

INDIA'S CONCERN/OBSERVATIONS ON WMTC CYCLE DEVELOPMENT

Transmitted by the representative of India

Objectives

Over the past four years, WMTC informal group of GRPE is engaged in developing a Harmonized Global Technical Regulation on the certification procedure for motorcycle exhaust emissions and has progressed to the stage of finalizing the Draft Technical Report for presentation, as an official document at the forty-eighth session of GRPE. India being one of the major two wheeler manufacturers in the world, is interested.

During year 2003, Government of India decided to participate in the WP.29 meetings as an Observer to start with and since then has been attending WP.29 and GTR meetings. At the WP.29 meeting held in October 2003, Indian delegates had the opportunity to get detailed information on the WMTC programme and details of the proposed Emission Test Cycles and the Test Procedures.

In order to get a better understanding of how the emission performance compares between the proposed WMTC test cycles and our current Indian Driving Cycle, Mass Emission Tests on a number of Indian two wheelers and three wheelers were conducted in India, which were presented duly highlighting our observations/difficulties at the WMTC FE meeting held at Ispra (24-25 November 2003). The Chairman, WMTC Working Group, Mr. Christoph Albus also appreciated India's concern in adoption of the proposed WMTC test cycles. It is understood that while this would not affect the progress on the current Draft GTR preparation, a special test cycle, to take care of the requirements of developing countries like India, could be considered for the future. Also, WMTC could consider three wheelers, which is a popular common mode of transportation in India and a number of developing countries.

This Informal Document seeks to highlight the difficulties/concerns apprehended in adoption of the proposed WMTC test cycles and to request GRPE to find a solution.

Present position in India

Out of total motor vehicle population of above 60 million in India, more than 60 per cent are two wheelers. Customer user conditions in India are quite different and unique. Fuel economy is of paramount importance to the customer and performance is relatively secondary. Traffic and road conditions do not encourage high speed and high acceleration on vehicles. Indian two wheelers, which are mostly around 100cc (75-125cc) cubic capacity, tend to be generally low powered with lower levels of acceleration characteristics. They are generally designed to provide high fuel economy for city driving conditions and at the moment meet one of the severest emission regulations in the world. Incidentally, Active Emission Control Regulations are in force in India since the year 1991. Next stage of still tighter emission regulation come into effect from 1 April 2005.

Development of Indian Driving Cycle (IDC)

In light of the heterogenous traffic pattern and the unique operating conditions of two wheelers in India, a special test cycle for mass emission has been developed after extensive studies and testing in major cities in India to represent the real-world operating conditions of Indian two wheelers and three wheelers on Indian roads for testing on Chassis dynamometer.

Considering fuel consumption as an important indicator to assess the effectiveness of the Drive cycle to represent the actual operating condition of the vehicle on the road, data collected over the past 12 years, has established that there is good correlation between fuel consumption values recorded with Indian Driving Cycle on Chassis Dynamometer and the field data from customers. The IDC closely represents the actual operating conditions of the vehicle on road and thus, enables a realistic assessment of the emission loads from Indian two wheelers.

Tests conducted with WMTC cycle

Mass emission tests employing IDC as well as WMTC cycles and test procedure, were conducted on Indian two wheelers and three wheelers of different cubic capacities and categories (Mopeds, Scooteretts, Scooters, Motorcycle, Three wheelers etc. with gasoline/diesel fuel, 2 stroke/4 stroke engines, with Cat/without Cat Exhaust Systems) by M/S Automotive Research Association of India (ARAI). Ease of operation and velocity traceability of the cycle was studied and comparative emission values as well as fuel consumption were recorded.

Observations

1. Most of the two wheelers tested, especially those under 75cc cubic capacity found difficulty to negotiate the acceleration ramps of the WMTC test cycle in some areas. Even some 100cc vehicles also faced this problem. This is due to the fact that the maximum acceleration rate on the WMTC cycle (2.0m/s.sq) is much higher than what is designed on IDC (0.65m/s.sq). As a result, a number of violations have been recorded while testing with WMTC cycle. Further difficulty in repeatability can be anticipated.
2. Fuel consumption values (km/lit.) recorded on WMTC cycle are consistently much higher on all the vehicles tested compared to values recorded on IDC. Judging by the fact that the fuel consumption values recorded on IDC closely correlate with the actual operating condition of these vehicles on road, WMTC cycle does not represent the actual operating condition of vehicles on Indian roads.
3. This is also corroborated by the high CO/CO₂ emission values recorded with WMTC cycle compared to the values recorded with IDC. Hence, WMTC cycle is not felt to be suitable for enabling a realistic assessment to be made of Emission loads from two wheelers in India.

4. In light of the higher acceleration characteristics and higher maximum speeds designed in the WMTC cycle formulation, it is anticipated that adoption of this cycle would invariably call for upward revision of Emission Regulations. In India, where public awareness about the ill effects of vehicular pollution is quite strong, there would be heavy resistance for any upward revision of Emission Regulations, both from the Government as well as the strong NGO lobby.

Further direction requested

At the forty-seventh session of GRPE meeting, Mr. Christoph Albus, Chairman, WMTC working group reported about India's presentation on this subject at the last WMTC FE working group meeting at Ispra in Italy in November 2003. While appreciating India's difficulties and concerns expressed in their presentation, Mr. Albus suggested that inclusion of an additional test cycle to take care of specific requirements of developing countries like India could be considered later.

India, being the second largest manufacturers of two wheelers and the major manufacturer of three wheeler in the world would like to actively participate in the global harmonization activity and would not like to be left out. As it stands now, the WMTC test cycles are designed more to harmonize the developed countries requirement while bulk of the two wheelers globally, are manufactured in the developing countries in South East Asia, India and China. The traffic pattern, road conditions, category of vehicles, in these countries are quite different from those in the developed countries. Further two wheelers are designed more towards fuel economy than fast acceleration.

In the year 2000, the estimated two wheeler population globally was assessed at 149.5 million of which Asia excluding Japan counted for 64 per cent, Japan 10 per cent and the rest of the world 26 per cent. In other words, out of 95.7 per cent million two wheeler in Asia excluding Japan, India alone accounted for above 40 million which comes to nearly 27 per cent of global two wheeler population. Hence, in order to make the proposed WMTC cycle Global in the true sense of the word, it is essential to study the requirement of the developing countries also and incorporate necessary modifications. India can start a dialogue with like countries and report the position as early as possible.

This informal paper is being presented to highlight this issue to the authorities concerned and to find a suitable direction and answer to this global harmonization programme.
