

SUSTAINABLE HOUSE

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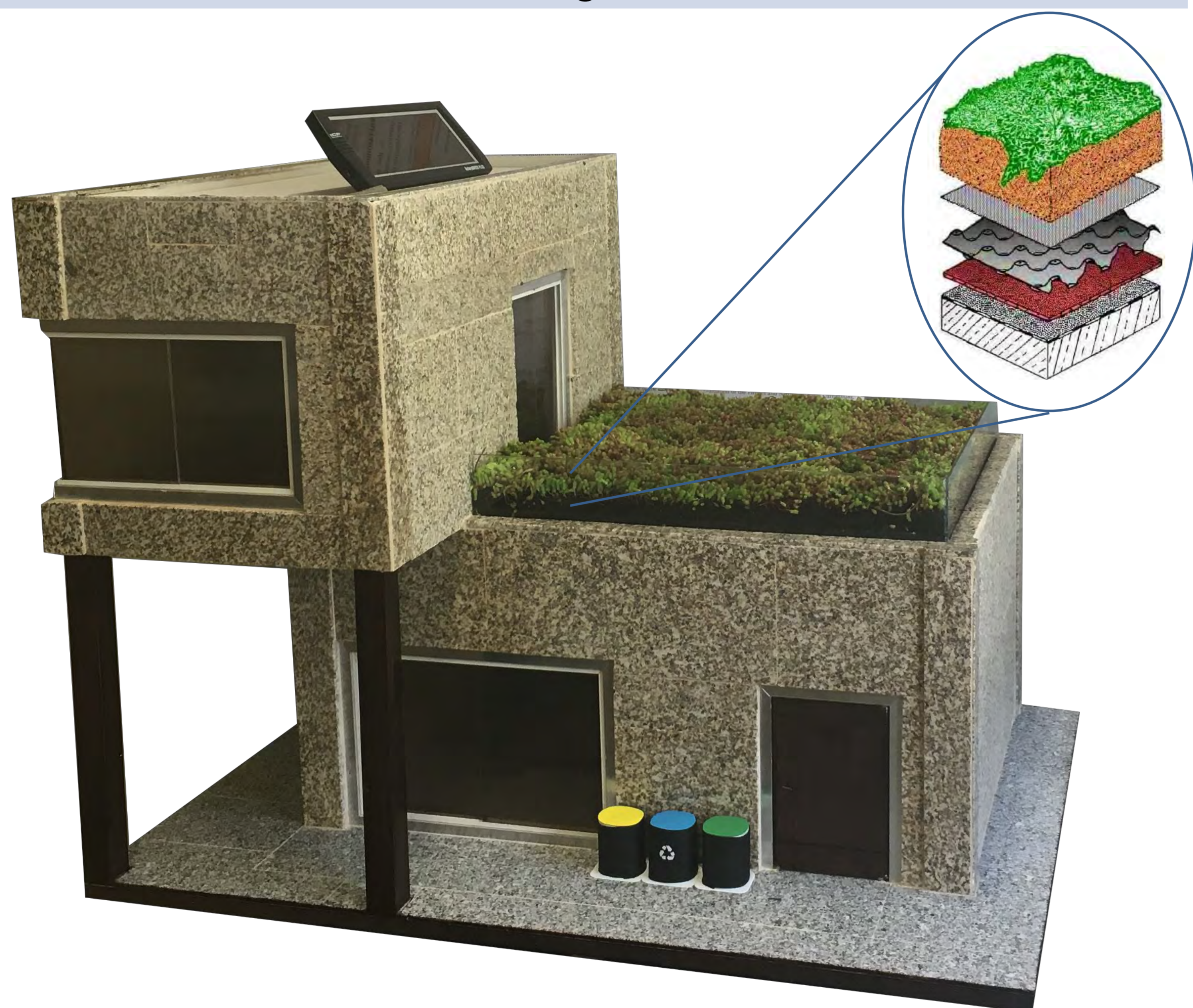
The realization of the following model is aligned with the sustainable development goals set out in 2030 Agenda by the United Nations. The "Sustainable House" intends to adopt sustainable alternatives that preserve the environment ensuring quality of life for present and future generations. Thus, the "Sustainable House" is part of the goal 11 and the target 11.3 of the 2030 Agenda, which state as follows: Sustainable Cities and Communities - enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries.

Granite

Intrusive igneous rock primarily made up of quartz, mica and feldspar, which is used in construction and as adornment. In Portugal, granites abound in the North and Centre. They play a central role in the external structure of the house.

Cork

Vegetable material obtained from the outer layer of cork oaks, one distinct tree in Portugal. Cork is very light and elastic since it is extremely porous. However, it shows water resistance due to the presence of suberin, a naturally hydrophobic substance, in a high concentration. Cork is used for various purposes. In this model it was used to simulate interior furnishings.



Aluminium

This is the most abundant metal in the earth's crust. It is a mineral and natural resource made from bauxite. It has many uses, including construction. In this model, the window frames are made from aluminium.

Medium density wood fibreboard

Material derived from wood composed by wood fibres and synthetic resins. It is the main constituent of the walls of the house.

Satin paint

Plastic paint obtained from an aqueous emulsion composed of vinyl copolymers and selected pigmentation. It was used in the walls and roof.

Varnish

Transparent synthetic compound used in wood finishing so as to provide protection and gloss. Its components are drying oil, resin and a solvent derived from petroleum.



Green roofing

Also known as green-roofs, these are vegetated roof covers that are increasingly being integrated into the urban construction. They serve multiple purposes: thermal and acoustic insulation, production of O₂ and CO₂ capture, increased biodiversity, waterproofing and improvement of the urban landscape. From top to bottom green-roofs are made of the following: a minimal maintenance and high longevity vegetation - this model chose *Sedum album*; a technical substrate lighter than earth, based on pine bark, turf and quartz sand; a filter layer to guarantee that the water outlet is not clogged with silt; a drainage layer, with 1 up to 2 cm, made of hollow, porous materials, so as to channel the excess of water but also to allow water storage; a root-resistant protective layer to prevent the roots from piercing the roof; and a waterproofing layer to protect the roof against infiltrations.

Photovoltaic panel

Device that converts solar energy into direct current electricity. In this model, the house resorts to this renewable energy source and thus it is self-sustaining.

Glass

Material used in the windows and as a layer for the green-roof. It is a solid, amorphous substance made up of mineral resources rich in silica, such as sand.

Wood

Biological natural resource used for different purposes in our daily lives. In this model wood was the material employed in the doorway and pillars.