

ANDREA MICANGELI - Curriculum Vitae

Part I – General Information

Brief Resume: Andrea Micangeli has been continuously lecturer for DIMA Sapienza Department from year 2001, he delivered several different Ing-Ind/09 courses, he has been temporary research (RTDA) for 2 contracts. As a point of innovation both in research and didactic he is coordinating at Sapienza Engineering Faculty the Grand Challenges Scholars Program issued by the US National Academy of Engineering. In the last 3 years he has been author of about 20 papers autonomously proposed in continuous dialog with international scholars fully dedicated *Mini-Grids Optimization* and *Access to Energy*. Through this research group he is now fundraising for DIMA Department and for specific autonomous projects to further develop numerical analysis and scientific models for Energy Systems Optimisation.

Research: He is now under second evaluation as Energy Systems Associate Professor Qualification in 09/C1 sector. He is performing research and didactic activities at Sapienza DIMA Department within the SSD ING- IND/09 Group “Energy and Environmental Systems”.

This intensive collaboration among international American, European and African Universities as Research Group Coordinator Andrea Micangeli, autonomously and successfully opened inside DIMA-Sapienza department a new set of studies committed to “energy access and mini grid optimization” delivering with Phd students, and Italian AIMSEA colleagues a continuous series of scientific activities fully dedicated to Deterministic, Heuristic, Stochastic and Multi Objective Models.

Research Indicators: *Scopus*. H-index: 11; Indexed documents: 37; Number of citations: 362 in 255 documents; *Total Factor*(10 years): 49,25 *Average Impact Factor* (10 yrs): 3,52

For herewith Presented Publication the Total Impact Factor is: 48,8 Average Impact Factor is: 4,8

Teaching Indicators at DIMA Sapienza: He has been Lecturer with continuously renewed contracts from year 2001, supervised more than 30 Final Course Thesis per year. He teaches Energy Systems and Renewable Energy System Design with more than 180 Students per year

Awarded for innovation in Higher Education: Innovation in Higher Education through the “Field Study Abroad” was awarded on February 2018 at Palazzo Chigi at the presence of Italian Republic President (Italia Decide 2018).

Most relevant interests and Research Advances are related to:

1. Mini grid models based on in-house and commercial algorithms:
 - oREM – Symulink – Homer Real-life Mini Grid Layouts Optimization
2. Mini grid models based on component optimization:
 - oStirling heat exchangers for Cold Chain in Mini Grid Optimization
 - oVanadium Redox flow batteries - Storage interacting with Flywheel and other devices
3. Design and numerical study on:
 - oWind Plants Optimization -Mini Grid Optimal deployment with MIT tools
 - oSolar Thermal devices modelling and optimization (Pleion, Sared, and others)
 - oSolar PV OSEC Electrolizer (Gaia Ricerche)
 - oi-Tree Energy (SUNY)

Research Results presentations in scientific conferences as invited speaker and organizer as follows:

Nov 2020	Steering Committee Member at Grand Challenges Summit – Washington November 2018-2019
Apr 2019	Scientific Committee Member at ICREN 2019-- Renewable Energy – Paris
Dec 2018	Invite Speaker at European Fuel Cell 2018 - Innovative and Hybrid Innovative Storage Solution
Jan 2018	Organizer Renewable Energy New Frontiers - Strathmore University – Nairobi, Kenya

Place: Rome Date: 2021.01.20

Relevant Research Skills after the strong experience in the use of innovative techniques for modelling conversion systems and their component machines: Since 2015, the Research activity in SSD ING-09 concerns Energy Systems in innovative Mini Grids studied at international level in particular data analysis, and their use for

optimization models, as demonstrated by the last 10 papers born in collaboration with Sapienza.- Pisa and MIT-Boston group with REM - ONSETT - HOMER in Mini Grid Optimization through the Application machine learning and artificial neural networks with software to hybrid energy system with an innovative and useful application of numerical methods such as:

- MILP Mixed-Integer Linear Programming, Rolling Horizon Technique
- MOPSO Multi-Objective Particle Swarm Optimization, MDO Multiple Design Options,
- NSGA Non-dominated Sorting Genetic Algorithm, LFS- Load Following Strategy
- Multiple sizing choices; Multi-Objective Particle Swarm Optimization (MDO-MOPSO)
- Multi-Objective Optimization of Off Grid Hybrid Renewable Energy Systems
- Heuristic approaches to size microgrids through Multi Criteria Decision Making (MCDM)
- Numerical case studies of hybrid microgrids by multi-objective approach

Part II – Education

Type	Year	Institution	Notes
Post-graduate studies	1996	Sapienza University of Rome	Mechanical Engineering
Licensure 01	1997	Engineering Board of Rome	Mechanical Engineering
PhD	2001	Sapienza University of Rome	Ing-Ind 09 – Energy and Environment

Part III – Appointments

III A – Academic Appointments

Start	End	Institution	Position
2001	2021	Sapienza University of Rome	ING-IND 09 Classes Lecturer
2017	2020	State University of New York	Adjunct Associate Professor
2009	2016	Sapienza University	Researcher

III B – Other Appointments

Start:	Entities :	Location:	Assignment:
2020	<i>GCSP EU Scholars</i>	EU	Director
2020	<i>Fondazione Sapienza Innovazione</i>	Italy	University-Enterprise Ambassador
2019	<i>National Academy of Engineering</i>	USA	GCSP Review Committee – Member
2018	<i>SUNY, MIT, Columba NYC et Al.</i>	EU	Field Studies4 Mini Grid Optimization-Coordinator
2017	<i>SUNY - State University New York</i>	USA	Adjunct Associate - Professor
2018	<i>Strathmore University</i>	Africa	Board member – Adjunct Professor
2017	<i>RES4Africa -Enel Foundation</i>	Italy	Micro Grid Academy Scientific Coordinator

IV B –International Teaching Experiences

Years	Institution	Lecture/Course
2013-2019	Columbia NYC	Invited Lecturer Engineering for Developing Communities CIEE E3260
2014-2015	Hawaiian Pacific University	Seminar on Sustainable Technologies in Development
2010-2011	Sapienza MAE Makerere Univeersity of Uganda	“Renewable Energies” Master Phil.
2012-2015	Cambridge University - UK	Lectures at Engineering for Sustainable Development - Mphil
2010-2013	Italian Foreign Affair Istituto Italo Latino Americano-	“Curso Energias Renovables” High Education
2000-2012	Sapienza	“Design for International Cooperation” Master Phil.
2005-2012	Milan Polytechnic	“Renewable Energy and Energy Saving RIDEF” M.Phil.
2012-2013	Universidad Nacional Paraguay	High Education Course “Solar Thermal Energy”,
2005-2012	Milan Polytechnic – ITACA	“Solar Thermal Energy RIDEF” M.Phil.
1999-2000	Sapienza	High Education Course “Design for Cooperation and Sustainability”
2001-2007	Sapienza	“Emergency Engineering ” Master Phil.

Place: Rome

Date: 2021.01.20

ANNEX1:

12 International Publications - DOUBLE BLINDED PEER-REVIEWED ARTICLES

1	2020	Articolo in rivista Lorenzoni, L., Cherubini, P., Fioriti, D., Poli, D., Micangeli, A., Giglioli, R.,(2020) Classification and modeling of load profiles of isolated mini-grids in developing countries: A data-driven approach, Energy for Sustainable Development, 2020
2	2020	Articolo in rivista Fioriti D., Poli D., Lutzemberger G., Micangeli A., Duenas P. ,(2020)Coupling economic multi-objective optimization and multiple design options: a business-oriented approach to optimize an off-grid hybrid microgrid, International Journal of Electrical Power & Energy Systems, accepted 3rd December 2020
3	2020	Articolo in rivista Micangeli A., Fioriti D., Cherubini P., Duenas-Martinez P. (2020). Optimal design of isolated mini-grids with deterministic methods: Matching predictive operating strategies with low computational requirements. ENERGIES, vol. 13, ISSN: 1996-1073
4	2020	Contributo in Atti di convegno Fioriti, D., Lutzemberger, G., Poli, D., Duenas-Martinez, P., Micangeli, A. (2020) Heuristic approaches to size microgrids: A methodology to compile multiple design options - 2020 IEEE International Conference on Environment and Electrical Engineering and 2020 IEEE Industrial and Commercial Power Systems Europe, 2020
5	2019	Articolo in rivista Barelli L., Bidini G., Cherubini P., Micangeli A., Pelosi D., Tacconelli C. (2019). How hybridization of energy storage technologies can provide additional flexibility and competitiveness to microgrids in the context of developing countries. ENERGIES, vol. 12, ISSN: 1996-1073, doi: 10.3390/en12163138
6	2019	Contributo in Atti di convegno Fioriti, D., Poli, D., Cherubini, P., Lutzemberger, G., Micangeli, A., Duenas-Martinez, P., (2019) Comparison among deterministic methods to design rural mini-grids: Effect of operating strategies, 2019 IEEE Milan PowerTech, PowerTech
7	2019	Articolo in rivista Gambino V., Citto R. D., Cherubini P., Tacconelli C., Micangeli A., Giglioli R. (2019). Methodology for the energy need assessment to effectively design and deploy mini-grids for rural electrification. ENERGIES, vol. 12, ISSN: 1996-1073, doi: 10.3390/en12030574
8	2018	Articolo in rivista Fioriti Davide, Giglioli R., Poli D., Lutzemberger G., Micangeli A., Del Citto R., Perez-Arriaga I., Duenas-Martinez P. (2018). Stochastic sizing of isolated rural mini-grids, including effects of fuel procurement and operational strategies. ELECTRIC POWER SYSTEMS RESEARCH, vol. 160, p. 419-428, ISSN: 0378-7796
9	2017	Articolo in rivista Micangeli, Andrea, DEL CITTO, RICCARDO, Kiva, Isaac, Santori, Simone, Gambino, Valeria, Kiplagat, Jeremiah, Viganò, Daniele, Poli, Davide, Fioriti, Davide (2017). Energy Production Analysis and Optimization of Mini-Grid in Remote Areas: The Case Study of Habaswein, Kenya. ENERGIES, vol. 10, p. 1-23, ISSN: 1996-1073
10	2014	Articolo in rivista M. Villarini, E. Bocci, M. Moneti, A. Di Carlo, MICANGELI, Andrea (2014). State of art of small scale solar powered ORC systems: A review of the different typologies and technology perspectives. ENERGY PROCEDIA, vol. 45, p. 257-267, ISSN: 1876-6102, doi: 10.1016/j.egypro.2014.01.028
11	2013	Articolo in rivista DELL'ERA, Alessandro, ZUCCARI, Fabrizio, SANTIANGELI, ADRIANO, FIORI, CHIARA, MICANGELI, Andrea, F. Orecchini (2013). Energy optimisation and layout of a membrane-free OSEC system for the hypochlorite self-production in Developing Countries. ENERGY CONVERSION AND MANAGEMENT, vol. 75, p. 446-452, ISSN: 0196-8904, doi: 10.1016/j.enconman.2013.06.046
12	2012	Articolo in rivista Domenico Borello, Alessandro Corsini, Giovanni Delibra, Sara Evangelisti, Andrea Micangeli (2012). Experimental and computational investigation of a new solar integrated collector storage system. APPLIED ENERGY, vol. 97, p. 982-989, ISSN: 0306-2619, doi: 10.1016/j.apenergy.2012.01.026