Transmitted by expert from OICA

Working paper No. **EFV-09-06**
(GRPE Informal Group on EFV,
9th Meeting, 15th February 2011)

OICA comments on EFV-08-06

Parameter: Noise

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Reference Document:
EFV 07-05: Noise

Noise regulations put stringent requirements on road vehicle noise emission. 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 ***(The dominating noise source in traffic is tyre/road noise, which is not dependent from the power source of the vehicle. Thus the positive effect for noise of electrified vehicles is limited.)***.

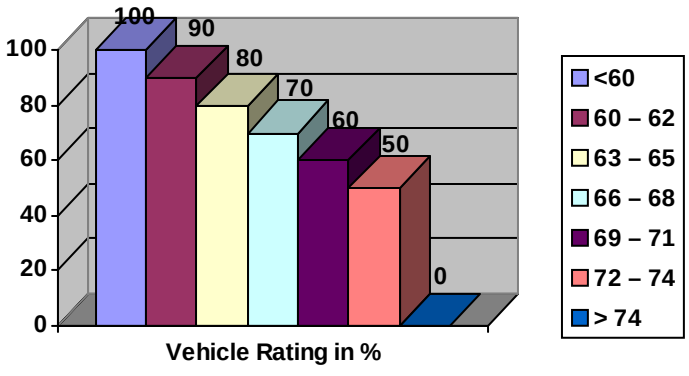
It is required to go for Hybrid / Electric Vehicles as environmentally friendly vehicles. For Hybrid Vehicle, when engine driven to have lower noise it is required to address NVH requirement at the design of vehicle, its subsystems, and components – the power train, intake and exhaust, interior and tyres.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

have minimum noise level to ensure the pedestrian's safety. ***(This is actually under research. It is premature to conclude the need of minimum noise standards. However an EFV should not endanger pedestrians.)***

From the reviews of 7th Informal Group Meeting of Environmentally Friendly Vehicle, held in Geneva in conjunction with 60th GRPE session, the 60 dB value specified for the quietest vehicle was the matter of debate. It is agreeable with the experts that the 64 ~ 65 dBA value can be the best value for the noise rating. But the thing is about achieving more and more stringent and future norms, by reducing the noise levels. On the other hand the 64 ~ 65 dBA value has not been outlined, but has given the weightage of 80 %. So it will be the goal set for the manufacturers to achieve lower and lower noise values. ***(This should be discussed in GRB. To review the actual state-of-the-art noise emission of vehicles, please consider ECE-TRANS-WP29-GRB-52-inf07e - page 19)***

This scope of EFV is limited to passenger cars M1. Presently noise level as per the ECE R 51 is 74dB (A), which is same in India also. ***(Currently the whole test standard is under revision and the new type approval test method B will come to application soon and replace the actual type test method. A classification for EFV should be based on the new test method.)***

Noise level in dB	Vehicle Rating in %
<60	100
60 – 62	90
63 – 65	80
66 – 68	70
69 – 71	60
72 – 74	50
> 74	00



Another point of discussion was over the 'special road surface' i.e. the quiet road surface achieved by a special top layer of ***4 ~ 5 cm***. This road reduces the ***tyre/road***-noise by almost 8 ~ 10 dB. If these types of roads would come in the applicability, these noise reductions from 74 to 64 dB can be easily achieved. ***(The road for type approval is specified by ECE and cannot be modified in a way that for type approval purposes 10 dB lower values are achieved. However in real traffic these kind of surfaces can be applied to roads with high traffic density. Indeed a 74 dB vehicle might behave much more quiet on such a road in real traffic compared to its type approval value. So the degree of environmental friendly behaviour is dependent of the road quality.)*** So by some improvement in the vehicular dynamics, technology, the 60 dB level is not difficult to achieve. ***(That needs clarification.)***

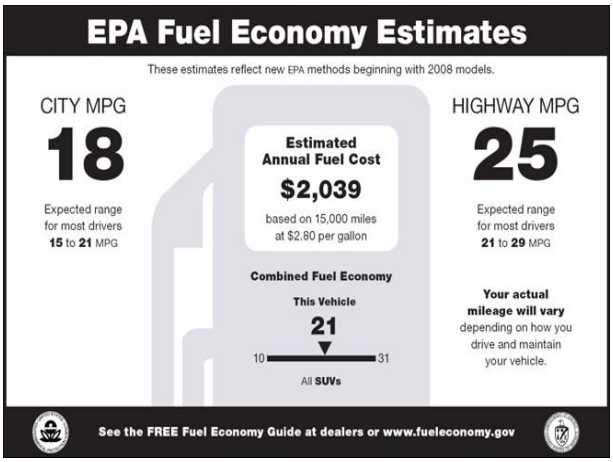
Further to this, Japan has submitted a document in the 52nd session of GRB, "*Guideline on measures against the quietness of hybrid vehicles, etc.*"

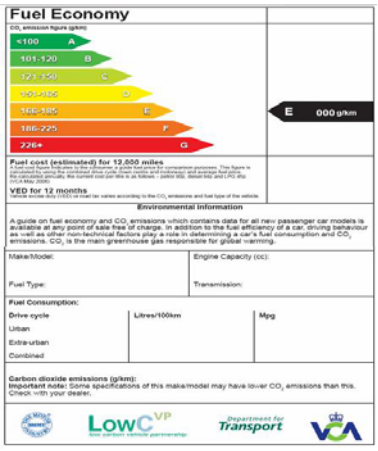
The document emphasizes on the promotion of wider use of hybrid, electric and other similar vehicles. However, concern has been raised by users, groups of visually disabled citizens, and some automotive experts about the risk associated with the structural quietness of Hybrid Vehicles. To overcome this issue, the vehicles should be fitted with "Approaching Vehicle Audible System". It is a sound-generating device designed to inform the pedestrians, etc. about vehicle approach and to be installed in a vehicle. The sound to be generated by the Approaching Vehicle Audible Systems should be easily indicative of vehicle behavior, for example, through the automatic variation of sound volume or tune in synchronization with vehicle speed.

So, from this, it can be concluded that the vehicle will be generating the noise about 60 dB, which is the lowest limit of the criteria suggested for Noise. Anyhow, the noise from the passenger car tends to fall between 60dB to 74 dB. This justifies the design criteria. ***(The Japanese guideline specifies sound at speed below 20 km/h, while the exterior noise type approval test as specified in ECE R51 tests at speeds between 50 km/h to 65 km/h. A conclusion of 60 dB is not understandable. OICA did measure current ICE vehicles for the subject of pedestrian safety. The typical values are between 55 dB and 60 dB measured in 2m distance instead of 7.5m distance as it is the case for type approval.)***

ENVIRONMENTAL LABELLING

Environmental labeling is to provide information of the vehicle and effect in environment for consumers. Therefore, it should be done after accessing all the criteria explained in this chapter. The labeling should be done in such a way that it would indicate the overall performance of the vehicle for CO2 emissions, Regulated Pollutants, Noise and Recyclability. This is to be done only for customer's information. Based on this labeling several exemptions from the taxation, park for free or at reduced prices, incentives should be given to encourage the buyers and manufacturers.





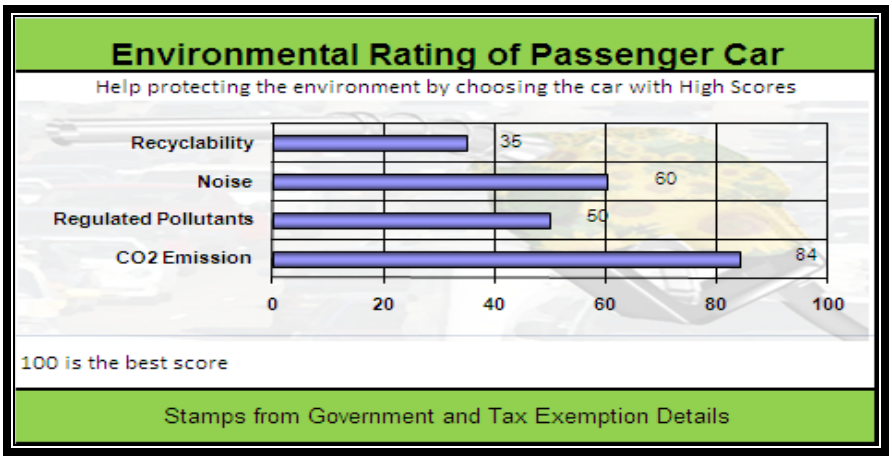
The different fuel economy labels are shown above. The label can be of any form. It may be colour band, star rating, scale rating, percentage rating or showing the direct values. It may contain the information like engine capacity, engine power, engine type, vehicle type etc.

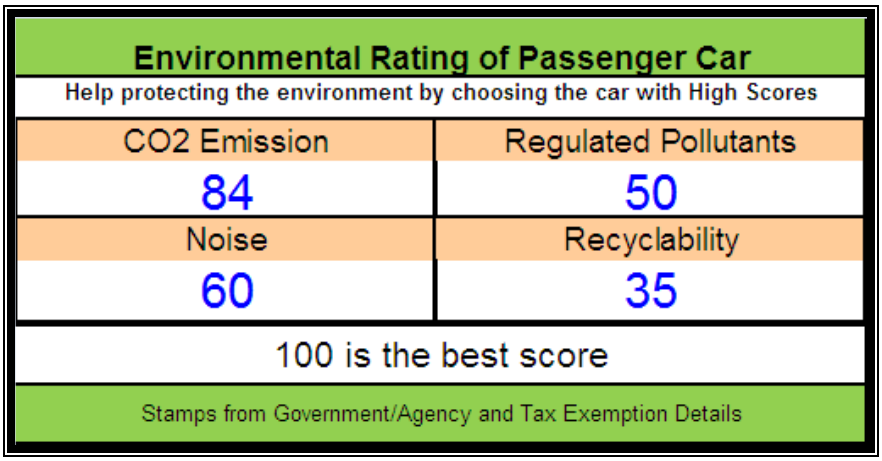
For Example:

A Gasoline operated passenger car after testing for EFV has given the following results:

CO_2 = 140 g/km
Regulated Pollutants Limit = Euro – IV compliant
Noise = 71 dB
Recyclability = 35 %

So the labeling will be based on these parameters
as for CO_2 140 g/km, 84 will be the score.
For regulation of Euro –IV, 50 is the score.
For Noise of 71 dB, 60 is the score and for recycling 35 is the score.





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