Amir Sajjad Bahman
Associate Professor
AAU Energy
The Faculty of Engineering and Science
Applied Power Electronic Systems
Applied Power Electronic Systems
EMI/EMC in Power Electronics
Reliability of Power Electronic Components
Type of address: Visiting address.
Pontoppidanstræde 111
1.163
9220
Aalborg Øst
Denmark
Email: amir@energy.aau.dk
Phone: +4599409271

Research profile

Biography

Amir Sajjad Bahman (Senior Member, IEEE) is an Associate Professor at the Center of Reliable Power Electronics (CORPE), Aalborg University, Denmark. His research interests include electro-thermo-mechanical modeling, packaging, and reliability of power electronic systems and components. Dr. Bahman received a B.Sc. from Iran University of Science and Technology, in 2008, an M.Sc. from Chalmers University of Technology, Sweden in 2011, and a Ph.D. from Aalborg University, Denmark, in 2015 all in electrical engineering. He was a Visiting Scholar in the Department of Electrical Engineering, University of Arkansas, USA, in 2014. Moreover, he was with Danfoss Silicon Power, Germany in 2014 as the Thermal Design Engineer. Dr. Bahman is a senior member of the IEEE and currently serves as an Associate Editor for the IEEE Transactions on Transportation Electrification and Elsevier Microelectronics Reliability.

Vice Leader of Reliability of Power Electronic Components Research Group (REPEC)

Coordinator and Lab Manager of the Danish Power Electronics Reliability Test Facilities (X-Power)

Positions

Associate Professor in Reliable Power Electronics, AAU Energy, Aalborg University, 2020 – present

Assistant Professor in Reliable Power Electronics, AAU Energy, Aalborg University, 2017 – 2020

Postdoctoral Fellow in Reliable Power Electronics, AAU Energy, Aalborg University, 2015 – 2017

Ph.D. Fellow in Reliable Power Electronics, AAU Energy, Aalborg University, 2012 – 2015

Visiting Scholar, Mixed-Signal Computer-Aided Design Research Lab, University of Arkansas, USA, 2014

Thermal Engineer, Danfoss Silicon Power, Germany, 2014

Research interests

Reliability and lifetime prognostics of power electronic systems and components

WBG devices and applications in power electronics converters

Physics-of-failure and fatigue analysis of power electronic components

Multiphysics modeling of power electronic systems

CFD and thermal management of power electronics

Employment

Associate Professor

Associate Professor
AAU Energy
The Faculty of Engineering and Science
Aalborg Øst, Denmark
1 Nov 2012 → 31 Dec 4712

Associate Professor
Associate Professor
The Faculty of Engineering and Science
Aalborg Øst, Denmark
1 Nov 2012 → 31 Dec 4712

Applied Power Electronic Systems
The Faculty of Engineering and Science
Aalborg Øst, Denmark
1 Jan 2021 → present

Associate Professor
Associate Professor
Applied Power Electronic Systems
The Faculty of Engineering and Science
Aalborg Øst, Denmark
1 Nov 2012 → 31 Dec 4712

EMI/EMC in Power Electronics
The Faculty of Engineering and Science
Aalborg Øst, Denmark
1 Jan 2021 → present

Reliability of Power Electronic Components
The Faculty of Engineering and Science
Aalborg Øst, Denmark
1 Jan 2021 → present

Research outputs

Enhanced Single-Inductor Single-Input Dual-Output DC–DC Converter With Voltage Balancing Capability
Rooholahi, B., Siwakoti, Y. P., Eckel, H.-G., Blaabjerg, F. & Bahman, A. S., Jul 2024, In: I E E E Transactions on Industrial Electronics. 71, 7, p. 7241 - 7251 11 p., 10224355.

Solid-state transformer and magnetic properties with potential topologies
Li, Y., Yang, M. & Bahman, A. S., 1 Jan 2024, *Control of Power Electronic Converters and Systems: Volume 4.* Blaabjerg, F. (ed.). Academic Press, Vol. 4. p. 535-555 21 p.

Investigating the solder mask defects impact on leakage current on PCB under condensing humidity conditions
Zhang, K., Bahman, A. S., Iannuzzo, F., Chopade, A. R., Holst, J., Rao, J. M., Bahrebar, S. & Ambat, R., Nov 2023, In: Microelectronics Reliability. 150, 115210.

Application-Oriented Characterization and Analysis of Core Materials Under Medium-Frequency Condition
Yang, M., Yang, Q., Li, Y., Lin, Z., Yue, S., Wang, H. & Bahman, A. S., 1 Sept 2023, In: IEEE Transactions on Power Electronics . 38, 9, p. 11245-11259 15 p.

Lifetime analysis of two commercial PV converters using multi-year degradation modelling
Fogsgaard, M. B., Zhang, Y., Bahman, A. S., Iannuzzo, F. & Blaabjerg, F., Sept 2023, In: e-Prime - Advances in Electrical Engineering, Electronics and Energy. 5, p. 1-9 9 p., 100205.

3-D-Lumped Thermal Network Models for the Reliability Analysis of Fan-Cooled Plate-Fin Heatsink
Fu, H., Chen, J., Wang, H., Liu, Z., Sorensen, H. & Bahman, A. S., 1 Jun 2023, In: IEEE Journal of Emerging and Selected Topics in Power Electronics. 11, 3, p. 3480-3491 12 p.

A New Hybrid-Modular Multi-level Inverter with Fault-Tolerant Capability
Rooholahi, B., Peyghami, S. & Bahman, A. S., 2023, *2023 25th European Conference on Power Electronics and Applications, EPE 2023 ECCE Europe.* IEEE (Institute of Electrical and Electronics Engineers), 10264676

An Online Identification Method of Thermal Dissipation State for Forced Air-cooled System of Power Converters
Fu, H., Chen, J., Bahman, A. S., Qiu, R. & Liu, Z., 1 Dec 2022, In: IEEE Journal of Emerging and Selected Topics in Power Electronics. 10, 6, p. 7677-7690 14 p.

Application-Oriented Reliability Testing of Power Electronic Components and Converters
Wang, H., Iannuzzo, F., Bahman, A. S., Zhang, K., Xue, P., Zhang, Y., Yao, B., Shen, Z., Sangwongwanich, A., Vernica, I., Song, Y., Sahoo, S. & Blaabjerg, F., Dec 2022, In: IEEE Power Electronics Magazine . 9, 4, p. 22-31 10 p., 10014625.

Prediction of the electrochemical migration induced failure on power PCBs under humidity condition — A case study
Xue, P., Bahman, A. S., Iannuzzo, F., Gudla, H. C., Lakkaraju, A. R. & Ambat, R., Dec 2022, In: Microelectronics Reliability. 139, 114796.

Mission profile simplification method for reliability analysis of PV converters
Fogsgaard, M. B., Bahman, A. S., Iannuzzo, F. & Blaabjerg, F., Nov 2022, In: Microelectronics Reliability. 138, p. 1-6 6 p., 114651.

Level-Set Interface Description Approach for Thermal Phase Change of Nanofluids
Yahyaee, A., Bahman, A. S., Olesen, K. & Sørensen, H., 29 Jun 2022, In: Nanomaterials. 12, 13, 2228.

A Benchmark Evaluation of the isoAdvection Interface Description Method for Thermally–Driven Phase Change Simulation
Yahyaee, A., Bahman, A. S. & Sørensen, H., 13 May 2022, In: Nanomaterials. 12, 10, 1665.

Guest Editorial Special Issue on Novel Hybrid and Electric Powertrain Architectures
Haghbin, S., Bahman, A. S. & Chen, H., 1 Mar 2022, In: IEEE Transactions on Transportation Electrification. 8, 1, p. 6-8 3 p.

Coupled Electro-Thermo-Mechanical Analysis to Understand Fuse Element Ageing by Finite Element Method
Chandradhas, P., Milliere, L., Gerlaud, A. & Bahman, A. S., 2022, *2022 IEEE Energy Conversion Congress and Exposition, ECCE 2022.* IEEE Signal Processing Society, (2022 IEEE Energy Conversion Congress and Exposition, ECCE 2022).

Improved Temperature Monitoring and Protection Method of Three-Level NPC Application Based on Half-Bridge IGBT Modules
Wang, Q., Zhang, J., Iannuzzo, F., Bahman, A. S., Zhang, W. & He, F., 2022, In: IEEE Access. 10, p. 35605-35619 15 p.

PV mission profile simplification method for power devices subjected to arid climates
Fogsgaard, M. B., Bahman, A. S., Iannuzzo, F. & Blaabjerg, F., Nov 2021, In: Microelectronics Reliability. 126, 5 p., 114328.

Thermal Modeling of Large Electrolytic Capacitors Using FEM and Considering the Internal Geometry
Lledo-Ponsati, T., Bahman, A. S., Iannuzzo, F., Montesinos-Miracle, D. & Galceran-Arellano, S., 1 Oct 2021, In: IEEE Journal of Emerging and Selected Topics in Power Electronics. 9, 5, p. 6315-6328 14 p.

An Application of Feature Engineering and Machine Learning Algorithms on Condition Monitoring of SiC Converters
Loghmani Moghaddam Toussi, A., Bahman, A. S., Iannuzzo, F. & Blaabjerg, F., Oct 2021, *Proceedings of the 2021 IEEE Energy Conversion Congress and Exposition (ECCE).* IEEE Press, p. 3652-3658 7 p. 9595152. (IEEE Energy Conversion Congress and Exposition).

Lifetime Analysis of Metallized Polypropylene Capacitors in Modular Multilevel Converter Based on Finite Element Method
Yao, R., Li, H., Lai, W., Bahman, A. S. & Iannuzzo, F., Aug 2021, In: IEEE Journal of Emerging and Selected Topics in Power Electronics. 9, 4, p. 4248-4259 12 p., 9040577.

Power electronic converter reliability and prognosis review focusing on power switch module failures
Abuelnaga, A., Narimani, M. & Bahman, A. S., Jun 2021, In: Journal of Power Electronics. 21, 6, p. 865-880 16 p.

An Extended Multilayer Thermal Model for Multichip IGBT Modules Considering Thermal Aging
Akbari, M., Tavakoli Bina, M., Bahman, A. S., Eskandari, B., Pouresmaeil, E. & Blaabjerg, F., May 2021, In: IEEE Access. 9, p. 84217 - 84230 14 p., 9439476.

Active Power Cycling Test Bench for SiC Power MOSFETs - Principles, Design and Implementation
Baba, S., Gieraltowski, A., Jasinski, M. T., Blaabjerg, F., Bahman, A. S. & Zelechowski, M., Mar 2021, In: I E E E Transactions on Power Electronics. 36, 3, p. 2661-2675 15 p., 9173720.

A review on IGBT module failure modes and lifetime testing
Abuelnaga, A., Narimani, M. & Bahman, A. S., 2021, In: IEEE Access. 9, p. 9643-9663 21 p., 9316255.

Effect of Current Distortion and Unbalanced Loads on Semiconductors Reliability
Lledo-Ponsati, T., Bahman, A. S., Iannuzzo, F., Montesinos-Miracle, D. & Galceran-Arellano, S., 2021, In: IEEE Access. 9 , p. 162660-162670 11 p.

Parameters sensitivity analysis of silicon carbide buck converters to extract features for condition monitoring
Loghmani Moghaddam Toussi, A., Bahman, A. S., Iannuzzo, F. & Blaabjerg, F., Oct 2020, In: Microelectronics Reliability. 114, 7 p., 113910.

Numerical simulation of boiling in a cavity
Yahyaee, A., Haervig, J., Bahman, A. S. & Sorensen, H., 14 Sept 2020, *2020 26th International Workshop on Thermal Investigations of ICs and Systems (THERMINIC).* IEEE (Institute of Electrical and Electronics Engineers), p. 1-5 5 p. 9420524. (International Workshop on Thermal Investigations of ICs and Systems).

Comparison of Press-Pack and Wire-Bonding Technologies for SiC MOSFETs under Short-Circuit Conditions
Yao, R., Iannuzzo, F., Bahman, A. S. & Li, H., Sept 2020, *2020 22nd European Conference on Power Electronics and Applications, EPE 2020 ECCE Europe.* IEEE (Institute of Electrical and Electronics Engineers), 9215875

Compact Sandwiched Press-Pack SiC Power Module with Low Stray Inductance and Balanced Thermal Stress
Chang, Y., Luo, H., Iannuzzo, F., Bahman, A. S., Li, W., He, X. & Blaabjerg, F., Mar 2020, In: IEEE Transactions on Power Electronics . 35, 3, p. 2237 - 2241 5 p., 8794576.

Survey on Generative and Discriminative Fault Detection Approaches with Focus on SiC Components
Loghmani Moghaddam Toussi, A., Bahman, A. S. & Blaabjerg, F., Mar 2020, *Proceedings of CIPS 2020; 11th International Conference on Integrated Power Electronics Systems.* Germany: VDE Verlag GMBH, p. 496-501 6 p.

A Modification of Offset Strip Fin Heatsink with High-Performance Cooling for IGBT Modules
Nujukambari, A. Y., Bahman, A. S. & Blaabjerg, F., Feb 2020, In: Applied Sciences. 10, 3, p. 1-15 15 p., 1112.

Lifetime estimation and failure risk analysis in a power stage used in wind-fuel cell hybrid energy systems
Rastayesh, S., Bahrebar, S., Bahman, A. S., Sørensen, J. D. & Blaabjerg, F., Nov 2019, In: Electronics (Switzerland). 8, 12, 1412.

Mission-Profile-Based Lifetime Prediction for a SiC mosfet Power Module Using a Multi-Step Condition-Mapping Simulation Strategy
Ceccarelli, L., Kotecha, R. M., Bahman, A. S., Iannuzzo, F. & Mantooth, H. A., Oct 2019, In: IEEE Transactions on Power Electronics. 34, 10, p. 9698-9708 11 p., 8616890.

A Review: New Designs of Heat Sinks for Flow Boiling Cooling
Nujukambari, A. Y., Bahman, A. S., Hærvig, J. & Sørensen, H., Sept 2019, *Proceedings of 2019 25th International Workshop on Thermal Investigations of ICs and Systems (THERMINIC).* IEEE (Institute of Electrical and Electronics Engineers), 6 p. 8923505. (International Workshop on Thermal Investigations of ICs and Systems).

Enhancement of Thermo-mechanical Behavior of IGBT Modules through Engineered Threshold Voltages
Akbari, M., Reigosa, P. D., Bahman, A. S., Ceccarelli, L., Iannuzzo, F. & Bina, M. T., Sept 2019, *Proceedings of 2019 21st European Conference on Power Electronics and Applications (EPE '19 ECCE Europe).* IEEE Press, 9 p. 8915545

Finite Element Modeling of IGBT Modules to Explore the Correlation between Electric Parameters and Damage in Bond Wires
Jiang , M., Fu, G., Ceccarelli, L., Du, H., Fogsgaard, M. B., Bahman, A. S., Yang, Y. & Iannuzzo, F., Sept 2019, *Proceedings of 2019 IEEE Energy Conversion Congress and Exposition (ECCE) .* IEEE Press, p. 839-844 6 p. 8912236. (IEEE Energy Conversion Congress and Exposition).

Impact of device aging in the compact electro-thermal modeling of SiC power MOSFETs
Ceccarelli, L., Bahman, A. S. & Iannuzzo, F., Sept 2019, In: Microelectronics Reliability. 100-101, 113336.

Loss and Thermal Analysis of a 100 kW Converter Module Mounted on a Cold-Plate for Fast Charging Applications
Uddin, M. J., Bahman, A. S., Hagbign, S. & Carlson, O., Sept 2019, *Proceedings of 2019 21st European Conference on Power Electronics and Applications (EPE '19 ECCE Europe).* IEEE Press, 9 p. 8915579

Reliability analysis of sintered Cu joints for SiC power devices under thermal shock condition
Gao, Y., Takata, S., Chen, C., Nagao, S., Suganuma, K., Bahman, A. S. & Iannuzzo, F., Sept 2019, In: Microelectronics Reliability. 100-101, 113456.

Wear-out evolution analysis of multiple-bond-wires power modules based on thermo-electro-mechanical FEM simulation
Jiang, M., Fu, G., Fogsgaard, M. B., Bahman, A. S., Yang, Y. & Iannuzzo, F., Sept 2019, In: Microelectronics Reliability. 100-101, 6 p., 113472.

Reliability analysis of sintered Cu joints under power cycle condition
Gao, Y., Chen, C., Nagao, S., Suganuma, K., Bahman, A. S. & Iannuzzo, F., Aug 2019, *2019 20th International Conference on Electronic Packaging Technology, ICEPT 2019.* IEEE (Institute of Electrical and Electronics Engineers), 9081076

A Methodology for Rapid Estimation of Junction Temperature of Power Semiconductors Considering Mission Profiles
Alavi, O. & Bahman, A. S., Jun 2019, *Proceedings of 2019 IEEE 28th International Symposium on Industrial Electronics (ISIE).* IEEE Press, p. 2359-2364 6 p. 8781177. (Industrial Electronics (ISIE), IEEE International Symposium on).

Reliability analysis of a 3-leg 4-wire inverter under unbalanced loads and harmonic injection
Lledo-Ponsati, T., Bahman, A. S., Iannuzzo, F., Montesinos-Miracle, D. & Arellano, S. G., Jun 2019, *Proceedings of 2019 20th Workshop on Control and Modeling for Power Electronics (COMPEL).* IEEE Signal Processing Society, 8769662. (IEEE Workshop on Control and Modeling for Power Electronics (COMPEL)).

A Busbar Integrated SiC-based Converter with Embedded Heat-pipes
Chang, Y., Bahman, A. S., Luo, H., Li, W., He, X., Iannuzzo, F. & Blaabjerg, F., May 2019, *Proceedings of 2019 10th International Conference on Power Electronics and ECCE Asia (ICPE 2019 - ECCE Asia).* IEEE Press, p. 2166-2172 7 p. 8796953. (International Conference on Power Electronics).

Frozen Leg Operation of a Three-Phase Dual Active Bridge Converter
Haghbin, S., Blaabjerg, F. & Bahman, A. S., May 2019, In: IEEE Transactions on Power Electronics. 34, 5, p. 4239 - 4248 10 p., 8434112.

Highly Reliable Package using Cu Particles Sinter Paste for Next Generation Power Devices
Gao, Y., Chen, C., Nagao, S., Suganuma, K., Bahman, A. S. & Iannuzzo, F., May 2019, *Proceedings of PCIM Europe 2019; International Exhibition and Conference for Power Electronics, Intelligent Motion, Renewable Energy and Energy Management.* IEEE Press, 4 p.

Fuzzy-Logic-Based Mean Time to Failure (MTTF) Analysis of Interleaved Dc-Dc Converters Equipped with Redundant-Switch Configuration
Rahimi, T., Khoun Jahan, H., Blaabjerg, F., Bahman, A. S. & Hosseini, S. H., 27 Dec 2018, In: Applied Sciences. 9, 1, p. 1-17 17 p., 88.

A Multi-Layer RC Thermal Model for Power Modules Adaptable to Different Operating Conditions and Aging
Akbari, M., Bahman, A. S., Tavakoli Bina, M., Eskandari, B., Iannuzzo, F. & Blaabjerg, F., 30 Oct 2018, *Proceedings of 2018 20th European Conference on Power Electronics and Applications (EPE'18 ECCE Europe).* IEEE (Institute of Electrical and Electronics Engineers), p. 1-10 10 p. 8515416

Failure mechanism analysis of fuses subjected to manufacturing and operational thermal stresses
Bahman, A. S., Jensen, S. M. & Iannuzzo, F., Sept 2018, In: Microelectronics Reliability. 88-90, p. 304-308 5 p.

Non-uniform Temperature Distribution Implications on Thermal Analysis Accuracy of Si IGBTs and SiC MOSFETs
Akbari, M., Bahman, A. S., Reigosa, P. D., Ceccarelli, L., Iannuzzo, F. & Tavakoli Bina, M., Sept 2018, *Proceedings of the 2018 24rd International Workshop on Thermal Investigations of ICs and Systems (THERMINIC).* IEEE Press, p. 1-6 6 p. (International Workshop on Thermal Investigations of ICs and Systems).

Thermal modeling of wire-bonded power modules considering non-uniform temperature and electric current interactions
Akbari, M., Bahman, A. S., Reigosa, P. D., Iannuzzo, F. & Tavakoli Bina, M., Sept 2018, In: Microelectronics Reliability. 88-90, p. 1135-1140 6 p.

Computer-aided engineering simulations
Bahman, A. S. & Iannuzzo, F., Jun 2018, *Wide Bandgap Power Semiconductor Packaging: Materials, Components, and Reliability.* Suganuma, K. (ed.). Woodhead Publishing, p. 199 - 223 25 p. (Elsevier).

A Lumped Thermal Model Including Thermal Coupling and Thermal Boundary Conditions for High Power IGBT Modules
Bahman, A. S., Ma, K. & Blaabjerg, F., Mar 2018, In: I E E E Transactions on Power Electronics. 33, 3, p. 2518 - 2530 13 p., 7903728.

Frozen Leg Operation of a Three-Phase Dual Active Bridge DC/DC Converter at Light Loads
Haghbin, S., Blaabjerg, F., Yazdani, F. & Bahman, A. S., Mar 2018, *IEEE Applied Power Electronics Conference and Exposition (APEC) 2018: APEC 2018.* IEEE Press, p. 3385-3391 7 p.

Compact electro-thermal modeling of a SiC MOSFET power module under short-circuit conditions
Ceccarelli, L., Reigosa, P. D., Bahman, A. S., Iannuzzo, F. & Blaabjerg, F., Oct 2017, *Proceedings of 43rd Annual Conference of the IEEE Industrial Electronics Society, IECON 2017.* IEEE Press, p. 4879-4884 6 p. (Proceedings of the Annual Conference of the IEEE Industrial Electronics Society).

Modeling of Short-Circuit-Related Thermal Stress in Aged IGBT Modules
Bahman, A. S., Iannuzzo, F., Uhrenfeldt, C., Blaabjerg, F. & Munk-Nielsen, S., Sept 2017, In: I E E E Transactions on Industry Applications. 53, 5, p. 4788 - 4795 8 p.

Reliability-oriented environmental thermal stress analysis of fuses in power electronics
Bahman, A. S., Iannuzzo, F., Holmgaard, T., Nielsen, R. Ø. & Blaabjerg, F., Sept 2017, In: Microelectronics Reliability. 76-77, p. 25-30 6 p.

A Fast Electro-Thermal Co-Simulation Modeling Approach for SiC Power MOSFETs
Ceccarelli, L., Bahman, A. S., Iannuzzo, F. & Blaabjerg, F., Mar 2017, *Proceedings of the 2017 IEEE Applied Power Electronics Conference and Exposition (APEC).* IEEE Press, p. 966-973 8 p. (IEEE Applied Power Electronics Conference and Exposition (APEC)).

Fuse Modeling for Reliability Study of Power Electronic Circuits
Bahman, A. S., Iannuzzo, F. & Blaabjerg, F., Mar 2017, *Proceedings of the 2017 IEEE Applied Power Electronics Conference and Exposition (APEC).* IEEE Press, p. 829-836 8 p. (IEEE Applied Power Electronics Conference and Exposition (APEC)).

A 3D Lumped Thermal Network Model for Long-term Load Profiles Analysis in High Power IGBT Modules
Bahman, A. S., Ma, K., Ghimire, P., Iannuzzo, F. & Blaabjerg, F., Sept 2016, In: I E E E Journal of Emerging and Selected Topics in Power Electronics. 4, 3, p. 1050 - 1063 14 p.

Mission-profile-based stress analysis of bond-wires in SiC power modules
Bahman, A. S., Iannuzzo, F. & Blaabjerg, F., Sept 2016, In: Microelectronics Reliability. 64, p. 419–424 6 p.

Optimization Tool for Direct Water Cooling System of High Power IGBT Modules
Bahman, A. S. & Blaabjerg, F., Sept 2016, *Proceedings of the 18th European Conference on Power Electronics and Applications (EPE'16 ECCE-Europe), 2016.* IEEE Press, 10 p.

Prediction of Short-Circuit-Related Thermal Stress in Aged IGBT Modules
Bahman, A. S., Iannuzzo, F., Uhrenfeldt, C., Blaabjerg, F. & Munk-Nielsen, S., Sept 2016, *Proceedings of IEEE Energy Conversion Congress and Exposition (ECCE), 2016.* IEEE Press, 7 p.

Electrical Parasitics and Thermal Modeling for Optimized Layout Design of High Power SiC Modules
Bahman, A. S., Blaabjerg, F., Dutta, A. & Mantooth, A., Mar 2016, *Proceedings of the 31st Annual IEEE Applied Power Electronics Conference and Exposition (APEC).* IEEE (Institute of Electrical and Electronics Engineers), p. 3012 - 3019 8 p.

General 3D Lumped Thermal Model with Various Boundary Conditions for High Power IGBT Modules
Bahman, A. S., Ma, K. & Blaabjerg, F., Mar 2016, *Proceedings of the 31st Annual IEEE Applied Power Electronics Conference and Exposition (APEC).* IEEE (Institute of Electrical and Electronics Engineers), p. 261 - 268 8 p.

Multidisciplinary Modelling Tools for Power Electronic Circuits: with Focus on High Power Modules
Bahman, A. S., Nov 2015, Department of Energy Technology, Aalborg University. 151 p.

Complete Loss and Thermal Model of Power Semiconductors Including Device Rating Information
Ma, K., Bahman, A. S., Beczkowski, S. & Blaabjerg, F., May 2015, In: I E E E Transactions on Power Electronics. 30, 5, p. 2556 - 2569 14 p.

A Novel 3D Thermal Impedance Model for High Power Modules Considering Multi-layer Thermal Coupling and Different Heating/Cooling Conditions
Bahman, A. S., Ma, K. & Blaabjerg, F., Mar 2015, *Proceedings of the 2015 IEEE Applied Power Electronics Conference and Exposition (APEC).* IEEE Press, p. 1209-1215 7 p. (I E E E Applied Power Electronics Conference and Exposition. Conference Proceedings).

Evaluation of current stresses in nine-switch energy conversion systems
Qin, Z., Loh, P. C., Bahman, A. S. & Blaabjerg, F., Nov 2014, In: IET Power Electronics. 7, 11, p. 2877-2886 10 p.

Thermal Impedance Model of High Power IGBT Modules Considering Heat Coupling Effects
Bahman, A. S., Ma, K. & Blaabjerg, F., Nov 2014, *Proceedings of the 2014 International Power Electronics and Application Conference and Exposition (PEAC2014).* IEEE Press, p. 1382-1387 6 p.

FEM Thermal Modeling and Improvement for High Power IGBT Modules Used in Wind Turbine Systems
Bahman, A. S., Ma, K. & Blaabjerg, F., Oct 2014, *Proceedings of the International Conference on Wind energy Grid-Adaptive Technologies, WEGAT 2014.* Chungbuk University, Korea, p. 1-7 7 p.

Loss and thermal model for power semiconductors including device rating information
Ma, K., Bahman, A. S., Beczkowski, S. & Blaabjerg, F., May 2014, *Proceedings of the 2014 International Power Electronics Conference (IPEC-Hiroshima 2014 - ECCE-ASIA).* IEEE Press, p. 2862-2869 8 p.

Loss comparison of different nine-switch and twelve-switch energy conversion systems
Bahman, A. S., Loh, P. C., Qin, Z. & Blaabjerg, F., Mar 2014, *Proceedings of the 2014 29th Annual IEEE Applied Power Electronics Conference and Exposition (APEC).* IEEE Press, p. 309-314 6 p. (I E E E Applied Power Electronics Conference and Exposition. Conference Proceedings).

Comparison between 9-level hybrid asymmetric and conventional multi-level inverters for medium voltage application
Bahman, A. S. & Blaabjerg, F., 2013, *Proceedings of the 2013 IEEE International Symposium on Industrial Electronics (ISIE).* IEEE Press, p. 1-7 7 p. (Industrial Electronics (ISIE), IEEE International Symposium on).

Evaluation of Switch Currents in Nine-Switch Energy Conversion Systems
Loh, P. C., Bahman, A. S., Qin, Z. & Blaabjerg, F., 2013, *Proceedings of the 39th Annual Conference of IEEE Industrial Electronics Society, IECON 2013.* IEEE Press, p. 755-760 6 p. (Proceedings of the Annual Conference of the IEEE Industrial Electronics Society).

Awards

Fatigue reliability of fuses
Bahman, A. S. (PI), C, P. (Project Participant) & Frøstrup, S. (Project Coordinator)
Mersen France SB SAS: DKK1,549,634.00
15/11/2021 → 14/05/2023

Projects

APETT: Advanced Power Electronic Technology and Tools
Blaabjerg, F. (PI), Munk-Nielsen, S. (CoI), Iannuzzo, F. (Project Participant), Wang, H. (Project Participant), Uhrenfeldt, C. (Project Participant), Beczkowski, S. M. (Project Participant), Zhou, D. (Project Participant), Choi, U. (Project Participant), Jørgensen, A. B. (Project Participant), Vernica, I. (Project Participant), Sangwongwanich, A. (Project Participant), Christensen, N. (Project Participant), Ceccarelli, L. (Project Participant), Nielsen, C. K. (Project Participant), Bahman, A. S. (Project Participant), Pedersen, K. (Project Participant), Pedersen, K. B. (Project Participant) & Kristensen, P. K. (Project Participant)
Innovation Fund Denmark
01/01/2017 → 30/06/2021

ALL2GaN: Affordable smart GaN IC solutions as enabler of greener applications
Zhou, D. (PI), Iannuzzo, F. (PI), Bahman, A. S. (Project Participant), Novak, M. (Project Participant), Sangwongwanich, A. (Project Participant), Zhao, S. (Project Participant), Zhang, K. (Project Participant), Du, S. (Project Participant), Steffensen, B. (Project Coordinator) & Frøstrup, S. (Project Coordinator)
Horizon - Chips Joint Undertaking
01/05/2023 → 30/04/2026

Condition Monitoring & Remaining Useful Life Estimation for Power Electronic Components
Loghmani Moghaddam Toussi, A. (PI), Blaabjerg, F. (Supervisor), Bahman, A. S. (Supervisor) & Iannuzzo, F. (Supervisor)
01/06/2019 → 30/06/2023

ELMAC: Electronics Manufactured for Climate
Iannuzzo, F. (PI), Blaabjerg, F. (CoI), Wang, H. (CoI), Bahman, A. S. (CoI) & Török, L. (Project Participant)
Department of Energy Technology
01/06/2019 → 01/12/2023

TEAMING: e-powerTrain prEdictive mAintenance using physics inforMed learnING
Zhao, S. (PI), Wang, H. (Project Participant), Blaabjerg, F. (Project Participant), Sangwongwanich, A. (Project Participant), Bahman, A. S. (Project Participant) & Frøstrup, S. (Project Coordinator)
Horizon Europe

01/01/2024 → 31/12/2027

Fatigue reliability of fuses
Bahman, A. S. (PI), C, P. (Project Participant) & Frøstrup, S. (Project Coordinator)
Mersen France SB SAS
15/11/2021 → 14/05/2023

Modelling and Optimization of the Water Cooling System for the Wind Power Converter
Blaabjerg, F. (Project Manager), Wang, H. (Project Participant) & Bahman, A. S. (Project Participant)
Woodward Kempen GmbH
01/04/2017 → 30/03/2018

Multi-Time Scale Modelling of Power Electronic Converters in Power System Applications
Fogsgaard, M. B. (PI), Blaabjerg, F. (Supervisor), Iannuzzo, F. (Supervisor) & Bahman, A. S. (Supervisor)
01/09/2019 → 31/08/2022

Thermal Management of Power Electronics - with Focus on Forced Convection and Two Phase Cooling Applications
Nujukambari, A. Y. (PI), Sørensen, H. (Supervisor), Bahman, A. S. (Supervisor) & Hærvig, J. (Supervisor)
15/12/2018 → 14/12/2021

X-POWER – Power Electronics Reliability Test Facilities
Blaabjerg, F. (PI), Iannuzzo, F. (CoI), Wang, H. (CoI), Bahman, A. S. (Project Participant), Steffensen, B. (Project Coordinator) & Ravn, T. K. (Project Coordinator)
Uddannelses- og forskningsministeriet
01/01/2019 → 31/12/2023