

SMART IOT ASSET MONITORING SOLUTION FOR SNOW PLOUGHS

The Aebi Schmidt Group is a global leader of smart product systems and services for the treatment of mission-critical infrastructures, including machines and digital solutions for de-icing and snow removal. Aebi Schmidt Group is looking at the incorporation of IoT solutions into their equipment to help the management of company assets, as well as providing real time information of all the company operations. Currently, they are looking into the development of a low-powered IoT-based smart tracker solution that will be incorporated into their snow plough shovel system, to track the absolute position, the different plough positions during operation, as well as sending periodic status reports to an online platform. This assignment is part of the “RAAK MKB *Designing for IoT*” research project, a project from the Ambient Intelligence (ACT) and Industrial Design (LED) research groups. The project aims to develop industrial methodologies and technical solutions to support Small and Medium Enterprises (SME) that would like to incorporate IoT solutions into the company’s set of products/services, where the proposed methodology looks into all project development aspects; from concept design and implementation to business case analysis, for a successful implementation and operation of IoT solutions for SMEs.



PROJECT DESCRIPTION

The main goal of this assignment is to research, develop and test a **cost-effective low-powered IoT-based smart tracker solution** to track the company’s plough systems. The solution will be installed in the plough system (minimal installation, integrated solution), should be stand-alone, battery powered and should withstand harsh environments. The smart IoT tracker will need to be equipped with a set of position and motion sensors, a low-power processing unit and power optimized firmware to report via IoT-based wireless communications the system status. As a part of this assignment, you would also be working on:

- Based on a provided methodology model; implement, evaluate, and validate some of the identified methodology steps during the assignment process.
- Research, analyse and select a set of IoT technologies (sensor, processing, wireless communications, power) that matches the product specifications.
- Development of smart tracker firmware that is optimized for power usage as well as for adapting to operation modes and power resources.
- Integrate the IoT tracker solution into an existing Aebi Schmidt cloud platform.
- Test and validate the proposed system in a laboratory, as well as on a real plough track during operation.

PRACTICAL INFORMATION

- **Student/s profile:** knowledge embedded system development, IoT technologies, low-power and optimized software development and passionate about electronics.
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