AMBIENT INTELLIGENCE

SCANIA CARRIER POWER HARVESTING FOR PREDICTIVE MAINTENANCE

Scania Productions Zwolle (**www.scania.nl**) is a lean manufacturer which produces trucks, assembling on average 200 trucks per day, each configured to customer requirements. This requires strict control over production, whereby coordination between people and machines is crucial. The uptime is currently 97% which means that 3% of the time no production can take place. The goal of Scania is to increase uptime.

Scania and the Ambient Intelligence (AmI) research group have joined forces to achieve this goal. AmI is a research group of Saxion that focuses on making environments smart, mainly in the areas of safety, sports and smart industry.

For this project we will look specifically at the carrier system that transports the trucks through the assembly line. The carrier system on which the chassis of the trucks rest are controlled by a central PLC (programmable logic controller) and it is critical that these carriers keep on working. To understand the reasons for disruptions in carrier operation, the carriers are going to be equipped with a generic sensing platform (GSP) developed by AmI to acquire a lot of detailed data about their behavior during the production runs, to analyze the data and obtain indicators for predictive maintenance. As the carrier has not enough electrical power available to power the GSP platform, a smart method of energy harvesting in the carrier must be found and implemented.

Task Description

The main goal of this assignment is to research and develop an uninterrupted power supply solution, to power the AmI GSP system, that will intelligently harvest energy from the RoFa power pickup system in situations where the carrier is not using all is power, therefore dynamically adapting to the available power. As a part of this assignment, you would be building on:

- Analyse the RoFa power system and operational modes, to identify possibilities for power harvesting during normal operation.
- Design, build and test an intelligent uninterruptable power solution to power the GSP system.
- Analyse and reconfigure the AmI GSP system, to reduce it's power consumption.
- Perform system tests at the RoFa carrier during normal operation, to validate the uninterrupted power to the Raspberry Pi at Scania Zwolle production.

In this project you will be working for and at Scania and coached by Saxion the AmI research group.

PRACTICAL INFORMATION

- **Student profile:** Electrical Engineering student/s with knowledge of power systems, embedded systems, programming and passionate about electronics.
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