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Department of Energy Technology
The Faculty of Engineering and Science
Fluid Power and Mechatronic Systems
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Employment

Associate Professor

Associate Professor
AAU Energy
The Faculty of Engineering and Science
Aalborg Øst, Denmark
1 Sept 2009 → 31 Dec 4712

Associate Professor

Associate Professor
The Faculty of Engineering and Science
Aalborg Øst, Denmark
1 Sept 2009 → 31 Dec 4712

Mechatronic Systems

The Faculty of Engineering and Science
Aalborg Øst, Denmark
1 Jan 2021 → present

Associate Professor

Associate Professor
Mechatronic Systems
The Faculty of Engineering and Science
Aalborg Øst, Denmark
1 Sept 2009 → 31 Dec 4712

Fluid Power

The Faculty of Engineering and Science
1 Jan 2021 → present

Power Electronics Packaging, Materials and Emerging Applications

The Faculty of Engineering and Science
Aalborg Øst, Denmark
1 Jun 2021 → present

Senior HW/SW EE Engineer

Motorola
Denmark
15 Nov 2006 → 1 Apr 2009

Associate Professor

Aalborg University
Aalborg, Denmark
1 Apr 2002 → 14 Nov 2006

Assistent Professor

Aalborg University
Aalborg, Denmark
1 Jan 1999 → 1 Jan 2002

Ph.D. Candidate

Aalborg University
Aalborg, Denmark
1 Aug 1995 → 1 Jan 1998

Research outputs

A Global Multi-Objective Optimization Tool for Design of Mechatronic Components using Generalized Differential Evolution

Bech, M. M., Nørgård, C., Roemer, D. B. & Kukkonen, S., Oct 2016, *Proceedings of the 42nd Annual Conference of IEEE Industrial Electronics Society, IECON 2016*. IEEE Press, p. 475 - 481 7 p.

An Automatic Parameter Identification Method for a PMSM Drive with LC-Filter

Bech, M. M., Christensen, J. H., Weber, M. L. & Kristensen, N. H., Oct 2016, *Proceedings of the 42nd Annual Conference of IEEE Industrial Electronics Society, IECON 2016*. IEEE Press, p. 2678 - 2683 6 p.

Experimental evaluation of control strategies for hydraulic servo robot

Bech, M. M., Andersen, T. O., Pedersen, H. C. & Schmidt, L., 2013, *Proceedings of the 2013 IEEE International Conference on Mechatronics and Automation (ICMA)*. IEEE Press, p. 342-347 7 p.

Human Mobile Inverted Pendulum Transporter - a Mechatronic System Case Study

Bech, M. M., Hansen, A. H., Pedersen, H. C. & Andersen, T. O., 2011, *Proceedings of the 2011 International Conference on Fluid Power and Mechatronics (FPM)*. IEEE Press, p. 559-565 7 p.

Accurate torque control of saturated interior permanent magnet synchronous motors in the field-weakening region

Bech, M. M., Frederiksen, T. S. & Sandholdt, P., 2005, *Industry Applications Conference, 2005. Fourtieth IAS Annual Meeting. Conference Record of the 2005, Vol. 4*. Electrical Engineering/Electronics, Computer, Communications and Information Technology Association, p. 2526-2532 7 p.

A Mechatronic Solution for Efficiency Optimization of Forklift Trucks

Bech, M. M., Pedersen, P., Andersen, T. O. & Hansen, M. R., 2004, *Proceedings of 5th Intl Workshop on Research and Education in Mechatronics - REM 2004*. <Forlag uden navn>

Modelling Pulse-Width Modulated Power Electronic Systems in Matlab

Bech, M. M. & Kragh, H., 2003, *Proceedings of Nordic Matlab Conference 2003*. <Forlag uden navn>, p. 73-78

Field Oriented Control of an Induction Motor using Random Pulse Width Modulation

Bech, M. M., Pedersen, J. K. & Blaabjerg, F., 2001, In: *IEEE Transactions on Industry Applications*. 37, 6, p. 1777-1785

Analysis of Random Pulse-Width Modulation Techniques for Power Electronic Converters

Bech, M. M., 2000, Aalborg: Aalborg Universitetsforlag.

Field-Oriented Control of an Induction Motor using Random Pulse Width Modulation

Bech, M. M., Pedersen, J. K. & Blaabjerg, F., 2000, *Proceedings of APEC'2000, New Orleans, Louisiana, USA, Feb. 2000*. La.

Random Modulation Techniques with Fixed Switching Frequency for Three-Phase Power Converters

Bech, M. M., Blaabjerg, F. & Pedersen, J. K., 2000, In: IEEE Transactions on Power Electronics. 15, 4, p. 753-761

A Methodology for True Comparison of Analytical Frequency Domain Spectra in Random PWM Converters

Bech, M. M., Pedersen, J. K., Blaabjerg, F. & Trzynadlowski, A. M., 1999, In: IEEE Transactions on Power Electronics. 14, 3, p. 578-586

Random Modulation Techniques with Fixed Switching Frequency for Three-Phase Power Converters

Bech, M. M., Blaabjerg, F. & Pedersen, J. K., 1999, *PESC'99 : 30. Annual IEEE Power Electronics Specialist Conference, South Carolina, USA, June 1999.*

A Methodology for True Comparisons of Analytical and Measured Frequency Domain Spectra in Random PWM Converters

Bech, M. M., Pedersen, J. K., Blaabjerg, F. & Trzynadlowski, A. M., 1998, *PESC'98 : 29. Annual IEEE Power Electronics Specialist Conference, Fukuoka, Japan, 1998.* Electrical Engineering/Electronics, Computer, Communications and Information Technology Association

Comparative Investigation of Random PWM Techniques with Variable Switching Frequency and Pulse Position for Inverter-fed Induction Motors

Bech, M. M., Blaabjerg, F., Trzynadlowski, A. M. & Pedersen, J. K., 1997, *EPE '97 : 7th European Conference on Power Electronics and Applications, 8-10 September 1997, Trondheim, Norway.* EPE Association

Experimental Evaluation of Modern Random PWM Techniques for Induction Motor Drives

Bech, M. M., Blaabjerg, F. & Trzynadlowski, A. M., 1997, *Proceedings of IEMDC '97, Milwaukee, Wisconsin, USA, May 1997.*

Random Modulation Techniques in Power Conversion: an Update

Bech, M. M., Pedersen, J. K. & Blaabjerg, F., 1996, *Proceedings of Power Electronics, Motion Control, PEMC'96, Ungarn, 1996.* <Forlag uden navn>, p. 357-365

Projects

Analyseværktøj til spektral analyse af PWM spektre

Bech, M. M. (Project Participant)

19/05/2010 → ...

Control of Medium Voltage Power Converters Enabled by 10 kV SiC MOSFETs

Nielsen, M. R. (PI), Munk-Nielsen, S. (Supervisor), Bech, M. M. (Supervisor) & Zhao, H. (PI)

01/07/2022 → 09/09/2025

Design and Analysis of Mega-Watt Power Converters Enabled by 10 kV SiC MOSFETs

Liu, G. (PI), Munk-Nielsen, S. (Supervisor), Bech, M. M. (Supervisor) & Zhao, H. (Supervisor)

01/07/2022 → 30/06/2025

Fler-niveau resonans konverter / Multilevel resonant converter

Munk-Nielsen, S. (Project Participant) & Bech, M. M. (Project Participant)

19/05/2010 → ...

HDPower: Heavy Duty Power Electronics for Electrification of Society

Munk-Nielsen, S. (PI), Bech, M. M. (Col), Jørgensen, A. B. (Col), Nielsen, M. R. (Col), Liu, G. (Project Participant), Pedersen, C. S. (Project Participant), Fink, M. (Project Participant), Beczkowski, S. M. (Project Participant), Meyer, S. (Project Participant) & Steffensen, B. (Project Coordinator)

Innovation Fund Denmark

01/04/2025 → 01/04/2028

HyDrive: Hydrostatic Drive Train Transmission for Renewable Energy Applications

Andersen, T. O. (Project Participant), Bech, M. M. (Project Participant), Nørgård, C. (Project Participant), Roemer, D. B. (Project Participant) & Johansen, P. (Project Participant)
DSF The Danish Council for Strategic Research
01/04/2014 → 30/09/2019

Ikke-deterministiske modulationsstrategier for PWM-VSI-invertere / Non-Deterministic Modulation strategies for PWM-VSI inverters

Pedersen, J. K. (Project Participant), Blaabjerg, F. (Project Participant) & Bech, M. M. (Project Participant)
31/12/2003 → 31/12/2003

Medium Voltage Based on SiC (MV-BASIC)

Munk-Nielsen, S. (PI), Uhrenfeldt, C. (Project Participant), Beczkowski, S. M. (Project Participant), Bech, M. M. (Project Coordinator), Wang, X. (Project Participant), Dalal, D. N. (Project Participant), Jørgensen, J. K. (Project Participant), Zhao, H. (Project Participant), Mishra, P. (Project Participant), Jørgensen, A. B. (Project Participant) & Steffensen, B. (Project Coordinator)
Department of Energy Technology
01/07/2018 → 30/06/2022

MVOLT: Medium Voltage Power Electronics for Wind Systems

Munk-Nielsen, S. (PI), Uhrenfeldt, C. (Col), Jørgensen, A. B. (Col), Jørgensen, J. K. (Col), Beczkowski, S. M. (Project Participant), Bech, M. M. (Project Participant), Spender-Andersen, G. (Project Participant), Lascu, C. (Project Participant), Zhao, H. (Project Participant), Dalal, D. N. (Project Participant), Kjærsgaard, B. F. (Project Participant), Aunsborg, T. S. (Project Participant), Jacobsen, J. (Project Participant), Mishra, P. (Project Participant) & Steffensen, B. (Project Coordinator)
Innovation Fund Denmark
01/10/2020 → 30/09/2024

Multi Storage Converter for Wind Energy (MultiCon)

Munk-Nielsen, S. (PI), Bech, M. M. (Project Participant), Uhrenfeldt, C. (Project Participant), Christensen, J. H. (Project Participant) & Knap, V. (Project Participant)
Innovation Fund Denmark
01/09/2017 → 31/10/2020

Permanent Magnet (PM) Motor Control

Bech, M. M. (Project Participant)
19/05/2010 → ...

The Flexible Drive Systems Laboratory

Teodorescu, R. (Project Participant), Bech, M. M. (Project Participant), Pedersen, J. K. (Project Participant) & Blaabjerg, F. (Project Participant)
01/10/1998 → 31/10/1999

Wind Load Simulator for Function and Reliability Test of Wind Turbine Drivetrains

Andersen, T. O. (Project Participant), Pedersen, H. C. (Project Participant), Bech, M. M. (Project Participant) & Pedersen, M. M. (Project Participant)
EUDP
01/01/2014 → 31/12/2016