by Emperor Nero after the great fire that destroyed Rome in 64 A.C. and today is a unique monument and a UNESCO world heritage site.

The magnificence and splendour that the Domus Aurea was originally meant to exhibit have been replaced by a condition of collapse and damage caused by exogenous and endogenous factors that, even if carefully studied and analysed, are hard to tackle.

This happens because, when working on a building’s architecture, one needs to pay attention to the balance between what is being removed and what is being added. And this is why the Vitruvian virtues of a well-done building need to be reconsidered as ethical – rather than technical – terms of reference.

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Quality is a feature which not only does apply to the choice of materials, but also to the intervention strategy elected, which is in fact exclusive just as exclusive and unique is the monument we are talking about.

The renewal plan for the Domus Aurea is aimed at the structure of the building, at elements like vaults and



facades, and at its decorative parts, such as frescos and paintings. Since most part of the monument is under the ground and is covered by a significant portion of soil, everything is conditioned by infiltration of water, especially meteoric water.

The problems in the monument's structure can be ascribed mainly to washout, percolation and deterioration damage caused by a continuous imbibition of the walls, with a consequent loss of mechanical resistance and cohesion. Architectural artefacts play, most of the time, a structural function. The close presence of backfill, and the strong relationship between the latter and the building, originated over time a sort of fusion: even though the two components were kept separate, a single system was created. Such system was made by the stonework, the artificial compaction of debris and binding agents and the covering soil's compaction and levelling with the backfill.

Water plays a crucial role in keeping this particular situation well balanced by carrying out a series of mechanical and chemical actions on the material and on the building's internal and external environment. Water is present in different layers of the soil and its action can vary from surface runoff and washout to imbibition; from rising damp, condensation and interstitial condensation to evaporation. All these activities can make salts migrate, crystallise and re-crystallise, thus generating sulphates, carbonates, nitrites, nitrates and chlorides.

Consequently, this situation can result in a wide range of alterations for materials: alveolization, crumbly disintegration and weathering, exfoliation, detachment, scaling and swelling. However, removing drastically the presence of water may compromise a mechanism that, no matter how negative, has established some environmental processes that have been going on for centuries.

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This is why the renewal of the Domus Aurea entails an active control over the amount of incoming and outgoing water. A drainage system – allowing for a “controlled drainage” – is active and lets water enter in case of excessive draining inside the building thanks to a complex stratigraphic system, made of different materials. The fundamental task of isolation from meteoric waters is carried out by a SealEco-produced EPDM membrane which, being chemically and thermally stable, does not pollute and can adapt to any surface, even to unlevelled ones, thanks to its ability to stretch up to 300% of its length. This feature makes it possible to fix any damage caused by differential subsidence of the material layers placed above and below the membrane.

The waterproofing membrane has a smooth, uniform and non-slip surface, which can seamlessly cover large areas by means of a special vulcanized linking system.

The DUBOkeur certificate awarded to sustainable constructions proves that the product is an environmentally friendly choice. The safeguard of centuries of history and memories is entrusted to this membrane thanks to a ground-breaking experimental project that will be conducted over time, during the different working phases at the construction site.

The EPDM membrane is a contemporary material that allows to meet the requirements identified by Marco Vitruvio Pollione, a Roman historian who lived in the XV century B.C., as the technical and ethical standards that a well-done building must satisfy. Almost all the Roman architecture, including the Domus Aurea, meets such requirements.

We can therefore agree on the firmity, utility and beauty of the EPDM membrane and on its ability to stand comparison with Roman's building techniques and to integrate itself, thanks to its technical and chemical features, with the

ancient components of the most important monuments.

For further information and technical details, please visit the official website of the Domus Aurea construction site:

<http://archeoroma.beniculturali.it/cantieredomusaurea/en/>

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