

KARPUKHIN KIRILL EVGENIEVICH

Research profile (portfolio) of potential research supervisor of post-graduate track participants in the Open Doors: Russian Scholarship Project

UNIVERSITY	MOSCOW POLYTECHNIC UNIVERSITY (Moscow Polytech)
Level of English proficiency	Upper-Intermediate
Educational program and field of the educational program for which the applicant will be accepted	2.5.11 Land transport and technological means and complexes (Land Vehicles)
List of research projects of the potential supervisor	Ministry of Science and Higher Education state assignment: Development of a Hybrid Powertrain for Category M1 Vehicles (Passenger Cars) Based on Domestically Produced Components, FZRR-2025-0009 (2025–present) — Project Lead.
List of the topics offered for prospective research	Research areas: - Electric vehicles; - Hybrid vehicles; - Traction batteries; - Thermal management systems for traction batteries; - Alternative energy in transport; - The use of solar (renewable) energy in electrified vehicles; - Life-cycle assessment of vehicles.



Research supervisor:

Karpukhin Kirill Evgenievich,
PhD in Engineering,
Moscow Polytech (former MAMI, 2008)

Field of research

2.03.03 Engineering, mechanical

Supervisor's main publications	The total number of publications in journals indexed by Web of Science, Scopus, and RSCI over the past five years – 17. Most significant publications over the past five years: - Component-in-the-Loop Testing of Automotive Powertrains Featuring All-Wheel-Drive// Kulikov I., Korkin S., Kozlov A., Terenchenko A., Karpukhin K., Azimov U. Energies 2021, 14, 2017. doi.org/10.3390/en14072017. SJR: 0,65. Q-1. (Scopus+WoS). - Development of a Power Flow Management Strategy for a Hybrid Racing Car Aimed at Minimizing Lap Time// Malikov R., Iturralde P., Karpukhin K., Karpukhin F., Zimov R. World Electric Vehicle Journal. 2025, 16, 558. https://doi.org/10.3390/wevj16100558 SJR: 0,58, Q-2 (Scopus).
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3. Development and Evaluation of Passive Balancing System Model for Lithium-Ion Battery Pack in Electric Vehicles Using Numerical Simulation // Vu Hải Quan, Karpukhin Kirill Evgenievich, Nguyen Trong Duc, Karpukhin Filipp Kirillovich. *Automotive Experiences*, Vol. 8 No. 2 (2025) pp. 390-400. <https://doi.org/10.31603/ae.13320> SJR: 0,41, Q-2 (Scopus).
4. The choice of characteristics of the components of the power plant of a Class C hybrid vehicle for operation in the Russian Federation// K.E. Karpukhin, A.F. Kolbasov, P. Iturralde, S.E. Zemtsev, F.K. Karpukhin. *Energies* 2025, 18, 5826. SJR: 0,713, Q-1 (Scopus).
5. Experimental evaluation of the efficiency of functional material containing microencapsulated perfluoro (2-Methyl-3-Pentanone) to ensure fire safety of lithium-ion batteries of electric vehicle// Yakunov D., Endachev D., Karpukhin K., Sertsova A., Krasilnikov S. *Lecture Notes in Networks and Systems*, 2026, VOL. 1804, p.p. 227-236. doi.org/10.1007/978-3-032-15839-0_25. SJR: 0,15. Q-4 (Scopus).

Results of intellectual activity

The most significant over the past 5 years is as follows:

1. Karpukhin, K.E., Shorin, A.A. Method for Predictive Control of the Cooling System of a Power Electric Drive of a Power Plant. Invention Patent No. 2740626, issued on January 18, 2021.
2. Kostyukov, A.V., Nadareishvili, G.G., Karpukhin, K.E., Tuktakiev, G.S., Azarov, K.O. Method for Preventing Thermal Deformations of the Rotor Frame of a High-Temperature Rotary Disc Regenerative Heater of the Working Fluid of a Power Plant. Invention Patent No. 2744588, issued on March 11, 2021.
3. Kostyukov, A.V., Nadareishvili, G.G., Tuktakiev, G.S., Karpukhin, K.E., Azarov, K.O., Kolesnikov, A.V. Cooling Device for the Frame of a Rotary Disc Heat Exchanger of a Power Plant. Utility Model Patent No. 202881, issued on March 11, 2021.
4. Endachev, D.V., Karpukhin, K.E., Kulikov, I.A., Shorin, A.A. Automatic Device for Monitoring the Insulation Resistance of a DC Power Supply Network. Invention Patent No. 2747043, issued on April 23, 2021.
5. Endachev, D.V., Karpukhin, K.E., Kulikov, I.A., Shorin, A.A. Method for Automatic Monitoring of the Insulation Resistance of a DC Network. Invention Patent No. 2749577, issued on June 15, 2021.
6. Kozlov, V.N., Kolbasov, A.F., Karpukhin, K.E. Method for Forming Modules of Photovoltaic Converter Batteries Installed on Flat Surfaces. Invention Patent No. 2777472, issued on August 4, 2022.