

NVH-Behaviour of Side Shaft-Systems

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1. Initial situation

New vehicle development has to meet increasing demands on the acoustic and vibrational performance (NVH-behaviour). These demands are arising from the fields presented in Fig. 1: environment, legislation and customer.

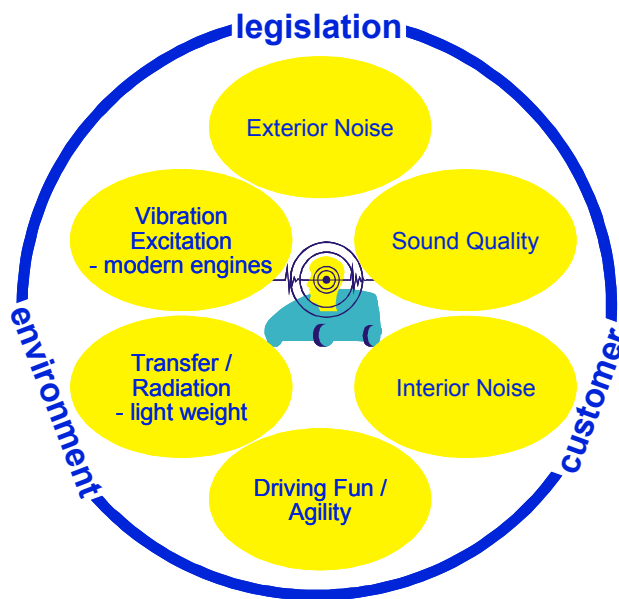


Fig. 1: Vehicle Acoustics in the vicious circle of development criteria

Recently, environmental demands aiming on the reduction of both, fuel consumption and exhaust emissions, force the effort to lightweight design and application of consumption-saving combustion engines. From the viewpoint of vehicle acoustics, there are two counterproductive concomitant factors:

- increased vibrational susceptibility of aggregates and body,
- increased vibration excitation and noise radiation by modern high-torque Diesel engines.

Furthermore, NVH-specialists have to meet the mandatory exterior noise levels required by law, which have been cut continuously in the past.

Watching the launches on the recent motor shows, driving fun has become a serious factor in the customers decision to purchase. One of the most requested issues is a fast engine response on actuation of the throttle. With low-damping driveline-designs, the vehicle NVH-specialist faces another aggravation in addition to the increased vibration excitation by modern engines. Besides, even compact-size vehicles are expected to provide a good NVH comfort. This means, that the interior noise level has to be low with - primarily – no annoying NVH-phenomena.

In his field of activity, the vehicle NVH-engineer has to gain a balanced compromise between partially conflicting aims.

