Fixing #Dieselgate: 
Solutions to Europe’s failed system of emissions testing – lessons for an independent testing regime

Can we prevent another dieselgate?
8th June 2016, FIA Foundation, London

Greg Archer
Transport & Environment
T&E: 27 COUNTRIES
49 MEMBER & SUPPORT GROUPS
#dieselgate In Europe

Why the European system fails

…and how to strength it

Lessons for an independent testing system

Lessons for robust regulation
EU EMISSIONS REGULATIONS ARE THE BASIS FOR MANY TESTING SYSTEMS
EACH EUROPEAN INSTITUTION HAS DIFFERENT ROLES AND RESPONSIBILITIES
WHAT #DIESELGATE REVEALS ABOUT THE EU SYSTEMS
ISSUES WITH, AND SOLUTIONS TO, EUROPE’S FAILED SYSTEM OF TESTING

Obsolete NEDC test

“Golden” vehicles

“Approval” authorities

In use testing

RDE & WLTP

Real world conformity checking

EU oversight

On road surveillance

No backdoor weakening

Extend on road tests to CO2 and all pollutants

Strengthen Type Approval Framework Regulation

Levy to fund market surveillance
LESSONS FOR ROBUST INDEPENDENT TESTING

Representative road tests
- Model specific
- Region specific
- Normalised?

Independent
- Drivers
- Testers

Use series vehicles
- Switch on auxiliaries

Test all pollutants simultaneously
- CO2
- NOx, PM etc

Check performance in different conditions
- Temps
# A NEW ROAD CO2 TEST SHOWS PROMISING RESULTS

<table>
<thead>
<tr>
<th>Vehicle tested</th>
<th>PEUGEOT 308</th>
<th>CITROËN C4 GRAND PICASSO</th>
<th>DS 3</th>
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<tbody>
<tr>
<td>Consumption measurement (l/100km)</td>
<td>1.6l BlueHDi 120 S&amp;S BVM6</td>
<td>1.6l BlueHDi 120 S&amp;S BVM6</td>
<td>1,6l BlueHDi 120 S&amp;S BVM6</td>
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<tr>
<td>T&amp;E Customer use protocol</td>
<td>5,0</td>
<td>5,6</td>
<td>4,9</td>
</tr>
<tr>
<td>Customer consumption (Customers survey / Spritmonitor)</td>
<td>5,0 / 5,1</td>
<td>5,5 / 5,7</td>
<td>5,1 / 5,3</td>
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<tr>
<td>Homologated consumption (NEDC)</td>
<td>3,2</td>
<td>4,0</td>
<td>3,6</td>
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</table>

Issues with PEMS measurements at low flows for gasoline cars require a correction
LESSONS FOR ROBUST REGULATION

- Single, financially independent, technically expert, adequately resourced regulator
- Extensive, detailed prescribed, inflexible tests on series vehicles
- Simple, performance based regulations
- Transparency
- Extensive, demanding in-service checks in a range of conditions
- Onerous penalties
KEY MESSAGES

1. VW #dieselgate is the tip of the iceberg

Dieselgate reveals in Europe vehicle regulations are systematically circumvented by ineffective tests and oversight

2. The solutions are known – better tests, improved oversight, effective market surveillance

3. An independent testing system is needed to complement regulatory approaches

4. Overly complex regulation is a recipe for failure

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FIXING #DIESELGATE

ANY QUESTIONS?
CO2 IMPROVEMENT IS LARGELY BEING DELIVERED IN THE LAB – NOT ON THE ROAD

Real-world improvement is 13.3 g/km

Widening real-world gap is now 22.2 g/km

ICCT & Element Energy 2015
Some EU oversight:

New Forum for TAA’s + peer reviews

Audit and sanctions of national authorities by Commission

Clear definition of spot testing by teh Commission

Independent members on TAA Forum

EU levy on new vehicle sales of €20 per car

Independent technical services

More market surveillance

Manufacturers to disclose software utilised

Transparency and public data:
### REAL WORLD DRIVING TESTS WILL CONTINUE TO DEVELOP

<table>
<thead>
<tr>
<th>Phase</th>
<th>Year</th>
<th>Test procedure</th>
<th>NOx conformity factors</th>
<th>Cold starts &amp; Regen</th>
<th>Particle Number</th>
<th>In service conformity</th>
<th>Durability</th>
<th>Normalisation</th>
<th>CO2</th>
<th>Other pollutants</th>
<th>Euro 7</th>
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<td>May 2015</td>
<td>Test procedure</td>
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<td>Phase 3</td>
<td>Autumn 2016</td>
<td>Cold starts &amp; Regen</td>
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<td>Phase 4</td>
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<td>Phase 6?</td>
<td>2020?</td>
<td>Euro 7</td>
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WLTP: PROGRESS - BUT A PARTIAL SOLUTION

From 2017/18

Generous (unfair) correlation

Basis for post 2020 targets

Implementation a shambles
WLTP IS A PARTIAL SOLUTION - A REAL WORLD CO2 TEST IN NEEDED TO LOWER EMISSIONS ON THE ROAD

Projections of new car fleet average CO2 emissions to 2025

- Real world
- Real World (growing gap)
- WLTP
- NEDC
- NEDC (95g/km 2021 & 70g/km 2025)
- Real world (declining deviation to WLTP + 10%)
- 10% gap RDE & WLTP
- Real world 16g/km lower
THE EU TESTING SYSTEM LACKS INDEPENDENCE

Who approved the Dirty 30?

UK
GERMANY
FRANCE
NETHERLANDS
LUXEMBOURG
SPAIN
ITALY

Source: T&E analysis of results of national investigations in France, Germany and UK
TURNING DOWN THE AFTER-TREATMENT BELOW 17°C WOULD NOT HAPPEN IN THE US

When carmakers begin turning down pollution control

Average temperature in Europe: 9°C

Below 17°C
- Opel (Vauxhall)
- Renault-Nissan
- Daimler

Below 17°C
- Peugeot
- Ford
- Fiat

Below 5°C
- Peugeot
- Ford

High speeds & full car
- Peugeot
- Ford
- Fiat

Source: National investigations in DE, FR, UK
LESSONS FOR ROBUST REGULATION

**WHAT WORKS**

1. Single, financially independent, technically expert, adequately resourced regulator
2. Extensive, detailed prescribed, inflexible tests on series vehicles
3. Simple, performance based regulations
4. Transparency
5. Extensive, demanding in-service checks in a range of conditions
6. Onerous penalties

**WHAT DOESN’T**

1. 28 competing National Type Approval Authorities without oversight
2. Flexible tests on golden vehicles
3. 800 pages of WLTP rules
4. Secrecy
5. Discretionary, unfinanced market surveillance
6. Discretionary penalties