

The workshop will take place on the second day of the TRNSYS experience seminar held in Kaiserslautern from March 9-10. For those who are interested in the workshop only and who are not already registered for the TRNSYS experience seminar, please send an email to: daniel.schmidt@bauing.uni-kl.de

Participation in the workshop is free of charge. We are looking forward to welcoming you at TU Kaiserslautern.

Location:

Building 57 | Rotunde | Erwin-Schrödinger Strasse | 67663 Kaiserslautern

<https://www.bauing.uni-kl.de/interreg/en/index.php>



Tuesday, 10 March 2020

11:00 Welcome

11:15 **Presentations:** *Romain Baiwir, Université de Liège:*

Development and test of a Model Predictive Controller for flexible buildings using TRNSYS

Daniel Schmidt, TU Kaiserslautern:

Simulation-based results of predictive controlled Heat-Pumps in combination with different storage systems

Steffen Bechtel, Université du Luxembourg:

Model-Predictive-Control for Heat-Pumps in a Multifamily House using Matlab-TRNSYS coupling

Discussion and Conclusion

13:00 **End of Workshop**

(optional: Lunch at DFKI and participation in the workshop
“Light and Solar Management with innovative Systems and Controls”)



Workshop:

Power to Heat for the Greater Region`s Renewables Integration and Development (PtH4GR²ID)

Organized by TU Kaiserslautern



In view of the climate change and the resulting aim of minimising CO₂-emissions, the Greater Region (GR) has set itself the target of 15.2% renewable energies (RE) of total energy consumption by 2023. In addition to the expansion of renewable energy sources, this will also result in a change of the heat generation. To achieve this, heating systems based on fossil fuels must be replaced by more environmentally friendly technologies to provide heating energy, e.g. heat pumps that can use renewable electricity. The use of electrically driven heat pumps in combination with storage tanks is a possibility of adapting electricity consumption to fluctuating generation from RE.

The project is based on the development of a sustainable control concept for heat pumps that is dependent on electricity prices and RE feed-in. After simulation based calculations have been carried out, the findings are evaluated on the basis of pilot installations in the Greater Region. The aim is to use innovative control concepts for heat pumps to identify optimal operation of the heat pump storage technology. This technology is intended to displace classic heating systems (e.g. gas and oil heating systems) from the market and thus increase the environmental friendliness of the Greater Region by reducing CO₂-emissions. Furthermore, this technology functions as a Demand Side Integration (DSI) instrument. By the temporal adaptation of the current consumption to the production, a reduction of the expansion need of the distribution grids is possible. During the workshop, first project results will be presented and especially the use of TRNSYS within the project will be demonstrated.

