

## **2. ABSTRACT**

The rapid development of the automotive industry requires an increasing noise reduction in the cabin. Noise may be caused by several moving components of the vehicle, including the electric powered steering system's electric motor, the noise of which affects the driving experience and distracts the driver.

The goal of the acoustic development process of the steering system is to reduce the noise that occurs in the system. An important part of the process is the acoustic modelling of the power steering motor. The goal is that the model's dynamic behaviour is as close to the physical object's dynamic behaviour as possible, so it is important to update and verify the model parameters with measurements. In the industrial practice these parameters are measured by experimental modal analysis.

In this paper I summarize the theoretical foundations of modal analysis and the signal processing methods required for the measurements. Then I present my implementation of an experimental modal analysis software written in MATLAB, the operation of which I demonstrate by measurements on a power steering motor's components provided by thyssenkrupp Components Technology Hungary Ltd.. Finally, I present the effect of the results of the motor measurements in the acoustic development process.