

**O-56 (8)****GREEN ROOFS AND FAÇADES FOR IMPROVING ENERGY AND ENVIRONMENTAL SUSTAINABILITY OF BUILDINGS**

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Today, green roofs and façades (GRF) attract more and more attention in many cities of the world as an important passive energy system solution for buildings since this techniques allows reducing the energy consumption demand for conditioning in summer and the thermal insulation in winter, and their indoor comfort. Vegetalized buildings contribute to reduce the air heating around the building since much of the solar energy absorbed by the plants and its leaves can be lost through transpiration as latent energy. Green roofs and façades (GRF) represents a sustainable technology worldwide to decrease CO<sub>2</sub> emissions and the unaesthetic vision of strongly urbanized areas. Other significant benefits to adding vegetation in buildings include: slowing storm runoff, creating urban wildlife habitat, lowering environmental noise, and improving air quality by minimizing contaminants from rainwater. Recently, a number of municipalities started to adopt regulations and constructive benefits for renovated and new buildings which incorporate GRF. This paper deals with a general description of the GRF plant technology, the technical characteristics, the existing certification framework, the plants species and the hydroponics typologies. In addition, it is reported the mathematical description of parameters to quantify heat fluxes and energy balance of the GRF associated with buildings.

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