



Workshop C2

Al Bustan Rotana Hotel, Bahri B & Stallion

CITA Corporate Member Presentations Inspection Procedures, Methods and Data Systems

Chaired by Juha Tukiainen

Member of CITA Bureau Permanent





Workshop C2

Presentation 1

TANDEM TEST LINE

Hakim El Jebli

Ryme, Spain



Ryme

Tandem test line

Tandem test line

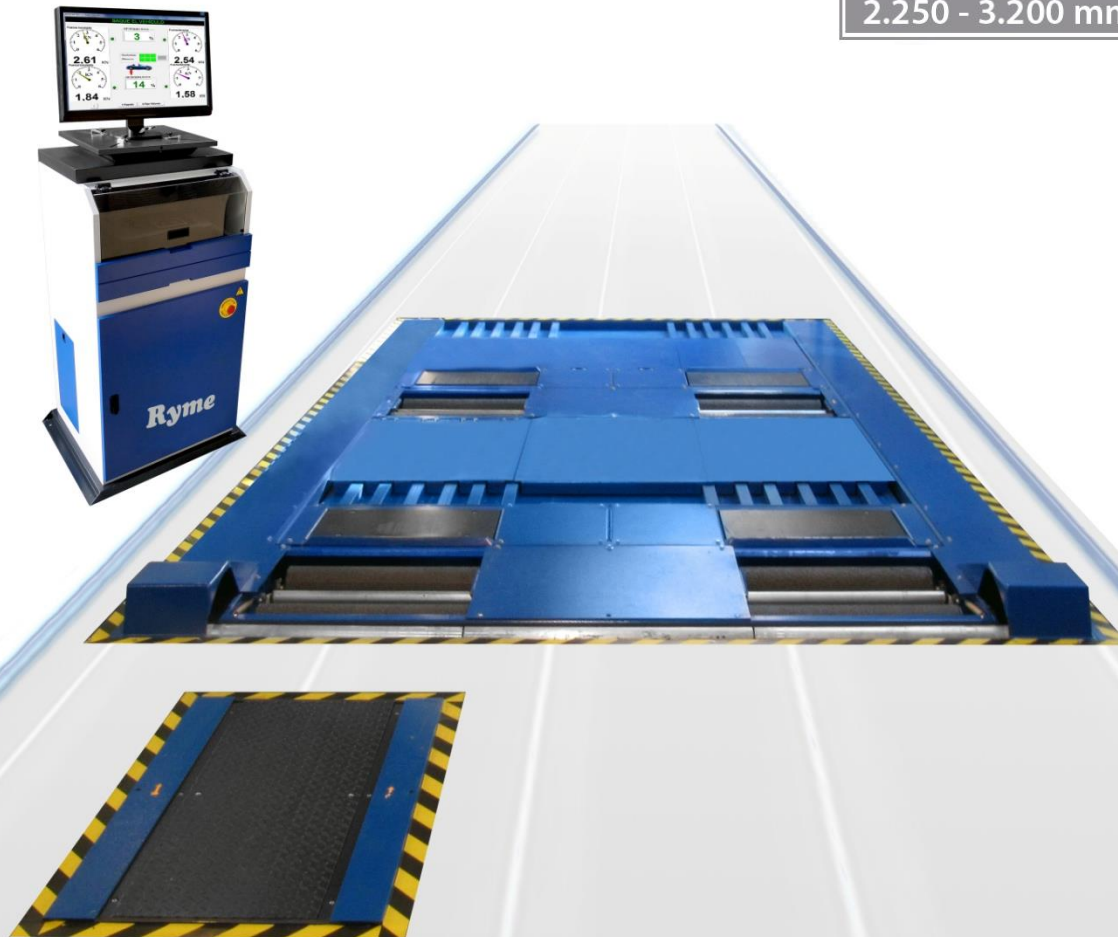
4,6
Kw.

3,5 Tn.

Ø 202 mm. Ø 166 mm.

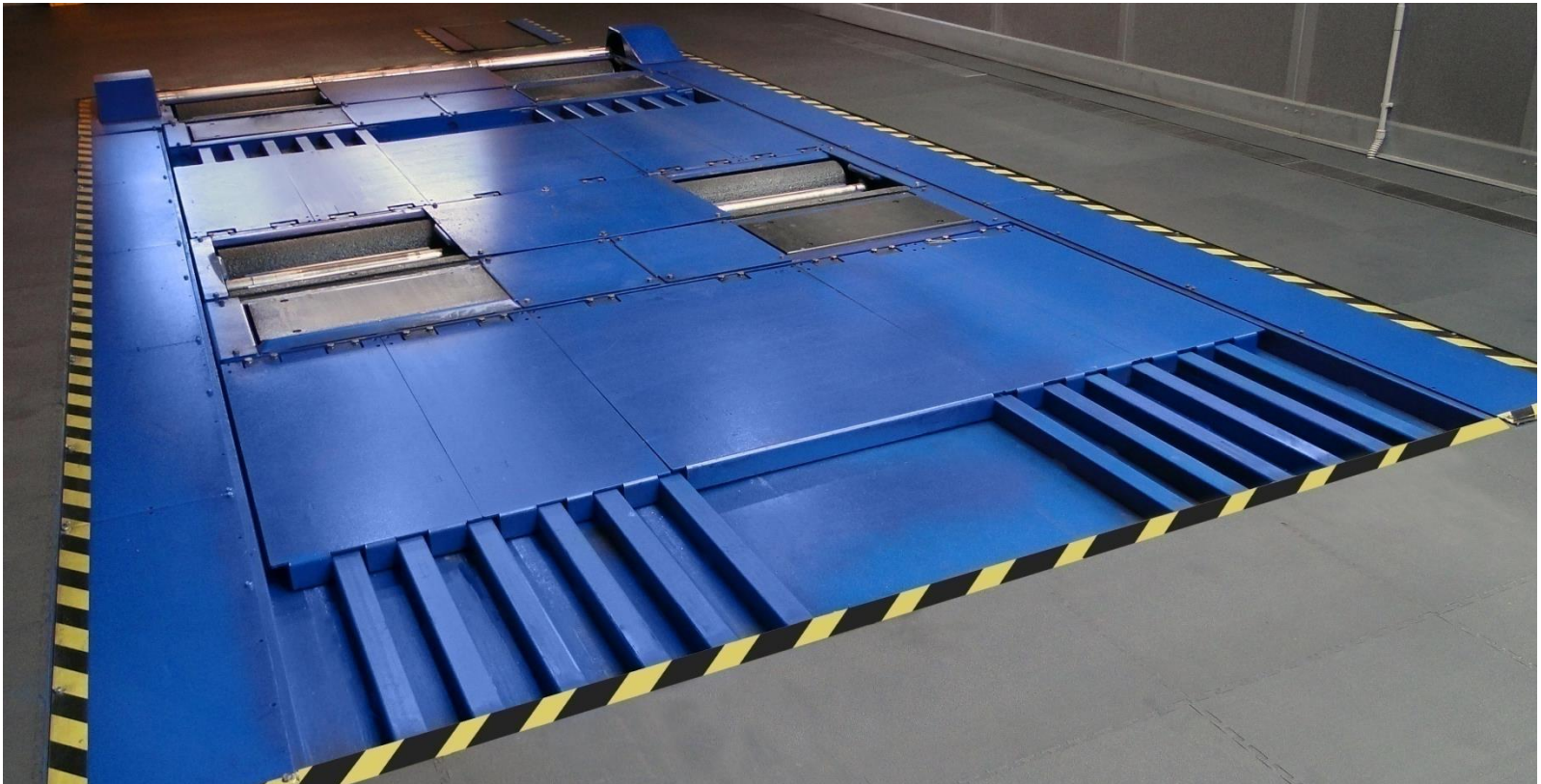
2.250 - 3.200 mm.

820 - 2.150 mm.



Brake Tester & Suspension Bench

- ▶ The Tandem test line is composed by two pairs of benches: 2 for the brake test and 2 for the suspension test



Automatic Adjustment

- ▶ The Tandem has an automatic adjustment to the specific distance between the axles of each vehicle



Pneumatic Retention System

- ▶ It has a pneumatic retention system of the vehicle that gives greater stability and safety for the braking test



Data Base

- ▶ The Tandem test line has a Data Base that includes the axle distances of the European, American and Asiatic vehicles.



Operation: Vehicle Selection

Once chosen the vehicle to be tested, the Tandem adapts the axle distance automatically and allows to do a quick inspection of the vehicle



Operation: Side Slip Teste

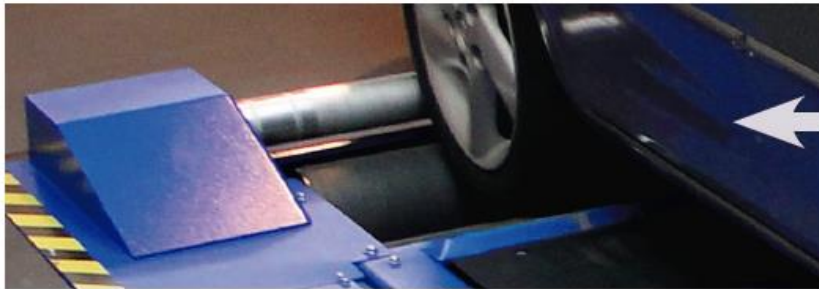
The first test is the **Side Slip Tester** to register the deviation of the **steering axle**



Operation: Brake Teste

Initially a lifting pneumatic beam retains the vehicle. When the proper placement of the vehicle is detected the lifting beam descends, leaving the axles perfectly positioned on the tandem of brake testers. At this moment a retention roller rests on the rear tires, giving the test a greater stability and therefore more safety. Then the motors of the brake tester start. The four wheels are tested simultaneously.

The ovality and brake values of the entire vehicle are then completed and registered.



Operation: Suspension Test

The pneumatic lifting system will position the vehicle on level with the floor in order to make easier the exit from the brake tester rollers. Then the vehicle moves to the tandem suspension tester. Again, both axles are simultaneously tested.



Operation: End of the Tests

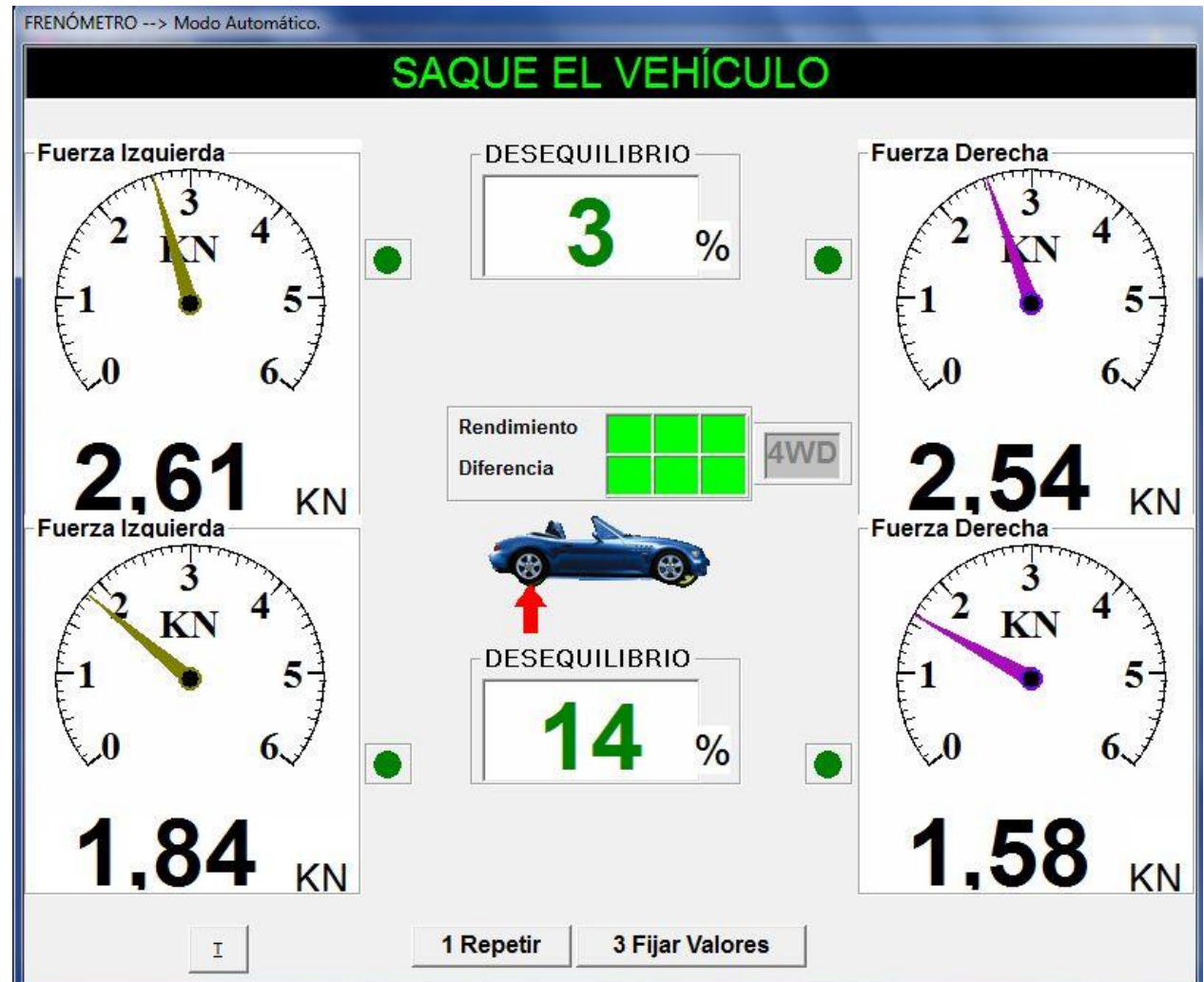
Once finished the tests, the vehicles is removed from the Tandem test line and the operator can continue the remaining tests of the inspection such us emission, headlight, visual inspection, etc..



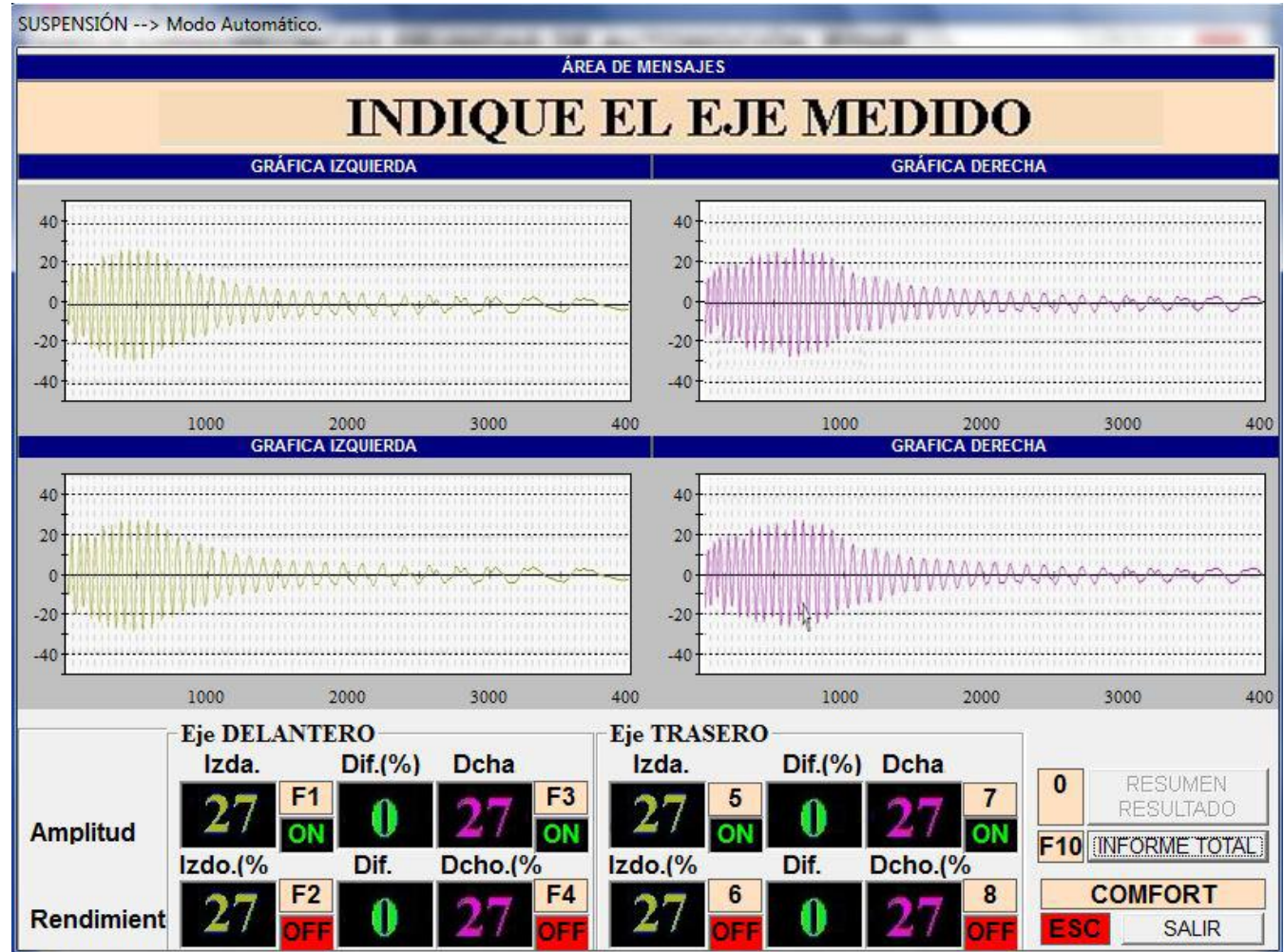
Advantages of the Tandem

- ▶ Reduction of the time of the vehicle inspection around 50%.
- ▶ Increase the productivity of the inspection in more than 100%.
- ▶ As the Tandem tests both axles at the same time, the vehicle movements are reduced and the operator can focus on inspecting the vehicle instead of moving the vehicle.
- ▶ Free Rollers are not required for the 4x4 vehicles do to the simultaneous test of both axles. In the inspection of the 4x4 vehicles the reduced time is even higher than 50%.
- ▶ While testing both axles at the same time the test and its values are more approximate to the real performance of the vehicle.

Software: Brake Teste



Software: Suspension test



**It adjusts automatically to the specific distance
between the axles of the vehicle**



Ryme

Thank you for your attention !

www.ryme.com



Workshop C2

Presentation 2

SOFTWARE FOR DATA COLLECTION AND ANALYSIS FOR PTI-TESTS WITH VERTEST

Stefan Velkoski

Robert Bosch GmbH, Germany





Software for Data collection and analysis of PTI-Tests with VeRTest

Stefan Velkoski – Robert Bosch GmbH

2015 CITA Conference, 14-16th April 2015, Dubai, UAE

Automotive Aftermarket

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BOSCH

VeRTest – Users and Sponsors

- VeRTest = Vehicle Roadworthiness Test
- Users:
 - Vehicle Test Organizations
 - Authorized companies which are working for Ministry of Transport
 - Authorized personnel (such as. Employee of the Ministry of Transport and Communications, etc.)
 - Organizations and institutions that may require some statistical data (ex. Emission of CO2, etc.), such as Ecology organization, Ministry etc.
- Successfully Implemented in:
 - Macedonia (on governmental level)
 - Serbia (AMSS in test period)



System description - VeRTest

- **VeRTest** is a sole integrated IT system in the area of
- Vehicle Data
 - Registered Vehicles
 - Technical Inspected Vehicles
 - Results from measuring with testing equipment
 - Owners and Users of Vehicles
 - Traffic Licenses, international driving licenses and many other documents depending on the local law
 - Collection of fees for Registration
 - Reports and Statistics

ONE Vision:

Creating a fully efficient and effective, error free, integrated IT system to collect, store and analyze all vehicle data in electronic form



Why VeRTest?

- Centralized unified and secure database
- Harmonizing the local legislation with the European and global legislation.
- Increasing the frequency of technical inspections and mandatory items to review
- Error free procedures and data exchange
- Complete customizable system for statistics and data analyzing
- Scheduling and organizing the complete process of technical inspection
- Marketing promotions



Working Flow without errors

The screenshot shows a web-based form for vehicle registration. The form is divided into two main sections: 'Id' and 'Country'. The 'Id' section contains fields for 'Last Registratin Number' (KU-000-AA), 'VIN' (with a red error icon), 'Last Registration Date' (09/03/2015), 'Last reg. valid till' (09/03/2016), 'Last reg. issuer' (МВР КР.ПАЛАНКА), 'Type' (with a red error icon), 'BodyType' (with a red error icon), 'Manufacturer' (lunesite), 'Model', 'Engine Type' (All), 'Engine Number', 'First Reg. Date' (09/03/2015), 'First Reg. Number' (KU-000-AA), 'First Reg. Issuer' (МВР КР.ПАЛАНКА), and 'Colors' (Primary Color [none] [none], Secondary Color [none] [none]). The 'Country' section contains fields for 'Country' (dropdown), 'Production year' (2015), 'TNG' (checkbox), 'Engine Power (kW)' (0), 'Engine Power (kS)' (0), 'Engine Working capacity' (0), 'Empty Weight' (0), 'Max. Allowed Weight' (0), 'Num. of seats' (0), 'Num. of standing places' (0), 'Num. of lying places' (0), 'Num. of axes' (0), 'Num of propulsion axes' (0), 'Primary power source' (dropdown), 'Secondary power source' (dropdown), 'EcoProgram' (dropdown), 'Hook' (checkbox), 'Lifting device' (checkbox), 'for Public Transport' (checkbox), 'Radio Station' (checkbox), 'Num. of doors' (0), and 'Num. of wheels' (0). A red 'X' icon is visible in the top left corner of the form.

Error control on each
entered value
providing error free
data

Error notification on each field
on mouse hover over the red
image

This close-up shows the 'BodyType' field with a red error icon and a tooltip message: 'Please select one item from the list'. The 'Type' field also has a red error icon, and the 'Use' field is set to 'нема'.

Key business benefits of VeRTest

- reduced errors in the output documents
- increased control over the operations
- a step towards to a paperless archive of incoming documents and outcomes of every preformed process
- control over the collecting of registration fees provided by the state and local government
- cheaper operating costs
- increased productivity
- Facilitated procedures
- Aggregate statistics
- Friendlier interface with easy manipulation of the system



Data Storage and Data Selection

The screenshot shows the 'Vehicles Report' window in a software application. The interface includes a navigation pane on the left, a top menu bar with options like 'Logout [F2]', 'Privileges', 'Options', 'Activate dashboard', 'Fiscal Options', 'Culture', and 'Margins'. The main area displays a report for the period 'From: 04/03/2014 To: 04/03/2014'. A 'Refresh [Alt+R]' button and a 'Print [Alt+P]' button are visible. Below the date range, there are several tabs for different data fields: EngineNumber, EngineWorkingCapacity, YearOfProduction, NumberOfDoors, NumberOfSeats, NumberOfStandingSeats, NumberOfUsingSeats, EmptyWeight, MaximumAllowedWeight, Category, NumberOfAxis, NumberOfWheels, VIN, VehicleSizeHeight, LastRegistration, VehicleSizeWidth, VehicleSizeLength, EcoProgram, PrimaryPowerSource, SecondaryPowerSource, PrimaryColorCode, Bodytype, PrimaryColorDescription, SecondaryColorCode, SecondaryColorDescription, DateOfLastRegistration, LastRegistrationValidTill, CO, and Model. A 'Manufacturer' dropdown is set to 'CO2'. Below these fields, there is a 'Drop Column Fields Here' section with a table showing a hierarchy of categories and their counts.

CategoryCode ▲	BodytypeCode ▲	Num. Total
L1	EA	4
	EB	4
L1 Total		8
L2	EG	3
L3	EA	6
	EB	4
L3 Total		10
L4		1
M1		1101
M2		1
M3		4
MM		3
N1		38
N2		10
N3		5
O1		2
O4		8
R2		1
R3		6

→ Simple drag-and-drop report customization

This close-up shows the 'Drop Column Fields Here' section. It contains a table with columns: CategoryCode ▲, BodytypeCode ▲, Manufacturer ▲, Model ▲, and Num. Total. The 'Model' field is circled in red, indicating it is being dragged. The table shows data for L1, EA, LIFAN, and TOMOS.

CategoryCode ▲	BodytypeCode ▲	Manufacturer ▲	Model ▲	Num. Total
L1	EA	LIFAN		1
		TOMOS		3

CategoryCode ▲	BodytypeCode ▲	Manufacturer ▲	Model ▲	Num. Total
L1	EA	LIFAN	LF50Q-2A	1
		TOMOS	APH9AAPH6C	1
			APN 4	1
			APN 6	1
		TOMOS Total		
	EA Total			4
	EB	HERK	50 SW	1
		SONIK	SG	1
		YIYING	YY 50 QT	1
			YY50QT	1
		YIYING Total		
	EB Total			4
L1 Total			8	
L2	EG	ALFA ROMEO	IE 145 1,6	3



User Interaction

- The software provides a simple and user-oriented environment.
- It can easily be adjusted towards the needs of the operator (adaptation of fields for input, color screen, choice of language for communication, etc.)..
- Possibility of collecting detailed information on the owners (users) of vehicles for promoting the user – operator relationship ex. mobile phone numbers, e-mail addresses etc.



Navigation

Customers Data

Vehicles

Vehicles Data

Roadworthiness Test Report

Payment

Traffic licences

Administrator

Reports

Dashboard

Active Debts

Vehicle

PaymentPivotReport

Date Range

Start date 3/4/2014 End date 3/5/2015

Without range % of price 0

Show data

Print report

Paid

Community

Note

Discount

DocumentID

Tax

Discount

VIN

PaymentCategory

DocumentDate

fieldCategory

VehicleModel

RoadworthinessTestType

PriceName

Community

CustomerFakturaDisplayName

PaymentTypeRate

PaymentType

Operator

Customer

PriceWithoutTax

TaxValue

ItemTotal

Drop Column Fields Here

GrandTotal

DocumentNumber	Registrati...	Price	PriceWithoutTax	TaxValue	ItemTotal
1-33-5506/2014	KP 0909 AB	170.0000	170	0	170
		600.0000	600		600
		994.0000	842	15	857
		1879.0...	1592	28	1620
KP 0909 AB Total			3570	45	
1-33-5507/2014	KP	0.0000	0		
		50.0000	50		
		143.0000	143		
		900.0000	763	13	
KP Total			956	13	
1-33-5508/2014	KP 1633 AB	600.0000	508	9	
1-33-5509/2014	KU-453-MG	0.0000	0		
		15.0000	15		

File

View

Background

Page Setup...

Print...

Print

Export Document...

Send via E-Mail...

Exit

PDF File

MHT File

RTF File

XLS File

XLSX File

CSV File

File View Background

Page Setup...
Print...
Print
Export Document...
Send via E-Mail...
Exit

PDF File
HTML File
MHT File
RTF File
XLS File
XLSX File
CSV File
Text File
Image File

04/03/2014-05/03/2015

Discount	DocumentID	Tax	Discount	VIN	PaymentCategory	DocumentDate	fieldCategory	VehicleModel	RoadworthinessTestType
	ItemTotal								
					GrandTotal				
	RegistrationPlate	Price		PriceWithoutTax	TaxValue	ItemTotal			
	KP 0822 AB	0.0000		0	0	0			
		20.0000		20	0	20			
		100.0000		100	0	100			
		105.0000		105	0	105			
		150.0000		150	0	150			
		500.0000		424	76	500			
		600.0000		600	0	600			
	KP 0822 AB Total			1399	76	1475			
1-33-5504/2014	KU-272-MJ	0.0000		0	0	0			
		15.0000		15	0	15			
		61.0000		61	0	61			
		100.0000		100	0	100			
		118.0000		100	18	118			
		130.0000		260	0	260			
		994.0000		842	152	994			
	KU-272-MJ Total			1378	170	1548			
1-33-5505/2014	KU-827-MG	0.0000		0	0	0			
		11.0000		11	0	11			
		24.0000		24	0	24			



Software for Data collection and analysis of PTI-Tests with VeRTest

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Workshop C2

Presentation 3

IMPROVEMENT OF THE RELIABILITY AND THE CONSISTENCY OF THE PTI

Jan van der Does

Executive Project/Product Manager, Van Leeuwen Test Systems
B.V., The Netherlands



Improvement of the reliability and the consistency of the PTI



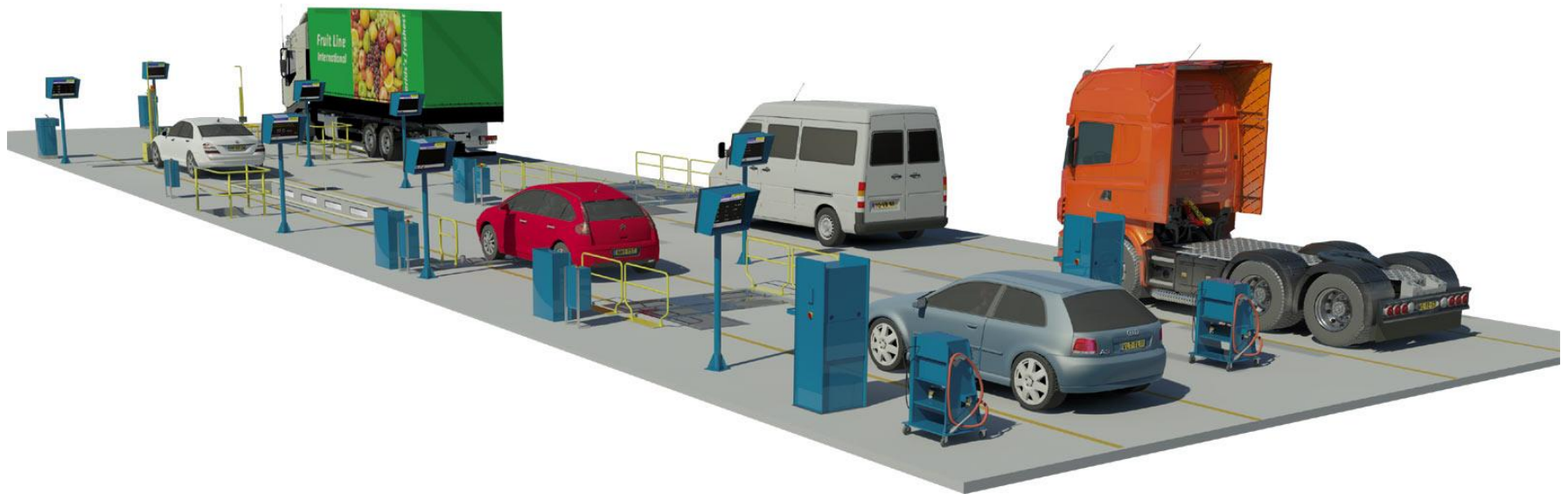
Van Leeuwen Test Systems B.V.
The Netherlands

V1.0

Applicable to large test stations



small and 1-lane test stations



and mobile test stations.



Information on overhead monitor

type of test

driver instructions

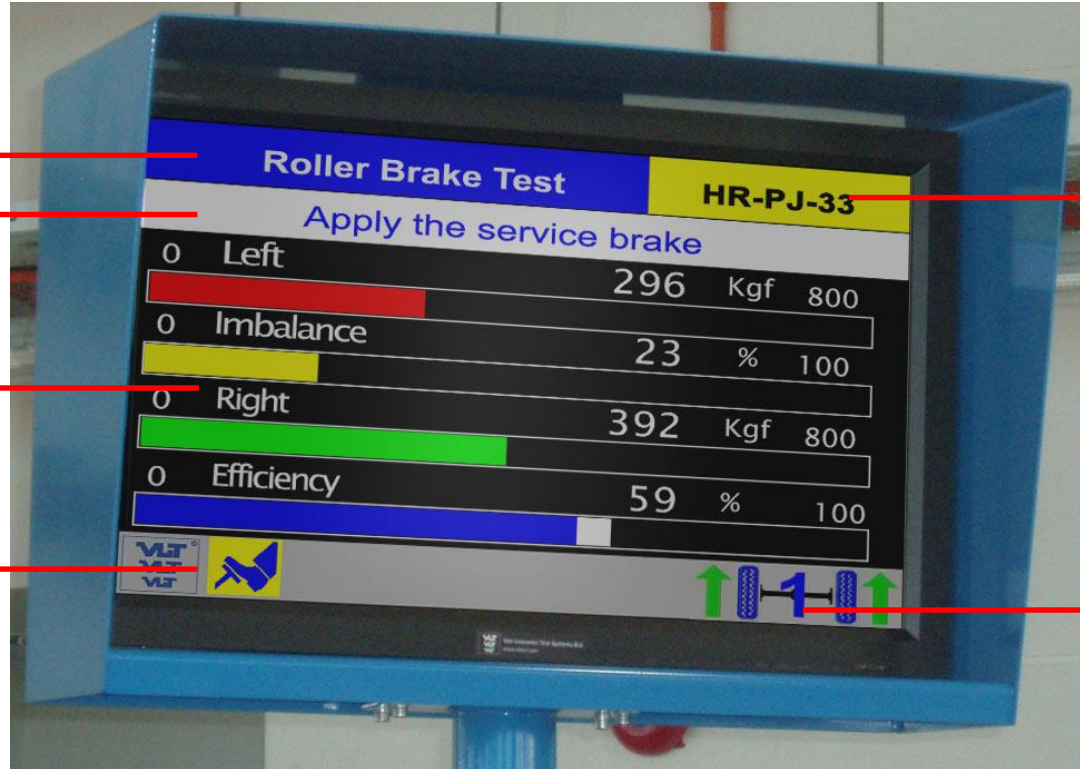
real-time

measuring values

tests to perform

licence number

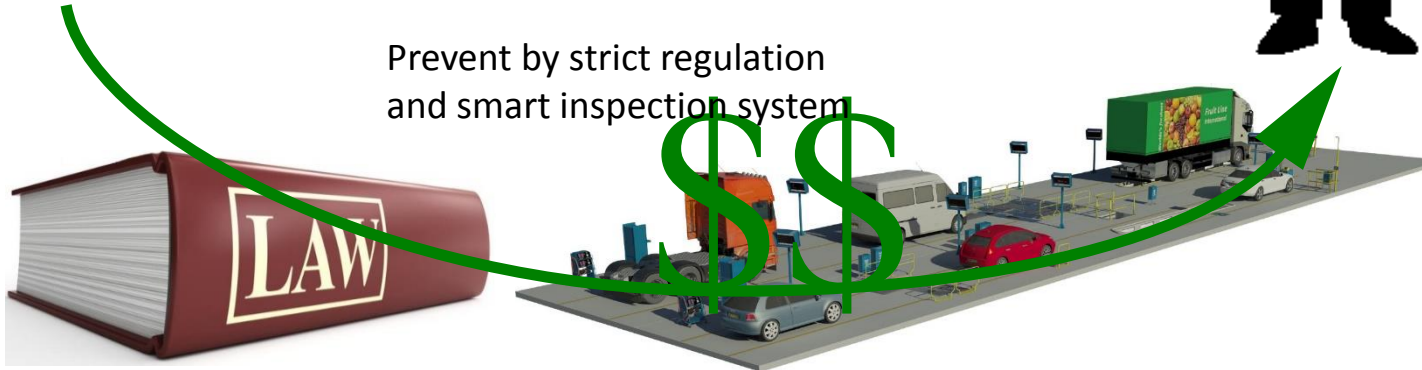
axle nr.



Bribery sensitive situation



Prevent by strict regulation
and smart inspection system



- Prevent contact between customer and vehicle examiner



waiting area



vehicle inspection area

- Alternatively assign vehicle examiner to random lane.
- System requires random compulsory re-inspections to be carried out by the manager.

Controlled access to parts of IT system

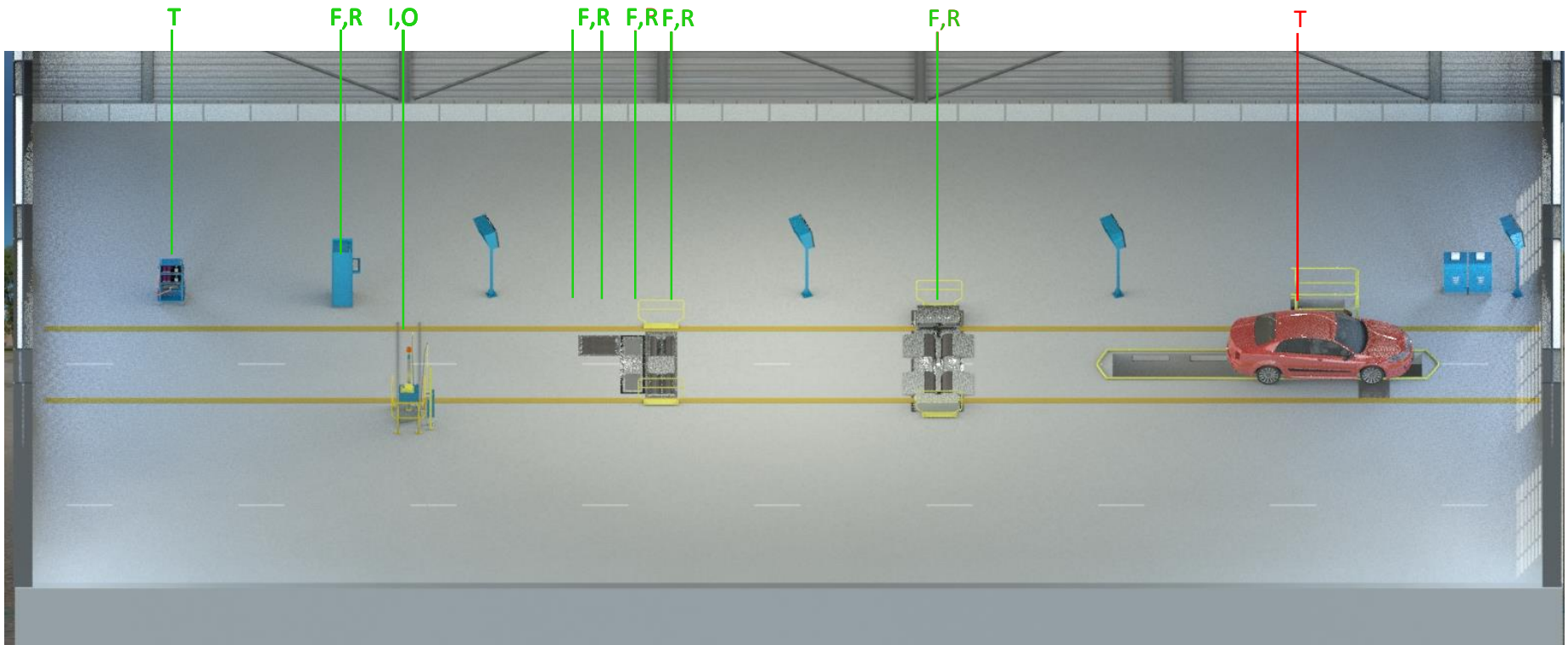
Permissions

Add permission

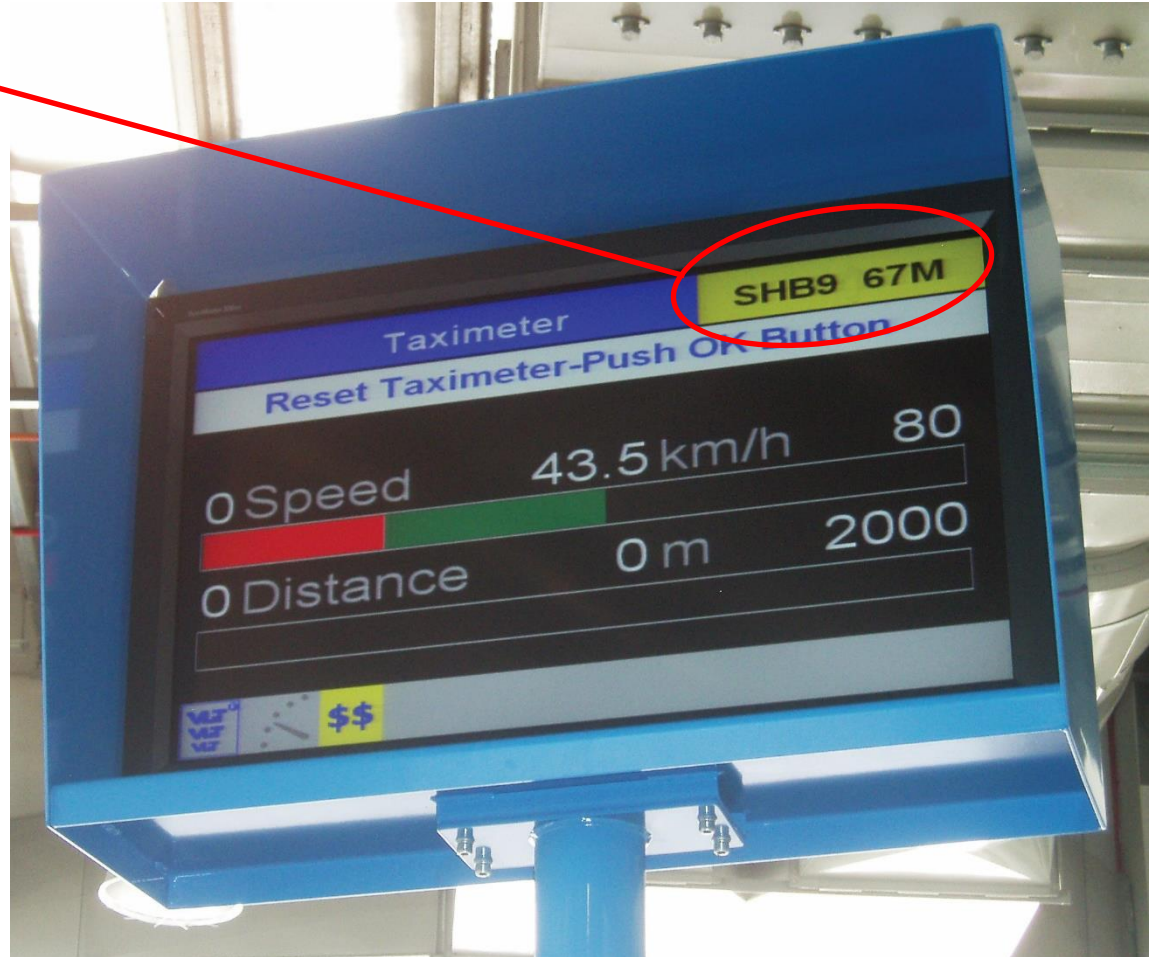
Permission name	Station overview	End of day summary	Inspector reporting	Statistics and graphics	Information equipment/calibration	Add equipment event	User access	Vehicle info
Administrator	v	v	v	v	v	v	v	v
Manager	v	v	v	v	v	x	x	v
Station Manager	v	v	v	v	v	x	x	v
Maintenance	x	x	x	x	v	v	x	x

Tracking system links the tests to the correct vehicle (axle)

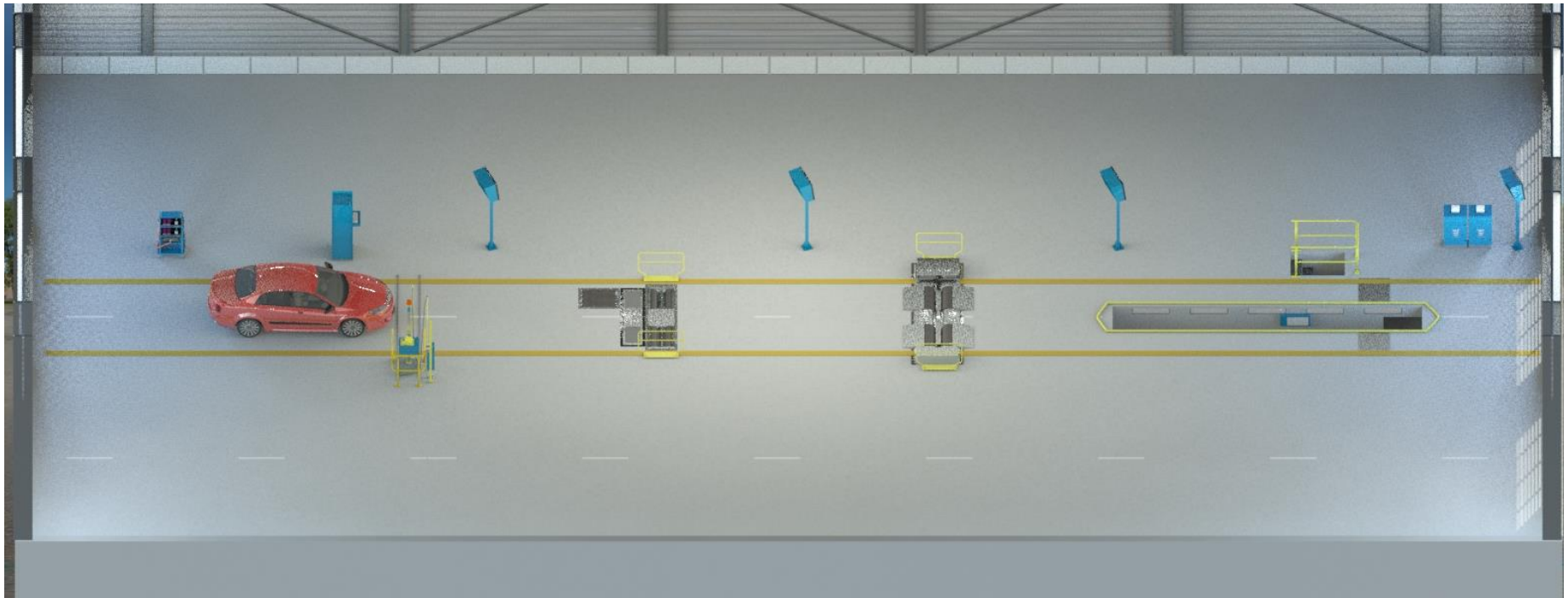
T = tracking
F = front axle
R = rear axle
I = in
O = out



Licence number check



Stage 1



Inspector identification with RFID tag



Inspector id stored with each test

RollerBrakeTest							
Test Result	Start Time	End Time	Lane	Performed by			
Passed	17:41:12	17:42:36	406050	[REDACTED]			
Measured Values							
Axle	Weight	Drag	Brake type	Left force	Right force	Efficiency	Diff - Prog
1	781	22,6%	Service	271	252	67%	F
			Serv Imbal.	265	242	-	8%
			Parking	0	0	-	-
2	766	45,8%	Service	214	208	55,1%	P
			Serv Imbal.	214	208	-	2%
			Parking	219	198	54,4%	10%

Irregularity alerts

File Tools Help

Vehicle Search

Plate: 123-abc Search

Inspection Information

Inspector Name: VLT Inspector Receipt No: Mileage: 0 km

Vehicle Information

Vehicle Type: Car
Manufacturer: Color: (dd/mm/yyyy)
Model: Year: Engine No.:
Chassis: Engine Type: Four Stroke E.Capacity Weight:
Max Power: Max RPM: Power:
Fuel Type: Petrol Item: BELOW_5999_NO_AB!
Speed Limiter: Suit Box:

Head Beam Information

HeadLight Configuration: 2 High

Axle Information

Number of Axles: 2

	Traction	P. Brake - St. with P. Brake	Released	Applied	Distance to Next (mm)
Axle 1	<input checked="" type="checkbox"/>	<input type="checkbox"/> Released <input type="checkbox"/> Applied	<input type="checkbox"/>	<input type="checkbox"/>	NORMAL
Axle 2	<input type="checkbox"/>	<input checked="" type="checkbox"/> Released <input type="checkbox"/> Applied	<input type="checkbox"/>	<input type="checkbox"/>	NORMAL

Custom Properties

Tests to Perform

☒ Above Carriage Insp.
☒ Under Carriage Insp.
☐ Diesel Smoke
☒ Emission
☒ Roller Brake
☒ Side Slip
☐ Speedometer
☐ Suspension

Unselect All

Destination: 405050-HV Lane 5 - Sectio

Cancel Start

Attention

**Road tax not paid
Vehicle reported stolen
Unpaid traffic fine(s)**

Fixed preselected tests for each compulsory inspection.

Inspection Information

Inspection Type:

210 First In

km

white

11/08/2000

1765

4000

SPV

Custom Properties

Tests to Perform

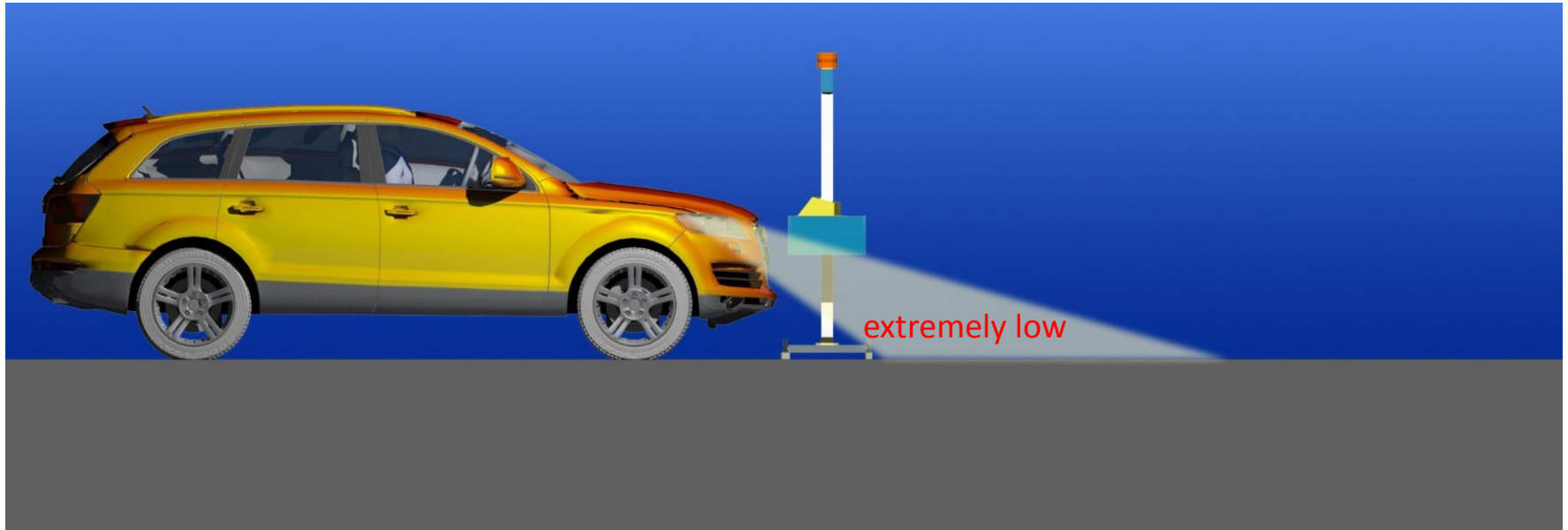
- ☒ Diesel Smoke
- ☐ Emission
- ☒ Head Beam
- ☒ Roller Brake
- ☒ Side Slip
- ☒ Sound Level Tester
- ☒ Speedometer
- ☒ Suspension
- ☒ Above Carriage Insp.
- ☒ Under Carriage Insp.

Movie clip

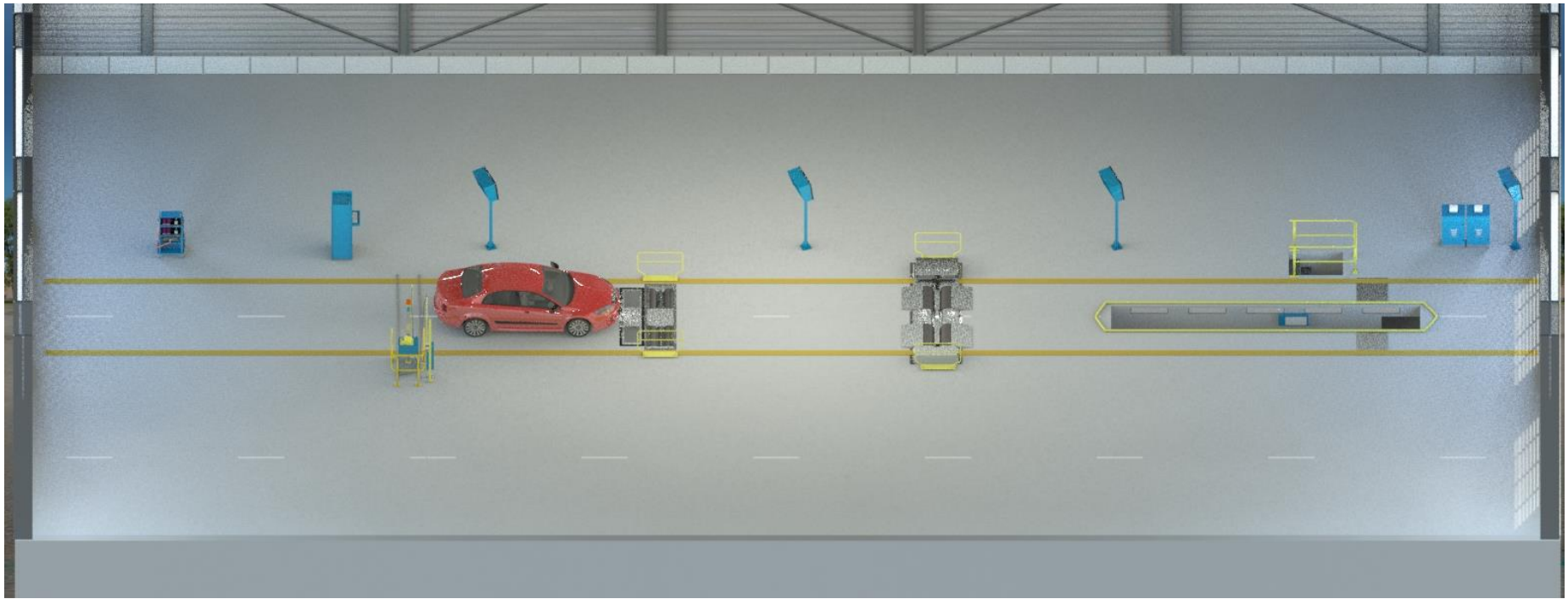
Robotised headlight beam tester
with laser scanner to detect
incorrect vehicle alignment



Comprehensive PTI standards



Stage 2



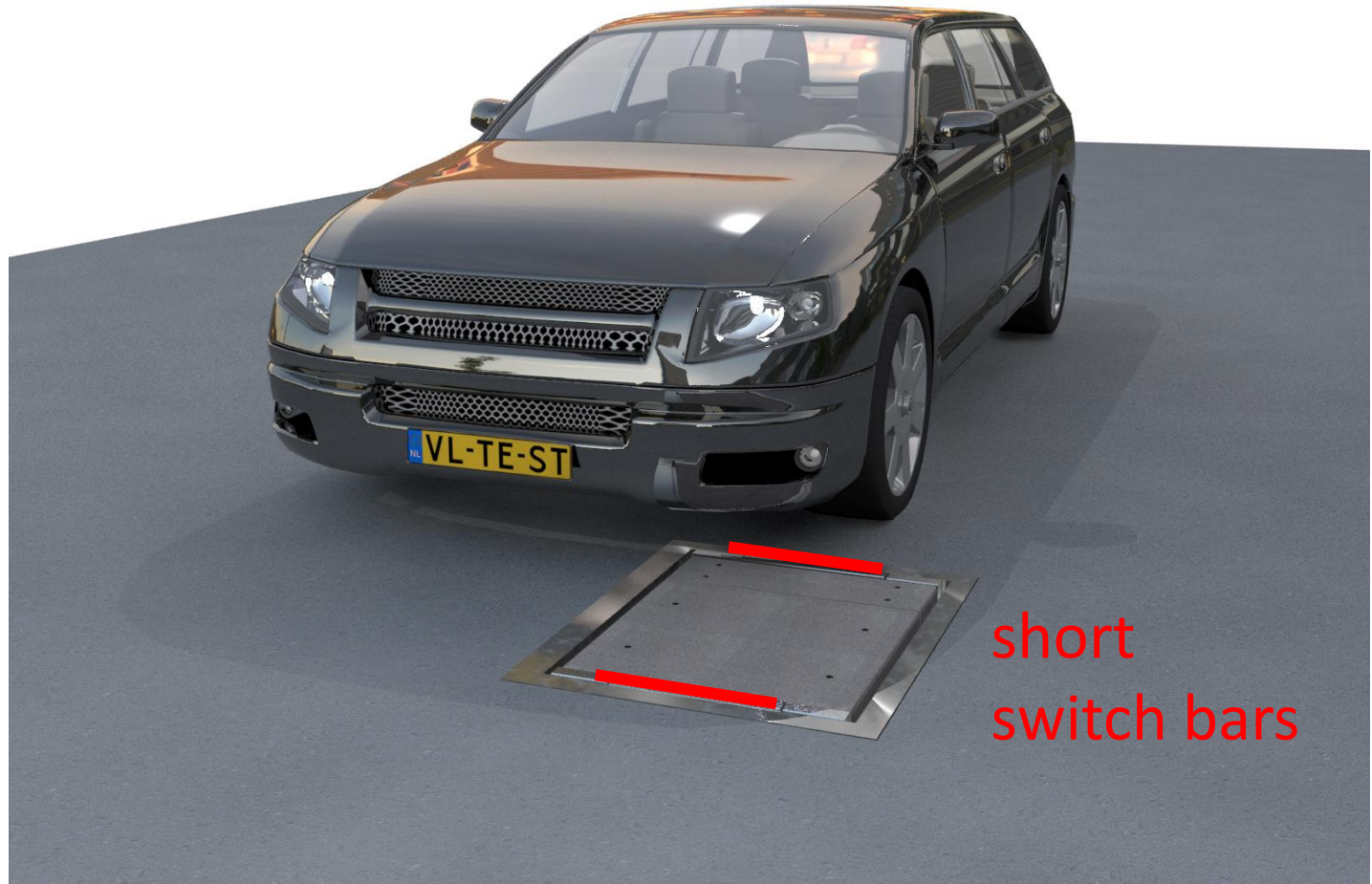
Side slip tester



Side slip tester



Side slip tester



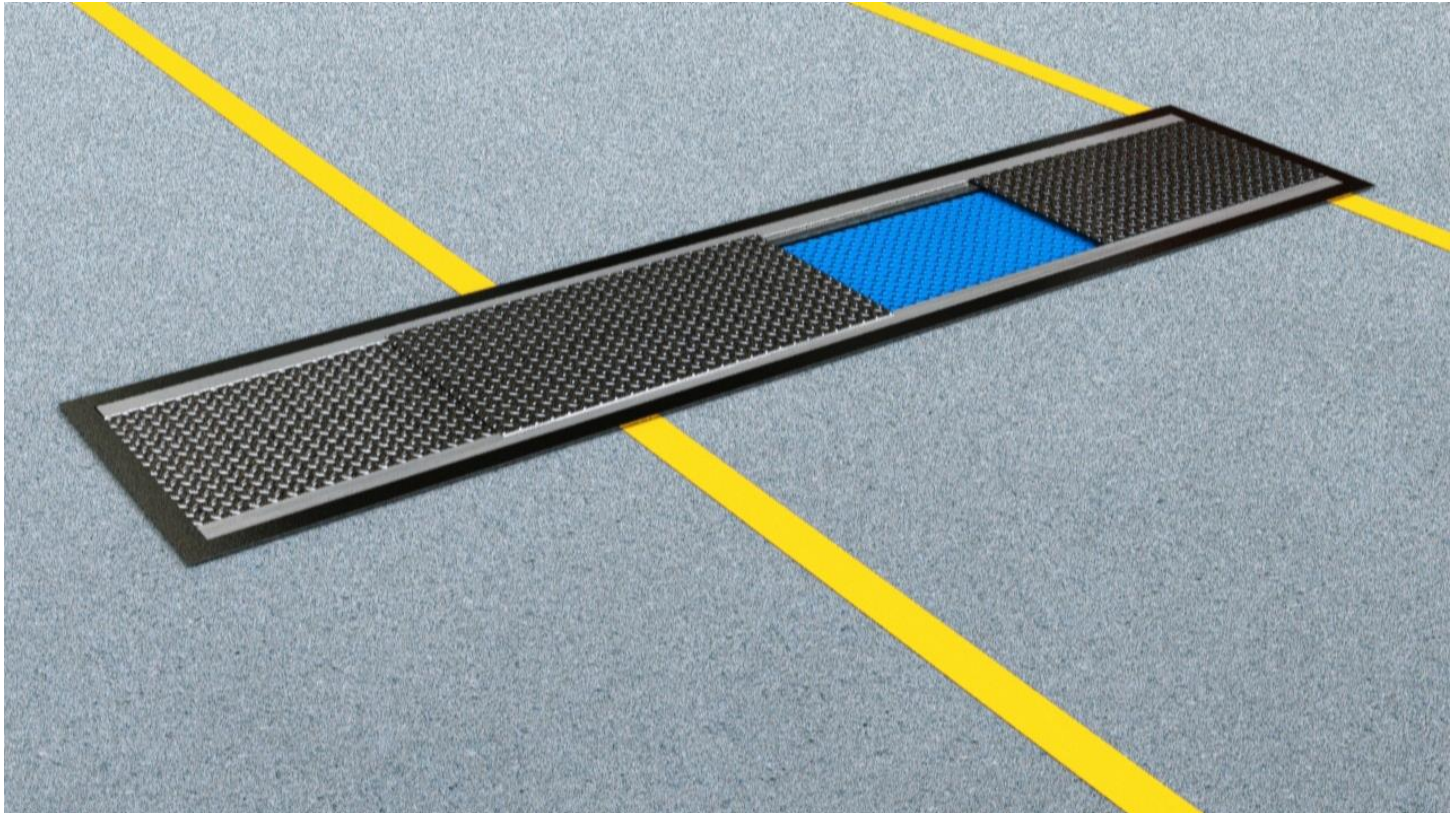
Side slip tester



speed
measurement

Tracking system controlled cover plates

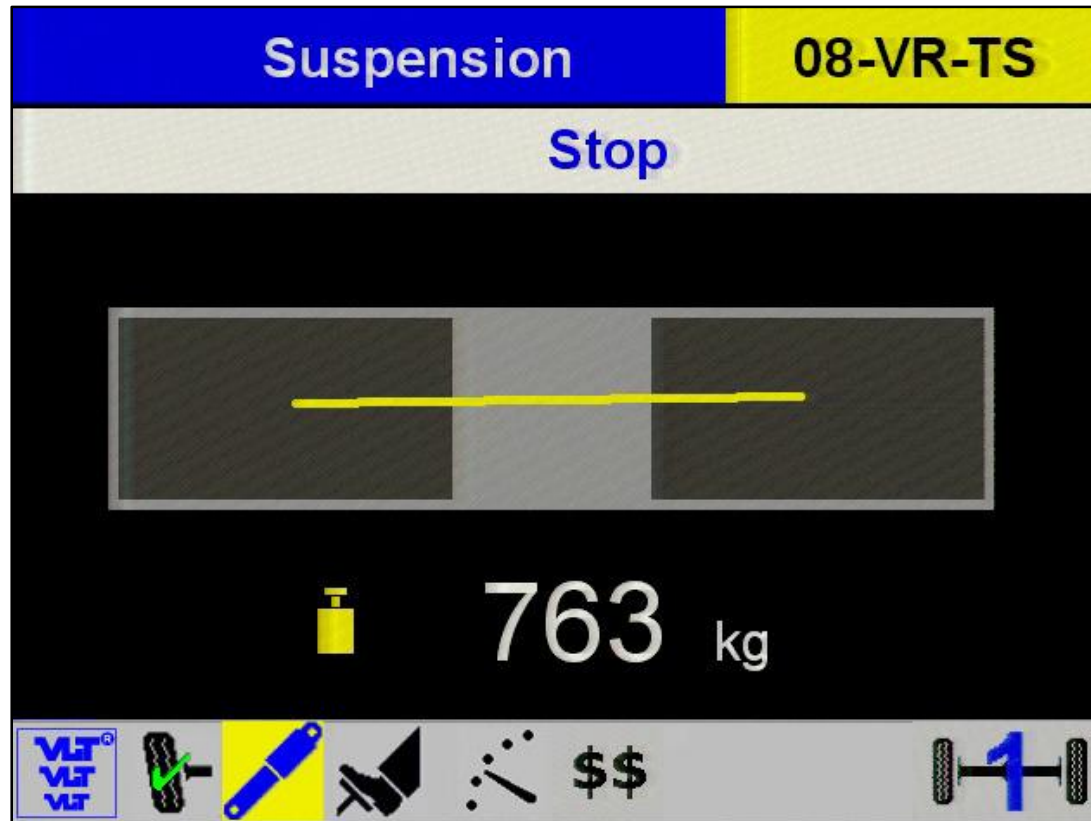
Movie clip



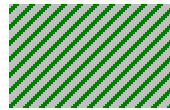
Misalignment



Axle position indication



Wheel position check











allowed wheel position area











weight load cell



Weight and position change check during suspension test















Suspension		5-VPT-02	
Test Stopped - Weight Changed			
	- kg		- kg
	- N/mm		- N/mm
	- % @ - Hz		- % @ - Hz
	- ° @ - Hz		- ° @ - Hz

1

Suspension		5-VPT-02	
Test Stopped - Vehicle Moved			
	- kg		- kg
	- N/mm		- N/mm
	- % @ - Hz		- % @ - Hz
	- ° @ - Hz		- ° @ - Hz

2

Judgment against absolute values, so not only a left/right comparison

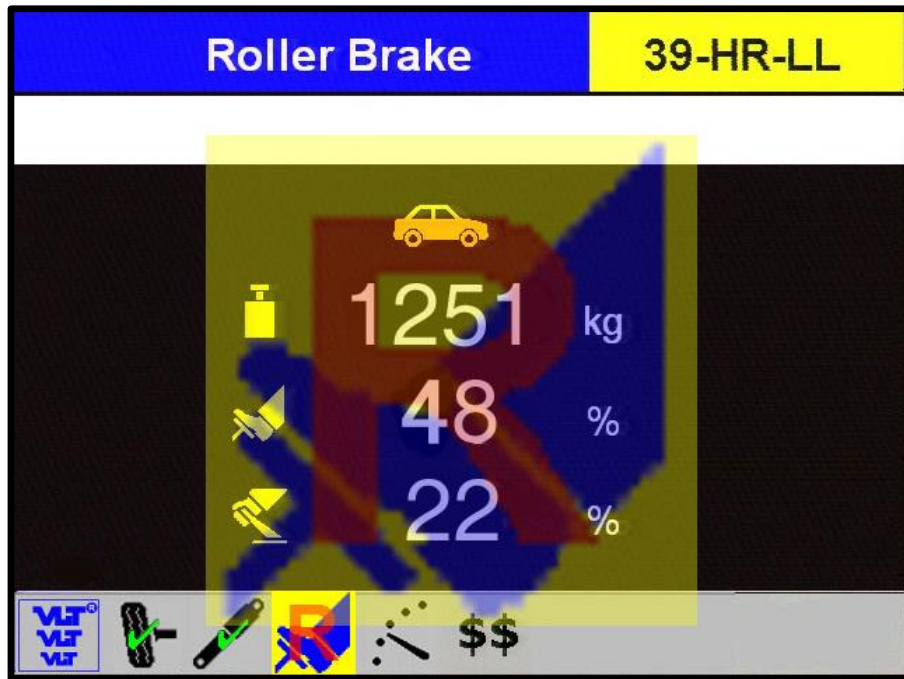
	Suspension	5-VPT-02
		
	279 kg	570 kg
	740 N/mm	12 %
	8 % @ 16 Hz	9 %
	103 ° @ 15 Hz	37 %
		65 ° @ 15 Hz
		
		
		
		



‘Safety’ barriers around brake tester



Automatic triggering of re-test



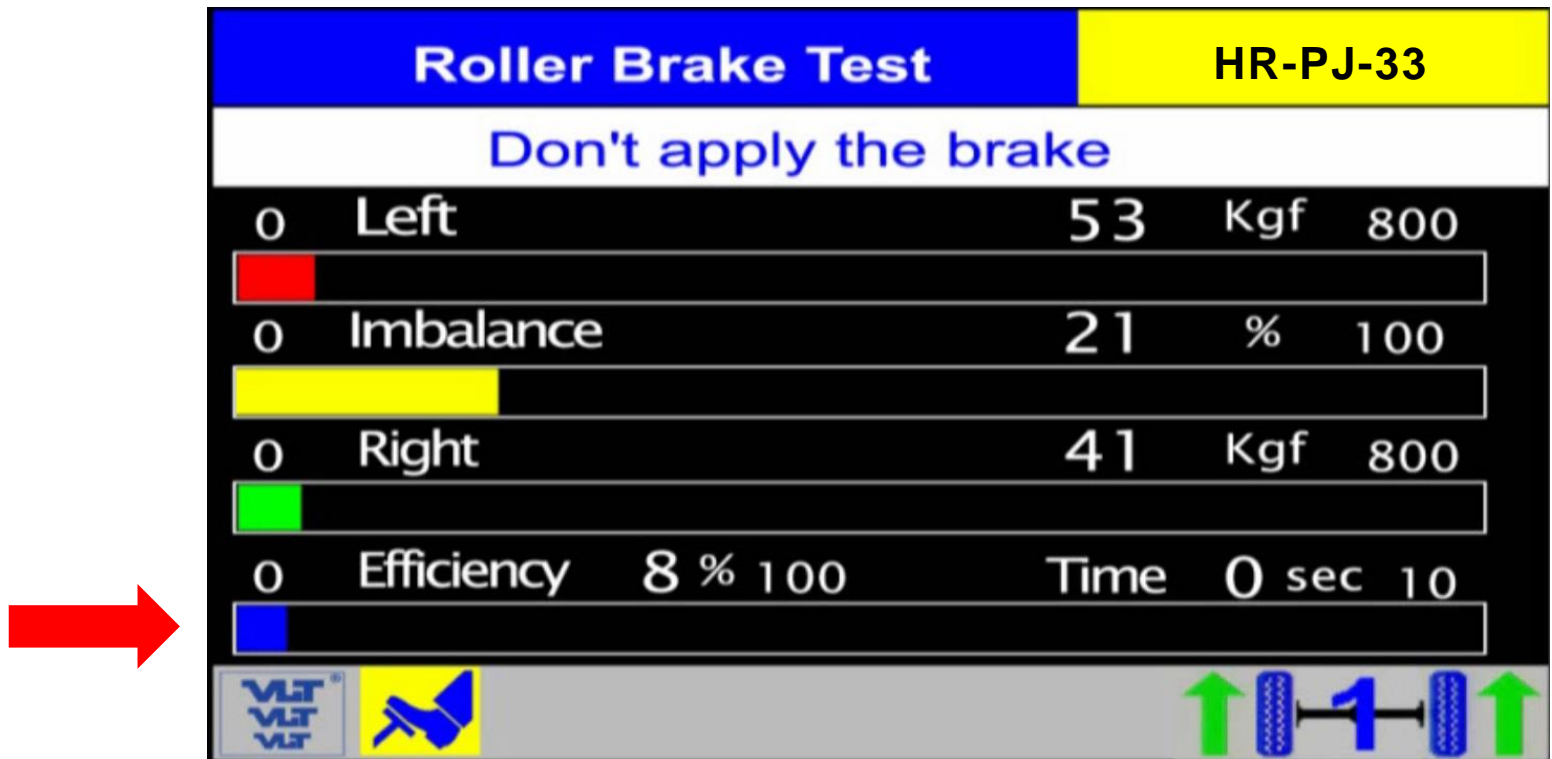
In this example: requirement = 50%



Compulsory re-test

Progressivity check to detect slamming on the brake.

Movie clip



Use of emergency stop detection

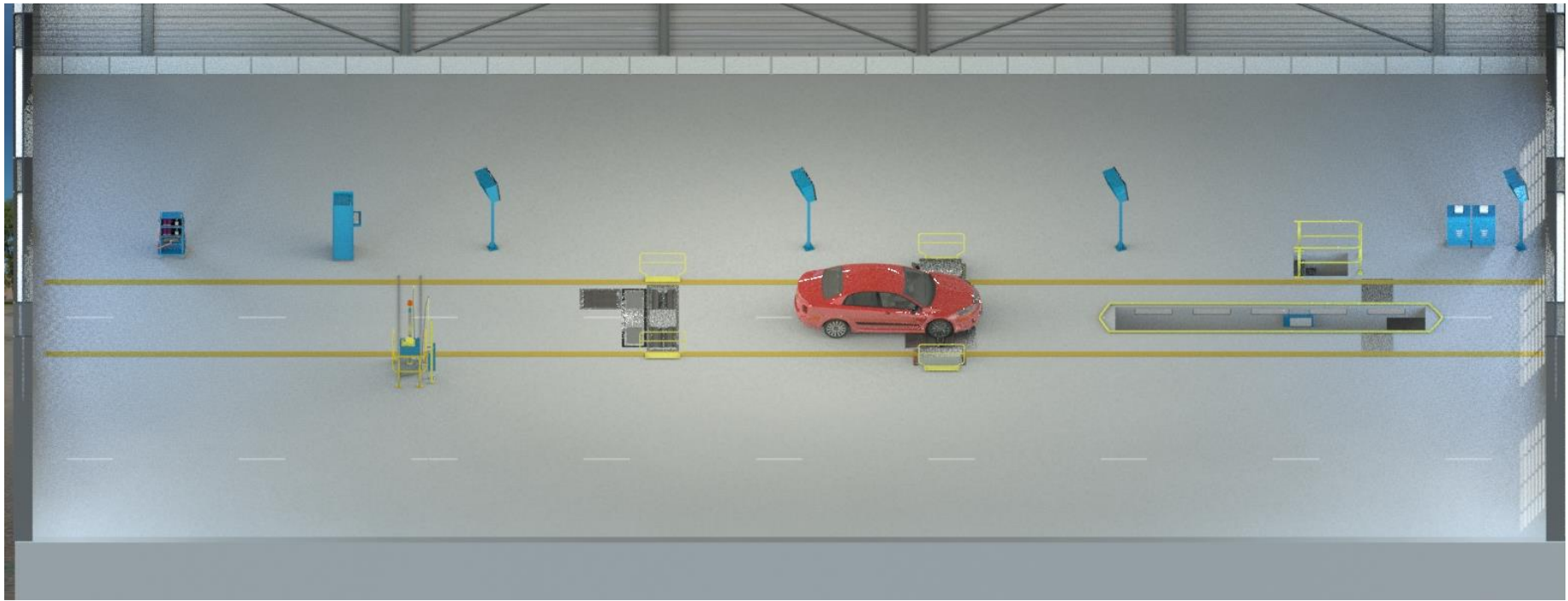


Use of emergency stop detection

power cut + software trigger



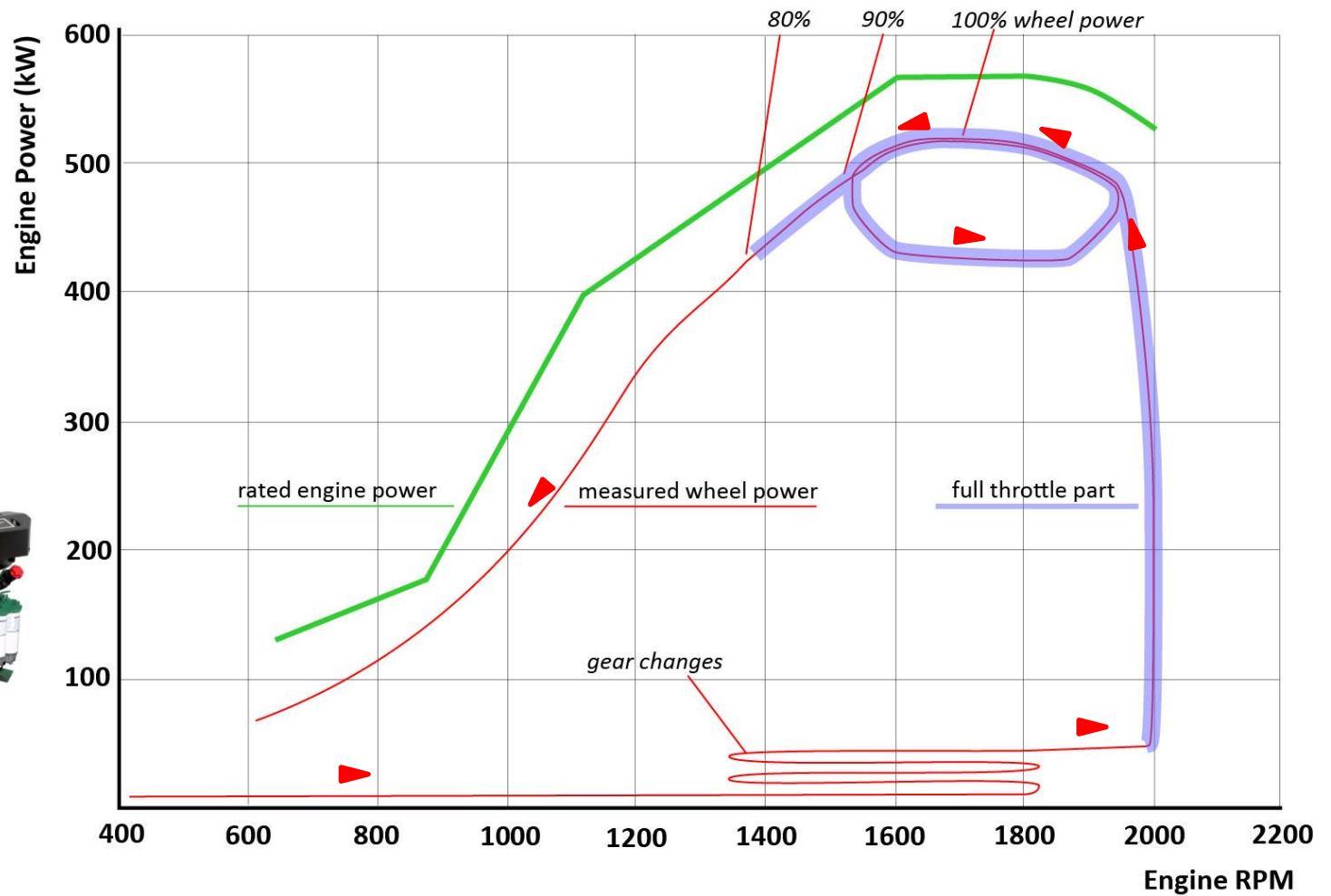
Stage 3



Stage 3, diesel smoke test under full load with CDST



Controlled
test cycle on CDST



Checks on engine rpm and power

Diesel Smoke		70-NX-VB
Wait engine idling time		
Max. RPM (n-1):	4570	✓
Power (kW)	61	✓
RPM (n-1)	Opacity (HSU)	
1	4210	15 ✓
2	3790	13 ✓
3	3370	10 ✓



Speedometer test on CDST

No actual speed indication
at speedometer test



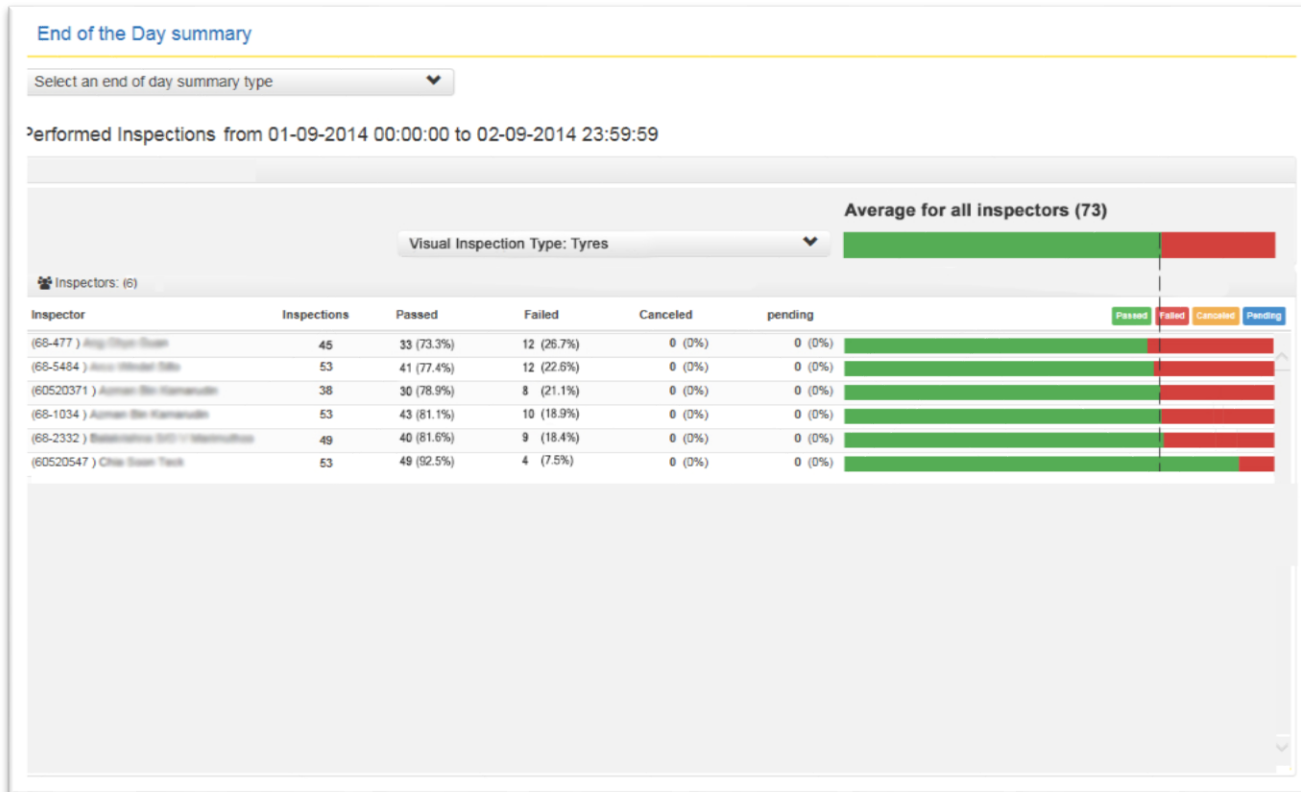
Aircon-test: not only temperature, but also air flow measurement



Inspector identification with RFID tag



Comparison of test results between inspectors



Test lane output fraud sensitive documents

TEST CERTIFICATE
Land Transport Authority
THE ROAD TRAFFIC ACT
(CHAPTER 276)

This is to certify that motor vehicle with
was examined under section 90 of the
the date of examination the prescribed
complied with in relation to the vehicle

Date of issue : 02/09/2004
Reference No : A2020904-00

PERAKUAN PEMERIKSAAN
BUTIR-BUTIR KENDERAAN YANG DIPERIKSA

NAMA NAME	SIRIL STREET NO
ALAMAT ADDRESS	
BUATAN/MODEL (YEAR/MODEL)	NO. PENDAFTARAN (REGISTRATION)
TARIKH DIPERIKSA (DATE MANUFACTURED)	TARIKH PENDAFTARAN (DATE OF REGISTRATION)
NO. ENJIN (ENGINE NO.)	KATEGORI KENDERAAN/KOD BAHAN (VEHICLE CATEGORY/BODY CODE)
NO. CHASIS (CHASSIS NO.)	TARIKH PEMERIKSAAN (INSPECTION DATE)
SIRIL ENJIN (ENGINE CAPACITY)	JENIS PEMERIKSAAN (TYPE OF INSPECTION)
BAHAN BAKAR (FUEL TYPE)	KOD PUSAT (CENTRE CODE)
BERAT TANPA MUATAN (BTM) (GROSS WEIGHT)	KOD PEMERIKSA (EXAMINER CODE)
BERAT BAHAN BAKAR (PERMISSIBLE GROSS WEIGHT)	SAH SEHINGGA (VALID UNTIL)

NO. SIRIL/STREET NO:
No 8652551
NO. PENDAFTARAN/REGISTRATION NO:

PERAKUAN PEMERIKSAAN
SAH SEHINGGA/VALID

NO. ENJIN/ENGINE NO:
NO. CHASIS/CHASSIS NO:
TARIKH LULUS/DATE
KOD PUSAT/CENTRE

TEST CERTIFICATE
Land Transport Authority
THE ROAD TRAFFIC ACT
(CHAPTER 276)

NO. S

This is to certify that motor vehicle with registration No. _____
was examined under section 90 of the Road Traffic Act and that at the
date of the examination the prescribed statutory requirements were complied
with in relation to the vehicle.

Date of issue : _____
Reference No : _____

Authorised Signatory

KEEP THIS CERTIFICATE SAFELY
CHECK carefully that the particulars specified above are correct.
A test certificate showing any alteration should not be issued or
accepted as this may delay the renewal of a vehicle licence.
For the purpose of renewing road tax, this Certificate must be
presented within **3 months** from the date of issue.

WARNING: A test certificate should not be accepted as evidence of the
satisfactory mechanical condition of a vehicle offered for sale.

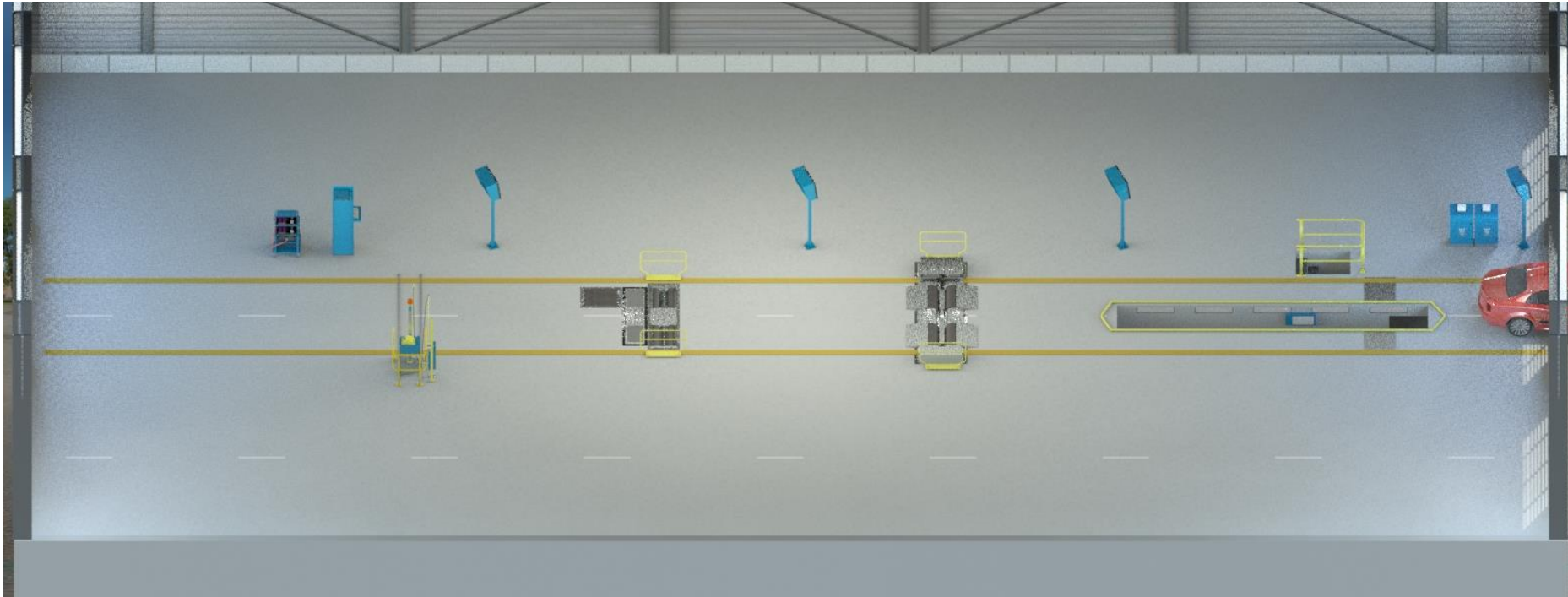
Lockable printer cabinet

test certificates












































test reports



End of inspection



Station overview screen for station manager

 VEHICLE STATION OVERVIEW Traffic on vehicle test lanes									
	Stage 1		Stage 2		Stage 3		Stage 4		Inspection type
Lane 1									Car lane
Waiting 02 									
KGS-883 MWE-927	SZ-23-45		HR-PJ-33		BDR-284		FC-35-HS		
Lane 2									Car lane
Waiting 00 									
GT-43-KD			FS-HK-58		-		HR-32-JY		
Lane 3									Universal lane
Waiting 02 									
HD-29-LK JSJ-836	LP-LK-74		VR-OM-73		HS-JJ-54		NWS-320		
Lane 4									Universal lane
Waiting 01 									
HDS-937	ND-93-NS		LKS-824		TS-38-JS		-		
Lane 5									Motorcycle lane
Waiting 00 									
	-		MZ-VT-64						

Station overview screen with real-time test lane overview screen





Thank you for your attention.

Please feel free to contact us
for detailed information.

Van Leeuwen Test Systems B.V.

Nieuwe Donk 18,
4879 AC Etten-Leur, The Netherlands
Tel. +31(0)76 502 9911, Fax +31(0)76 501 6731
E-mail: sales@vltest.com



CITA 2015



INTERNATIONAL MOTOR VEHICLE INSPECTION COMMITTEE

Conference and 17th
General Assembly

14-16th APRIL DUBAI U.A.E.

WWW.CITA-VEHICLEINSPECTION.ORG

Workshop C2

Presentation 4

CONFIRMING SAFETY OF ELECTRIC AND HYBRID ELECTRIC VEHICLES

Hannes Bloder

AVL DiTEST, Austria

HOSTED BY



ENOC

الشريك الأفضل بقطاع الطاقة
Energy Partner of Choice

أكثر من مجرد فحص للمركبات
Beyond Vehicle Testing





Workshop C2

Presentation 5

DIGITAL PTI (PTI 2.0) – INNOVATIVE APPROACH

Antonio Multari

Technical Expert Emissions at CITA and Vice Chairman of WG
Diagnostics & Emissions at ASA and Sales Director Export,
MAHA, Germany



Inspection Procedures and Methods

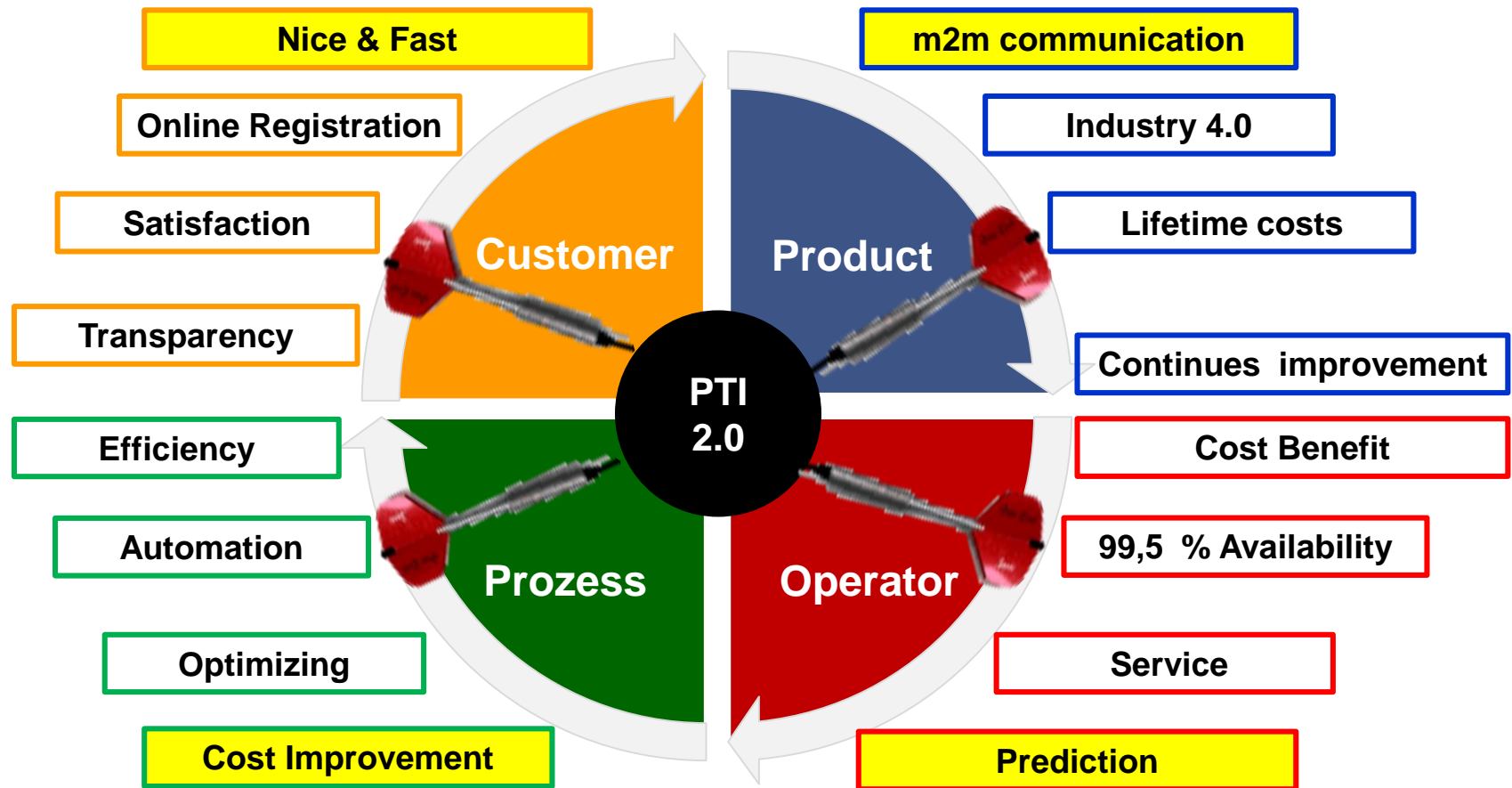
Digital PTI (PTI 2.0) - Innovative Approach

**By Antonio Multari, Technical Expert Emissions at CITA
and Vice Chairman of WG Diagnostic & Emissions at ASA
and Sales Director Export at MAHA**

The background of the slide is a blue-toned graphic. It features a perspective view of binary code (0s and 1s) arranged in rows that recede into the distance, creating a tunnel-like effect. Overlaid on this is a faint line graph with several data points connected by lines, suggesting data analysis or trends.

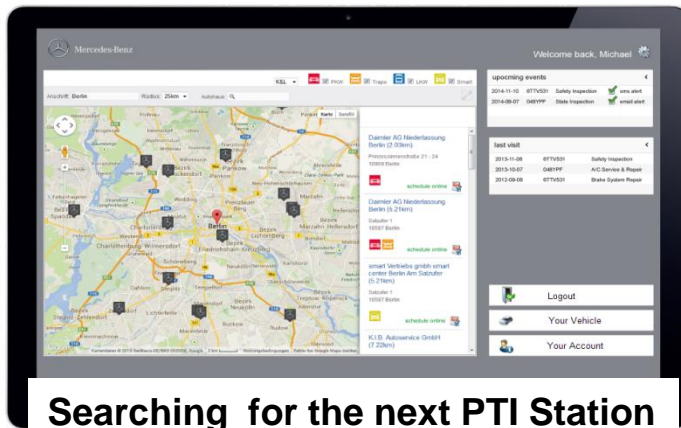
In God we trust;
all others must bring data!

Digital PTI (PTI 2.0) - Innovative Approach



- 1. Vehicle identification (e.g. online registration, license plate reading, RFID,...)**
- 2. Tire depth measurement**
- 3. Body scan**
- 4. OBD**
- 5. Online data evaluation (e.g. tire-rim combination)**
- 6. Visualization via tablet, smartphone, ...**
- 7. Paperless documentation**
- 8. Prediction of results**

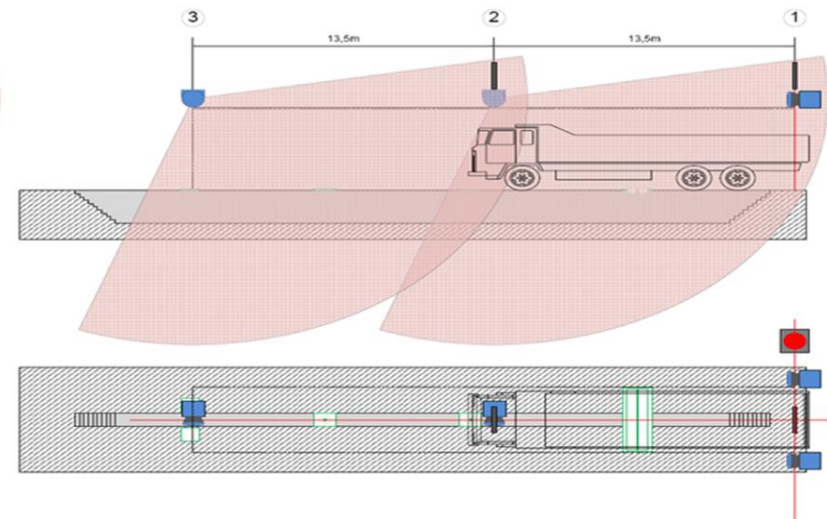
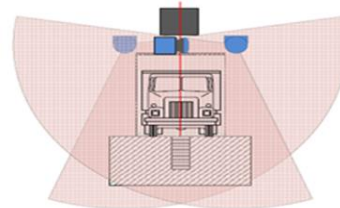
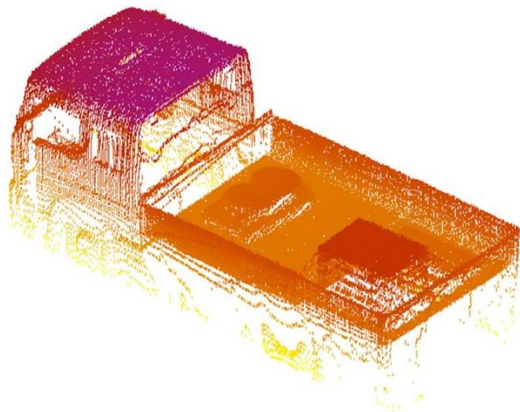
1. Vehicle identification (e.g. online registration, license plate reading, RFID,...)



2. Tire depth measurement

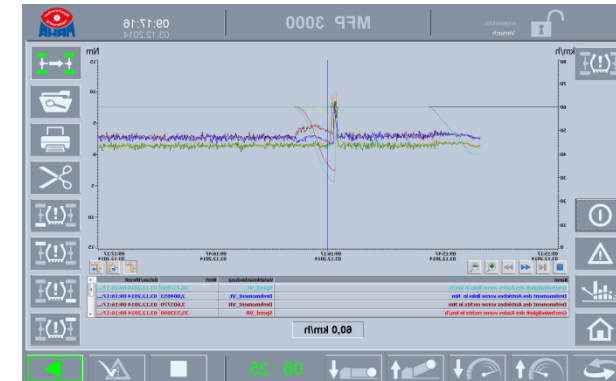
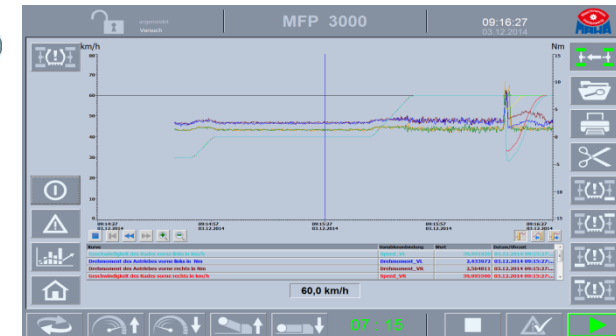
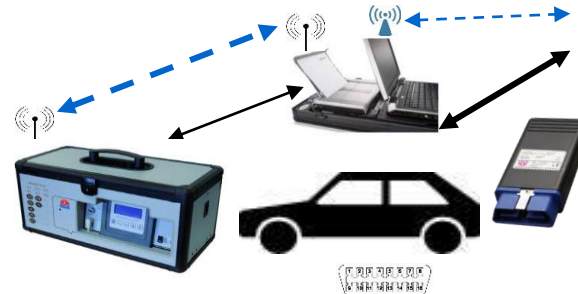
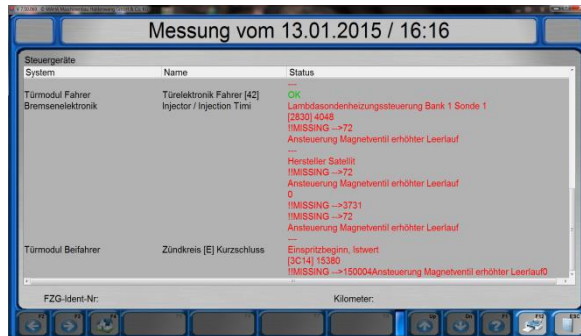
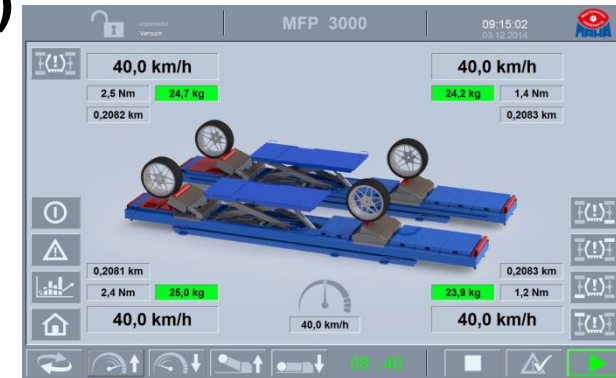
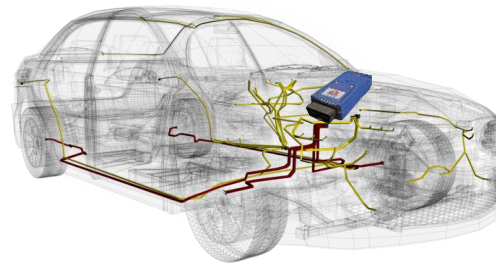


3. Body scan



Digital PTI (PTI 2.0) - Innovative Approach

4. ECSS (OBD PTI Tool)



5. Online data evaluation (e.g. tire-rim combination)

Management
Booking
Badge
Maintenance
Examiner
Registration
Test station
System

Vehicle

VIN: 111111111117
Licence plate: OA - MH 007
Vehicle No.:
Manufacturer: AUDI
Model series: TT Roadster (I)
Vehicle type: 2.0 TFSI quattro
Vehicle class group: Car
Vehicle class: M1

Current vehicle data

Front rim

Front tyre

Rear rim

Rear tyre

Application

Comment

7.50 x 16 ET 45.0	225/55 R 16 95W	7.50 x 16 ET 45.0	225/55 R 16 95W	Summer and winter	Same tyre size on both axles
9.00 x 18 ET 52.0	245/40 R 18 93Y	9.00 x 18 ET 52.0	245/40 R 18 93Y	Summer and winter	Same tyre size on both axles
7.00 x 17 ET 47.0	225/50 R 17 94H	7.00 x 17 ET 47.0	225/50 R 17 94H	winter only	Same tyre size on both axles
9.00 x 19 ET 52.0	255/35 R 19 96Y	9.00 x 19 ET 52.0	255/35 R 19 96Y	Summer and winter	Same tyre size on both axles
7.00 x 16 ET 47.0	225/55 R 16 95H	7.00 x 16 ET 47.0	225/55 R 16 95H	winter only	Same tyre size on both axles
8.00 x 17 ET 47.0	225/50 R 17 94W	8.00 x 17 ET 47.0	225/50 R 17 94W	Summer and winter	Same tyre size on both axles
8.50 x 17 ET 50.0	245/45 R 17 95W	8.50 x 17 ET 50.0	245/45 R 17 95W	Summer and winter	Same tyre size on both axles

Limit value

Images

Detail

Idle rotation speed

080

MinLimit

660

1/min

MaxLimit

860

1/min

Target

-

MinWarn

-

MaxWarn

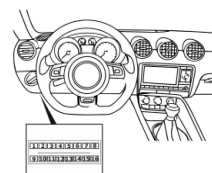
-

MinIndicate

-

MaxIndicate

-



Built in year: 200806

Model year up to:

KW: 147

ccmTech: 1984

Fuel: Petrol

Engine: AUDI - CCTA

Engine: AUDI - CCZA

Work box

Search vehicle

Search vehicle owner

Search commission

Start new test

Continue test

Start rapid test

Synchronisation

Inspect

View

Current vehicle data

Front rim

Front tyre

Rear rim

Rear tyre

Application

Comment

5.50 x 14 ET 37.5	175/65 R 14 82T	5.50 x 14 ET 37.5	175/65 R 14 82T	Summer and winter	Same tyre size on both axles
6.50 x 16 ET 41.5	195/45 R 16 80T	6.50 x 16 ET 41.5	195/45 R 16 80T	Summer and winter	Same tyre size on both axles
6.50 x 16 ET 41.5	195/45 R 16 84V	6.50 x 16 ET 41.5	195/45 R 16 84V	Summer and winter	Same tyre size on both axles

Limit value

Images

Detail

Noise limit

080

MinLimit

-

MaxLimit

90

dB

Target

-

MinWarn

-

MaxWarn

80

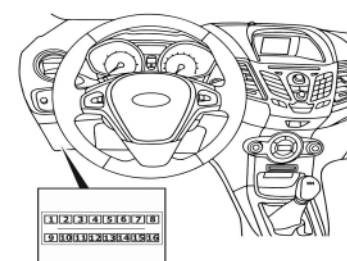
dB

MinIndicate

-

MaxIndicate

-



Built in year: 200810

Model year up to:

kW: 66

ccmTech: 1560

Fuel: Diesel

Engine: FORD - HHJC

Engine: FORD - HHJD

Engine: FORD - HHJE

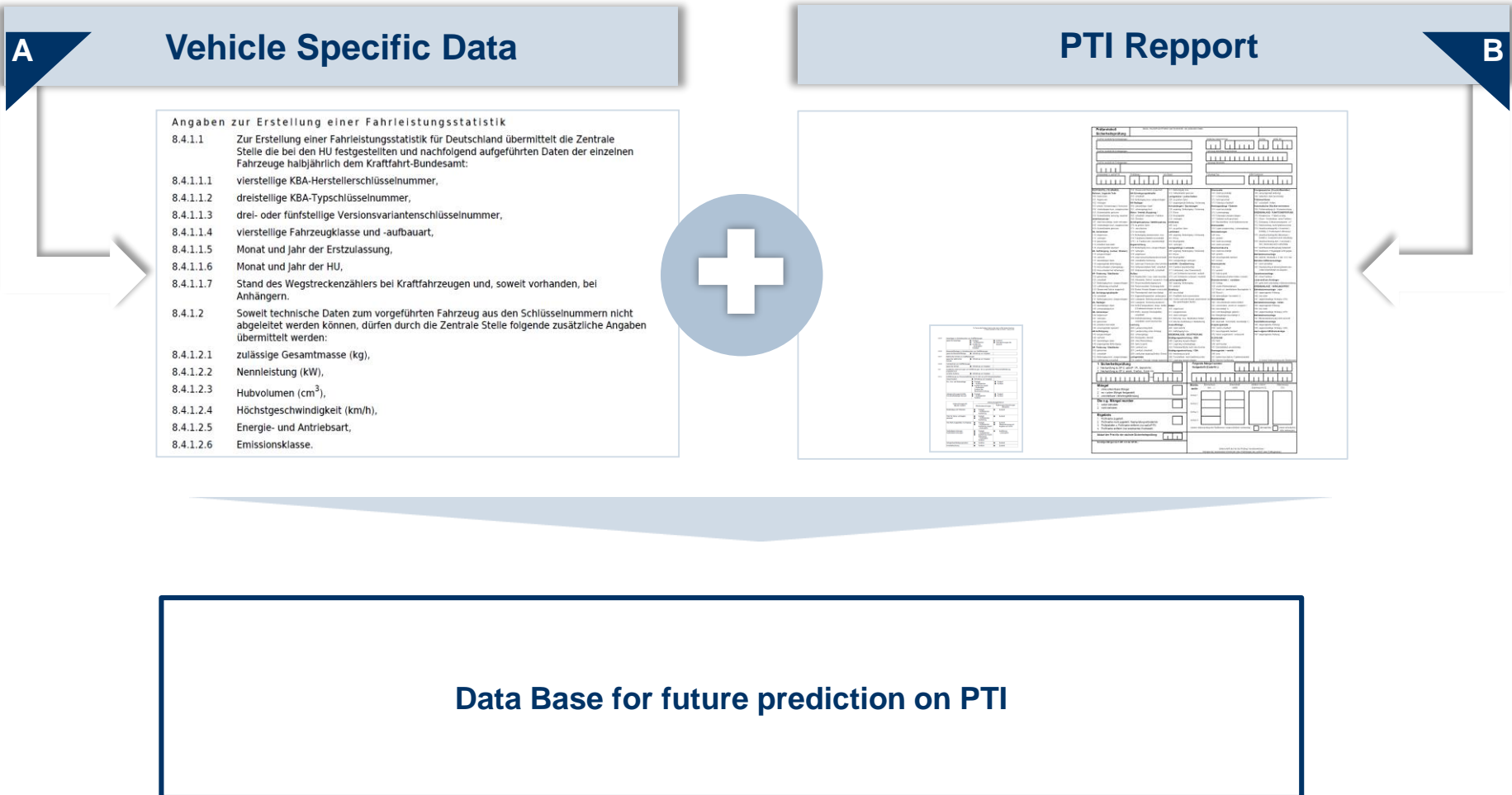
6. Visualization via tablet, smartphone,



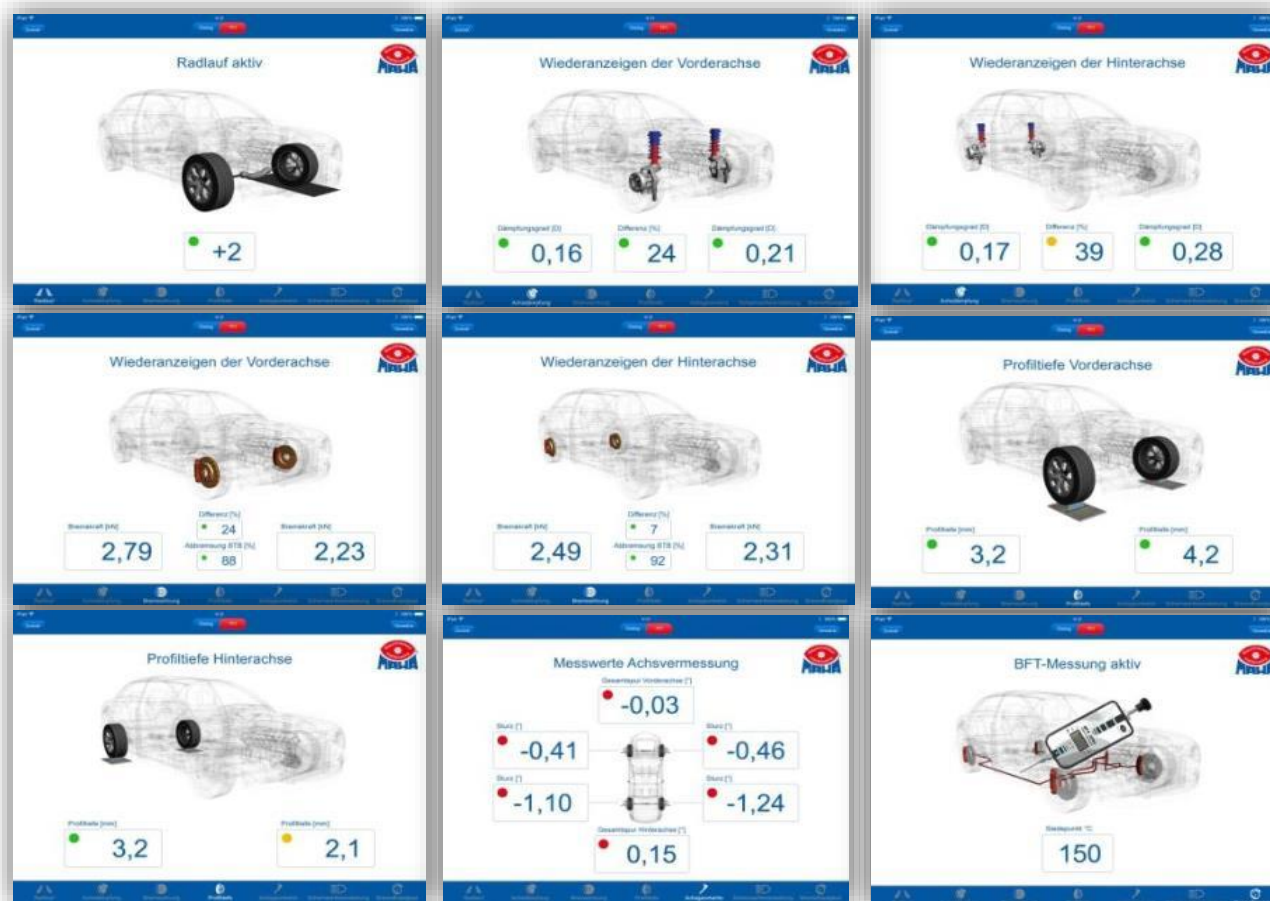
7. Paperless documentation



8. Prediction of results



- Resume



Questions Now ???



Thank you !!!

**By Antonio Multari, Technical Expert Emissions at CITA
and Vice Chairman of WG Diagnostic & Emissions at ASA
and Sales Director Export at MAHA**