

SCANIA CARRIER MOTOR MONITORING 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 (Aml) research group have joined forces to achieve this goal. Aml 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 Aml to acquire a lot of detailed data about their behavior during the production runs, in order to analyze the data and obtain indicators for predictive maintenance.

Task Description

The main goal of this assignment is to research the carrier **3-phase induction motor drive system**, analyse the required parameters that should be measured for **predictive maintenance analysis**, design proper acquisition techniques for motor parameters monitoring (i.e. motor currents, temperatures, voltages, start currents) and develop the firmware/driver to interface this measurement system into the Aml GSP framework for further data collection into Scania cloud platform. Also, as a part of this assignment you would be building on:



- State of the art research on predictive maintenance indicators for 3-phase induction motors, draw requirements for sensing and algorithms.
- Development and design this 3-phase motor monitoring system, as an independent monitoring system (non-invasive), that will be incorporated as part of a sensor module of the Aml GSP platform.
- Selection of a robust housing that can withstand the industrial environment, *i.e.* liquids, shocks.
- Perform system tests and validations at the carrier during normal operation.

In this project you will be working for and at Scania and coached by Saxion the Aml 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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