

List of Publications, Prof. R. Mailach

(09/2026)

Book Contributions

Seume, J., und Mailach, R., 2020: Dubbel: Taschenbuch für den Maschinenbau (Hrsg.: Grote, K.-H., Bender, B., Göhlich, D.), Kapitel R1 „Grundlagen der Strömungsmaschinen“, Springer-Verlag, 26. Auflage.

Schmidt, R., Voigt, M., Mailach, R., 2019: “Latin Hypercube Sampling-Based Monte Carlo Simulation: Extension of the Sample Size and Correlation Control”, in: Hirsch C., Wunsch D., Szumbariski J., Łaniewski-WoŃk Ł., Pons-Prats J. (Eds.) “Uncertainty Management for Robust Industrial Design in Aeronautics”. Notes on Numerical Fluid Mechanics and Multidisciplinary Design, Vol 140. Springer.

Mailach, R., 2009: “Unsteady Flow in Turbomachinery“, Habilitation, Technische Universität Dresden, also published as: ISBN 978-3-941298-92-7, TUDpress, 2010, Dresden, Germany.

Mailach, R., and Vogeler, K., 2006: “Blade Row Interaction in Axial Compressors, Part I: Periodical Unsteady Flow Field”, Von Kármán Institute for Fluid Dynamics (VKI), Lecture Series 2006-06 “Advances in Axial Compressor Aerodynamics”, ISBN 2-930389-68-0, May 15-18, 2006, Rhode-Saint-Genèse, Belgium.

Mailach, R., and Vogeler, K., 2006: “Blade Row Interaction in Axial Compressors, Part II: Unsteady Behaviour of Boundary Layer, Pressure Distribution and Excited Pressure Force of Compressor Blades”, Von Kármán Institute for Fluid Dynamics (VKI), Lecture Series 2006-06 “Advances in Axial Compressor Aerodynamics”, ISBN 2-930389-68-0, May 15-18, 2006, Rhode-Saint-Genèse, Belgium.

Mailach, R., 2001: „Experimentelle Untersuchung von Strömungsinstabilitäten im Betriebsbereich zwischen Auslegungspunkt und Stabilitätsgrenze eines vierstufigen Niedergeschwindigkeits-Axialverdichters“, Dissertation, Technische Universität Dresden, zugleich: Fortschritt-Berichte VDI, Reihe 7, Nr. 410, VDI-Verlag, Düsseldorf, Germany.

Journal Articles

Wiegand, M., Kalbitz, R., Balderas-Xicohtencatl, R., Mailach, R., 2026: “Climate Impact Robust Design Optimization for Turbofan Aircraft Engine”, J. Eng. Gas Turbines Power. 148(10): 101020. <https://doi.org/10.1115/1.4072468>.

Wiedicke, A., Wiegand, M., Miltén, P., Lange, M., Mailach, R., 2026: “Integrated Performance Modeling of Aircraft Engines Based on Hydrogen Combustion”, J. Eng. Gas Turbines Power. 148(10): 101019. <https://doi.org/10.1115/1.4072467>.

Kalbitz, R., Prots, A., Dittmann, M., Voigt, M., and Mailach, R., 2026: "Global sensitivity analysis through advanced ANCOVA decomposition for correlated inputs", Probabilistic Engineering Mechanics, Vol. 84, 2026, 103915, <https://doi.org/10.1016/j.probengmech.2026.103915>.

Jasmund, C., Lange, M., and Mailach, R., 2026: "Investigation of Shear Layer Induced Pressure Fluctuations in a Linear Compressor Cascade" ASME. J. Turbomach., May 2026; 148(5): 051012. <https://doi.org/10.1115/1.4070050>.

Wiegand, M., Koops, L., Mailach, R., and Balderas-Xicohtencatl, R., 2026: "Uncertainty Quantification in Aviation Climate Impact: A Stochastic Approach to CO₂ and Non-CO₂ Effects", *Atmospheric Environment: X*, Vol. 31, <https://doi.org/10.1016/j.aeaoa.2026.100502>.

Wiegand, M., Lange, M., and Mailach, R., 2025: "Thermofluid Modeling for Next-Generation Aircraft Engine Design", *Journal of Aircraft* (2025), pp. 1-10, <https://doi.org/10.2514/1.C038534>

Vasilopoulos, I., Rostamian, M., Voigt, M., Meyer, M., and Mailach, R., 2025: "Roughness Investigations on In-Service High-Pressure Compressor Blades - Part I: An Automated Process for High-Fidelity Roughness Measurements" *ASME. J. Turbomach.*, August 2025; 147(8): 081001. <https://doi.org/10.1115/1.4067291>

Vasilopoulos, I., Adami, P., Voigt, M., Meyer, M., and Mailach, R., 2025: "Roughness Investigations on In-Service High-Pressure Compressor Blades - Part II: Roughness Parameterization and Computational Fluid Dynamics-Based Modeling of Its Impact on Turbulent Flows" *ASME. J. Turbomach.*, August 2025; 147(8): 081002. <https://doi.org/10.1115/1.4065681>

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Prots, A., Voigt, M., and Mailach, R., 2024: "Improvements in Probabilistic Strategies and Their Application to Turbomachinery", *Aerospace* 2024, 11, 355. <https://doi.org/10.3390/aerospace11050355>.

Schuchard, L., Bień, M., Ziaja, K., Blanken, N., Göing, J., Friedrichs, J., di Mare, F., Ponick, B., and Mailach, R., 2024: "A Study on Quantities Driving Maintenance, Repair, and Overhaul for Hybrid-Electric Aeroengines", *ASME. J. Eng. Gas Turbines Power*, February 2024; 146(2): 021013, <https://doi.org/10.1115/1.4063580>

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Chen, X., Koppe, B., Lange, M., Chu, W., and Mailach, R., 2023: "Influence of Casing Groove on Rotating Instabilities in a Low-Speed Axial Compressor" *ASME. J. Turbomach.*, July 2023, 145(7): 071015. <https://doi.org/10.1115/1.4056863>.

Böhm, H., Högner, L., Meyer, M., Mailach, R., Hornig, A., and Gude, M., 2023: "A Methodology for a Coupled Structural - CFD Analysis of Compressor Rotor Blades Subjected to Ice Impact with Uncertain Impactor Parameters", *J. Eng. Gas Turbines Power*, March 2023, 145(3): 031001. <https://doi.org/10.1115/1.4055687>

Ventosa-Molina, J., Koppe, B., Lange, M., Mailach, R., and Fröhlich, J., 2022: "Effects of Rotation on the Flow Structure in a Compressor Cascade", *ASME Journal of Turbomachinery*, Vol. 144, 081006.

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Ventosa-Molina, J., Lange, M., Mailach, R., and Fröhlich, J., 2021: "Study of Relative Endwall Motion Effects in a Compressor Cascade Through Direct Numerical Simulations", *ASME Journal of Turbomachinery*, Vol. 143 (1), 011005.

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Voigt, P., Högner, L., Fiedler, B., Voigt, M., Mailach, R., Meyer, M., and Nasuf, A., 2019: "Comprehensive Geometric Description of Manufacturing Scatter of High Pressure Turbine Nozzle Guide Vanes for Probabilistic CFD Analysis", *ASME Journal of Turbomachinery*, Vol. 141 (8), 081002.

Sinkwitz, M., Winhart, B., Engelmann, D., di Mare, F. and Mailach, R., 2019: "Experimental and Numerical Investigation of Secondary Flow Structures in an Annular Low Pressure Turbine Cascade under Periodic Wake Impact - Part 1: Experimental Results", *ASME Journal of Turbomachinery*, Vol. 141, 021008.

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Conference Papers

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Wiegand, M., Kiendl, P., Mailach, R., 2026: "Contrail Prediction Model for Integration Into Aircraft Engine Design", ASME Turbo Expo, June 15–19, 2026, Milan, Italy, GT2026-174981.

Kalbitz, R., Dittmann, M., Voigt, M., Mailach, R., 2026: "Global Sensitivity Analysis on Compressor Performance Through Advanced ANCOVA Under Consideration of Correlated Geometric Parameters", ASME Turbo Expo, June 15–19, 2026, Milan, Italy, GT2026-176734.

Wiedicke, A., Wiegand, M., Miltén, P., Lange, M., Mailach, R., 2026: "Integrated Performance Modeling of Aircraft Engines Based on Hydrogen Combustion", ASME Turbo Expo, June 15–19, 2026, Milan, Italy, GT2026-174979.

Vyas, H., Voigt, M., Mailach, R., 2026: "Surrogate Modelling in Turbomachinery: Novel Greedy Regression and Improved Estimation of Model Performance", ASME Turbo Expo, June 15–19, 2026, Milan, Italy, GT2026-176850.

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Wiegand, M., Schuchard, L., Lauro, S. D., Lange, M., Mailach, R., 2025: "Fuel Cell Hybrid-Electric Aircraft Performance: Optimizing Thermal Management for Reduced Climate Impact", ASME Turbo Expo, June 16–20, 2025, Memphis, Tennessee, USA, GT2025-151328.

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Jasmund, C., Lange, M., and Mailach, R., 2025: "Investigation of Shear Layer Induced Pressure Fluctuations in a Linear Compressor Cascade", ASME Turbo Expo, June 16–20, 2025, Memphis, Tennessee, USA, GT2025-151156.

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