

Summer semester 2024

# M.Sc.PE Seminar on Renewable and Sustainable Energy Systems

Prof. Dr. Thomas Hamacher

## Registration

The number of participants for the seminar is limited and only M.Sc.PE students can take part. **If you are interested in participating in the seminar, please send an e-mail to the stated supervisor of the topic that interests you.** The e-mail should contain the following details: name, surname, matriculation number and e-mail. **You will get a confirmation or rejection email from the supervisor within 2-3 days. This will depend on the number of students interested in the topic.** In case of a positive answer, you will then be automatically registered to the corresponding Moodle course.

## Objectives

After completion of the module, the students are expected to process independently a topic in the field of renewable and sustainable energy systems in a scientific way, to present the results in front of a professional audience and to discuss them with the audience afterwards.

## Components of the module exam

- Regular meetings with the assigned supervisor (research assistant) on the progress of the work and the procedure (20%)
- Presentation of the results (15 minutes) followed by discussion (5 minutes) (40%); **Timeslots on July 09, 2024 (2 pm to 6 pm) or July 12, 2024 (10 am to 6 pm).**
- Written research paper in IEEE style (5 pages) (40%); obligatory submission by **July 01, 2024.**

## Start

Kick-off-event (for students with topic confirmation by supervisor):

**Thursday April 18, 2024, 4 pm, Web-meeting**

## Coordination and general topics

Thushara Addanki

E-Mail: [thushara.addanki@tum.de](mailto:thushara.addanki@tum.de)

Only to be contacted for organizational questions. Please apply for the seminar directly at the supervisor of the topic(s) that interest(s) you!

## List of topics

Topic	Supervisor
Machine Learning in District Heating Modelling and Control: A Structured Literature Review	Thomas Licklederer <a href="mailto:thomas.licklederer@tum.de">thomas.licklederer@tum.de</a>
<del>A Detailed Literature Review and Comparison Study of Existing Fast Frequency Response (FFR) Techniques</del>	<del>Prashant Pant <a href="mailto:prashant.pant@tum.de">prashant.pant@tum.de</a></del>
<del>Power Systems Flexibility from District Heating Networks: Modeling Choices Classification</del>	<del>Saltanat Kuntuarova <a href="mailto:saltanat.kuntuarova@tum.de">saltanat.kuntuarova@tum.de</a></del>
<del>Power Systems Flexibility from District Heating Networks: Solution Strategies Classification</del>	<del>Saltanat Kuntuarova <a href="mailto:saltanat.kuntuarova@tum.de">saltanat.kuntuarova@tum.de</a></del>
<del>Correlations between energy demand and socio-economic parameters: a detailed literature review</del>	<del>Anđelka Kerekeš <a href="mailto:andelka.kerekos@tum.de">andelka.kerekos@tum.de</a></del>
<del>Models for forecasting industrial production (steel, glass, etc.) as a basis for energy demand prediction</del>	<del>Anđelka Kerekeš <a href="mailto:andelka.kerekos@tum.de">andelka.kerekos@tum.de</a></del>
<del>Overview of Building Cooling Technologies: Comprehensive literature review on existing cooling systems and their market penetration in Europe.</del>	<del>Leonhard Odersky <a href="mailto:leonhard.odersky@tum.de">leonhard.odersky@tum.de</a></del>
<del>Cooling Demand of Public, Commercial, and Industrial Buildings: Detailed literature review on current statistics and methodologies.</del>	<del>Leonhard Odersky <a href="mailto:leonhard.odersky@tum.de">leonhard.odersky@tum.de</a></del>
<del>Assessment of the European Building Stock: Detailed literature review on building characteristics and spatial distribution of archetype buildings.</del>	<del>Leonhard Odersky <a href="mailto:leonhard.odersky@tum.de">leonhard.odersky@tum.de</a></del>
A review of deep learning methods for reconstructing remotely sensed land surface temperature under cloudy conditions	Marwa Alfouly <a href="mailto:marwa.alfouly@tum.de">marwa.alfouly@tum.de</a>
Literature review on Urban Form and Urban Heat Island and their relation	Marwa Alfouly <a href="mailto:marwa.alfouly@tum.de">marwa.alfouly@tum.de</a>

Energy policies in Europe. Finding our way through EU-RED I and II, EU-ReFuel, EU-H2.	Julia Gawlick <a href="mailto:julia.gawlick@tum.de">julia.gawlick@tum.de</a>
Renewable potentials (Wind and PV): Comprehensive literature review on renewable potentials (technical potential) in Germany and Europe	Laura Honig <a href="mailto:Laura.honig@tum.de">Laura.honig@tum.de</a>
North American power transmission grid: Detailed literature review on benefits and challenges to combine and boost the existing networks	Thushara Addanki <a href="mailto:thushara.addanki@tum.de">thushara.addanki@tum.de</a>
Grid frequency and trends analysis for the five European synchronous zones.	Prashant Pant <a href="mailto:prashant.pant@tum.de">prashant.pant@tum.de</a>
Productive uses of energy in remote mountain Himalayan regions. Structured literature review	Michael Erhart <a href="mailto:m.erhart@tum.de">m.erhart@tum.de</a>
Maximizing Value and Sustainability: Literature Review on Second Life and Circular Economy Approaches for Electrolyzer Components	Andrea Cadavid <a href="mailto:andrea.cadavid@tum.de">andrea.cadavid@tum.de</a>
Prospective Life Cycle Assessment: A Comprehensive Literature Review of Applications, Strengths, and Methodological Challenges	Andrea Cadavid <a href="mailto:andrea.cadavid@tum.de">andrea.cadavid@tum.de</a>
Optimized integration of biomass potential into the energy systems	Nashmin Elyasi <a href="mailto:Nashmin.elyasi@tum.de">Nashmin.elyasi@tum.de</a>