

Green Skyline Cities by Intelligent Rooftop Greenhouses

The presentation is dealing with a new concept: *The Intelligent Rooftop Greenhouse* (iRTG), as a development of *The Integrated Rooftop Greenhouse* (IRTG). IRTGs are giving a new life to the well-known yet rather unsuccessful *Rooftop Greenhouses* (RTG). Integrating an RTG with the underneath building means to set two bidirectional air flows: O₂ enriched air from RTG down to the building and CO₂ enriched air from building up to RTG. While an IRTG has a natural air circulation, iRTG has fan-controlled air tubes and renewable energy sources. iRTGs can smartly manage the water and renewable energy resources available in the urban environment (sun, wind, geo-thermal). Such way a benefic humans-plants symbiosis may be set in any urban building and the plants' presence together with their CO₂ offset will strongly grow in our cities. A *Green Skyline City* (GSC) is composed exclusively of iRTGs, conceived as *Internet of Things* (IOT) subjects, compatible with the *Smart Cities*. The presentation discusses the iRTG topic and a mathematical model, implemented in Matlab-Simulink. Computer simulations illustrate the presentation.



Marius M. Balas is currently a Full Professor in the Department of Automatics and Applied Software at the Faculty of Engineering, University “Aurel Vlaicu” Arad (Romania). He holds a Doctorate in Applied Electronics and Telecommunications from the Politehnica University of Timisoara. Dr. Balas is an IEEE Senior Member.

He is the author of 4 books, 12 book chapters, 36 ISI articles, 37 indexed articles (Scopus, Google Scholar, etc.), 40 papers in other journals and conference proceedings and 7 invention patents. His research interests are in Electronic Circuits, Modeling and Simulation, Adaptive Control, Intelligent and Fuzzy Systems, Soft Computing and Intelligent Transportation.

The main original concepts introduced by Prof. Marius M. Balas are: the fuzzy-interpolative systems, the passive greenhouse, the intelligent roof-top greenhouse, the constant time to collision optimization of the traffic, the imposed distance braking, the internal model bronze casting, PWM inverter for railway coaches in tropical environments, the rejection of the switching controllers effect by phase trajectory analysis, the Fermat neuron, etc.

He has been mentor for student research challenges, awarded by Microsoft Imagine Cup, GDF Suez, etc.

Prof. Marius M. Balas has participated in many international conferences as organizer, session chair and member in international program committees. He is editor-in chief, member of editorial board or reviewer for several international journals.