EVG Institute Research Architecture

MISKOLCI EGYETEM
UNIVERSITY OF MISKOLC

Open Thesis & Research Topics for Academic Year 2025–26

EVG ENERGETIKAI ÉS VEGYIPARI GÉPÉSZETI INTÉZET

EVG Institute proudly offers a wide range of exciting and cutting-edge research topics for analytically minded students.

Explore projects aligned with your technical expertise.

Presented by-
Dr. Baibhaw Kumar

GÉPÉSZMÉRNÖKI ÉS INFORMATIKAI KAR

REVIEW TOPICS. FIND YOUR PILLAR. CONTACT YOUR SUPERVISOR.

The Academic Progression Pathway

NOTE- *Recommended NOT Obligatory

TDK

Introductory research, fundamental testing, and targeted literature analysis.

BSc Thesis

Application of core engineering principles, component-level simulation, and guided lab work.

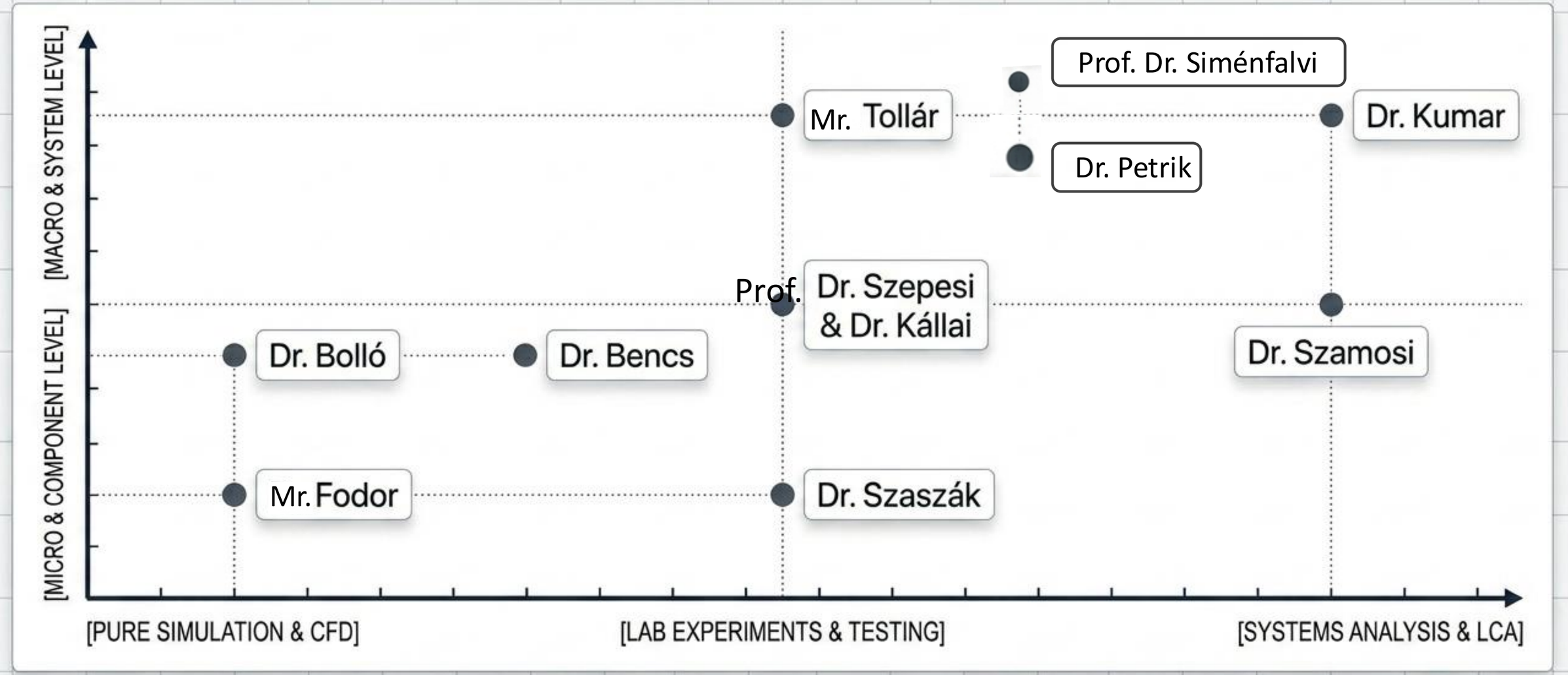
MSc Thesis

Complex system modeling, advanced CFD/UDF integration, and full experimental validation.

PhD Level

Independent, novel research driving new methodologies, macro-scale lifecycle assessments, and publications.

Diagnostic Research Matrix



Pillar 1: Fluid & Thermal Dynamics

Béla Fodor (CFD and Heat Transfer)

- ✓ CFD analysis of tube wall heat transfer (heating and boiling stages)
- ✓ Automation using UDF and post-processing integration

[CFD] [UDF] [SIMULATION]

Dr. Péter Bencs (CFD and Heat Transfer)

- ✓ Temperature distribution in domestic refrigerators and freezers
- ✓ Wind load testing of building models

[CFD] [EXPERIMENTAL]

Dr. Betti Bolló (CFD Modeling in Gas & Dust Separation)

- ✓ Two-phase flow simulation in gas wells
- ✓ Cyclone separator efficiency under varying inlet conditions

[CFD] [SIMULATION]

Dr. Norbert Szaszák (Fluid and Heat Transfer Systems)

- ✓ Laboratory testing and characterization of coil pumps
- ✓ Thermal analysis of heat pipes under varying operating conditions

[EXPERIMENTAL] [LAB]

Pillar 2: Process & Mechanical Systems

Prof. Dr. Gábor Szepesi & Dr. Viktória Kállai (Chemical Process Simulation & Engineering)

Simulation of chemical process technologies

Rectification column modeling

[CFD] [EXPERIMENTAL] [SIMULATION]

Pipe-in-pipe heat exchanger optimization

Mixing element design: Experimental and CFD comparison

Sándor Tollár (Mechanical Systems and Engine Development)

Diesel engine modernization by turbocharger evaluation

Aerodynamic assessment of iced wind turbine blades (CFD & wind tunnel)

[CFD] [WIND TUNNEL] [APPLIED MECHANICS]

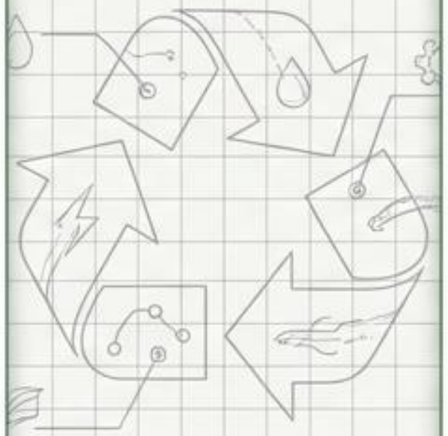
Pillar 3: Sustainable Energy & Lifecycle

Dr. Zoltán Szamosi (Biomass Energy Engineering)

Thermochemical treatment of biomass for enhanced gas yield

openLca

[EXPERIMENTAL] [BIOMASS] [LAB]



Dr. Baibhaw Kumar (Solar Energy & LCA Analysis)

Life Cycle Assessment (LCA) of Solar energy or Biomass systems

Solar thermal / Biomass torrefaction energy system optimization

[LCA] [SYSTEMS ANALYSIS] [OPTIMIZATION]

Pillar 4: Explosion Design and Safety Engineering

Prof. Dr. Zoltán Siménfalvi
and, Dr. Máté Petrik

- **Unit operation**
- **Explosion design**
- **Pressure vessel simulations**
- **Design safety engineering**

The Engineering Lifecycle

Simulating fluid forces, thermal boundaries, and gas flow at the micro-level.

Translating foundational dynamics into physical mixing elements, heat exchangers, and modern engine components.

Evaluating the long-term, macro-environmental footprint of those integrated physical systems.

From single-phase fluid simulations to macro-scale lifecycle assessments, EVG Institute covers the full spectrum of modern energy and mechanical engineering.

Secure Your 2025–26 Project

1

Step 1: Target

Identify your academic level (TDK, BSc, MSc, PhD) and your preferred Research Pillar.

2

Step 2: Filter

Use the Methodology Matrix to find topics aligning with your specific skills (CFD, Lab Testing, LCA).

3

Step 3: Select

Note the specific project title and the respective supervising faculty member.

4

Step 4: Execute

Contact the supervisor directly through e-mail to state your interest and arrange a meeting.

WE KINDLY ASK ALL INTERESTED STUDENTS TO CONTACT THE RESPECTIVE SUPERVISOR DIRECTLY THROUGH E-MAIL.

ENERGETIKAI ÉS VEGYIPARI GÉPÉSZETI INTÉZET

SCAN ME FOR THE FACULTY CONTACT EMAILS