Workshop D

Al Bustan Rotana Hotel, Rashidiya Ballroom A & B

Regional Perspective – PTI in Different Regions of the World

Chaired by Ferose Oaten

Chairperson, CITA Regional Advisory Group - Africa
Workshop D

Presentation 2

Vehicle Testing in Tasjeel - Dubai

Carlos Ison

Technical Trainer, Tasjeel, Dubai, UAE
2015 CITA CONFERENCE
April 14, 15, 16 2015
CITA 2015 theme: Enhancing the value of Vehicle Inspection

Organization name: ENOC Tasjeel
Name: Carlos Lirio Ison
Title: Site Manager
ENOC TASJEEEL is the pioneer in vehicle testing and registration services in Dubai in joint venture with Roads & Transport Authority (RTA) and in Sharjah with Sharjah Police. We have the biggest market share in Dubai and Sharjah and most trusted entities in our line of business.
MISSION

To become the leading vehicle testing registration and other related services provider in our chosen markets and to retain our top position in this region.

Building Our Future Together
VISION

- To provide efficient services that we offer to our valued customers through convenience, innovation, technology and competence.

- To maximize shareholders value by growing the existing businesses, pursuing and developing new profitable business opportunities.

- To become the employer of choice by providing a healthy, challenging and professional work environment.

- To conduct our business in a socially and environmentally responsible manner in the community that we operate in.
TASJEEL SITES LOCATION

• Tasjeel first Al Ghusais site for light Vehicles  
  (opened in November 1999)
• Tasjeel Al Aweer for light vehicles
• Tasjeel Al Barsha for light vehicles
• Tasjeel Warsan for heavy & light vehicles
• Tasjeel JAFZA for light & heavy vehicles
• Tasjeel Auto Village for light vehicles in Sharjah opened in April 2006
• Tasjeel Khorfakkan for light vehicles
• Tasjeel Hatta for light vehicles
• Tasjeel MVIS for vehicle test at customer premises
TASJEEL VILLAGE SHARJAH
THE SITES

TASJEEL AL GHUSSAIS
SERVICES

- Vehicle Testing and Registration
- Chassis Checking & Measurement at Ghusais, Barsha & Sharjah.
- Comprehensive Testing of Used Vehicles at Aweer, Barsha, Twar and Sharjah & Khorfakan.
- Mobile Vehicle Inspection Service based at Warsan that conducts tests at customers’ premises. The unit is taken by well-equipped van to any locations.
- Drive-thru’ service’ at Barsha & Sharjah and Ghussais
- Issuance of International Driving License at all sites.
- Car Valuation Certificate
- OBD Test - in Barsha, Ghussais, Al Twar, Al Aweer and Sharjah (NEW)
CHASSIS MEASUREMENTS
FOOD TRANSPORT VEHICLES

DUBAI MUNICIPALITY TEST
CIVIL DEFENCE TEST
DRIVE THRU EXPRESS
Employees Learning & Development

ENOC/EPPCO has a fully equipped LEARNING & DEVELOPMENT department conducting various courses for its own employees as well as for external organization as and when requested. Some of the courses include:

- English communication skills
- Global English learning - on line course
- Customer Care Training
- Telephone Handling Skills
- Supervisory Skills
- Handling Meeting Effectively
- Effective Business Writing Skills

Tasjeel also arranges refresher courses for its vehicles inspectors with leading automobile & tire dealers from time to time, to acquaint themselves with the new technology and vehicle models.
Tasjeel Vehicle Inspectors and Site Managers at a training course from Porsche Dealer in Dubai.
Vehicle Inspectors / Site Managers and RTA Supervisors at in-house training course from Tasjeel Training department.
THANK YOU FOR YOUR ATTENTION
Workshop D

Presentation 3

Heavy Vehicle Condition Study

Simon Labbett

Director, United Arab Emirates TRL Ltd., UAE
Heavy Vehicle Condition Study

Transport Research Laboratory

Presented by: Simon Labbett, Director TRL UAE
Background to study

1. High levels of Truck involvement in collisions
2. High profile collisions
3. Observational information but lack of data
4. To provide an industry health check
5. Benchmark to EU vehicle safety standards and regulations
Truck Safety Inspection Findings
Random Vehicle Sample: 517
Vehicles without brake defects: 198
Vehicles without tyre defects: 92
Vehicles without other safety defects: 24
Vehicles without being overweight: 10
Vehicles without Driver hours work/rest conflicts: 1
Vehicles without Driver hours work/rest conflicts: 1
Bonus payment for the number of loads in a day
Out of a sample of 517 NO vehicles complied with benchmarked vehicle safety
Detailed Results

- Overview vehicle condition
- Weight
- Brakes
- Lights
- Tyres/wheels etc.
- Driver hours
- Environmental controls
Vehicle Maintenance

- 97% of all drivers reported that their vehicle had been serviced less than 3 months ago

- 3% reported that the last service had taken place 3-6 months ago

- Given, that the majority of vehicles have been serviced less than 3 months ago this may lead us to expect that these vehicles were reasonably well-maintained.

BUT...
Vehicle Condition - Brakes

- 60% of vehicles had defective brakes
- By comparison - UK 0.65% of trucks with dangerous brakes
- Evidence of operators knowingly sending out highly dangerous vehicles with defective brakes
- Excessive truck weights will impact on effective braking force (60% defects will therefore be a significant under representation of braking issues)
Vehicle Condition - Brakes
Vehicle Condition – Wheels and Tyres

- 62% of vehicle with defective wheels and tyres
- Poor industry practice
- Dangerous repairs
- Inadequate standards for re-treading
- Cracked wheels (weight related)
- Wheel nuts missing and incorrect studs fitted
Vehicle Condition – Suspension and Chassis

• 14% defective suspension
• 8% defective chassis
• Cracked chassis
• Broken springs
• Distorted suspension
• Dangerous condition
• Weight related damage
Vehicle Condition - Lighting

- 82% defective lighting
- Lights not kept clean
- Broken warning beacons
- Poor maintenance
- No evidence or requirement for daily/weekly safety checks
Environmental and Parking Controls

- Lack of restrictions on commercial vehicle parking
- At night 63% of trucks are not parked in company compounds
- Insufficient requirement for operating centres
- Significant health and safety concerns for residential properties
- Uncontrolled parking of fuel tankers within 50m of large residential area
Overweight Trucks

- 62% of vehicles overweight (but not just by a little bit)
Vehicle Standards

• Driver’s can’t see!
• Trailer lengths/widths
• Lack of mirror requirements
• Inappropriate coloured lighting
Drivers Hours of Work

- 100% of drivers drive for 6 or more days a week
- 21% of drivers drive every day
- 46% of drivers drive for more than 11 hours a day
- 49% drivers report receiving a bonus for extra journeys

Note: All of the above, if they occur every week, are contrary to benchmarking – (EC 561/2006)
## Vehicle Condition - Summary

<table>
<thead>
<tr>
<th>Condition description/defect</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lighting</td>
<td>82</td>
</tr>
<tr>
<td>Overweight</td>
<td>62</td>
</tr>
<tr>
<td>Brakes</td>
<td>60</td>
</tr>
<tr>
<td>Wheels and tyres</td>
<td>62</td>
</tr>
<tr>
<td>Windscreen wipers/washers</td>
<td>56</td>
</tr>
<tr>
<td>Fire extinguishers</td>
<td>29</td>
</tr>
<tr>
<td>Seat belt working</td>
<td>20</td>
</tr>
<tr>
<td>Suspension</td>
<td>14</td>
</tr>
<tr>
<td>Body/chassis condition</td>
<td>8</td>
</tr>
<tr>
<td>Vehicle horn</td>
<td>4</td>
</tr>
</tbody>
</table>
And some just wanted to keep out of the way!
# Benchmarked Control Measures

<table>
<thead>
<tr>
<th>Effective Control Measures</th>
<th>UK</th>
<th>GCC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Driver standards</td>
<td>✓</td>
<td>✗</td>
</tr>
<tr>
<td>Vehicle standards</td>
<td>✓</td>
<td>✗</td>
</tr>
<tr>
<td>Weight controls</td>
<td>✓</td>
<td>✗</td>
</tr>
<tr>
<td>Load security guidelines</td>
<td>✓</td>
<td>✗</td>
</tr>
<tr>
<td>Operator licensing</td>
<td>✓</td>
<td>✗</td>
</tr>
<tr>
<td>Hazardous materials</td>
<td>✓</td>
<td>✗</td>
</tr>
<tr>
<td>Drivers hours of work/rest</td>
<td>✓</td>
<td>✗</td>
</tr>
<tr>
<td>Environmental controls</td>
<td>✓</td>
<td>✗</td>
</tr>
</tbody>
</table>
Summary

1. We have a problem! But desire of GCC States to improve road safety

2. Trucks are significantly over represented in injury collision risks

2. Benchmarking highlighted that 100% of vehicles and drivers in sample fail safety controls

3. Industry is out of control and is not currently capable of self regulation

4. Lack of effective enforcement and education programmes

5. Lack of effective operator controls
شكراً

Thank You

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THE EFFECTS OF EMISSION TEST USING A CHASSIS DYNAMOMETER IN KOREA

Jungsoo Park

Manager Vehicle Inspection Division, Korea Transportation Safety Authority, Korea
The Effects of the Emission Test Using a Chassis Dynamo in Korea

Jungsoo Park

Manager, Vehicle Inspection Division, Korea Transportation Safety Authority
Contents

1. Introduction
2. Background
3. Emission Test Using a Chassis Dynamo
4. Assessment of the Emission Test Effects
5. Ongoing Project
1. Introduction

History

(1962) Visual Check

(1981) “Korea Transportation Safety Authority” Foundation
  * The number of vehicle: 0.6M

(1997) Divided in Public and Private Sector
  * Due to Increasing the number of vehicle ('84: 0.9M → ’97: 9.8M)

  * The number of vehicle: 14M

(2009) Combination of PTI and Advanced Emission Test

(2011) KD-147 Mode Introduction for Diesel

(2011) Pressure-Resistant Container Re-Inspection for CNG

(2014) Motorcycle Emission Testing (more than 260cc)
  * The number of motor cycle: 2.1M, more than 260cc: 6 thousands
1. Introduction

Registered Vehicles in Korea

Kinds of Fuels in Use

<table>
<thead>
<tr>
<th>Categories</th>
<th>Petrol</th>
<th>Diesel</th>
<th>LPG</th>
<th>Hybrid+EV</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000 yr</td>
<td>7.2</td>
<td>3.6</td>
<td>1.2</td>
<td>0</td>
</tr>
<tr>
<td>2005 yr</td>
<td>7.8</td>
<td>5.7</td>
<td>1.9</td>
<td>0</td>
</tr>
<tr>
<td>2010 yr</td>
<td>8.9</td>
<td>6.5</td>
<td>2.4</td>
<td>0.02</td>
</tr>
<tr>
<td>2014 yr</td>
<td>9.6</td>
<td>7.9</td>
<td>2.3</td>
<td>0.14</td>
</tr>
</tbody>
</table>
1. Introduction

Status Quo for Vehicle Inspection in Korea

1,790 Vehicle Inspection Center
- by TS: 58+54, by Designated Garage: 1,678

Approx. 3,500 Inspectors
- TS: approx. 500, Designated Garage: approx. 3,000

The Number of Vehicle Registered(‘14): approx. 20M

The Number of Vehicle Inspected(‘14): approx. 10M
- TS: approx. 3.1M, Designated Garage: approx. 6.9M

Fail Rate and Market Share in Korean Vehicle Inspection

Korea Transportation Safety Authority(TS)
- Fail Rate: 19.4%
- Share: 31%

Designated Garages
- Fail Rate: 12.1%
- Share: 69%

Total Fail Rate: 14.3%
2. Background

- Half of population in Korea inhabit metropolitan area
- Increasing the number of diesel vehicles
- Deterioration of Air Quality

The Number of Vehicles and Prediction
Source: Ministry of Land and Transport

PM10(Dust) Density (2001)
Source: Ministry of Environment
3. Emission Test Using Chassis Dynamometer

Chassis Dynamo Emission Test Overview

- Facilities status quo(’14)

<table>
<thead>
<tr>
<th>Categories</th>
<th>TS (Korea Transportation Safety Authority)</th>
<th>Designated Garages</th>
<th>TS+Garages</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Number of Inspection Lanes</td>
<td>165</td>
<td>771</td>
<td>936</td>
</tr>
<tr>
<td>Lanes only for Heavy Vehicle</td>
<td>20</td>
<td>212</td>
<td>232</td>
</tr>
<tr>
<td>The Number of Inspection Devices</td>
<td>188</td>
<td>771</td>
<td>959</td>
</tr>
</tbody>
</table>

- The number of vehicles inspected using a chassis dynamo

(Thousands Vehicles)
3. Emission Test Using Chassis Dynamometer

Emission Test System

- **Petrol, LPG, and CNG**
  - **ASM2525 Mode** (Load Test, Metropolitan)
  - **Free Acceleration Mode** (Rural Area)

- **Diesel**
  - **Lug-down3 and KD-147 Mode** (Load Test, Metropolitan)
  - **Free Acceleration Mode** (Rural Area)

### Type of Emission Test Using Chassis Dynamometer

<table>
<thead>
<tr>
<th>Classification</th>
<th>Petrol</th>
<th>Diesel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dynamo Methods</td>
<td>ASM2525 mode</td>
<td>Lug-down 3 mode</td>
</tr>
<tr>
<td>Subjects</td>
<td>The vehicle registered in more than 0.5M population city should be given a dynamo emission test (other than 4WD, AWD, and so on)</td>
<td>KD147 mode</td>
</tr>
<tr>
<td>Subjects</td>
<td>All</td>
<td>HGV</td>
</tr>
<tr>
<td></td>
<td>Small, LGV</td>
<td></td>
</tr>
<tr>
<td>Pollutants</td>
<td>CO, HC, NOx, Lamda</td>
<td>Smoke Density</td>
</tr>
<tr>
<td></td>
<td>Smoke Density</td>
<td></td>
</tr>
</tbody>
</table>
3. Emission Test Using Chassis Dynamometer

ASM2525 Mode for Petrol

"Acceleration Simulation Mode Test", means an emission test to analyze exhaust emissions of CO, NO, and HC performed at a steady state of 25mph and utilizing a dynamometer load set to simulate 25% of power.

Lug-Down3 Mode for Diesel

It consists of 3 modes, 1 mode is the max of the power, 2 mode is 90% of it, 3 mode is 80% of it while checking RPM, max HP, and smoke density following 5 seconds at the modes respectively.
3. Emission Test Using Chassis Dynamometer

**KD-147 Mode for Diesel**

- TS developed *Korean own test method* using a dynamo, called *KD147* benchmarking Canada version.
- Compared to Lug-down 3, KD147 can **reflect real driving** and is **more convenient** to test.

![Diagram showing KD-147 Mode for Diesel](image)

**[ Warming-up Period, 40s ]**
Making the Engine over 82°C

**[ Inspection Period, 147s ]**
Measuring PM density, with accelerating and decelerating max. 83.5km/h on the chassis dynamo as below graph

Not measuring HP due to failing mode if power is insufficient

**Load Setting = (VW* + GVW*)^2**

*VW* : Vehicle Weight
*GVW* : Gross Vehicle Weight
3. Emission Test Using Chassis Dynamometer

Advantage of KD147 Mode

- Reflecting the real driving situation
- Convenience to test (Not need to attach RPM sensor, etc)
3. Emission Test Using Chassis Dynamometer

Monitor Watching KD-147 Mode Inspector

Mode Overview

Processing Speed

Targeting Speed

Limiting Speed

Speed (km/h)

Elapsed Time (Sec)

Testing Distance

Indicator Shift Timing

<table>
<thead>
<tr>
<th>Mode</th>
<th>Overview</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speed (km/h)</td>
<td>29.7</td>
</tr>
<tr>
<td>Elapsed Time (Sec)</td>
<td>43</td>
</tr>
<tr>
<td>Testing Distance</td>
<td>0.22</td>
</tr>
</tbody>
</table>
3. Emission Test Using Chassis Dynamometer

**KD-147**

System Overview

- Atmospheric Press & Temperature Sensor
- Main Controller
- Cooling Fan
- RPM Measurer
- Chassis Dynamometer
- Safety Device
- Soot Collecting Apparatus
- Noise Tester
- Recording Camera Device
- Opacity PM Measurer

**Knorr-Bremse**

**Vehicle Inspection Management System (VIMS)**

- Physical connector
- Electronic connector

Korea Transportation Safety Authority
4. Assessment of Emission Test Effects

The Change of PM Density Reduction in Seoul, Korea

- **2001**: 71 μg/m³
- **2004**: 59 μg/m³
- **2007**: 58 μg/m³
- **2010**: 47 μg/m³
- **2013**: 44 μg/m³

**Key Events**:
- **KD-147 Introduction**
- **Combination of the PTI and a Dynamo Test**
- **Extension of the City Applying to a Dynamo Test**
- **Introduction of Emission Test Using a Dynamo for only Seoul**
4. Assessment of Emission Test Effects

- Methods

**Inspection Statistics**

**Formula of reduction amounts**
(Weight density conversion and statistics methods)

**Decreasing Amounts of CO, HC, NOx, PM**

- The Results of Analysis (2014)

<table>
<thead>
<tr>
<th>Air Pollutants</th>
<th>The Amount of Reduction as fail vehicles</th>
<th>NPV(Net Present Values)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Petrol</td>
<td>CO</td>
<td>11,603 ton/yr.</td>
</tr>
<tr>
<td>LPG</td>
<td>HC</td>
<td>439 ton/yr.</td>
</tr>
<tr>
<td></td>
<td>NOx</td>
<td>1,615 ton/yr.</td>
</tr>
<tr>
<td>Diesel</td>
<td>PM$_{10}$</td>
<td>1,526 ton/yr.</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>15,183 ton/yr.</strong></td>
<td><strong>671.8 M $</strong></td>
</tr>
</tbody>
</table>

1$ = 1,000 KRW
5. Ongoing Project

- Developing for standard and methods
to Diesel NOx
to Diesel PM2.5 preparing for Euro VI

Source: Ministry of Environment
Thank you for your time

Q & A

Presenter Information

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