

## Report from the Data Experts Group to R41WG

### 1. General

The Data Experts Group has met twice, 06/09/01 and 06/11/20-21. An additional informal meeting on ASEP data was also held 07/02/05 . The group was attended by Germany, India (in part), Italy, Japan, IMMA and ISO

### 2. ISO 362-2: new test method for R41

The R41WG in April 2006 agreed on the range of motorcycles to be tested. The data group was established to create the database and analyse the results. Additional data was also received from the Indian experts.

The repeatability and practicability of the new ISO362-2 test procedure was confirmed and the testing proved that the new ISO test procedure forced motorcycles to accelerate.

The Data Experts Group agreed that:

- with the completion of the BAST data, the database would be representative of motorcycle production for the medium term future.
- when comparing the R41 and the new ISO 362-2 results, there were 3 data points above the 45° line, though the experts did not think that this was significant. The initial conclusion was that these vehicles were probably 1 CVT vehicle which used the R41 method of averaging for each side , instead of the ISO method which gives higher values and 1 MT which used 3<sup>rd</sup> gear for R41, but 2<sup>nd</sup>/gear for ISO
- the reasons for the scatter in the data points were:
  - the inclusion of the constant speed noise level (which is dependant on the vehicle type)
  - the sensitivity of the vehicle to differences in the test conditions
- as in the R51 tests, there was no mathematical correlation between the test procedures, which was to be expected due to the fundamental differences in the methods
- the database would be reorganized and presented in the same format as the data for the R51 discussions, using the rounded ISO 362-2 results. (*Annex 1*)
- the results showed a different effect for the different R41 classes of vehicle but, overall, there was a lowering of measured sound levels by about 3.6 dB(A)
- the database was representative enough of motorcycle production to allow a proper discussion of limit values to take place

Further work by Italy on the effect of reducing the number of test runs for type approval purposes from 4 to 3 showed that the maximum deviation introduced was 0.3% and the average deviation was 0.00dB(A) for the sample of 15 vehicles, when removing the 4th run (4thRR). When removing the run accounting for the largest single deviation (LDR) these figures account for 0.3% and 0.01dB(A) respectively (*Annex 2*). Reducing the number of test runs would therefore reduce costs without compromising the efficiency of the testing.

*[Note: Timing has not allowed the Data Experts to discuss this final finding, but an earlier version of the analysis was discussed and the conclusions considered logical. It is therefore added to the report for R41WG to consider].*

### 3. ASEP

The first version of the ASEP proposal (i.e. the ASEP proposal included in the initial test protocol) showed that there were problems of interpretation of the procedure, e.g. the engine condition to use, which did not allow a consistent analysis of the test results.

In their discussions so far, the Data Experts Group agreed that:

- the maximum exit speed ( $v_{BB'}$ ) should be lowered from 90 km/h to 80 km/h due to test track limitations
- the new ASEP procedure had been successful in identifying a RESS with the potential for operating in an illegal mode above the engine speeds in the ISO362-2 procedure.
- engine speeds  $n$  and  $n_i$  should be related to  $PP'$  to simplify the test
- simplifications/standardisations would be made to the proposed test
- after analysis of the test results, exclusion of CVT and low(er) PMR MT vehicles should be considered because the ASEP test would just duplicate the already high engine speed forced by the ISO without any significant noise level increase
- there was a need for additional ASEP test data for motorcycles with a PMR > 130 to allow further refinement and simplification of the proposed ASEP test. The dividing line at 130 PMR was probably correct but needed to be checked.
- from the results so far, a 5 dB(A) per 1000 rpm slope for the limit line would be adequate to identify non-linear engine behaviour
- the existing data did not show any need to include values below the  $L_{woti}$  point in the ASEP testing
- a specific tolerance figure for the testing might not need to be specified if the limit value curve was properly positioned

A second version of the test protocol is under development, based on the procedure being considered for cars, and a further document will be circulated after the meeting on 07/02/05.

### 4. The roadside/drive-by enforcement testing

Testing to the proposed roadside test did not produce repeatable results. The engine speed was too low to be able to get a stable acceleration for some types of motorcycle. The general opinion was that this version of the drive-by test would make it very difficult to obtain convictions. In addition, BAST discovered that the motorcycle's speedometer could not be relied on to provide an accurate enough reading of the vehicle speed for enforcement testing.

Following the discussion on enforcement at 7/R41WG on 06/09/04, IMMA prepared a summary of the enforcement procedures foreseen under the ECE Regulatory system. The Data Experts Group reviewed the contents and agreed that the document should be forwarded to R41WG, as an aid to considering the enforcement situation. The summary is contained in *Annex 3 and a graphical overview in Annex5*.

At the second Data Experts Group meeting, IMMA's position was that if these provisions were properly enforced, the illegal RESS and owner-modified exhausts would be eliminated. If, to assist national level enforcement actions, a national drive-by enforcement test was introduced, this should not increase the burden on the vehicle manufacturers.

Further discussion of the enforcement summary, between Germany and the Data Expert Group Chairman reached the following conclusions:

- the only technical problem discovered by Germany was that a small number of after-market RESS were designed so that they could be modified by the owner and still pass the stationary test. They would not pass a drive-by test.

- Conclusion:** The solution to this was to make it a requirement that under the R92 procedures, RESS should be tested in all settings foreseen by the manufacturer
- the main difficulty in enforcing the Regulations is the lack of clear procedures related to Conformity of Production. In particular, it was not clear how one Contracting Party, having found that products certified by another Contracting Party were no longer in conformity with the type approval, could ensure that production would be stopped.
- Conclusion:** This administrative aspect of enforcement needs further study and, as necessary, strengthening
- Several Contracting Parties have introduced controls at the point of sale, e.g. France and the United Kingdom. An IMMA document on these issues was presented to GRB in 2000 and reproduced as *Annex 4*
- Conclusion:** These measures rely on specific national legislation and should be studied as part of the solution.
- apart from the checking of type approval marks and labelling requirements, controls in the shop and the checking of the conformity of imported products require the back-up of a system of regular testing in one or more designated laboratories. It is not the same as the on-the-spot enforcement actions that can be undertaken by the police at the roadside.
- Conclusion:** This kind of enforcement implies the regular purchase of products and testing. As such, it is an activity that has to be organised at a central government level, e.g. by a Ministry
- **Conclusion:** in view of the known legal and practical problems in using a drive-by test for roadside enforcement, such a procedure is probably more appropriate for a national level application
  - **Conclusion:** an enforcement drive-by test could be defined by using the following parameters taken from the wide-open throttle (WOT) test in the ISO 362-2 procedure:
    - the gear used
    - the entry speed at line AA (which might have to be standardised with a suitable tolerance, in order to simplify the procedure)
    - the dB(A) value recorded in the WOT test

*[Note: What additional data might be needed for such a test still needs to be analysed]*

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