School of Graduate Studies and Research

Invites faculty, staff, and students to attend

Faculty Research Colloquium

Dr. Fernando del Ama Gonzalo

Department Chair & Associate Professor of Architecture Department
School of Engineering

"Water Flow Glazing in Zero Energy Buildings"

3:00-4:00 PM, Tuesday, November 1, 2016
Building G, Ground Floor, G103 Conference Room

Abstract

Buildings are responsible for, approximately, half of the energy consumption of the planet. Designing buildings with energy saving criteria is fundamental in reducing the consumption, but it is not enough. It is becoming more and more necessary to integrate efficient production technologies and energy management. Building codes are introducing the requirement to reduce both the energy demand and consumption in buildings, in order to reach a nearly-zero energy consumption in a few years. In this context, the concept of Regenerative Building appears; it is the one able to give back to nature the energy consumed during its construction process. To meet the parameters of a regenerative building, it is not only necessary to design with energy-efficient parameters and to choose suitable devices, but it also requires new materials and constructive solutions that make the building an energy producer, either for its own use, or to pump it in the existing city network. Given the passive actions, which favor thermal insulation in buildings, active elements are able to produce and manage energy. One of these systems is the active water-flow windows. The advantage of water, compared to other stone materials, is its great heat capacity; it has a larger storage capacity per volume unit than the materials mentioned. Furthermore, water has the ability of transporting energy. It is transparent to visible solar radiation, and resistant to infrared radiation, so the use of this glazing allows the light to enter the building and blocks the heat. Building Codes are based on allowances and implies more openness to innovation. This option is justified, since the building knowledge and technology are in constant progress, in such way that regulation promotes research and does not hinder technological progress. The active water-flow window panels are being introduced in the market. This article shows real data obtained by means of monitoring a building that integrates this technology in its façade.

About the Speaker

Dr. Fernando del Ama Gonzalo is an Architect, Associate Professor of Architecture at American University of Ras Al Khaimah. Dr. Fernando has seventeen years of teaching experience related to construction technology, building physics and energy management in buildings. He teaches courses in Building Construction and Architectural Design. He earned a Master in renewable energies at San Pablo CEU University in Madrid. Prior to that, he acquired more than 10 years of professional experience as a co-founder of a spin-off corporation, as an architectural bureau partner, and as 3D graphic designer. He is a co-founder of IntelliGlass S.L., a technology based company, and has managed public research projects granted by Ministry of Science and Technological Innovation and Ministry of Industry, Energy and Tourism in Spain. As a result of these projects, he has published the patent document "Active Transparent or Translucent Enclosures with Energy Control Capacity" (PCT ES/2008/000071, USA 12/545510) as a co-inventor with other Spanish researchers.