

Michael Møller Bech Lektor Institut for Energiteknik Det Ingeniør- og Naturvidenskabelige Fakultet Hydrauliske og mekatroniske systemer
Postadresse: Pontoppidanstræde 111 1-113 9220 Aalborg Ø Danmark
Postadresse: Danmark E-mail: mmb@et.aau.dk



Ansættelse

Lektor

AAU Energi
Det Ingeniør- og Naturvidenskabelige Fakultet
Aalborg Øst, Danmark
1 sep. 2009 → present

Lektor

Det Ingeniør- og Naturvidenskabelige Fakultet
Aalborg Øst, Danmark
1 sep. 2009 → present

Mechatronic Systems

Det Ingeniør- og Naturvidenskabelige Fakultet
Aalborg Øst, Danmark
1 jan. 2021 → present

Lektor

Mechatronic Systems
Det Ingeniør- og Naturvidenskabelige Fakultet
Aalborg Øst, Danmark
1 sep. 2009 → present

Fluid Power Technology

Det Ingeniør- og Naturvidenskabelige Fakultet
1 jan. 2021 → present

Power Electronics Packaging, Materials and Emerging Applications

Det Ingeniør- og Naturvidenskabelige Fakultet
Aalborg Øst, Danmark
1 jun. 2021 → present

Senioringeniør HW/SW EE

Motorola
Danmark
15 nov. 2006 → 1 apr. 2009

Lektor

Aalborg University
Danmark
1 apr. 2002 → 14 nov. 2006

Adjunkt

Aalborg University
Danmark

1 jan. 1999 → 1 jan. 2002

Ph.D. kandidat

Aalborg University
Danmark

1 aug. 1995 → 1 jan. 1998

Publikationer

Dead Time Volt-Second Compensation of Converters Enabled by 10 kV SiC MOSFETs

Nielsen, M. R., Kirkeby, M., Zhao, H., Jørgensen, J. K., Bech, M. M. & Munk-Nielsen, S., 2 okt. 2023, *2023 25th European Conference on Power Electronics and Applications, EPE 2023 ECCE Europe*. IEEE, 10264515

Parasitic Capacitive Couplings in Medium Voltage Power Electronic Systems - an Overview

Kjærsgaard, B. F., Liu, G., Nielsen, M. R., Wang, R., Dalal, D. N., Aunsborg, T. S., Jørgensen, J. K., Yan, Z., Jacobsen, J., Wu, R., Bech, M. M., Rannestad, B., Munk-Nielsen, S. & Zhao, H., 1 aug. 2023, I: *IEEE Transactions on Power Electronics*. 38, 8, s. 9793-9817 25 s., 10107452.

An Experimental Study on High-Flowrate Ultrasonic Particle Monitoring in Oil Hydraulics

Johansen, P., Bech, M. M., Dupont, S., Christiansen, U. N., Sørensen, J. L., Østedgaard-Munck, D. N. & Bentien, A., 1 nov. 2022, *Proceedings of the BATH/ASME 2022 Symposium on Fluid Power and Motion Control*. American Society of Mechanical Engineers, V001T01A035

Test Platform for Comparative Evaluation of 690 V – 4160 V Power Electronic Converters

Jacobsen, J., Kjærsgaard, B. F., Dalal, D. N., Zhao, H., Yan, Z., Bech, M. M., Munk-Nielsen, S. & Rannestad, B., 29 jun. 2022, *2022 IEEE 13th International Symposium on Power Electronics for Distributed Generation Systems (PEDG)*. IEEE, s. 1-8 8 s. (IEEE International Symposium on Power Electronics for Distributed Generation Systems (PEDG)).

Noise Analysis of Current Sensor for Medium Voltage Power Converter Enabled by Silicon-Carbide MOSFETs

Nielsen, M. R., Kirkeby, M., Zhao, H., Dalal, D. N., Bech, M. M. & Munk-Nielsen, S., 2022, *2022 IEEE 9th Workshop on Wide Bandgap Power Devices & Applications (WiPDA)*. IEEE, 6 s. (IEEE Workshop on Wide Bandgap Power Devices & Applications (WiPDA)).

Design and Analysis of PLL Speed Estimator for Sensorless Rotor-Flux Oriented Control of Induction Motor Drives

Mishra, P., Lascu, C. V., Bech, M. M., Rannestad, B. & Munk-Nielsen, S., nov. 2021, *2021 IEEE Energy Conversion Congress and Exposition (ECCE)*. IEEE, s. 4743-4747

Behavioral Modeling and Analysis of Ground Current in Medium-Voltage Inductors

Zhao, H., Dalal, D., Jørgensen, J. K., Bech, M. M., Wang, X. & Munk-Nielsen, S., feb. 2021, I: *IEEE Transactions on Power Electronics*. 36, 2, s. 1236-1241 6 s., 9143498.

Dead-time Compensation and Soft-starting of VSI-fed High-Power Induction Motor Drive

Mishra, P., Lascu, C., Bech, M. M., Rannestad, B. & Munk-Nielsen, S., 2 jan. 2021, *ICPEE 2021 - 2021 1st International Conference on Power Electronics and Energy*. IEEE Signal Processing Society, 6 s. 9358493. (ICPEE 2021 - 2021 1st International Conference on Power Electronics and Energy).

Behavioral Modeling of Ground Current in Filter Inductors of Medium-Voltage SiC-MOSFET-Based Converters

Zhao, H., Dalal, D. N., Jørgensen, J. K., Wang, X., Bech, M. M., Jørgensen, A. B., Beczkowski, S. M., Uhrenfeldt, C. & Munk-Nielsen, S., jun. 2020, *Proceedings of 2020 IEEE Applied Power Electronics Conference and Exposition (APEC)*. IEEE Press, s. 1972-1978 7 s. 9124147. (IEEE Applied Power Electronics Conference and Exposition (APEC)).

Hardware-in-the-Loop Validation of Model Predictive Control of a Discrete Fluid Power Take-Off System for Wave Energy Converters

Hansen, A. H., Asmussen, M. F. & Bech, M. M., 25 sep. 2019, I: *Energies*. 12, 19, 22 s., 3668.

Dynamic Response of a Digital Displacement Motor Operating with Various Displacement Strategies
Nordås, S., Bech, M. M., Ebbesen, M. K. & Andersen, T. O., aug. 2019, I: *Energies*. 12, 9, 25 s., 1737.

Modeling and Validation of Moving Coil Actuated Valve for Digital Displacement Machines
Nørgård, C., Bech, M. M., Christensen, J. H. & Andersen, T. O., nov. 2018, I: *IEEE Transactions on Industrial Electronics*. 65, 11, s. 8749-8757 9 s.

Test of a Novel Moving Magnet Actuated Seat Valve for Digital Displacement Fluid Power Machines
Nørgård, C., Madsen, E. L., Jørgensen, J. M. T., Christensen, J. H. & Bech, M. M., okt. 2018, I: *IEEE - A S M E Transactions on Mechatronics*. 23, 5, s. 2229-2239 11 s., 8445616.

A multi-agent evolution algorithm used for input shaping of a repetitive non-linear dynamic system
Bender, N. C., Pedersen, H. C., Bech, M. M. & Andersen, T. O., sep. 2018, *Proceedings of the BATH/ASME 2018 Symposium on Fluid Power and Motion Control*. American Society of Mechanical Engineers, s. 1-10 10 s. FPMC2018-8870

Modelling of Solenoid Actuated Fast Switching Valve for Digital Hydraulic Machines
Matbouei, A., Bech, M. M. & O. Andersen, T., jul. 2018, *2018 Global Fluid Power Society PhD Symposium, GFPS 2018*. IEEE Press, s. 1-6 6 s. 8472392

Model Predictive Control of a Wave Energy Converter with Discrete Fluid Power Power Take-Off System
Hansen, A. H., Asmussen, M. F. & Bech, M. M., mar. 2018, I: *Energies*. 11, 3, s. 1-17 17 s., 635.

Flow Characteristics and Sizing of Annular Seat Valves for Digital Displacement Machines
Nørgård, C., Bech, M. M., Andersen, T. O. & Christensen, J. H., jan. 2018, I: *Modeling, Identification and Control*. 39, 1, s. 23-35 13 s.

An Arbitrary Order Adaptive Control Structure with Application to a Hydraulic Winch Drive
Schmidt, L., Andersen, T. O., Pedersen, H. C. & Bech, M. M., okt. 2017, *Proceedings of ASME/Bath 2017 Symposium on Fluid Power & Motion Control*. American Society of Mechanical Engineers, 7 s.

Design Optimization of Moving Magnet Actuated Valves for Digital Displacement Machines
Madsen, E. L., Jørgensen, J. M. T., Nørgård, C. & Bech, M. M., okt. 2017, *Proceedings of ASME/BATH 2017 Symposium on Fluid Power and Motion Control*. American Society of Mechanical Engineers, 12 s.

Energy Optimal Tracking Control with Discrete Fluid Power Systems using Model Predictive Control
Hansen, A. H., Asmussen, M. F. & Bech, M. M., sep. 2017, *Proceedings of 9th Workshop on Digital Fluid Power, DFP 2017*. Department of Energy Technology, Aalborg University, 13 s.

Test Rig for Valves of Digital Displacement Machines
Nørgård, C., Christensen, J. H., Bech, M. M., Hansen, A. H. & Andersen, T. O., sep. 2017, *Proceedings of 9th Workshop on Digital Fluid Power, DFP 2017*. Department of Energy Technology, Aalborg University, 13 s.

Valve and Manifold considerations for Efficient Digital Hydraulic Machines
Roemer, D. B., Nørgård, C., Bech, M. M. & Johansen, P., nov. 2016, *Proceedings of the 8th Workshop on Digital Fluid Power (DFP16)*. Tampere University of Technology, 2016. Tampere University of Technology, s. 213-227 16 s.

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., okt. 2016, *Proceedings of the 42nd Annual Conference of IEEE Industrial Electronics Society, IECON 2016*. IEEE Press, s. 475 - 481 7 s.

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

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

A Simple and Robust Sliding Mode Velocity Observer for Moving Coil Actuators in Digital Hydraulic Valves

Nørgård, C., Schmidt, L. & Bech, M. M., sep. 2016, *Proceedings of BATH/ASME 2016 Symposium on Fluid Power and Motion Control*. ASME Digital Collection: American Society of Mechanical Engineers, 9 s. FPMC2016-1789

Dynamic Analysis & Characterization of Conventional Hydraulic Power Supply Units

Schmidt, L., Liedhegener, M., Bech, M. M. & Andersen, T. O., sep. 2016, *Proceedings of the BATH/ASME 2016 Symposium on Fluid Power and Motion Control*. American Society of Mechanical Engineers, 10 s. FPMC2016-1756

Optimization of Moving Coil Actuators for Digital Displacement Machines

Nørgård, C., Bech, M. M., Roemer, D. B. & Pedersen, H. C., maj 2016, *Proceedings of the 8th Workshop on Digital Fluid Power (DFP16)*. Uusi-Heikkilä, J. & Linjama, M. (red.). Tampere University of Technology, s. 39-54 16 s.

Design of full scale wave simulator for testing Power Take Off systems for wave energy converters

Pedersen, H. C., Hansen, R. H., Hansen, A. H., Andersen, T. O. & Bech, M. M., apr. 2016, *International Journal of Marine Energy*. 13, s. 130–156 27 s.

A motion observer with on-line parameter estimation for moving-coil based digital valves in digital displacement machines

Nørgård, C., Bech, M. M. & Roemer, D. B., 2016, *9th FPNI Ph.D. Symposium on Fluid Power, FPNI 2016*. American Society of Mechanical Engineers, 10 s. FPNI2016-1543

Optimum Design of a Moving Coil Actuator for Fast-Switching Valves in Digital Hydraulic Pumps and Motors

Roemer, D. B., Bech, M. M., Johansen, P. & Pedersen, H. C., dec. 2015, *IEEE - A S M E Transactions on Mechatronics*. 20, 6, s. 2761-2770 10 s.

Experimental Validation of Mathematical Framework for Fast Switching Valves used in Digital Hydraulic Machines

Nørgård, C., Roemer, D. B., Bech, M. M. & Andersen, T. O., okt. 2015, *Proceedings of the ASME/BATH 2015 Symposium on Fluid Power and Motion Control, FPMC 2015*. American Society of Mechanical Engineers, s. 1-9 9 s. FPMC2015-9612

Modelling of Moving Coil Actuators in Fast Switching Valves Suitable for Digital Hydraulic Machines

Nørgård, C., Roemer, D. B. & Bech, M. M., okt. 2015, *Proceedings of the 2015 ASME Fluid Power and Motion Control, FPMC'15*. American Society of Mechanical Engineers, s. 1-10 10 s.

A low order adaptive control scheme for hydraulic servo systems

Andersen, T. O., Pedersen, H. C., Bech, M. M. & Schmidt, L., aug. 2015, *Proceedings of the 2015 International Conference on Fluid Power and Mechatronics (FPM)*. IEEE Press, s. 1148-1152 5 s.

Experimental Validation of Modelled Fluid Forces in Fast Switching Hydraulic On/Off Valves

Nørgård, C., Bech, M. M., Roemer, D. B. & Schmidt, L., aug. 2015, *Proceedings of the 2015 International Conference on Fluid Power and Mechatronics (FPM)*. IEEE Press, s. 68 - 73 6 s.

Avoidance of transmission line pressure oscillations in discrete hydraulic systems – by shaping of valve opening characteristics

Hansen, A. H., Pedersen, H. C. & Bech, M. M., 2015, *Proceedings of the 7th Workshop on Digital Fluid Power*. LCM GmbH, s. 57-71 15 s.

Simulation and Experimental Testing of an Actuator for a Fast Switching On-Off Valve Suitable to Efficient Displacement Machines

Roemer, D. B., Johansen, P., Bech, M. M. & Pedersen, H. C., okt. 2014, *Proceedings of the 9th JFPS International Symposium on Fluid Power*. Japan Fluid Power System Society, 7 s.

Self-commissioning of permanent magnet synchronous machine drives using hybrid approach

Basar, M. S., Bech, M. M., Andersen, T. O. & Andersen, P. S., 2014, *Power Electronics, Machines and Drives (PEMD 2014), 7th IET International Conference on*. Institution of Engineering and Technology, s. 1-5 5 s. (I E T Conference Publication Series).

Comparison of sensorless FOC and SVM-DTFC of PMSM for low-speed applications

Basar, M. S., Bech, M. M., Andersen, T. O., Scavenius, P. & Thomas-Basar, T., 1 jan. 2013, *Proceedings of the 2013 4th International Conference on Power Engineering, Energy and Electrical Drives (POWERENG)*. IEEE Press, s. 864-869 6 s. (Power Engineering, Energy and Electrical Drives (POWERENG)).

Adaptive Sliding Mode Control for Hydraulic Drives: A New Approach

Schmidt, L., Andersen, T. O., Pedersen, H. C. & Bech, M. M., 2013, *Proceedings of the 8th International Conference on Fluid Power Transmission and Control, ICFP 2013*. World Publishing Cooperation, s. 359-362 4 s.

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, s. 342-347 7 s.

Second Order Sliding Mode Control with Prescribed Convergence Law for Electro-Hydraulic Drives

Schmidt, L., Andersen, T. O., Pedersen, H. C. & Bech, M. M., 2013, *Proceedings of the 8th International Conference on Fluid Power Transmission and Control, ICFP 2013*. World Publishing Cooperation, s. 450-453 4 s.

Super Twisting Second Order Sliding Mode Control for Position Tracking Control of Hydraulic Drives

Schmidt, L., Andersen, T. O., Pedersen, H. C. & Bech, M. M., 2013, *Proceedings of the 8th International Conference on Fluid Power Transmission and Control, ICFP 2013*. Wang, Q., Ju, B. & Zou, J. (red.). World Publishing Cooperation, s. 476-479 4 s.

2-SMC of Electro-Hydraulic Drives Using the Twisting Algorithm

Schmidt, L., Andersen, T. O., Pedersen, H. C. & Bech, M. M., 2012, I: *Applied Mechanics and Materials*. 233, s. 131-134 4 s.

Design and Control of Full Scale Wave Energy Simulator System

Pedersen, H. C., Hansen, A. H., Hansen, R. H., Andersen, T. O. & Bech, M. M., 2012, *Proceedings of the ASME Symposium on Fluid Power and Motion Control (FPMC 2012)*. American Society of Mechanical Engineers, s. 551-564 14 s.

Robust Position Tracking for Electro-Hydraulic Drives Based on Generalized Feedforward Compensation Approach

Schmidt, L., Andersen, T. O., Pedersen, H. C. & Bech, M. M., 2012, I: *Applied Mechanics and Materials*. 233, s. 100-103 4 s.

Sliding Control with Chattering Elimination for Hydraulic Drives

Schmidt, L., Andersen, T. O., Pedersen, H. C. & Bech, M. M., 2012, I: *Applied Mechanics and Materials*. 233, s. 168-171 4 s.

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, s. 559-565 7 s.

Presenting a Multi-level Superstructure Optimization Approach for Mechatronic System Design

Pedersen, H. C., Andersen, T. O., Bech, M. M. & Hansen, M. R., 2010, *Proc. of the Biennial ASME Conference on Engineering Systems Design and Analysis, ESDA 2010*. American Society of Mechanical Engineers, s. 891-898 8 s.

Modern Control of Induction Machines

Krogsgaard, M., Bech, M. M. & Andersen, T. O., 2006, *Proc. of Nordic Workshop on Power and Industrial Electronics*. NORPIE

Sensorless Control of IPMSM by Voltage Injection

Matzen, T. N. & Bech, M. M., 2006, *Ikke angivet*. NORPIE, 6 s.

Sensorløs kontrol af motor

Schaltz, E., Matzen, T. N. & Bech, M. M., 2006, I: *Elteknik : elektronik, automation og energi*. 23, 7, s. 28-30 3 s.

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, s. 2526-2532 7 s.

A Mechatronic Concept for Combined Traction and Steering Control of Small Vehicles

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

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>

Comparison of soft and hard-switching efficiency in a three-level single phase 60kW dc-ac converter

Munk-Nielsen, S., Teodorescu, R., Bech, M. M. & Pedersen, J. K., 2003, *EPE'2003, Toulouse, France 2-4 september 2003*.

Modelling Pulse-Width Modulated Power Electronic Systems in Matlab

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

Multi-level resonance converter

Munk-Nielsen, S., Teodorescu, R. & Bech, M. M., 2003, Aalborg Universitet.

Tre-niveau resonanskonverter anvendt i UPS-anlæg

Munk-Nielsen, S., Bech, M. M. & Teodorescu, R., 2003, I: *Elteknik : elektronik, automation og energi*. 20, 10, s. 14-17

Advanced prototyping tools for project- and problem-based learning

Teodorescu, R., Bech, M. M., Holm, A. J., Larsen, K. B., Blaabjerg, F. & Pedersen, J. K., 2002, *Proceedings of PEMC'2002, Dubrovnik, Kroatien*.

Analysis of power and power spectral density in PWM inverters with randomized switching frequency

Kirlin, R. L., Bech, M. M. & Trzynadlowski, A. M., 2002, I: *IEEE Transactions on Industrial Electronics*. 49, 2, s. 486-499 14 s.

A three level Natural Clamped Inverter (NCI)

Munk-Nielsen, S., Bech, M. M., Teodorescu, R. & Pedersen, J. K., 2002, *IPEC Sevilla, Spain, 5-8 November 2002*. IEEE Signal Processing Society

Pulse Width Modulation Techniques for Three-Phase Voltage Source Converters

Kazmierkowski, M. P., Malinowski, M. & Bech, M. M., 2002, *Control in Power Electronics : selected problems*. Kazmierkowski, Marian P. : Krishnan, R. : Blaabjerg, Frede (red.). California, USA: Academic Press, (Academic Press Series in Engineering).

Simulink model of a three level converter leg including device losses

Munk-Nielsen, S., Bech, M. M., Teodorescu, R. & Pedersen, J. K., 2002, *IEEE Power Conversion Conference (PCC) 2002, Osaka, Japan, 2-5 April, 2002*. IEEE Signal Processing Society, s. 559-564

A Modern Laboratory for Teaching Electrical Drives at Aalborg University

Teodorescu, R., Bech, M. M., Blaabjerg, F. & Pedersen, J. K., 2001, *Proceedings of E=TeM2, Liege, Belgium, March 2001*.

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

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

Optimization of Switching Frequencies in the Limited-Pool Random Space Vector PWM Strategy for Inverter-Fed Drives

Trzynadlowski, A. M., Bech, M. M., Blaabjerg, F., Pedersen, J. K., Kirlin, R. L. & Zigliotto, M., 2001, I: *IEEE Transactions on Power Electronics*. 16, 6, s. 852-857

Power and Power Spectral Density in PWM Inverters with Randomized Switching Frequency

Kirlin, R. L., Bech, M. M., Trzynadlowski, A. M. & Huo, B., 2001, *Proceedings of PESC'2001 : 32th Annual IEEE Power Electronics Specialists Conference*.

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

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

A New Approach in Teaching Power Electronics Control of Electrical Drives using Real-Time

Teodorescu, R., Bech, M. M., Blaabjerg, F. & Pedersen, J. K., 2000, *COMPEL'2000 : Proceedings of the 7th IEEE Workshop on Computers in Power Electronics, Virginia Tech, 16-18 July, 2000, Blacksburg, Virginia, USA*. s. 221-226 5 s.

A New Hybrid Random Pulse Width Modulator for Industrial Drives

Blasko, V., Bech, M. M., Blaabjerg, F. & Pedersen, J. K., 2000, *Proceedings of APEC'2000, New Orleans, Louisiana, USA, Feb. 2000*. s. Vol. 2, pp. 932-938

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.

Flexible Drive Systems Laboratory: a Modern Teaching Facility in Electrical Drives at Aalborg University

Teodorescu, R., Bech, M. M., Blaabjerg, F. & Pedersen, J. K., 2000, *Proceedings of NORPIE'2000 : IEEE Nordic Workshop on Power and Industrial Electronics, Aalborg University, Denmark, June 2000*. Institut for Energiteknik, Aalborg Universitet, s. 42-46

Power Spectral Density Analysis of Randomly Switched Pulse Width Modulation for DC/AC Converters

Kirlin, R. L., Bech, M. M. & Trzynadlowski, A. M., 2000, *IEEE Workshop on Statistical Signal and Array Processing : Proceedings of the Tenth IEEE Workshop on Statistical Signal and Array Processing, August 14-16, 2000, Pocono Manor Inn, Pocono Manor, Pennsylvania, USA*. Electrical Engineering/Electronics, Computer, Communications and Information Technology Association, s. 373-377

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

Bech, M. M., Blaabjerg, F. & Pedersen, J. K., 2000, I: *IEEE Transactions on Power Electronics*. 15, 4, s. 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, I: *IEEE Transactions on Power Electronics*. 14, 3, s. 578-586

An Integral Space-Vector PWM Technique for DSP-Controlled Voltage-Source Inverters

Trzynadlowski, A. M., Bech, M. M., Blaabjerg, F. & Pedersen, J. K., 1999, I: *IEEE Transactions on Industry Applications*. 35, 5, s. 1091-1097

Optimization of Switching Frequencies in the Limited-Pool Random Space Vector PWM Technique for Inverter-Fed Drives
Trzynadlowski, A. M., Bech, M. M., Blaabjerg, F., Pedersen, J. K., Kirlin, R. L. & Ziegliotto, M., 1999, *Proceedings of APEC'99, Dallas, USA, March 1999*.

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 Specialistconference, Fukuoka, Japan, 1998*. Electrical Engineering/Electronics, Computer, Communications and Information Technology Association

An Integral Space Vector PWM Technique for DSP-Controlled Voltage-Sourced Inverters
Trzynadlowski, A. M., Bech, M. M., Blaabjerg, F. & Pedersen, J. K., 1998, *IAS '98 : Proceedings of the 1998 IEEE Industry Applications Conference, October 1998, St. Louis, USA*. Electrical Engineering/Electronics, Computer, Communications and Information Technology Association

Reduction of the Electromagnetic Interference Conducted to Mains in Inverter-Fed AC Drives using Random Pulse width Modulation
Trzynadlowski, A. M., Ziegliotto, M., Bolognani, S. & Bech, M. M., 1998, *IAS '98 : Proceedings of the 1998 IEEE Industry Applications Conference, October 1998, St. Louis, USA*. Electrical Engineering/Electronics, Computer, Communications and Information Technology Association

Analysis of Spectral Effects of Random PWM Strategies for Voltage-source Inverters
Kirlin, R. L., Trzynadlowski, A. M., Bech, M. M., Blaabjerg, F. & Pedersen, J. K., 1997, *EPE '97 : 7th European Conference on Power Electronics and Applications, 8-10 September 1997, Trondheim, Norway*. EPE 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>, s. 357-365

Projekter

Analyseværktøj til spektral analyse af PWM spektre
Bech, M. M.
19/05/2010 → ...

Fler-niveau resonans konverter / Multilevel resonant converter
Munk-Nielsen, S. & Bech, M. M.
19/05/2010 → ...

HyDrive: Hydrostatic Drive Train Transmission for Renewable Energy Applications
Andersen, T. O., Bech, M. M., Nørgård, C., Roemer, D. B. & Johansen, P.
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., Blaabjerg, F. & Bech, M. M.
31/12/2003 → 31/12/2003

Medium Voltage Based on SiC (MV-BASIC)

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

MVOLT: Medium Voltage Power Electronics for Wind Systems

Munk-Nielsen, S., Uhrenfeldt, C., Jørgensen, A. B., Jørgensen, J. K., Beczkowski, S. M., Bech, M. M., Spender-Andersen, G., Lascu, C., Zhao, H., Dalal, D. N., Kjærsgaard, B. F., Aunsborg, T. S., Jacobsen, J., Mishra, P. & Steffensen, B.
Innovationsfonden
01/10/2020 → 30/09/2024

Multi Storage Converter for Wind Energy (MultiCon)

Munk-Nielsen, S., Bech, M. M., Uhrenfeldt, C., Christensen, J. H. & Knap, V.
Innovationsfonden
01/09/2017 → 31/10/2020

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

Liu, G., Munk-Nielsen, S., Bech, M. M. & Zhao, H.
01/07/2022 → 30/06/2025

Permanent Magnet (PM) Motor Control

Bech, M. M.
19/05/2010 → ...

The Flexible Drive Systems Laboratory

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

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

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