

MSCA PF HOSTING OFFER 2026 – BME FASTER RG

Name of the host institution	<u>Budapest University of Technology and Economics</u>
Faculty	<u>Faculty of Electrical Engineering and Informatics</u>
Name of the supervisor	<u>Dr. Bálint Hartmann</u>
Organisational Unit / Research Group	<u>Department of Electric Power Engineering</u> <u>BME FASTER Research Group</u>
Research Team	<p>The head of the Research Group is Bálint Hartmann, senior research fellow, deputy-head of department. He received his M.Sc. degree, Ph.D. degree and habilitation from Budapest University of Economics (BME) in 2008, 2013 and 2022, respectively. His early research focused on the role of energy storage in the power system and the integration of variable renewable energy sources. Most recently, his interest was in the topological properties, the evolutionary processes of transmission and distribution networks, and how the previous affect the vulnerability of the system. He is the author of 111 journal and 92 conference papers, 11 books or book chapters and has received 1023 independent citations for his publications. His cumulative impact factor is 189.257.</p> <p>István Vokony (M.Sc. 2007, Ph.D. 2012 @ BME), associate professor, head of Department. His primary area of expertise lies in power system stability, renewable energy integration, distributed energy generation, smart grids and energy policy. He also explores the corporate models within the sustainable electricity industry.</p> <p>Péter Sörös (M.Sc. 2013 @ BME), assistant lecturer. His profession includes complex, cross-business business analyses and he translates new solutions into practical projects with his team. His research curriculum includes energy market design, market operation algorithms and the allocation of transmission capacity, demonstrated in academic papers and R+D+I projects.</p>
Project experiences (EU / international)	<p>Selected projects of the group</p> <ul style="list-style-type: none"> - RECORD - Reimagining the EleCtric pOwer qRiD, 2025-2028, National Research Excellence Programme ADVANCED_24, Hungarian Academy of Sciences, € 300k - HYPNET: 2024-2027, HORIZON-CL5-2024-D3-01 (Grant No: 101172757), € 238k - TwinEU: 2023-2026, H2020-EU.3.3.4., € 1,653k - Budapest CARES: 2023-2025, H2020 Net Zero Cities, € 204k - OneNet: 2020-2023, H2020-EU.3.3.4. (Grant No: 957739), € 1,017k, Demonstration leader - FARCOSS: 2019-2023, H2020-EU.3.3.4. (Grant No: 864274), € 683k, Work Package leader (WP8)

	<ul style="list-style-type: none"> - Lendület Grant: 2019-2022, Hungarian Academy of Sciences, € 400k, Principal Investigator - INTERRFACE: 2019-2022, H2020-EU.3.3.4. (Grant No: 824330), € 995k, Task leader - FLEXITRANSTORE: 2017-2022, H2020-EU.3.3.4. (Grant No: 774407), € 674k, Work Package leader (WP9)
<p>Research Interests</p>	<p><i>The BME FASTER Research group deals with the modeling of electricity networks, increasing their stability and reliability, supporting long-term planning and operational management with applied scientific methods.</i></p> <ul style="list-style-type: none"> • <i>We shape the future of power grids through science-based insights and practical solutions – for stable, reliable, and sustainable operation.</i> • <i>By developing innovative methods, we contribute to the renewal of power grids, offering both theoretical and practical support to professionals and the industry.</i> • <i>We are one of Hungary’s leading research teams in the field of electric power systems – delivering scientific excellence, practical solutions, and business reliability in a strategically vital domain that affects everyone.</i> <p><i>The RECORD (Reimagining the EleCtric pOwer gRiD) project aims to develop a unified theoretical framework to address these challenges by integrating infrastructure planning, power system operations and control, and electricity markets. This framework will ensure interoperability across different timeframes and spatial resolutions, enhancing our understanding of future power system behaviour and vulnerabilities. The three will explore timely questions of failure cascades, grid flexibility, AI-based decision-making, new control parameters, NP-hard problems in electricity markets, scalable optimization models and more. This research shifts the focus from short-term, simplistic solutions to a long-term, holistic approach addressing the multifaceted challenges of modern power grids. With over 40 research and consultancy studies conducted in the last five years, the team of the RECORD project builds on extensive experience to offer innovative solutions and set new benchmarks in energy research, ultimately contributing to a more resilient, efficient, and sustainable power system.</i></p>
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