

PUBLIKATIONSLISTE

Prof. Dr.-Ing. Marco Denk

2026

Riedelbauch, L.; Arbeiter, G.; Denk, M.: Explainable Machine Learning for EIS-Based Clustering of Second-Life EV Batteries, Energy Storage and Sustainable Circularity Conference ESSC 2026, Turkey, Istanbul, July 2026

Denk, M.; Kulkarni, S.; Jennings, V.: Advanced Condition Monitoring of IGBT Power Modules to Address Evolving Industrial and Automotive Regulations, Journal of Power Electronic Devices and Components PEDC, ISSN: 2772-3704, Elsevier Ltd. 2026, <https://doi.org/10.1016/j.pedc.2026.100152>

Kolletzki, M.; Jungwirth, H.; Schmidhuber, M.; Weindl, C.; Denk, M.: Design and Investigation of a 4kW 48 V/60V GaN Boost Converter for Micromobility Applications, ECCE Europe Conference, Spain, Valencia, September 2026, Status: Full paper accepted

Denk, M.; Kulkarni, S.: A Two-Year Real-World Study of an EV Battery State-of-Health Estimation Algorithm, 12th IEEE International Conference on Power Electronics Drives and Energy Systems, PEDES, December 2026 at IIT Guwahati, Assam, India, Status: Digest accepted

2025

Aron, M.; Pop, A-C.; Koch, M.; Weindl, C.; Denk, M.: Advanced Methods for Extrapolating Thermal Measurement Signals to Accelerate Electric Drive Testing, In: Proceedings of the International Conference for Power Electronics, Intelligent Motion, Renewable Energy and Energy Management (PCIM), Nuremberg, June 2025

Riedelbauch, L.; Jäckel, N.; Kählert, F.; Weindl, C.; Denk, M.: Management of used electric vehicle battery modules: A review of existing approaches and a proposed decision-making algorithm. Journal of Energy and Sustainability, September 2025

Riedelbauch, L.; Weindl, C.; Denk, M.: Zustandsbestimmung rückgeführter EV-Batterien. Wir gestalten Zukunft – VDI-Konferenz: Innovation erleben, Technik proaktiv nutzen, Schweinfurt, Sept. 2025

2024

Denk, M.; Esau, M.; Fritsch, S.; Ubben, O.: Implementation of a Junction Temperature Cycle Recorder in a Battery Electric Vehicle and Accuracy Assessment by Road Testing, In: Proceedings of the Conference on Integrated Power Systems (CIPS), Düsseldorf, March 2024

Denk, M.; Heigel, F.; Schwarzkopf, J.; Filka, R.: Synthesis of a Field Oriented Control Algorithm by using two different Pole-Zero Compensation Approaches, In: Proceedings of the International Conference for Power Electronics, Intelligent Motion, Renewable Energy and Energy Management (PCIM), Nuremberg, June 2024

Denk, M.; In-Situ Junction Temperature Measurement and Condition Monitoring of Power Modules in Traction Inverter, In: European Cluster of Power Electronics Workshop, Spain, Bilbao, June 2024

Denk, M.; Arbeiter, G.; Hohmann, F.; Hain, S.: Impact of the Operating Strategy on the Range Benefit of Wide Bandgap Power Semiconductors in Battery Electric Vehicles, eehe conference, Bamberg, May 2024

Aron, M.; Pop, A-C.; Herrmann, J.; Denk, M.: Evaluation of Real-Time Capable Thermal Simulation Models for Electrical Machines, In: ECCE Energy Conversion Congress, Darmstadt, September 2024

Preißner, J.; Bauer, A.; Denk, M.; Grubert, J.: XR-based Education of Thermal Management in Power Electronics, In: Adjunct Proceedings of IEEE International Symposium on Mixed and Augmented Reality 2024 (ISMAR 2024), Seattle, USA, October 2024

2023

Denk, M.; Arbeiter, G.; Hohmann, F.; Hain, S.: Relevance and Range Benefit of Wide Bandgap Power Semiconductors in Autonomous Battery Electric Vehicles, In: Proceedings of the Conference for Power Electronics, Intelligent Motion, Renewable Energy and Energy Management (PCIM), Nuremberg, Germany, 2023, doi: 10.30420/566091227

Denk, M.; Arbeiter, G.: Power Electronics for Autonomous Electric Vehicles – How to make the best use of material advantages, In: Proceedings of the 4th Annual Advanced Power Electronics for EV/HEV Conference, October 2023, Munich

2022

Kolletzki, M.; Ohl, F.; Denk, M.: Knowledge-based Engineering for System Optimization of Power Electronics including the Electric Motor Design, In: International Conference for Power Electronics (PCIM), Nuremberg, May 2022

2021

Kolletzki, M.; Denk, M.; Anderson, D.; Reißenweber, L.; Stadler, A.: Inverter Design for a Battery Cooling Compressor for 800V Electric Vehicles with Focus on Efficiency and Inverter Volume, International Conference for Power Electronics (PCIM), Nuremberg, May 2021

M. Denk; M. Kolletzki: Leistungselektronik für 800V Kältemittelverdichter – SiC-2-Level vs. Si 3-Level, In: ECPE Cluster Online Seminar 800V Automobil-Umrichter, Januar 2021

2019

Hain, D.; Meiler, M.; Denk, M.: Evaluation of 800V Traction Inverter with SiC-MOSFET versus Si-IGBT Power Semiconductor Technology, In: Proceedings of the International Conference for Power Electronics (PCIM), Nuremberg, 2019

Bertelshofer, T.; Denk, M.; Bakran, M-M.: Design Study and Prototype of 150 kW Inverter with Discrete SiC MOSFETs, In: Proceedings of the International Conference for Power Electronics (PCIM), Nuremberg, 2019

2018

Denk, M.; Bakran, M-M.: Partial Discharge Measurement in a Motor Winding fed by a SiC Inverter – How critical is high dV/dt really?, In: Proceedings of the International Conference for Power Electronics (PCIM), Nuremberg, 2018

Denk, M.: Monitoring of Power Modules in EV/HEV, In: International Conference on Advanced Power Electronics for EV/HEV, 5.-7. September 2018, Munich, Germany

Denk, M.; Lochner, M.: New Process - Real-time Temperature Measurement on Semiconductors, In: ATZ elektronik worldwide 03|2018, Cover Story, Springer Vieweg, ISSN 1862-1791 70934

Winterhagen, J.; Denk, M.: Wie bringt man das Elektroauto auf Trab, Interview mit Dr.-Ing. Marco Denk, In: Frankfurter Allgemeine Sonntagszeitung, November 05, 2018, Germany

2017

Denk, M.; Bakran, M-M.: Accuracy Analysis of $UCE(on)$ -based Measurement of the Inverter Output Current at Higher Motor Speeds EPE, In: Proceedings of the 19th European Conference on Power Electronics and Applications (EPE), Warsaw, 2017

Denk, M.; Bakran, M-M.: IGBT Gate Driver with Accurate Measurement of Junction Temperature and Inverter Output Current, In: Proceedings of the International Conference for Power Electronics (PCIM), Nuremberg, 2017

Denk, M.; Bakran, M-M.: High Bandwidth and Minimal Invasive Current Measurement for Semiconductor Characterization, In: Current Measurement for Power Electronics Applications in Lab Scale, ECPE Workshop, Hamburg, 17-18 October 2017

Denk, M.; Bakran, M-M.: Gate Driver with Integrated Measurement of Junction Temperature and Inverter Output Current, In: Current Measurement for Power Electronics Applications in Lab Scale, ECPE Workshop, Hamburg, 17-18 October 2017

2016

Denk, M.; Bakran, M-M.: Investigation of the Characteristic Thermal Properties of IGBT Power Modules for Robust In-situ Health Monitoring, In: Proceedings of the 18th European Conference on Power Electronics and Applications (EPE), Karlsruhe, 2016

Denk, M.; Bakran, M-M.: Case Sensitive Condition Monitoring of an IGBT Inverter in a Hybrid Car, In: Proceedings of the 9th Conference on Integrated Power Systems (CIPS), Nuremberg, 2016

Denk, M.; Bakran, M-M.: Health-Monitoring of IGBT power modules using repetitive half-sinusoidal power losses, In: Proceedings of the International Conference for Power Electronics (PCIM), Nuremberg, 2016

Denk, M.; Bakran, M-M.: Condition Monitoring of IGBT Power Modules by Real-Time Measurement of the IGBT Junction Temperature, In: Automotive Transmissions, HEV and EV Drives, 15th CTI Symposium, Berlin, 2016

Denk, M.: In-Situ-Zustandsüberwachung von IGBT Leistungshalbleitern mittels Echtzeit-Sperrschichttemperaturmessung, Verlag Dr. Hut, ISBN 978-3-8439-2625-6, Bayreuth, 2016

2015

Denk, M.; Bakran, M-M.: Comparison of UCE - and RGi -based Junction Temperature Measurement of Multichip IGBT Power Modules, In: Proceedings of the 17th European Conference on Power Electronics and Applications (EPE), IEEE-Verlag, Geneva, 2015

Denk, M.; Bakran, M-M.: Online Junction Temperature Cycle Recording of an IGBT Power Module in a Hybrid Car, Journal Article: Advances in Power Electronics, Article-ID: 652389, Hindawi Publishing Corporation, 16. January 2015

Denk, M.: TJ-IGBT-Driver for Junction Temperature Measurement during Operation, In: ECPE Workshop: Drivers, Control and Protection Circuits for MOSFETs and IGBTs, Hannover, October 2015

Denk, M.; Bakran, M-M.: Junction Temperature Measurement during Inverter Operation using a TJ-IGBT-Driver, In: Proceedings of the International Conference for Power Electronics (PCIM), VDE-Verlag, Nuremberg, 2015

2014

Denk, M.; Bakran, M-M.: Efficient online-algorithm for the temperature-cycle recording of an IGBT power module in a hybrid car during inverter operation, In: Proceedings of the 8th Conference on Integrated Power Systems (CIPS), S. 428-433, VDE-Verlag, Nuremberg, 2014,

Denk, M.; Bakran, M-M.: An IGBT Driver Concept with Integrated Real-Time Junction Temperature Measurement, In: Proceedings of the International Conference for Power Electronics (PCIM), VDE-Verlag, Nuremberg, 2014

2013

Denk, M.; Bakran, M-M.: Comparison of Counting Algorithms and Empiric Lifetime Models to Analyze the Load-Profile of an IGBT Power Module in a Hybrid Car, In: Proceedings of the 3rd International Electric Drives Production Conference (EDPC), S. 462-467, Nuremberg, 2013

Awards

- Semikron Young Engineer Award, 25.5.2015, Munich
- CTI Young Drive Experts Award, 7.12.2016, Berlin
- PCIM Young Engineer Award, 17.5.2017, Nuremberg
- ZF Excellence Award, 6.10.2018, Friedrichshafen
- Preis für exzellente Lehre, 2023, Coburg
- Preis für innovative Lehre, 2025, Coburg