

Parameter: Noise (*Weightage: 10%*)

Environmental noise, caused by traffic, is considered to be a significant local environmental problem in world. It is estimated that millions of people suffer from noise levels that scientists and health experts consider unacceptable. The vehicle fleet noise has not changed very much over the last three decades; however, if the trend in hybrid vehicle use continues, substantial noise reduction will occur.

It is required to go for Hybrid / Electric Vehicles as environmentally friendly vehicles. For Hybrid Vehicle, when engine driven to have lower noise it is required to address NVH requirement at the design of vehicle, its subsystems, and components – the powertrain, intake and exhaust, interior and tyres. In electric motor mode it is required to have minimum noise level to ensure the pedestrian's safety.

The worldwide legislations over the noise are as follows:

1) Japan: Reducing motor vehicle and road traffic noise constitutes a major environmental issue. Automobiles generate various kinds of noise, including the noise emitted by the engine, the intake system, the drivetrain, the cooling system, and the exhaust system. In addition, tires generate tire/road noise. Automotive noise in Japan is regulated by standards—on accelerated Running noise, steady running noise, and stationary exhaust proximity noise—which have become progressively more stringent, requiring automobile manufacturers to develop the technologies necessary for compliance. All motor vehicles manufactured as of September 2003 comply with the latest noise standards.

2) EU and UNECE: Preliminary: there are several noise sources which contribute to noise comes from the vehicles explaining regulation on vehicle external noise.

References:

European Regulation: 70/157 * 2007/34/EC

UN-ECE regulation as equivalence: ECE R51-02

Summary of the requirements:

According to both stationary and rolling test procedures, the level vehicles are checked.

The purpose of M1 and N1 vehicle categories, the mandatory limit

- **Category M1: 74 dB(A)**

(Derogation for compression ignition engines and direct injection

- **Category N1: 76 dB(A) if the $MTALW \leq 2t$ and 77 dB(A) in**

($MTALW$ = Maximum Technically Admissible Laden Weight)

Next step: New test procedure has been defined in order to better evaluate conditions. So, based on this procedure and in parallel with the current ongoing, in order to allow decision makers to define new limits.

3) India: Indian noise regulation is basically similar to ECE R-51.02 with the exception that the tyres need to have 90% of the residual tread pattern depth detailed in the ECE R-51.02.

4) Russia: In Russian requirements, a regulation GOST R 51616 is followed:

Category M₁ - 78 dB

Category M₁ (wagon or semi bonnet body) - 80 dB

5) VCD: Based on the expert's reviews, 20% overall rating was given to noise. 10 points has been given to 65 dB and 0 points to 75 dB.

6) Environmental Transport Association (UK): offers an annual Car Buyers Guide which ranks vehicle class wise. Its 5 star rating is based on engine capacity, emissions, fuel consumption and noise.

Suggested Approach:

The overall weightage of 10 % should be given to noise. This scope of EFV is limited to passenger cars M₁. Presently noise level as per the ECE is 74dB (A) which is same in India also.

Noise level in dB	Vehicle Rating in %
<60	10
60 – 62	9
63 – 65	8
66 – 68	7
69 – 71	6
72 – 74	5
>74	0

Note: The request from Blind Men Association and Social Groups should be considered while implementing the concept over the noise.
