

Influence of Humidity on Environmental Sustainability, Air Quality and Occupant Health

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Abstract : Nowadays, sustainable development issues have a key role in the planning of the man-made environment. Ensuring this development means limiting the impact of human activity on nature. It is essential to secure healthy places and good living conditions. For these reasons, indoor air quality and building materials play a fundamental role in sustainable architectural projects. These factors significantly affect human health: they can radically change the quality of the internal environment and energy consumption. The use of natural materials such as earth has many beneficial aspects in comfort and indoor air quality. As well as advantages in the environmental impact of the construction, they ensure a low energy consumption. Since they are already present in nature, their production and use do not require a high-energy consumption. Furthermore, they have a high thermo-hygrometric capacity, being able to absorb moisture, contributing positively to indoor conditions. Indoor air quality is closely related to relative humidity. For these reasons, it can be affirmed that the use of earth materials guarantees a sustainable development and at the same time improves the health of the building users. This paper summarizes several researches that demonstrate the importance of indoor air quality for human health and how it strictly depends on the building materials used. Eco-efficient plasters are also considered: earth and ash mortar. The bibliography consulted has the objective of supporting future experimental and laboratory analyzes. It is necessary to carry on with research by the use of simulations and testing to confirm the hygrothermal properties of eco-efficient plasters and therefore their ability to improve indoor air quality.

Keywords : hygroscopicity, hygrothermal comfort, mortar, plaster

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