

LONG-TERM BUILDING WITH NATURAL STONE



Natural stone scores on energy conservation.

The German government intends to cut CO₂ emissions in Germany by 40 per cent by 2020 through an energy and climate programme. This puts the focus on natural stone again as a natural building material. "The use of natural stone for building considerably reduces CO₂ emissions," says Reiner Krug, General Manager of the Deutscher Naturwerkstein-Verband DNV. The production of natural stone only consumes energy for quarrying and processing and the large stone deposits in Germany mean short transport routes. Natural stone is also an old-established building material; hardly any energy is required for the operation and maintenance of natural stone buildings.

Quite a number of architects and building planners fear the capital cost of natural stone and resort to supposedly cheaper building materials. However, increasing attention is being paid to the long life of a building and the total costs during its useful life, not only for large buildings in the public sector, but also for prestige projects of private developers. A situation that favours natural stone, as it is cheaper than synthetic building materials in terms of its useful life. "The capital cost is offset by the attractive long-term maintenance costs and the long life," says the DNV general manager explaining the cost-benefit advantage of the natural building material.

"Whereas many building materials become unsightly in the course of the years and need intensive cleaning and maintenance measures, natural stone develops a natural patina over the years. The visual appearance of many natural stones even remains almost unchanged after decades." The cost of cleaning and maintenance therefore remains low. Natural stone is also distinguished by its high capacity for storing heat. In contrast to modern glazed buildings, for example, little energy is needed for heating and cooling buildings with natural stone facades. Natural stone absorbs the heat radiated by the sun and prevents unwanted heating up of the building.

Low energy requirement, good usability

Experts estimate that up to 50 per cent of all energy available for consumers is used in the building industry. Especially synthetic building materials frequently need a large amount of energy during the manufacturing process. Not so natural stone: As a material created over millions of years, it is found in almost finished form in nature. The extraction of natural stone from the quarry is a careful process and does not use large amounts of energy. The transport routes are short: Natural stone is available in large quantities in many regions. Although the local material competes with offers from growth countries like Brazil, China and India, this is at the cost of the energy audit: Long transport routes increase both energy consumption and environmental pollution.

When choosing materials for large buildings, natural stone often loses out against glass because of the "more modern" appearance of glass. Whereas conventional facades with holes are frequently preferred for classic

housing construction, architects and planners support glazed outer skins for large projects. The result is usually more expensive climate controllers, details of total energy consumption are gladly kept vague, and the necessary light and heat shading requires more artificial lighting, as established in an extensive study by the Darmstadt Institute for Living and the Environment (www.iwu.de).

The current report of the Bavarian Audit Office (www.orh.bayern.de) also explains that large glazed areas can no longer be warranted for aesthetic reasons alone and should only be implemented in exceptional justified cases. The cost of the facade and the operating costs increase enormously with the use of glass. An open and light room design and natural stone are actually not contradictory, as proved by the building for the award-winning German Historical Museum in Berlin. Light-coloured limestone combined with glass elements enables almost perfect utilization of the light conditions inside the triangular building with low energy consumption.

Fuente: Stone Report