

Quality evaluations of the objective brake noise detection

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Brake noise based on *J.D. Power and Associates* evaluations is one of the most disturbing complaints in the last few years. Hence, all vehicle manufacturers take an extra effort to ensure that there will be a noise free brake at start of production. This results in an urgent demand to reliably detect and evaluate brake noises during the development phase.

As a result, noise evaluation of brake systems in realistic environments will be of growing importance. Systematic testing can be supported substantially by integrated data acquisition systems recording brake noise together with relevant brake and ambient parameters, especially when a reliable objective detection of brake noises is incorporated into the system. Modern acquisition systems are able to detect the most important brake noise types like squeal and moan. The broad introduction of such systems depends on the reliability of the objective detection procedures implemented in the data acquisition systems.

In this paper a procedure is described that allows for the quality assessment of the objective detection of squeal and moan noises. First, a set of reference signals and their characteristics are presented consisting of typical brake noises in different acoustical situations. It is explained how detection quality indices are calculated based on specific detection tasks using those reference signals. Different problems leading to erroneous detection results are presented using practical examples. The resulting quality indices are discussed.