Report of the GRB informal Working Group on ASEP

Transmitted by the Chairman of the Informal Group
Reminder: why ASEP

- Annex 3 covers the part of the engine map with lower revs

- Decision made to have Additional Sound Emission Provisions to cover a wider part of the engine map (higher revs).
Meetings:

1. Amsterdam; 2005 November
2. The Hague; 2006 January
3. Geneva; 2006 February
4. Geneva; 2006 September
5. The Hague 2006 November
6. Geneva, behind this GRB

Task Force: 4 meetings: Geneva, Tokyo, Trondheim, Detroit
3. The informal group shall develop a complementary test method and evaluation criteria for insertion into Annex 10. The complementary test method shall cover the noise emission under higher engine speeds and loads than the proposed procedure in TRANS/WP.29/GRB/2005/5, as amended.

(no ‘if’, just: do it)
GRB 44: where did we stand

Measurement method (Taskforce)
ASEP applies for all M1 and N1 vehicles
Knowing what to do:
   Data processing
   Limits
   Text mainbody
   Homologation
GRB 44: what did we got

Time, but not for ever
So we had to hurry up

And we did
GRB 44: we promised

Try to have a system this meeting, as a preliminary proposal.

We kept our promise: Yes, we tried

BUT
BUT

We can not deliver the method yet.

Good news: Fresh data

Bad news:
  It showed how complex it is
Complexity

It’s all about relation revs and sound level

Japan, Germ. OICA:
Mediate 5-6 dB each 1000 revs

So, it looks easy to take a point and draw a line
Complexity

Vehicles behave very different

Vehicles vary in max engine speed (turbo vs revs)

And also vehicles with 12/1000 revs
Even ending up with 120 db(A)
So

1. We have to make the Unification Theory and the Great Unification Method

2. We have to value behavior (is a fighter jet acceptable)
Progress

• meeting this week (promise: more data available)
• Next meeting early this spring
• OICA event would be helpful

• Result: ASEP framework ready this summer
Other Issues

Boundary conditions

Open pipe devices

Homologation
Boundary Conditions

Acceleration:

Majority: 3.5 m/s²
Issue: GTI class round this border
Easy to get them over the border
Result: tested in 3ᵉ gear: do we want that
(also common preference for 2ᵉ gear)
Open pipe devices

- Straight pipe
- Silencer
- Valve
Open Pipe Devices

Valves as such: nothing wrong with it

We learned from CLEPA that you even need them to lower the noise
(very useful presentation, should be in GRB)
Harley Davidson

**Electrically Controlled Exhaust System**

A high performance exhaust system with excellent sound quality was developed as an OE replacement. An ECM-controlled, cable driven exhaust valve controls exhaust flow for improved sound quality and engine performance while remaining noise compliant.

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Concern</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Muffler Diameter</td>
<td>Muffler style must be compatible with OE.</td>
<td>3.5&quot; diameter muffler shell fits within OE envelop.</td>
</tr>
<tr>
<td>2</td>
<td>Fiberglass liner</td>
<td>Sound Quality improvement and Chrome surface discoloration</td>
<td>Double wrap fiberglass shell liner improves sound quality and minimizes chrome discoloration.</td>
</tr>
<tr>
<td>3</td>
<td>2&quot; Dia. Perforated Core Tube</td>
<td>Engine Performance and Sound Quality</td>
<td>Low backpressure design.</td>
</tr>
<tr>
<td>4</td>
<td>Valve Assembly</td>
<td>Improve performance and Sound Quality</td>
<td>Computer controlled valve in exhaust system.</td>
</tr>
<tr>
<td>5</td>
<td>Valve Actuator</td>
<td>Precise control of the valve is needed to meet regulatory and sound quality targets</td>
<td>Actuator receives signal from the vehicle engine control unit.</td>
</tr>
<tr>
<td>6</td>
<td>Catalytic Converter</td>
<td>Control of Tailpipe emissions</td>
<td>&quot;3-way&quot; double spiral wound catalytic converter.</td>
</tr>
<tr>
<td>7</td>
<td>ECM</td>
<td>Ensure proper position/operation of valve</td>
<td>Computer controlled algorithm.</td>
</tr>
<tr>
<td>8</td>
<td>Full Coverage Heat Shield</td>
<td>Valve must be cosmetically invisible</td>
<td>Full coverage heat shield covers valve and muffler.</td>
</tr>
</tbody>
</table>

Information supplied by Harley-Davidson Motor Company.
A high performance exhaust system with excellent sound quality was developed as an OEM replacement. An ECM controlled cable driven exhaust valve controls the exhaust flow for improved sound quality and engine performance while remaining noise compliant.
Control flap

REGELKLEP
Kan in het uitlaatsysteem niet alleen zorgen voor meer koppel bij lage toeren, tegenwoordig wordt zo'n klep steeds vaker gebruikt om bij kritieke toerentallen (lees: het toerental waarbij de motor gekeurd wordt) het geluidsniveau terug te dringen.
Can not only be used in the exhaust system to increase torque at low rpm, nowadays such control flap is used more and more to attenuate the noise at critical engine speeds (read: the engine speed at which the motorcycle is being type approved)
By the way (1)

If you allow this, how can you ask your police to enforce?
By the way (2)

Can’t there be an agreement of the Type Approval Authorities to ban these cycle beaters from our market?
To protect the public.

They are working for the public interest.
Exhaust Devices N1 Vehicles

- Common on exclusive cars
- As with everything it will be used in to the common fleet
- Because there is a customer demand

- So: regulation is relevant
What does it mean for ASEP

• Every gap in the regulation will be used
• What is not strictly forbidden will be done

• So the regulation must be very clear and strict.
Homologation

GRB decided: The ASEP demands apply for every vehicle.

Should every vehicle be tested:
Japan: yes          others: no

As long it’s not a GTR: no problem (?)
WILL BE CONTINUED

THANK YOU!