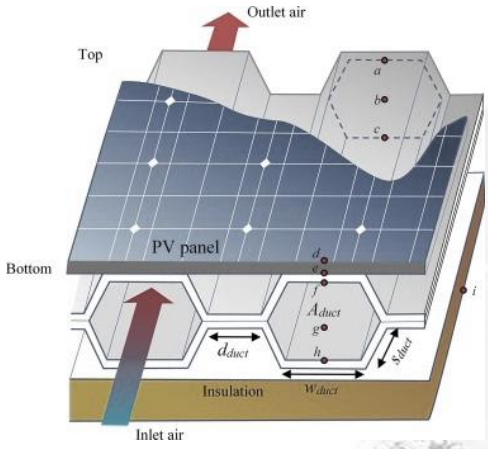
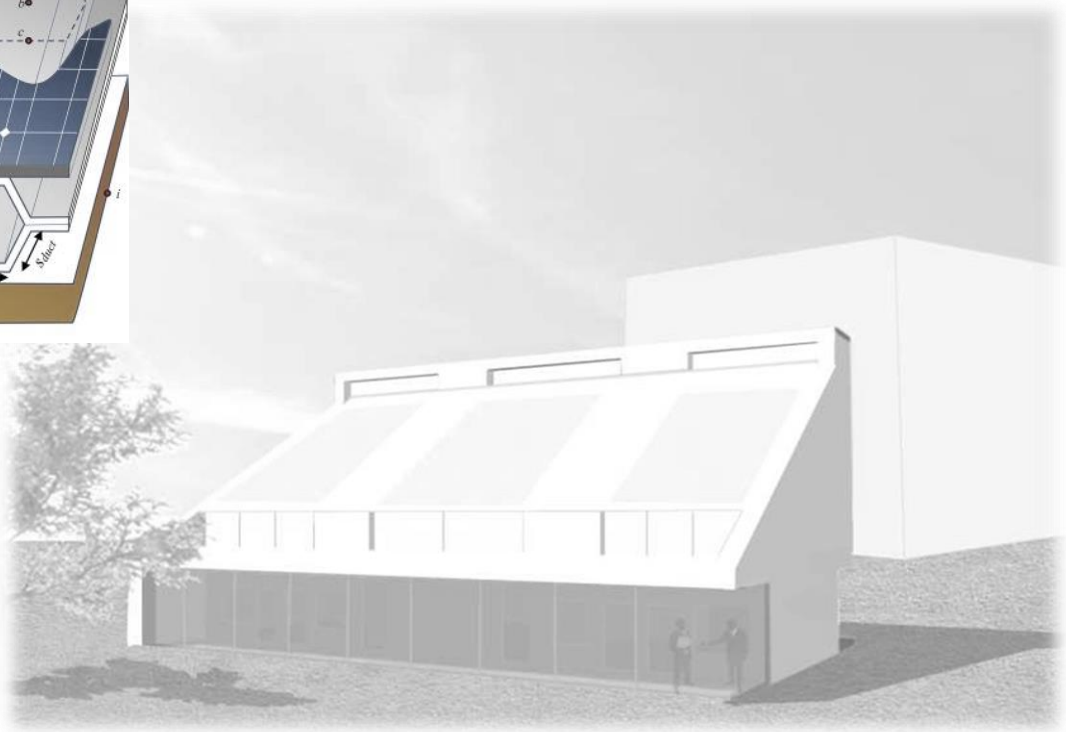
LECTURE

ARCHITECTURE LECTURE SERIES
2021, UNIVERSITY OF CYPRUS

GIOVANNI BARONE

Renewable energy in buildings





FRIDAY, FEBRUARY 19, 2021
18.00 - 19.00
ARCHITECTURE DEPARTMENT
ZOOM LINK:
https://ucy.zoom.us/j/93830364898?pwd=dG5LNW5WMENmc2hHSGZmVnlhTUlSQT09

University of Cyprus

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Renewable energy in buildings

This presentation will focus on renewable energy exploitation in the building sector. Initially, the current world energy context and future scenarios regarding different energy policy are introduced. Then, a special focus is paid on the building sector that is responsible for almost 40% of world energy consumption. The main energy fluxes through buildings will be defined and different devices based on renewable energy sources will be introduced. After that, the definition of net/nearly zero energy building will be introduced and a suitable case study is presented. Specifically, it is referred to the design of the first non-residential net-zero energy building for a Mediterranean climate. Here, the building envelope and the energy plants are improved through the adoption of innovative technologies (e.g. phase change materials, low-emissive windows, high-vacuum solar thermal collectors, photovoltaic/thermal systems, etc.). Finally, design and operation for energy efficiency are discussed and possible solutions for retrofitting purpose are presented that will enable the existing building stock to be enhanced according to the European directive.

GIOVANNI BARONE

Giovanni Barone, Researcher at the Department of Industrial Engineering of University of Naples Federico II. He obtained a B.Sc. and a M.Sc. in Mechanical Engineering in 2013 and 2016 at the University of Naples Federico II and a Ph.D. in Industrial Engineering at the same University in 2020. He was visiting scholar at the Cyprus University of Technology (Cyprus) in 2019. He is actively involved in research topics regarding building energy efficiency, with a special focus on the development of dynamic simulation models and innovative building-plant solutions. These studies are based on integrated construction techniques, innovative HVAC systems and novel renewable energy technologies including solar heating and cooling systems, concentrating photovoltaic solar thermal systems, and polygeneration. He is also involved in collaborative research activities relative to the design of net zero energy buildings and the integration of passive solar thermal systems in buildings.

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