SCANIA ROFA CARRIER UN-INTERUPTABLE POWER HARVESTING SYSTEM

Scania Productions Zwolle is a leader in lean manufacturing with a production capacity around 200 trucks per day. To achieve such a result, the production line uptime must be very close to 100%, with a current figure around 97%. To further improve the facilities capacity and ensure flawless production times, Scania's intention is to further improve his uptime by introducing predictive maintenance analysis on the major parts of the production line. Previous analysis by Scania, together with the research group Ambient Intelligence of Saxion and Windesheim, revealed that a major thread of this uptime lies in the reliability of the RoFa carrier used to move the truck chassis throughout the factory during the assembly process. To identify system status, errors and

malfunction causes of this carrier, it is eminent that detailed data on the performance of the carrier must be collected and transmitted to a cloud platform for further predictive maintenance analysis. As a part of this research project, a Generic Sensing Platform (GSP) has been previously developed, which it is responsible of collecting sensor data at the carrier and transmit to an external cloud platform, based on a Raspberry Pi embedded computer attached with multiple sensor units. The RoFa carrier is powered by an induction power system, which it's built on the carrier guidance floor tracks and converted via a contactless induction power pickup unit at the carrier. Currently the power pickup system is running on its upper power delivery limits, not being able to provide power to all systems running at the same time and triggering errors on the RoFa control unit.

PROJECT DESCRIPTION

The main goal of this assignment is to research and developed an uninterrupted power supply solution, to power the Saxion 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.

Also, 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 GSP based on Raspberry Pi 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.

PRACTICAL INFORMATION

- **Profile:** Electrical Engineering student/s with knowledge of power systems, embedded systems, programming and passionate about electronics.
- **Assignment**: The assignment will be carried out at Scania Production Zwolle with the technical coaching from the Ambient Intelligence research group and Scania members.
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