Nicolaos A. Cutululis — Curriculum Vitae

Contact information

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Personal

Greek/Romanian (D.o.B. 27th of May 1974)
Married to Irina Alina Cutululis – Father of Sebastian Peter

Research Interests

Wind power technology, Offshore wind, Integration and Grid Connection, Control and Operation, Offshore grids, Wind Variability and Uncertainty

Appointments

Technical University of Denmark, DTU Wind Energy, Roskilde, Denmark
Professor **01/2019 - …**

- Establishing a research group on offshore wind integration
- Research on integration of offshore wind, with applications to design and optimization of electrical infrastructure for offshore wind, technical capabilities of offshore wind power plants (e.g. black-start, grid forming operation, etc) and operation and control of offshore wind power plants and clusters
- Principal investigator for Nordic, EU and Danish projects
- Teaching and Supervision at M.Sc and Ph.D level

Senior Scientist **10/2010 –01/2018**

- Research on offshore wind technology, offshore grids, HVDC, electrical infrastructure design
- Principal investigator for Nordic, EU and Danish projects
- Teaching and Supervision at M.Sc and Ph.D level

Risø National Laboratory for Sustainable Energy, Roskilde, Denmark
Scientist **10/2006 – 10/2010**

- Modelling of wind power variability
- Wind turbine control
- Capabilities for ancillary services

Risø National Laboratory for Sustainable Energy, Roskilde, Denmark
Post-Doc **02/2005 – 10/2010**

- Modelling of electrical components
- Integrated design of wind power plants

"Dunarea de Jos University" of Galati, Romania
Teaching assistant **10/1998 – 02/2005**

- Teaching control theory, electrical drives, power electronics

Education

"Dunarea de Jos University" of Galati, Romania
Ph.D. , Automatic Control (01/2005)
Title: *Contributions to the synthesis of control strategies for renewable energies systems with hybrid structures*;

"Dunarea de Jos University" of Galati, Romania
MS.c., Automatic Control (06/1998)
Title: "*Friction control in servo-systems*"

Languages

Greek: Mother tongue
Romanian: Mother tongue
English: Fluent
Danish: Advanced

Teaching

2019 - …: DTU course – "46905 – Research in wind energy; challenges and methods" (Ph.D.)
2019 - …: DTU course – "46915 – Project planning for PhD students at DTU Wind Energy" (Ph.D.)
2018 - …: DTU course – "46W27 - Grid connection and integration of wind power" (M.Sc.)
2018: DTU course – "46000 – Research Immersion at DTU Wind Energy" (Ph.D.)
2016 - …: several ad-hoc special courses (Ph.D.)

Service

Editorial membership:
2019: IEEE Trans on Power Systems – Guest Editor: "Towards 100% renewable energy system"
2017: IET Renewable Power Generation – Co-Chief Guest Editor: "Coordinated Control and Protection of Offshore Wind Power and Combined AC/DC Grids"
2016 - … IET Renewable Power Generation – Associate Editor
2015: IEEE Trans on Power Delivery – Guest Editor: "Transmission systems for large offshore wind power plants"
2016: IET Renewable Power Generation – Guest Editor: "Active Power Control of Renewable Energy Generation Systems"

Journal referee:
IEEE Transactions on Power Systems, IEEE Transactions on Energy Conversion, IEEE Transactions on Sustainable Energy, IEEE Transactions on Power Delivery, Wind Energy, Applied Energy, Energies, Energy, IEEE Proceedings, Energy Procedia, Renewable Energy, Energy Conversion and Management, International Journal of Electrical Power and Energy Systems, Journal of Renewable and Sustainable Energy, Journal of Solar Energy Engineering, ASME

Reviewer for book proposals:
IET, John Willey & Sons, Springer

Reviewer for research proposals
Research Councils UK Energy Programme (UK), KU Leuven (Belgium)

Committee for academic evaluation and recruiting
Aalborg University, KU Leuven

Conferences (Scientific/Programme Committee/Reviewer):
PSCC 2018, EnergyCon 2018, Wind Energy Science Conference (WESC) 2017, IEEE PowerTech 2017, Offshore Wind Energy 2017, WindEurope Conference 2017, PSCC 2016,

EnergyCon 2016, IET RPG 2016, Torue 2016, EWEA Annual Event 2016, IEEE PES GM 2015, IEEE PowerTech 2015, IET RPG 2015, OPTIM 2015, EWEA Annual Event 2015, EWEA Annual Event 2014, EWEA Annual Event 2013

Publications

Books Co-author in 2 books

Book chapters Co-author of 3 book chapters

Journal Articles Authored/co-authored 35 articles in journals

Conference Publications Authored/co-authored 98 conference papers

Impact

Citations:

ISI Web of Knowledge	≈ 777 citations; h-index = 10
Scopus	≈ 580; h-index = 9
Google Scholar	≈2,997; h-index = 20

ORCID

Membership

- IEEE, Member (Power & Energy Society)
- CIGRE, Member
- JP EERA WIND, Member
- IEA Wind Task 25 Design and Operation of Power Systems with Large Amounts of Wind Power, Danish Representative
- MEGAVIND working group

Projects/ Fundings

European & Nordic

- **TotalControl** (CI, 2018-2021): Wind power plant control;
- **InnoDC** (DTU PI, 2017 – 2021): Innovative Tools for Offshore Wind and DC Grids; www.innodc.org
- **PROMOTioN** (DTU PI, 2016-2019): Progress on Meshed HVDC Offshore transmission networks; www.promotion-offshore.net
- **Baltc Integrid** (DTU Wind PI, 2017 – 2019): Offhore grid design for the Baltic Sea; www.baltic–integrid.eu
- **EERA IRPWIND** (CI, 2015 – 2018): Wind Power Plant Control; www.irpwind.eu
- **MEDOW** (DTU PI, 2014-2017): Multi-terminal DC grids for offshore wind; http://sites.cardiff.ac.uk/medow/
- **GARPUR** (DTU PI, 2014-2017): Generally Accepted Reliability Principle with Uncertainty modelling and through probabilistic Risk assessment; https://www.sintef.no/projectweb/garpur
- **EERA-DTOC** (DTU CI, 2012-2015): Power output variability and predictability; www.eera-dtoc.eu
- **REserviceS** (DTU PI, 2012-2014): Economic grid support from variable renewables; wind power capabilities and costs; https://www.reservices-project.eu/
- **OffshoreDC (PI,** 2011-2016): DC Grids for Integration of Large Scale Wind Power; http://www.offshoredc.dtu.dk/

- **TWENTIES** (CI, 2010-2013)**:** Wind turbine high wind speed control and impact of offshore wind power variability on European power system;
- **TradeWind** (CI, 2006-2009): Wind Integration in Trans-European Power Markets; https://windeurope.org/policy/eu-funded-projects/tradewind/
- **UpWind** (CI, 2006-2011): Substantially improved models of the principal wind turbine components; https://windeurope.org/policy/eu-funded-projects/upwind/

Danish

- **PowerKey** (CI, 2017-2020): Enhanced wind turbine control for optimized wind power plant operation;
- **CONCERT** (CI, 2016-2019): Control and uncertainties in real-time power curves of offshore wind power plants; http://www.posspow.vindenergi.dtu.dk/concert
- **RePlan** (CI, 2015-2018): Ancillary services from Renewable power Plants; http://www.replanproject.dk/
- **EaseWind** (CI, 2011-2014): Relevant forecasting products for wind turbines to provide ancillary services in order to support grid operations
- **Radar@Sea** (CI, 2009-2012): Plant controller using short-term wind (power) forecasting at Horns Rev using real-time data from an onsite Local Area Weather Radar
- **Integrated design of wind power systems** (CI, 2008-2009): Impact of grid faults on wind turbine loading
- **Mesoscale atmospheric variability and the variation of wind and production for offshore wind farms** (CI, 2007-2010):
- **Power fluctuations in large offshore wind farms** (CI, 2005-2008): Research and development on modelling of fluctuations based on Horns Rev and Nysted data
- **Simulation Platform for Wind Turbines II** (CI, 2005-2008): Electrical models for wind turbines simulation platform

Industrial/Collaborative

- **Pan-European Climate Database** (PI, 2014 - 2018): development of pan-European wind and PV power time series for the European Network of Transmission System Operators (ENTSO-E) and used in the Ten Years Network Development Plan (TYNDP)
- **SIMBA** (CI, 2010-2015): collaborative project with Danish Transmission System Operator Energinet.dk for the development of wind power variability and uncertainty models to be include in the simulation of balancing (SIMBA) tool

Supervision

Post-doc researchers:

- **Dr. Jonas Kazda** (2019 - …)
- **Dr. Jayachandra N. Sakamuri** (2018 - …)
- **Dr. Kauhik Das** (2017 - 2018)
- **Dr. Ömer Göksu** (2017)
- **Dr. Braulio Barahona** (2012-2014)

Ph.D. Students (graduated: 6, current 7)

- **Liang Lu** (with Poul Sørensen and Gunner Larsen): Enhanced frequency control capabilities from wind turbine/plant (2018-…)
- **Amir Arasteh** (with Ömer Göksu): Advanced wind Turbine Converter Control in HVDC-connected Wind Power Plants (2018-…)

- **Anup Kavimandan** (with Anca D. Hansen and Kaushik Das): *Cluster supervisory control of large offshore wind power plants* (2018-…)
- **Anubhav Jain** (with Ömer Göksu and Kaushik Das): Black start and islanding operation capabilities of offshore wind power plants (2018-…)
- **Juan-Andrés Pérez-Rúa** (with Mathias Stolpe, Kaushik Das and Poul Sørensen): *Design and optimization of electrical infrastructures in offshore wind power clusters* (2017-…)
- **Ali Bidadfar** (with Poul Sørensen and Müfit Altin): Control and stability of meshed offshore grids with diode rectifiers and VSC HVDC (2016-…)
- **Oscar Saborío-Romano** (with Poul Sørensen and Ömer Göksu): Integration of wind power plants connected to HVDC via diode rectifiers (2016-…)
- **Jonas Kazda** (with Mike Courtney and Gregor Giebel): *Multi-objective wind farm control* (2015-2018)
- **Elliot Simon** (with Mike Courtney): The uses of remote sensing technology in wind farm control (2015-2019)
- **Edgar Nuño Martinez** (with Poul Sørensen): *Impact of Renewable Energy Uncertainty on Electric Power System Reliability* (2014-2017) – now R&D Engineer at Suzlon (DE)
- **Jayachandra N. Sakamuri** (with Poul Sørensen and Anca D. Hansen): *Coordinated Control of Wind Power Plants in offshore HVDC grids* (2014-2017) – **received EAWE Young Doctor Award 2017** – now R&D Engineer at ABB (SE)
- **Juan Gallego-Calderon** (with Anand Natarajan): *Electro-mechanical Drivetrain Simulation* (2012-2015) – now Scientist at Sentient Science (US)
- **Braulio Barahona** (with Poul Sørensen and Anca D. Hansen): *Integrated design of wind power systems* (2009-2012) – now postdoctoral fellow at ETH Zurich (CH)

Ph.D. guests
- **Gayan Abeynayake** (Cardiff University), 2019
- **Kevin Schönleber** (UPC), 2016
- **Muhammad Raza** (UPC), 2016
- **You Rui** (Tsinghua University), 2015

M.Sc. Students (graduated: 12)
- **Georgios Papakonstantinou**: Modelling and Control of Modular Multilevel Converter designed for DC-based off-shore wind farm (2019)
- **Daniel Hermosilla Minguijon**: Development of algorithms to solve the Wind Farm Electrical Collection System Design and Optimization Problem (2018)
- **Feng Guo**: Security and stability of high wind penetrated power system during storm conditions (2017)
- **Joan Oliva Gratacos**: In-operation learning of optimal wind farm operation strategy (2017)
- **Christoph Wolter**: Overplanting in offshore wind power plants in different regulatory regimes (2016)
- **Francesc Uya**: Analysis of overplanting with dynamic cable rating for large offshore wind farms (2016)
- **Nick Gerardus Cornelis Janssen**: Uncertainties in aggregation of wind power generation in power system areas (2015)
- **Henrik Stade**: Space-time Analysis of Wind Power Forecast Error in Denmark (2015)

- **Christina Angeloudi**: Availability Aspects in Large Offshore Wind Farms (2014)
- **Georgia Roussi**: Methods for representations of wind farms in dynamic power system studies (2013)
- **Blanca Naudin Aparicio**: Aggregated power curve for multiple wind turbines in power system areas (2013)
- **Brian Rasmussen**: *Dynamics of variable-speed wind turbine drive-train* (2012)

Ph.D. Evaluation committee

Evaluated:

- **Florian Thams** (2018), Data-driven and HVDC Control Methods to enhance Power System Security, Technical University of Denmark
- **Ingeborg Graabak** (2018), Balancing of wind and solar power production in Northern Europe with Norwegian hydropower , NTNU, Norway
- **Kevin Schönleber** (2018), *Control and operation of wind power plants connected to DC grids*, Universitat Politècnica de Catalunya, Spain
- **Robert Renner** (2017), Interaction of HVDC grids and AC power systems – Operation and Control, Katholieke Universiteit Leuven, Belgium
- **Mikkel P.S. Grygning** (2016), Offshore Wind Park Control Assessment methodologies to Assure Robustness, Technical University of Denmark
- **Nicolas Espinoza** (2015), *Grid code testing of wind turbines by VSC based test equipment* (Licentiate), Chalmers University, Sweden
- **Abdul Basit** (2015), *Wind Power Plant System Services,* Technical University of Denmark
- **Antonio Vigueras Rodriguez** (2008), Modelling of the power fluctuations in large offshore wind farms, Universidad Politecnica de Cartagena, Spain