

## **Keynote: Photovoltaic and water: submerged and floating solutions**

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The use of photovoltaic systems in a water context creates positive synergy by increasing the cost effectiveness of PV systems, satisfying local demand for energy and creating positive effects on water (e.g. by limiting evaporation and the algae bloom problem).

It is usually systems installed on the mainland that are considered, but nowadays the need to further exploit PV technology requires the search for new solutions.

The aim of this keynote speech is to present the main issues that can attract the interest and attention of researchers that are investigating the possibility of installing photovoltaic systems over (e.g. a floating system) or under (e.g. a submerged system) the water surface with or without storage systems that can also be either floating or submerged.

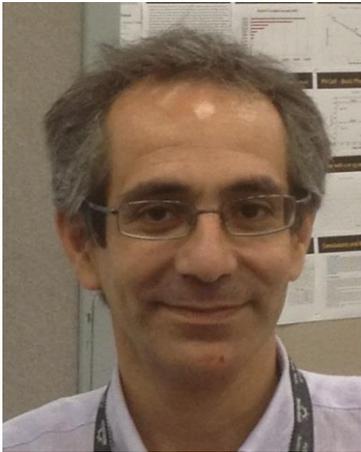
Specifically, floating a PV plant is at present a budding technology: only a few plants have been installed around the world as pilot projects and demonstrators, without there being any large-scale investments. However, the reduction in costs of the installation as well as the increasing interest in renewable energy in emerging countries suggest that, in the near future, the sector will experience a rapid take-off and this will be accompanied by an increasing interest in acquiring expertise in this area.



Fig. Floating PV plant with tracking in Suvereto, Livorno (Italy) [1]

[1] M. Rosa-Clot and G. M. Tina, "Submerged and Floating Photovoltaic Systems: Modelling, Design and Case Studies", Academic Press, 2017.

## Giuseppe Macro Tina



***GIUSEPPE MARCO TINA***:- MS, Electrotechnics Engineering, 1988 University of Catania (UdC) Italy; Ph.D., Electrotechnics Engineering, 1992, UdC. Currently he is associate Professor of Electric Energy Systems at UdC. National Academic Qualification as Full Professor (2013). Electrical engineer in Agip Refineries and ST Microelectronics, Italy (1993-1996). Associate researcher for INFN, Catania (Italy), 2002. Erasmus agreement coordinator in: France, Greece, Spain and Croatia. Keynote speaker: 2012 IEEE EPE, Iasi Romania. Invited speaker at ICEEAC (Algeria, 2013), WREC (UK, 2014), Splitech (HR 2016). Awarded: Diploma di Excelentia in teaching and research in power system from University “Stefan cel Mare”, Suceava, Romania (2012); best paper regular session in SEB 2014. Editorial Board Member: International Journal of Sustainable Energy (from 2015), Helyion (from 2016).

Co-author of 203 scientific papers on: analysis and modelling of Wind and Photovoltaic generation systems, DGSs (Dispersed Generation Systems), Energy and Ancillary Services Market, Stationary applications of Hydrogen Technology, photovoltaic/thermal (PV/T) systems, monitoring and diagnostic of photovoltaic systems. Book Author (title: “Submerged and Floating Photovoltaic Systems: Modelling, Design and Case Studies”).

Responsible of power system research group and lab at UdC (6 y). Member of the IEEE (20 y) and Power and Energy Society (12 y). Vice-president of AEIT, Catania (2010-2015). Coordinator of regional and national research grants and research contracts.