

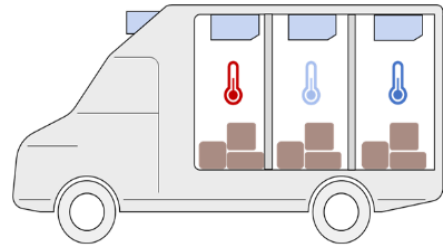
# Announcement Diploma Thesis

## Control of a multi-compartment refrigerated vehicle

### Content:

Refrigerated vehicles with multiple temperature zones are essential for transporting various perishable goods simultaneously, each requiring specific temperature conditions. By enabling the simultaneous transport of products with different cooling requirements, these vehicles can significantly enhance supply chain efficiency.

However, they are not yet as widely adopted in the industry as single-compartment refrigerated vehicles. One key challenge is the complexity of controlling such systems, as their multivariable nature involves coupled nonlinear dynamics. Therefore, this work aims to develop a decoupling controller that enables independent temperature regulation in each compartment, minimizing temperature deviations while also optimizing energy consumption. A model predictive controller (MPC) is intended for this purpose, with model reduction and linearization techniques applied to the nonlinear model to reduce computational complexity.



### Tasks:

- Literature research
- Extending the already developed model and applying linearization techniques for control
- Development of a model predictive control scheme with binary decision variables
- Validation of the control scheme in Matlab/Simulink simulations

### Requirements:

- Experience with Matlab/Simulink
- Solid background in control theory
- Knowledge of predictive control techniques and optimization is advantageous

The work can be written in German or English.

If you are interested or have questions, please do not hesitate to contact us.

### Contact:

*Maximilian Lösch*

Phone + 43 1 58801 325543

E-Mail [maximilian.loesch@tuwien.ac.at](mailto:maximilian.loesch@tuwien.ac.at)

**Institute of Mechanics and Mechatronics**

Division of Control and Process Automation E325-04

TU Wien, Getreidemarkt 9 BA / 6th floor, 1060 Vienna