

## Curriculum Vitae

**Name: prof. dr. Marta Molinas**

**Institution:** Norwegian University of Science and Technology,  
Department of Electric Power Engineering,  
7491 Trondheim, Norway

<http://www.ntnu.edu/employees/marta.molinas>

**Education and Training: Ph.D.** in Electrical Engineering, **awarded on September 30, 2000** from Tokyo Institute of Technology (Tokyo, Japan)

### Professional experience

- Since 2008 Professor, Department of Electric Power Engineering, Norwegian University of Science and Technology (Trondheim, Norway)
- 2008-2009 JSPS Postdoctoral Fellowship for 10 months research at AIST, (Tsukuba, Japan)
- 2005-2007 Postdoctoral research associate, Center for Renewable Energy (SFFE-NTNU), supported by a competitive fellowship from the Research Council of Norway, (Trondheim, Norway)
- 2004-2005 Postdoctoral research associate, Department of Electric Power Engineering (NTNU) supported by a competitive NTNU scholarship (Trondheim, Norway)
- 2000-2001 Research associate, Research Laboratory for Nuclear Reactors, (Tokyo, Japan)

### Education Background

- 1997-2000 Dr. of Eng., Tokyo Institute of Technology (Tokyo, Japan), Supervisor: Ryuichi Shimada
- 1998 6 months PhD exchange, Dep. of Information Engineering, University of Padova, (Italy)
- 1994-1997 Master of Engineering, University of the Ryukyus, Okinawa, Japan
- 1994 Osaka University of Foreign Studies, Japanese proficiency (6 months)

### Principal scientific responsibilities

- Supervision: 8 PhDs (+3 co-supervision), and 7 Master students currently under supervision. Graduated 11 Masters, and 1 PhD (co-supervision) working for the Norwegian Railway Authority
- AdCom member of the IEEE Power Electronics Society, 2009-2014.
- Programme Chair of the IEEE Power Tech. conference, in Trondheim, June 2011
- Member of the Technical Steering Committee of the Vestas Power Programme, 2009 to date
- Member of the committee for the IEEE PELS Modeling and Control Achievement Award for 2011
- Member of the Norwegian Smart Grid Centre
- General chair of the IEEE COMPEL Conference to be held in Trondheim in 2016
- Co-founder of the International Network in Offshore Renewable Energy-INORE of PhD students and Post Docs in 2007 (447 members from 48 countries)

### Referee activities

#### Review services for Foundations & Universities

- European Commission
- Austrian Council for Research and Technology Development (FFG)
- National Science Foundation (NSF), USA
- Georgian National Science Foundation
- Research Promotion Foundation (RPF) of the Government of the Republic of Cyprus
- European Commission Executive Agency for Competitiveness and Innovation (EACI)
- Evaluator of professorships at Swiss Federal Inst. of Technology, Royal Institute of Technology, University of Agder, and Aalborg University
- Evaluator of the Mechatronics Programme of the University of Malaysia Pahang, 2011

#### Review services for Journals & Magazines

- Associate Editor for *IEEE Trans. Power Electron* and Reviewer for *IEEE Trans. Ind. Electron-Power Delivery-Industry Applications and Energy Conversion*, *IET Renewable Power Generation*, *European Trans. Electrical. Power*.

### Participation in research projects and experience in scientific collaboration

J. Kondoh, AIST, Tsukuba, Japan; P. Tenti, University of Padova, Italy; T. Moan, Center for Ships and Ocean Structures, Norway, L. Gertmar, ABB Corporate Research, Sweden

Currently in the process of building new international collaborations to strengthen my research.. Collaborations with P. Mattavelli (Virginia Tech.), J. Itoh (Nagaoka University of Technology) J. Biela (Swiss Federal Institute of Technology) and with J. Sun (Rensselaer Polytechnic Institute, USA) have started in the last year.

### Awards/Fellowship

7/2010	<b>IEEE International Symposium on Industrial Electronics</b> Prize to the most successful special session of the conference
7/2008-5/2009	<b>JSPS Postdoctoral Fellowship for Research in Japan</b> Japan Society for the Promotion of Science
8/2005	<b>International Conference of Women Engineers and Scientists</b> Distinction for outstanding presentation at the 13 <sup>th</sup> Int. Conf. of Women Eng. and Scientists
4/1994-3/2000	<b>The MONBUKAGAKUSHO Scholarship</b> Ministry of Education, Culture, Sports, Science and Technology, Government of Japan
6/1998-12/1998	<b>The CREI Ven Scholarship for a 6 month research period at the University of Padova (Padova, Italy) with P.Tenti</b> Industrial and Electronic Research Centre of Veneto, Italy
6/1998	<b>IEEE Student Branch of Tokyo Institute of Technology</b> Second Prize at the 1998 Student Paper Contest

### Invited key symposia and lectures

- Organizer of two special sessions at IEEE International Conferences, in 2010 (Japan and Italy)
- Four invited lectures in Norway, Spain and Japan
- Two invited lectures for graduate courses in Spain and Japan
- Four invited seminar presentations in Japan and Italy

### Funding ID

Title-Funding institution	Role	Period	Amount of funding
NOWITECH-Research Council of Norway	Co-investigator	Dec. 2010-Nov. 2014	396.700 EUR
"Matrix Converter Prototype-NTNU"	Investigator (Equipment funding)	Sept. 2010	87.850 EUR
'High frequency wind parks'-Research Council of Norway	Co-investigator	July 2009-June 2012	396.700 EUR
'Offshore wind energy in Norway: setting the basis'-Research Council of Norway, SUPTEK	Project manager and Co-investigator	July 2008-April 2012	1.518. 000 EUR
NTNU-ISP 'Design and control of energy conversion systems for integration of offshore renewable energy sources into the main grid'	Supervisor and Co-investigator	August 2009-Dec. 2011	250.000 EUR

### Invited Presentation to peer-reviewed international conferences and advanced schools.

- Four invited lectures in Norway, Spain and Japan, two invited lectures for graduate courses in Spain and Japan, four invited seminar presentations in Japan and Italy.

Organizer and Chair of a special session ('Integration of renewable energy sources into the power network') at the IEEE International Symposium on Industrial Electronics, Italy, July 2010, and of the special session 'Renewable Energy' of the IEEEJ-IEEE International Power Electronics Conference, Japan,

June 2010

- Invited speaker at the Spring Meeting of the Norwegian Electro-technical Association, Trondheim, Norway, March 2010, 'Wind energy conversion systems: facing the challenges of offshore grids'
- Invited speaker in the 2<sup>nd</sup> Annual Symposium on Grid Integration of Wind Energy, Vestas Power Programme Workshop, Spain, September 2009, 'System challenges for accommodating large amounts of wind power: offshore solutions'
- Invited speaker at the 5<sup>th</sup> AIST Symposium on Distributed Energy Systems, Tokyo, Japan, Dec. 2008, 'The role of power electronics in distributed energy systems'
- Invited speaker at the Norway-Japan New Energy Systems Seminar hosted by the Royal Norwegian Embassy in Tokyo, 2006, 'Distributed systems with high degree of wind integration and the role of voltage support with power electronics such as STATCOM'
- Lecturer for graduate courses at the University of Alcalá de Henares, Alcalá, Spain (2009), and Yokohama National University, Yokohama, Japan (2010). Seminar presentations at the University of Meiji, Tokyo, Japan (2010), University of Padova, Italy (2009), Waseda University, Tokyo, Japan (2008), Tokyo Institute of Technology, Tokyo, Japan (2008).

### International Academy Membership

- Member of the Institute of Electrical and Electronics Engineers (IEEE PELS and PES) since 1994
- Member of the Institute of Electrical Engineers of Japan (IEEJ) since 1994
- Member of the International Network of Women Engineers and Scientists (INWES) since 1999
- Member of the Norske kvinnelige akademikerer landsforbund since 2006
- Member of the International Peace Bureau since 2010

### Membership of Editorial Boards of International Journal

- Guest Editor of the *IEEE Transactions on Industrial Electronics*, Special Issue on Grid Integration of Wind Energy Systems, 2011-2012
- Associate Editor of the *IEEE Transactions on Power Electronics*, 2010-to-date

### Language proficiency

- Spanish:** mother tongue.
- English:** optimum reading, writing and conversation skills.
- Italian:** optimum reading and conversation skills. Good writing skills.
- Japanese:** good conversation and reading skills
- Norwegian:** good reading, basic conversation skills

### Main publications

The following table shows results obtained by using Harzing's Publish or Perish author impact analysis. Several of my publications while I was in Japan are not captured by this search engine neither are the newest publications this year.

Papers:	84	Cites/paper:	3,74	h-index:	9	AWCR:	55,63,97
Citations:	314	Cites/author:	134,78	g-index:	14	AW-index:	7,46
Years:	17	Papers/author:	36,40	hc-index:	9	AWCRpA:	23,86
Cites/year:	18,47	Authors/paper:	2,62	hI-index:	3,68	e-index:	9,17

### Selected Journal and Conference Publications (last 5 years):

Total publication: 84, H-index: 9

- [J-2011] E. Tedeschi, **M. Molinas**, "Effect of control strategies and power take-off efficiency on the power capture from sea waves", *IEEE Trans. Energy Conversion*, 2011, in Press.
- [J-2011] M. Liserre, R. Cardenas, **M. Molinas**, J. Rodriguez, "Overview of multi-MW wind turbines and wind parks," *IEEE Transactions on Industrial Electronics*, vol. 58, no. 5, 2011, pp. 1081-1095
- [C-2011] G. Bracco, E. Giorcelli, G. Mattiazzo, E. Tedeschi, **M. Molinas**, "Control Strategies for the ISWEC Wave Energy System", *European Wave and Tidal Energy Conference,(EWTEC11)*, 5-9 September 2011, Southampton, UK (accepted for publication)
- [C-2011] E. Tedeschi, M. Santos, P. Ricci, **M. Molinas**, J.L. Villate, "Control Strategies for the Grid Integration of Wave Energy Converters at the Biscay Marine Energy Platform", *European Wave and Tidal Energy Conference,(EWTEC11)*, 5-9 September 2011, Southampton, UK (accepted for publication)

- [C-2011] M. Santos, E. Tedeschi, P. Ricci, **M. Molinas**, J.L. Martin, "Grid Connection Improvements by Control Strategy Selection for Wave Energy Converters" *Int. Conference on Renewable Energy and Power Quality (ICREPQ11)*, Las Palmas de Gran Canaria, 13-15 April 2011
- [J-2011] A. Garces, **M. Molinas**, "Coordinated Control of Series Connected Wind Turbines for Off Shore Wind Farms with Reduced Matrix Converter Energy Conversion System," *Wind Energy Journal*, 2011
- [J-2011] A. Garces, **M. Molinas**, "A Study of Efficiency in a Reduced Matrix Converter for Offshore Wind Farms," *IEEE Transactions on Industrial Electronics*, September 2011, in press
- [C-2010] E. Tedeschi, **M. Molinas**, "Wave-to-Wave Buoys Control for Improved Power Extraction under Electro-Mechanical Constraints", *2nd IEEE Int. Conference on Sustainable Energy Technologies (ICSET10)*, Kandy, Sri Lanka, 6-9 December 2010
- [C-2010] E. Tedeschi, **M. Molinas**, "Control Strategy of Wave Energy Converters Optimized under Power Electronics Rating Constraints", *3rd international Conference on Ocean Energy (ICOE10)*, Bilbao (SP), 6-8 Oct.2010, pp. 1-6
- [C-2010] E. Tedeschi, M. Carraro, **M. Molinas**, P. Mattavelli, "Analysis of Power Extraction from Irregular Waves by All-Electric Power Take Off", *IEEE Energy Conversion Congress & Expo*, Atlanta, 12-16 September 2010, pp. 2370-2377
- [C-2010] E. Tedeschi, **M. Molinas**, "Impact of Control Strategies on the Rating of the Electric Power Take Off for Wave Energy Conversion", *IEEE International Symposium on Industrial Electronics*, Bari (IT), 4-7 July 2010, pp.1-6
- [C-2010] A. Garces, **M. Molinas**, "High Frequency Wind Energy Conversion from the Ocean," *Proc. of IEEE Energy Conversion Congress & Expo, Asia IPEC 2010*, Sapporo, Japan June 2010
- [C-2010] N. Jelani, **M. Molinas**, "Optimal use of Power Electronics interfaces for loads in distributed systems," *Proc. of IEEE International Symposium on Industrial Electronics*, Bari Italy, July 2010
- [C-2010] N. Holtmark, **M. Molinas**, "Reactive Power Compensation using an indirectly Space Vector Modulated Matrix Converter," *Proc. of IEEE International Symposium on Industrial Electronics*, Bari Italy, July 2010
- [C-2010] M. R. Hansen, A. Garces, **M. Molinas** "Operation features of a Reduced Matrix Converter for Offshore Wind Power," in *Proc. of IEEE International Symposium on Industrial Electronics*, Bari Italy, July 2010
- [C-2010] K. E. Nielsen, **M. Molinas** "Superconducting Magnetic Energy Storage (SMES) in power systems with Renewable Energy Sources," *Proc. of IEEE International Symposium on Industrial Electronics*, Bari Italy, July 2010
- [C-2010] M. Jafar, **M. Molinas**, "A Series Injection Strategy for Reactive Power Compensation of Line Commutated HVDC for Offshore Wind Power," s, *Proc. of IEEE International Symposium on Industrial Electronics*, Bari Italy, July 2010
- [C-2010] A. Garces, E. Tedeschi, G. Verez, **M. Molinas**, "Power Collection Array for Improved Wave Farm Output based on Reduced Matrix Converters", *12th IEEE Workshop on Control and Modeling for Power Electronics (COMPEL 2010)*, Boulder (CO), 28-30 June 2010
- [C-2010] E. Tedeschi, P. Ricci, M. Santos, **M. Molinas**, J.L. Martin, "Control strategies for a Wave Energy Converter for Power Quality Improvement", *Proc. of the Renewable Energy Research Conference (RERC10)*, Trondheim (N), 7-8 July 2010
- [J-2010] **M. Molinas**, J.A. Suul, T. Undeland, "Extending the life of gear box in wind generators by smoothing transient torque with STATCOM," *IEEE Transactions on Industrial Electronics*, vol. 57, no. 2, February 2010, pp. 476-484
- [J-2010] S. Danielsen, **M. Molinas**, T. Toftevaag, O.B. Fosso, "Constant power load characteristic's influence on the low frequency interaction between advanced electrical rail vehicle and railway traction power supply with rotary converters". *Electromotion* 17, 61-69, 2010
- [J-2010] S. Danielsen, O. B. Fosso, **M. Molinas**, J. A. Suul and T. Toftevaag, "Simplified models of a single-phase power electronic inverter for railway power system stability analysis – development and evaluation," *Electric Power System Research*. 80 (2), pp. 204-214, 2010.
- [J-2010] J. A. Suul, **M. Molinas**, T. Undeland, "STATCOM-based Indirect Torque Control of induction machines during voltage recovery after grid faults," *IEEE Transactions on Power Electronics*, vol. 25, no. 5, May 2010, pp. 1240-1250
- [C-2009] **M. Molinas**, J. Kondoh, "Power electronic loads as providers of reactive power ancillary service to the grid: analytical and experimental study," *Proceedings of the 13th European Conference on Power Electronics and Applications, EPE'09*, Barcelona, Spain, 8-10 September 2009, 10 pp.
- [C-2008] O. Skjervheim, B. Sørby, **M. Molinas**, "Wave Energy Conversion: All Electric Power Take Off for a Direct Coupled Point Absorber," *2nd international Conference on Ocean Energy (ICOE08)*, Brest, France, 15 - 17 October 2008
- [J-2008] **M. Molinas**, J. A. Suul, T. Undeland, "Low Voltage Ride Through of wind farms with cage generators: STATCOM versus SVC" *IEEE Transactions on Power Electronics*, vol. 23, no. 3, May 2008, pp. 1104-1117
- [C-2007] **M. Molinas**, O. Skjervheim, P. Andreassen, S. Lundberg, "Power Smoothing by Aggregation of Wave Energy Converters for Minimizing Energy Storage Requirements," *7th European Wave and Tidal Energy Conference (EWTEC 2007)*, Porto, Portugal, 11 - 14 September 2007
- [C-2007] **M. Molinas**, J. A. Suul, T. Undeland, "Improved Grid Interface of Induction Generators for Renewable Energy by use of STATCOM," *International Conference on Clean Electrical Power - ICCEP 2007*, Capri, Italy, 21 - 23 May 2007
- [C-2007] **M. Molinas**, O. Skjervheim, P. Andreassen, T. Undeland, J. Hals, T. Moan, B. Sørby, "Power Electronics as Grid Interface for Actively Controlled Wave Energy Converters," *International Conference on Clean Electrical Power (ICCEP 2007)*, Capri, Italy, 21 - 23 May 2007
- [C-2007] **M. Molinas**, J. A. Suul, T. Undeland, "Improved grid interface of induction generators for renewable energy by use of STATCOM," in *Proc. of the International Conference on Clean Electrical Power, ICCEP'07*, Capri, Italy, 21-23 May 2007, pp. 215-222
- [C-2006] **M. Molinas**, J. Kondoh, J. A. Suul, T. Undeland, "Reactive Support for Wind and Wave Farms with a Statcom for Integration into the Power System, *Renewable Energy Conference 2006*, Makuhari, Japan, 9 - 13 October 2006
- [J-2006] **M. Molinas**, B. Næss, W. Gullvik, T. Undeland, "Robust wind turbine system against voltage sag with induction generators interfaced to the grid by power electronic converters," in *IEEJ Transactions of the Institute of Electrical Engineers of Japan - Industry Applications*, vol. 126, no. 7, July 2006, pp. 865-871