

# **Thesis proposals VDS motor controller**

## **SRM algorithm in Simulink**

Two or three persons who will develop a motor control algorithm for a SRM in Simulink and test it on a hardware platform.

## **Architecture/framework**

We are looking for one person who will be responsible for the complete algorithm on digital hardware. More precisely, he/she will set up a framework in which all the different parts will be combined: controller algorithm, peripherals, protection, regenerative braking, monitoring, ...

## **PMSM algorithm optimization and implementation**

Someone who will optimize the current PMSM algorithm in general and for the type of motor which is going to be used. Later on, this will have to be implemented in hardware, which will then be integrated in the complete framework.

## **Protection, security and regenerative braking control**

Two persons who will closely work together on everything concerning protection and security of the motor controller. This also includes regenerative braking, since very large currents are produced which have to be limited and safely removed/dissipated.

Some more things that for example have to be taken in account are detecting failures and safely shut down in case of failure, limiting torque ( $\sim$ current) on startup to prevent breakdown of mechanical parts, ...

## **Communication and monitoring**

One person who will take care of the monitoring of the motor controller, like voltages, currents, temperatures, ... He will also take care of the flow of information with other components in the car, like the ECU (electric control unit), using the CAN-bus or another protocol.

## **Design and production of digital hardware**

This person will be responsible for the component choice and the PCB design of the (low power) digital hardware. He will be working closely together with the I/O team and the responsible for the framework. He will also research the different methods for production of the PCB and choose the most suited one.

More information? Contact me by email → [gert.vos@vehicledesignsummit.be](mailto:gert.vos@vehicledesignsummit.be)