

# Energy management systems for residential micro-grids with integrated energy storage

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## Summary

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*This position is part of SMARTGYsum (SMART Green energyY Systems and bUsiness Models) project between 13 universities and 14 companies. The position is part of WP4 "End user of Energy and prosumers", supervised by Prof. D. Vinnikov (TalTech) and co-supervised by Prof. G. De Carne (KIT), with a secondment in OPAL-RT Germany GmbH.*

Research field:	Electrical Power Engineering and Mechatronics
Supervisor:	Dmitri Vinnikov
Availability:	This position is available.
Offered by:	School of Engineering Department of Electrical Power Engineering and Mechatronics
Application deadline:	Applications are accepted between November 15, 2021 00:00 and December 15, 2021 23:59 (Europe/Zurich)

## Description

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SMARTGYsum consortium aims to implement a multidisciplinary and innovative research and training program, bringing to enable a new generation of Early Stage Researchers (ESR) to foster a New Green Energy Economy in Europe. The student will acquire expertise in interdisciplinary fields, gaining through this training program a set of skills that are highly appreciated by semiconductor corporations, providing him/her a valuable expertise background for a future career in the green energy industry. The ESR will take part in the whole researching process, starting with the proposal of new ideas, going from the design to the experimental validation of prototypes in the laboratory and industry facilities, and finishing with the developing of the business models.

The position is in the frame of a H2020 Marie Skłodowska-Curie Innovative Training Networks (ITN) action. ESR is expected to be recruited from February 2022. The grant covers up to 3 years (contract will be for 1 year with renewing possibility) of full time research with taxable salary income.

Supervisor: Tallinn University of Technology Research Professor Dr Dmitri Vinnikov

Co-supervisor: Helmholtz young investigator group leader Dr Giovanni De Carne

### **Objective:**

To optimize the behaviour of buildings considered as Energy Management Systems through the integration of smart sensors and monitoring systems.

### **Expected Results:**

Validated system architecture for the integration of Energy Storage Systems in buildings, embedding informatics in the energy infrastructure.

### **Planned secondment(s):**

- 2 of 2 months at KIT (supervised by G. De Carne) in 1st and 2nd years;
- 1 of 4 months at OPAL (supervised by Mathias Noe) in 3rd year.

### **Deliverables:**

- Prototype of residential Energy Management System (experimentally validated at TRL5 or higher)
- Innovative Business Models in Smart Buildings and Prosumer Communities
- Partial and final scientific reports published in project website
- 3 Journal and 4 Conference papers (as a minimum requirement for defense)

### **Applicants should fulfil the following requirements:**

First, applicants should complete form <https://www.smartgysum.eu/Home/Apply> by December 3, 2021. Uploaded document must contain CV, letter of interest and contact of two references. Add example of your academic writing (preferably first-author research paper). All documentation should be in English and merged in single PDF document.

**Eligibility:**

- master's degree in the past 4 years;
- have not resided in Estonia for more than 12 months in the past 3 years;
- be eligible to apply to PhD program (<https://taltech.ee/en/phd-admission>) by December 15, 2021;
- B2 English level certificate if English is not native language;
- International publications will be valued;
- Only applicants that passed prescreening by SMARTGYsum consortium will be considered.



To get more information or to apply online, visit <https://taltech.glowbase.com/positions/450> or scan the the code on the left with your smartphone.