25-06-2021

Thermal Control System internship

Company Information
Veridis has the ambitious goal to create a better future for humanity and the planet, our mission is to deliver key recycling technologies to advance the transition to a circular economy. We are trying to create a place of work where scientists and engineers can develop technical opportunities for the benefit of society and climate. To achieve these objectives we are offering an internship with flexible working hours, an informal atmosphere, and a lot of independence and responsibility.

Veridis is a deep-tech startup developing a novel instrument to improve quality control in plastic recycling: MAssive DSC ANalysis (MADSCAN). This MADSCAN technology is based on Differential Scanning Calorimetry (DSC), a thermal analysis technique. DSC can be used to analyse plastics/polymers to give a material characterisation (material type, degradation, etc.). With our MADSCAN technology we scale up the sample size of a DSC by a factor 100.000. This allows us to give a representative analysis of large batches of plastics, thereby increasing the relevance to the recycling industry. With this method we are able to analyse dark plastics, detect material degradation, and most importantly we directly increase the commercial value of recycled plastics.

Assignment Description
Within this internship you will be working on the thermal control system that will be integrated in the proof of concept and demonstrator of our product. This includes improving our control system model, writing the software and assembling the hardware. The goal is to transition from a PID-based control system to a model based control system. For example, feed forward control or model predictive control, but determining this is also part of the assignment. The thermal control system is of critical importance to the MADSCAN technology to get relevant results. The control system software can be directly implemented in practice in the proof of concept to optimize this for practical application. Next to that, the output of the control system will be analysed and used for our data analysis to determine the plastic sample properties.

This internship assignment will allow you to have an impact on the improvement of plastic recycling and therefore on the circular transition as a whole. Because of the multidisciplinary start-up environment you will learn a lot from different disciplines. And most importantly, you will develop your technical skills a lot by working independently on a challenging project with the rest of the team to give unique insights to help you. Finally, if the internship works out well we are always interested to consider extending your stay with us or even taking you on board as an employee.

Intern Profile
You are a creative and curious person who is not afraid of a challenge and working with the inherent uncertainty that novel technological development brings. You like taking initiative and contributing new ideas. You have high standards with the ability to dive deep, critically evaluate the work of yourself and others, and relate the research you are performing to the relevant technological requirements. You are able to analyse data at an academic level and are capable of communicating the results, problems and next steps clearly.

Requirements:
• C/C++ programming experience
• Experience with model based control systems

Preferences (not requirements):
• Basic knowledge of control systems electronics
• Experience with thermal systems