AVL is the world’s largest independent company for development of powertrains (combustion engines, hybrid systems, electric drive) as well as simulation and test systems for passenger cars, trucks and marine engines.

We offer a master thesis:

**FEM BASED ANALYSIS OF MANUFACTURING TOLERANCES & ECCENTRICITY IN ELECTRIC MOTOR**

Nowadays hybrid and fully electric drives have been developing in variety, power and range. One of the main NVH sources is the e-motor. The excitations in the e-motor, caused by the electromagnetic forces, excite the structure. Even though the design of two electric axles are the same, there are differences due to manufacturing tolerances. Therefore two different vehicles can have a very different NVH characteristic. To increase the robustness is required to find out the effect of different parameters and control the deviations in NVH behavior. In this study an induction motor will be evaluated.

**Task:**
- Literature study
- FEM simulation of the Electric motor
- Study different manufacturing errors such as eccentricity on the magnetic field using FEM model
- Analysis on the forces, Torque, efficiency
- Simulation based on the electromagnetic excitation
- Comparison of the cases and design recommendations and guideline

**Study:**
- Electrical or Mechanical engineering, Technical physics

**Requirements:**
- Experience in electric motors is appreciated
- Language: English or German

Remuneration: The successful completion of the thesis is remunerated with a one-time fee of EUR 2,500 before tax.

According to the Austrian Employment of Foreign Nationals Act it is unfortunately not possible to assign graduate work to third-country citizens (Non-EU citizens) and Croatian citizens who study at a university abroad.

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