

Graduation assignment

Period +/- 1-25 to 7-25

Location: on site Vianen (UT)

Battery management test set-up for functional safety

About Gyrari

Gyrari is a supplier of battery management systems (BMS) and a integration partner for their customers for systems manufactured by Sensata. They provide these systems for wide range of industries such as , automotive, utility, ess, machinery etc.

Besides BMS systems Gyrari provides engineering support prototyping, small series and service support to their customers.

Motivation.

Due to increasing interest and shift to electrifications the regulations around battery systems is increasing. One of the main the new is functional safety. The newest BMS system from Sensata offered by Gyrari complies to these regulations.

To support and demonstrate this product Gyrari wants to build a test set up system.

Battery management system

A battery management system is a product that guarantees the safety of Lithium batteries and provides status data of the health of the battery.

The systems used are scalable systems which can be applied to a wide range of applications often designed and build by the OEM themselves.

The software is configured specifically for every new application.



Assignment

The assignment is to design, build, program and validate a Battery management test set up.

Hardware:

The test set up will be build out of available components and systems. The supporting hardware such as support plates and casings have a refence CAD design but need to be adapted to the newly to build test set up.

The BOM has to be established and budgeted.

Missing and too be made components ordered by various suppliers.

The wiring is partially based on exiting wiring looms and non-exiting yet which needs to be built from scratch.

Design

Both the mechanical design and wiring schematics have to be completed, adapted and finalized.

Assembly/build

The set will be built in our workshop equipped with all necessary tools.

Test plan:

The scalability and universal set up allows different configurations of the system. The test plan will describe multiple use cases to be validated on the system.

Configuration:

The configuration of a BMS for functional safety is very extensive and because of the new platform still under development. The configurations have to be written for the different use cases. Including the CAN communication with users.

Interfacing

To receive all required data and control points a dedicated CAN-interface will need to be written so data transmitted via the BMS can be displayed on a computer.

Validation.

Once all parameters have been configured and systems assembled the use cases can be validated in the test environment.

