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True Vehicle Inspection by Preventing Manipulations and Tricks by Examiners

Jan van der Does

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

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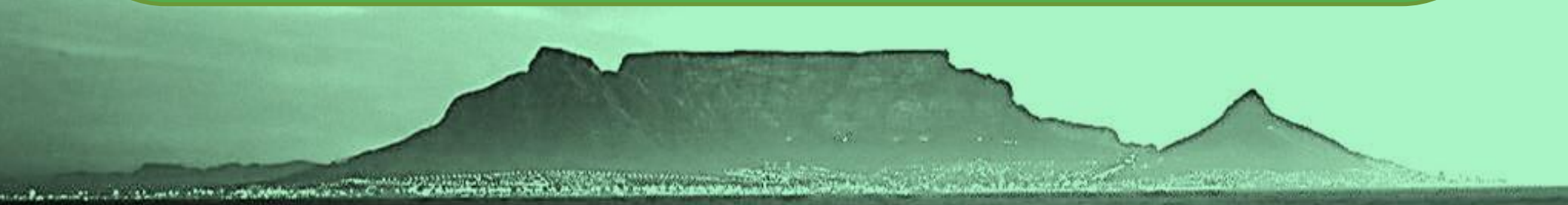
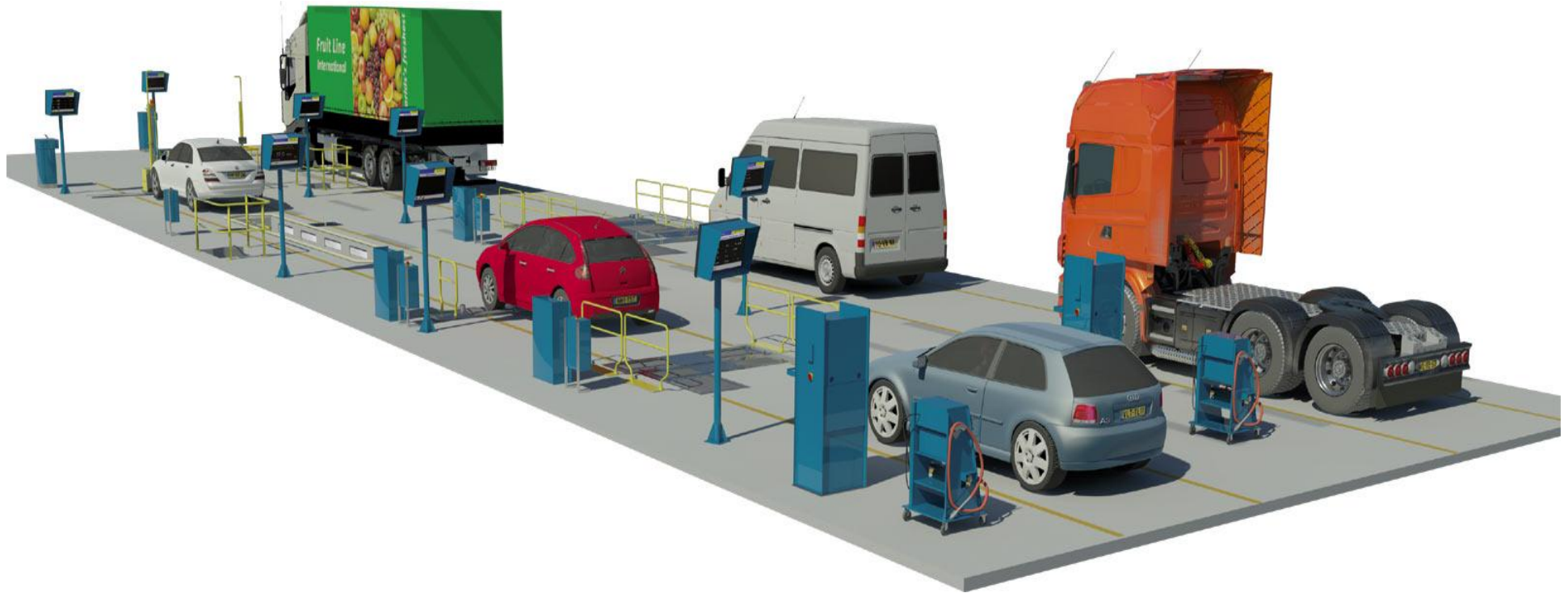# True Vehicle Inspection by Preventing Manipulations and Tricks by Examiners

Van Leeuwen Test Systems B.V.
The Netherlands
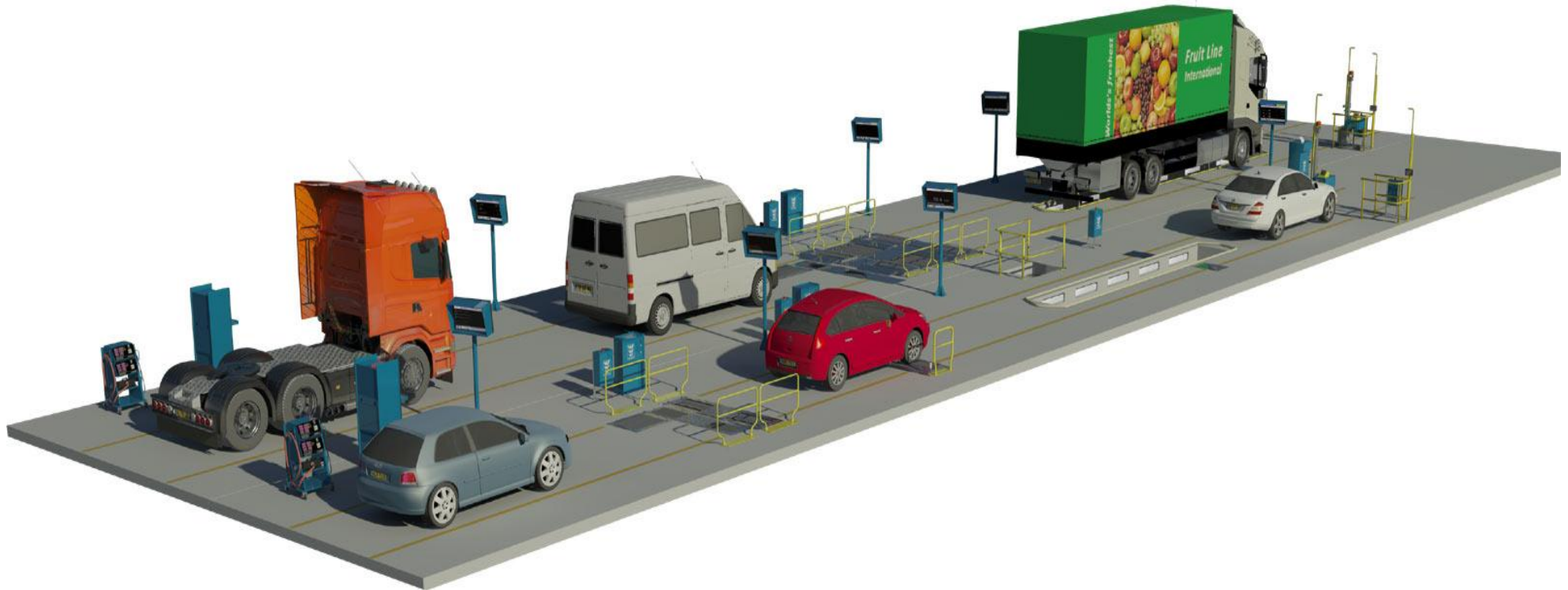
Integrated and automated test station

Car test lane and universal test lane

Car test lane and universal test lane

Motorcycle test lane and car test lane

Test lane overhead monitor

type of test

driver instructions

licence number

real-time
measuring values

tests to perform

axle nr.

Network connections test lane
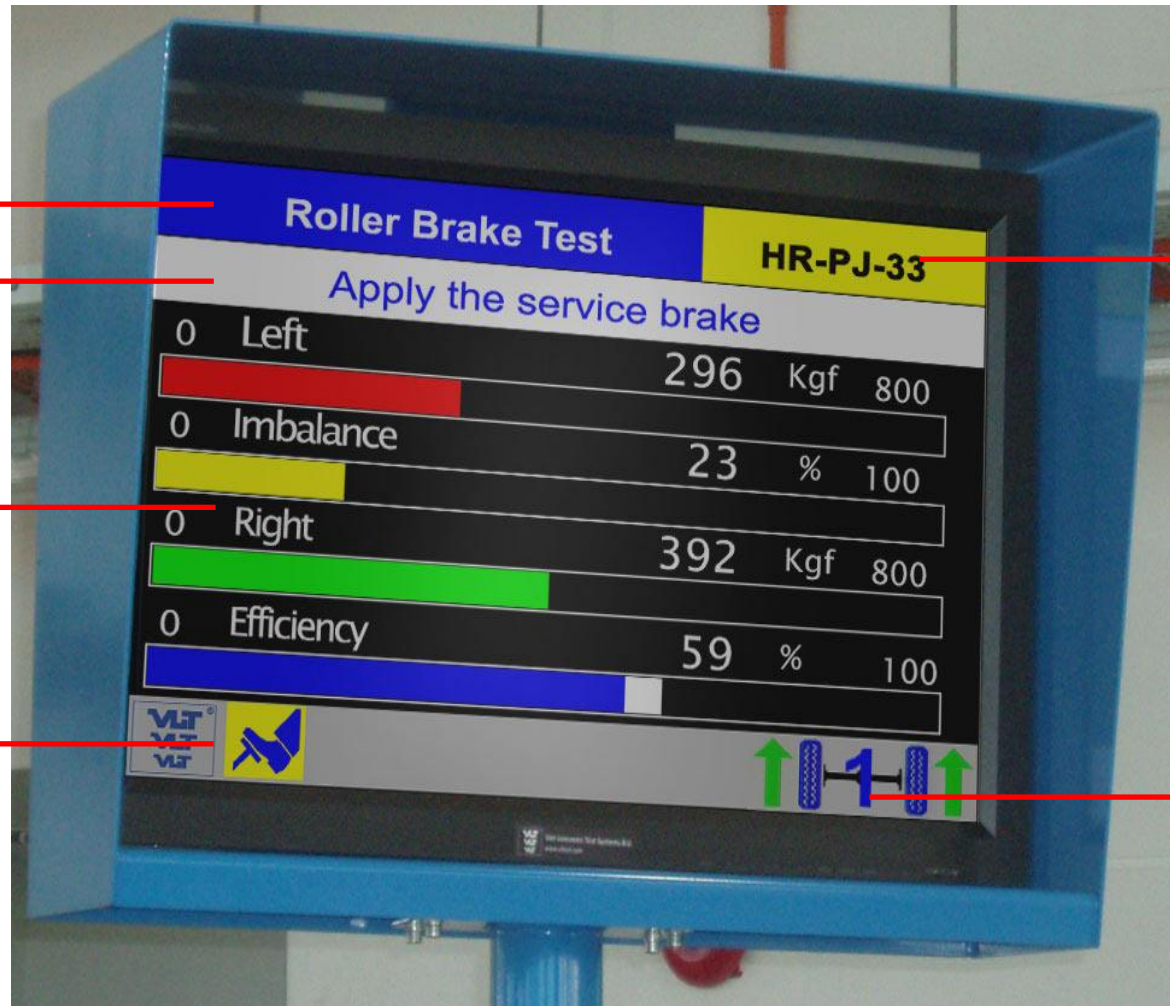
Anti-Manipulation Measures
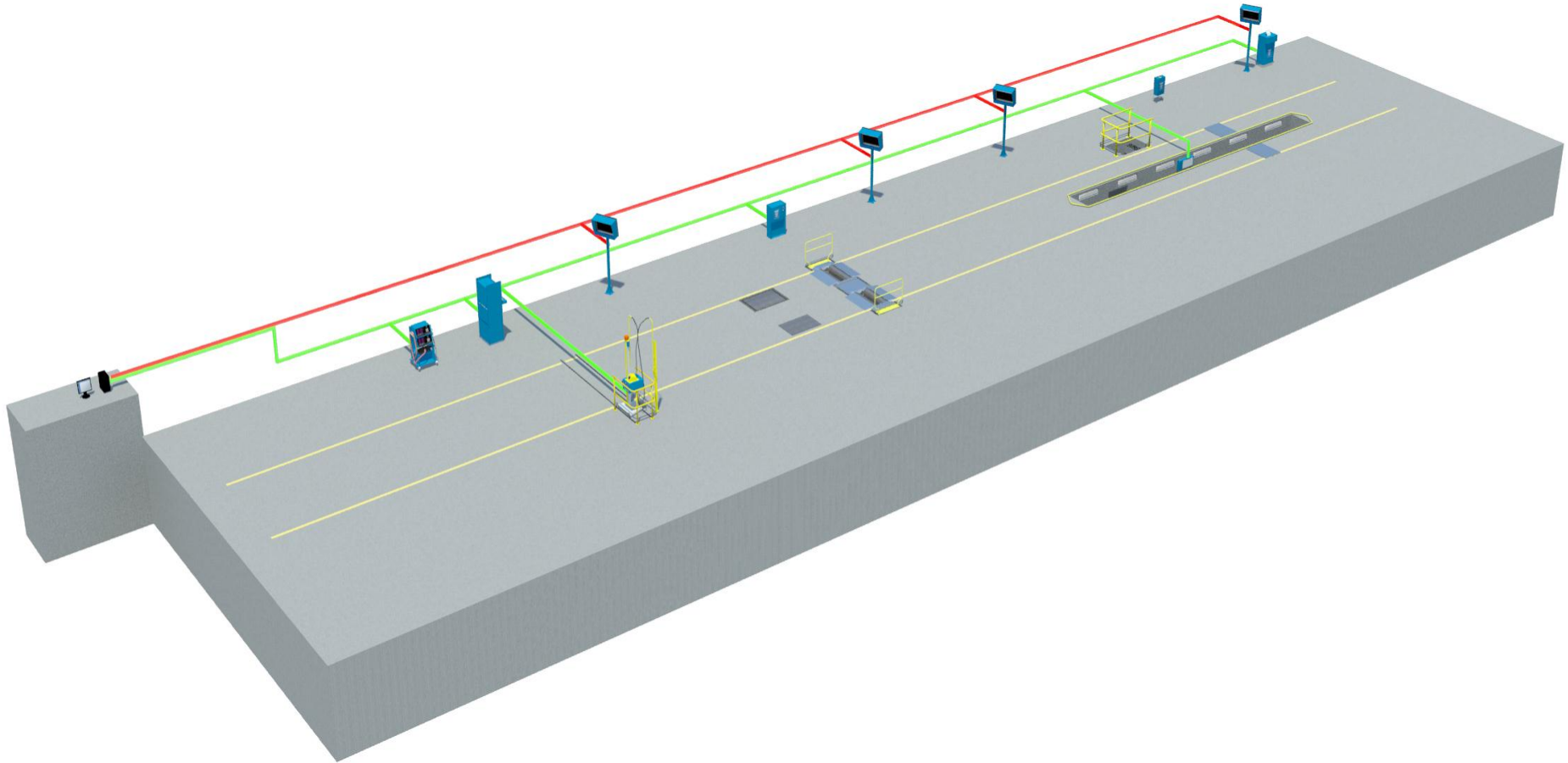
Network connections test station

Anti-Manipulation Measures
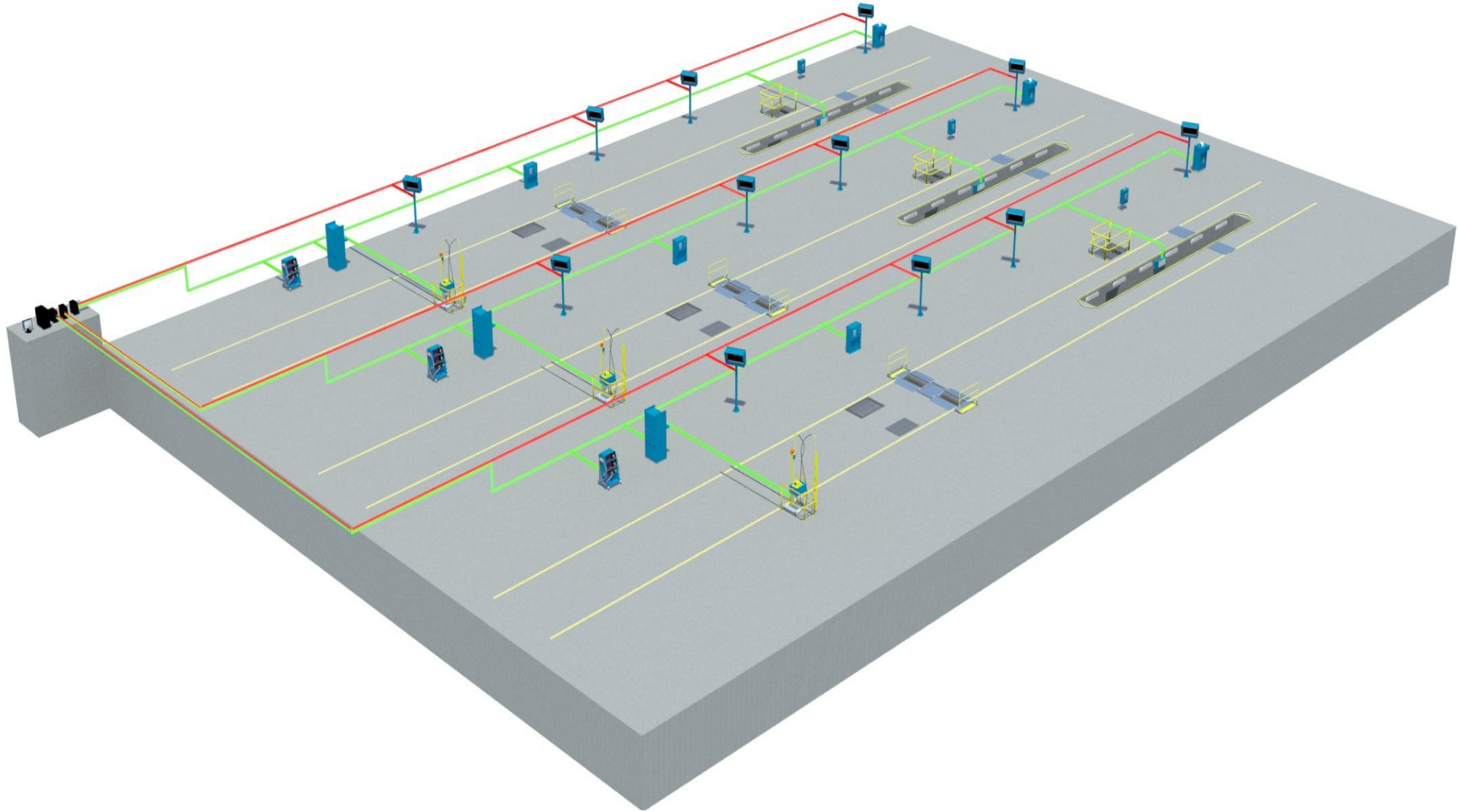
Network connections test organisation
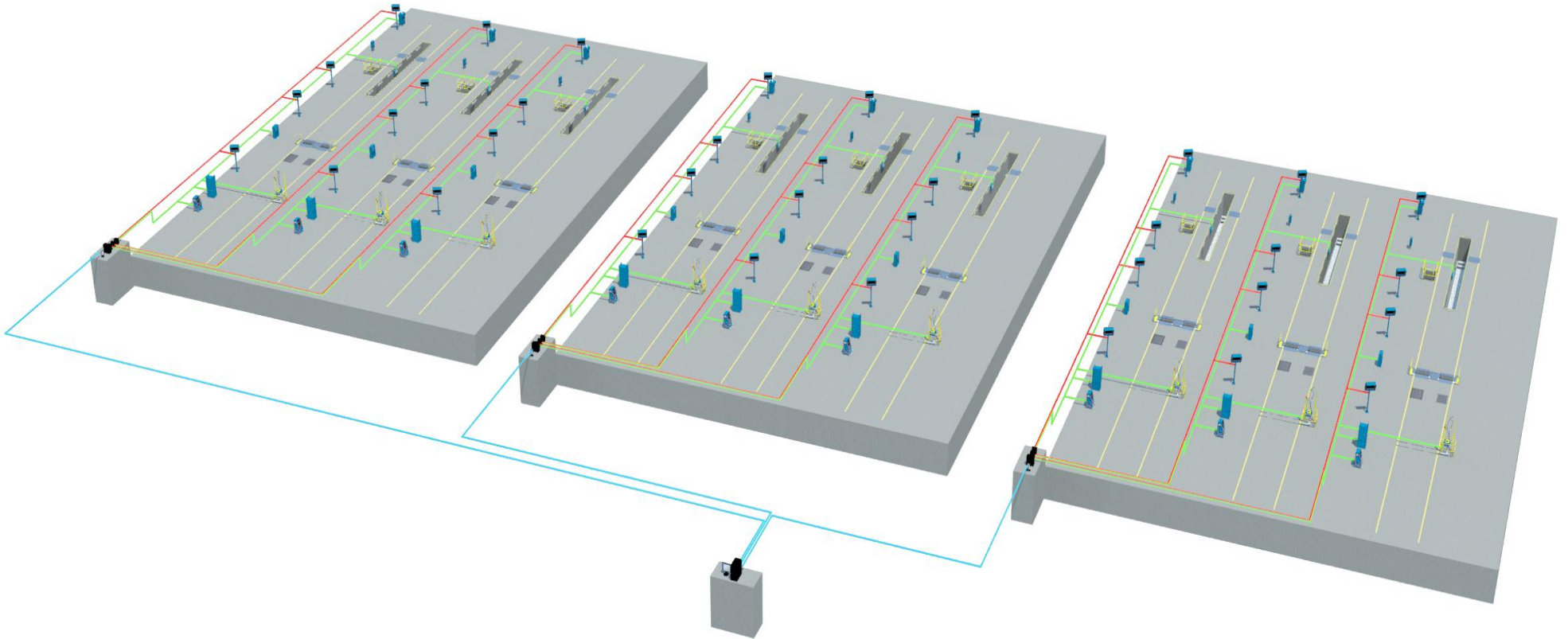
Anti-Manipulation Measures

All test station computers in locked air conditioned room

Test lane computers

Server computer

Uninterruptible power supply (UPS)

Anti-Manipulation Measures
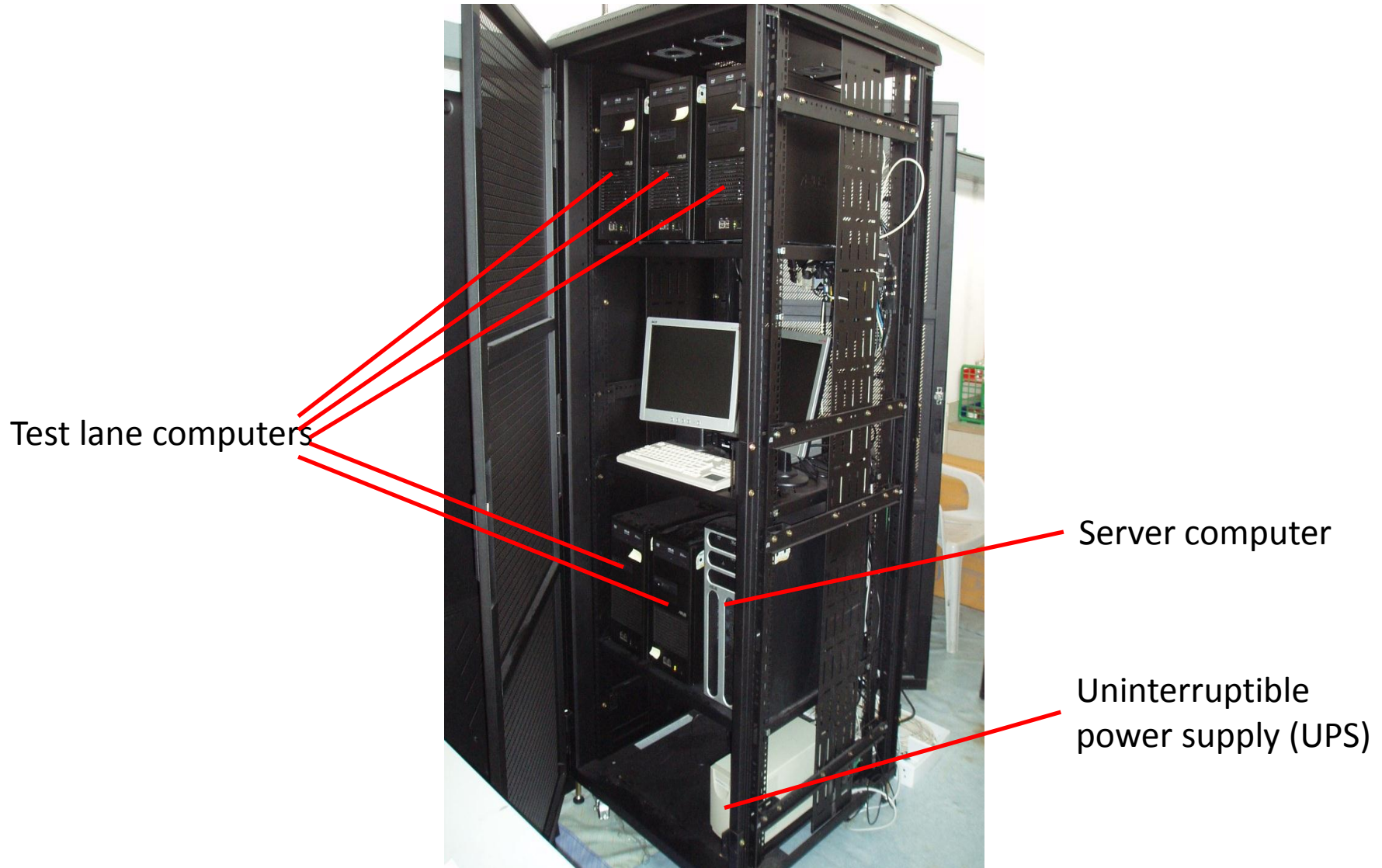
Controlled access to IT system

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

Anti-Manipulation Measures

Bribery sensitive situation
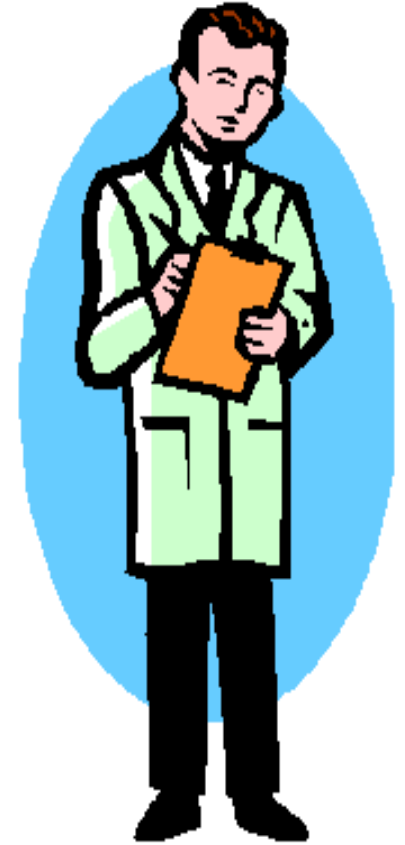
Prevent by strict regulation
and smart inspection system

LAW

$$
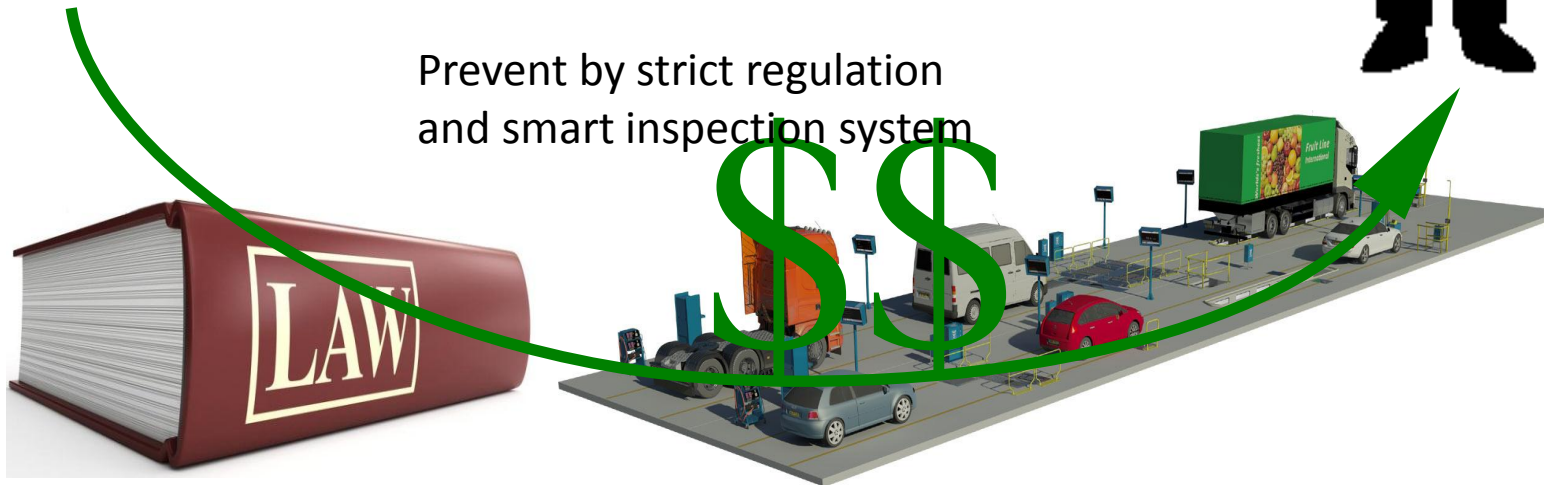
Anti-Manipulation Measures

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

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

T   F,R   I,O   F,R F,R F,R   F,R   T
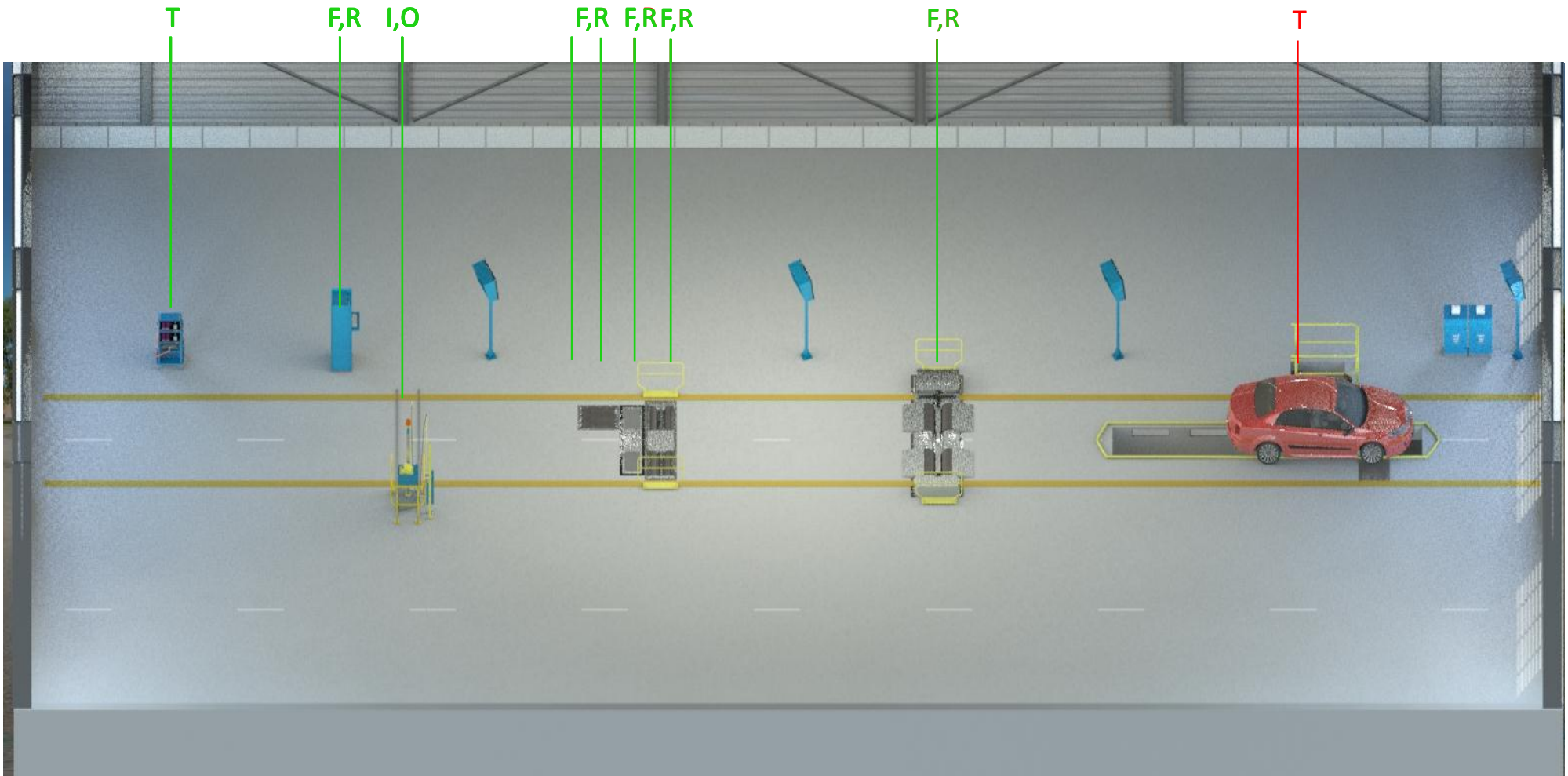
Licence number check

Stage 1
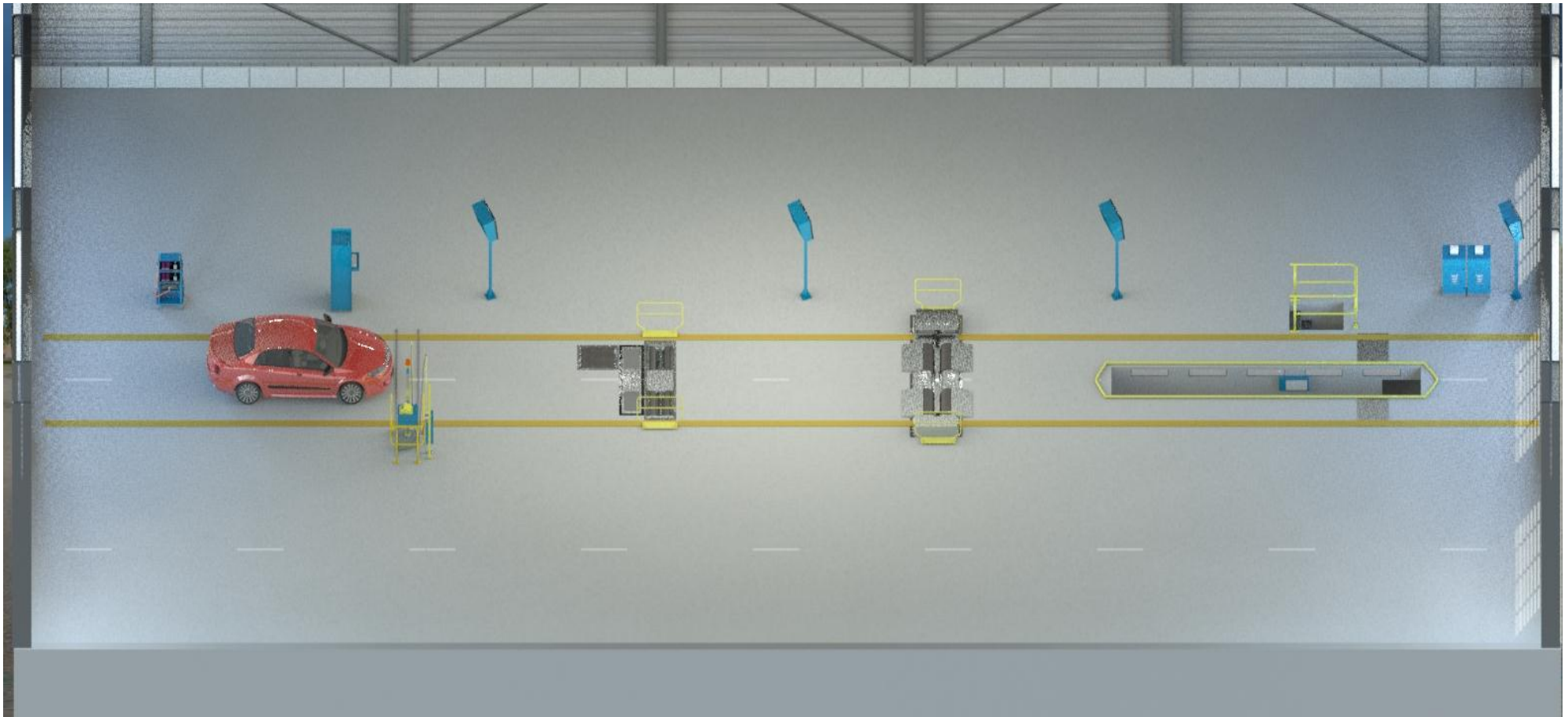
Anti-Manipulation Measures

Inspector identification with RFID tag at each test stage

Anti-Manipulation Measures

Inspector id stored with each test

RollerBrakeTest				
Test Result	Start Time	End Time	Lane	Performed by
Passed	17:41:12	17:42:36	406050	

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

Anti-Manipulation Measures

Fixed preselected tests for each compulsory inspection.

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.

km

r: white
11/08/2000

Inspection Information

Inspection Type: 210 First In

1765
4600

Password

SPV

Anti-Manipulation Measures

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

Comprehensive PTI standards

extremely low
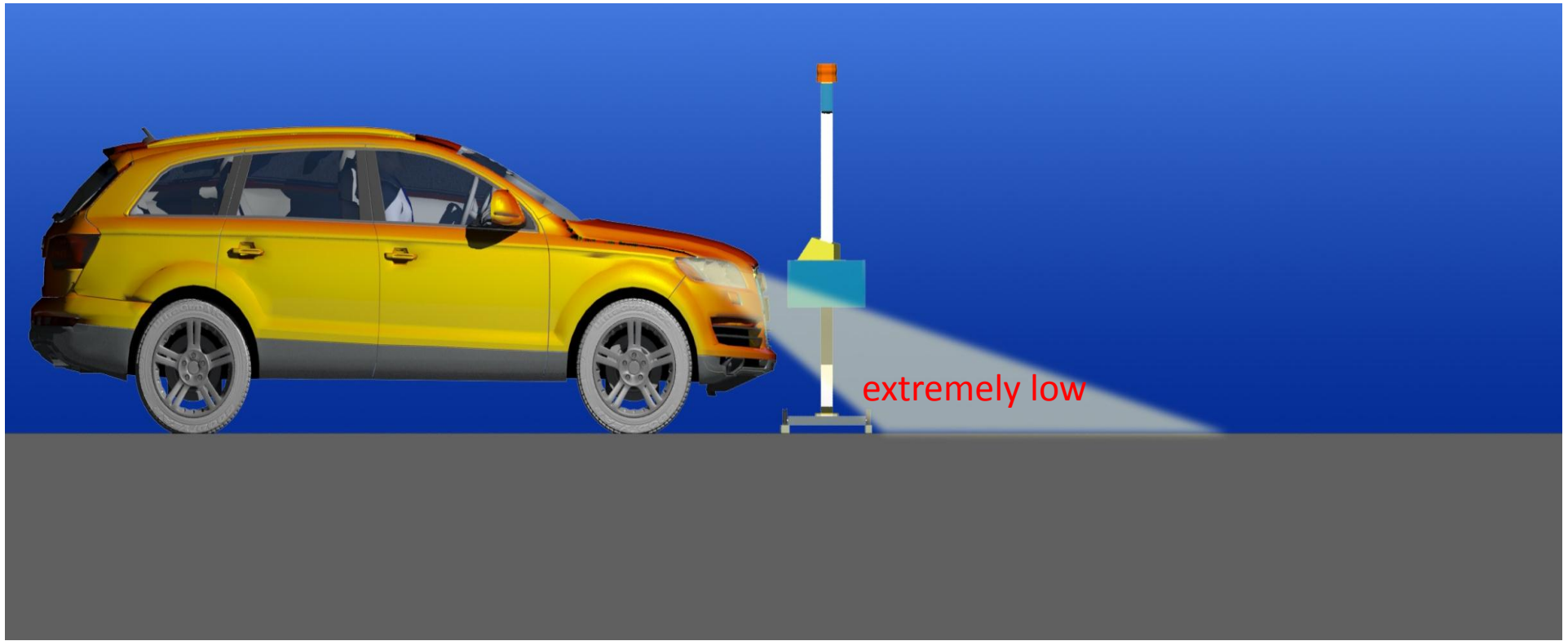
Stage 2, side slip tester
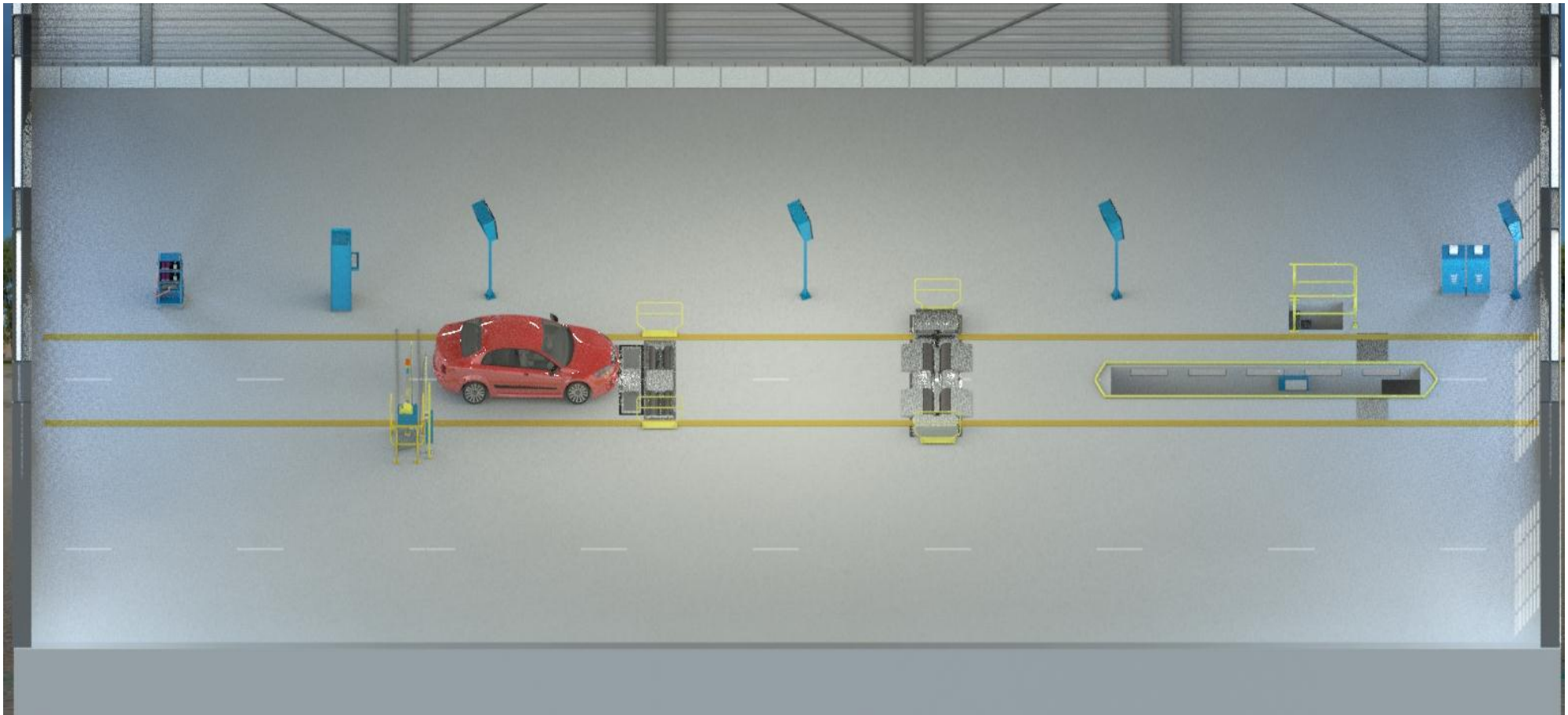
Side slip tester

Anti-Manipulation Measures

Side slip tester

© VLT 25
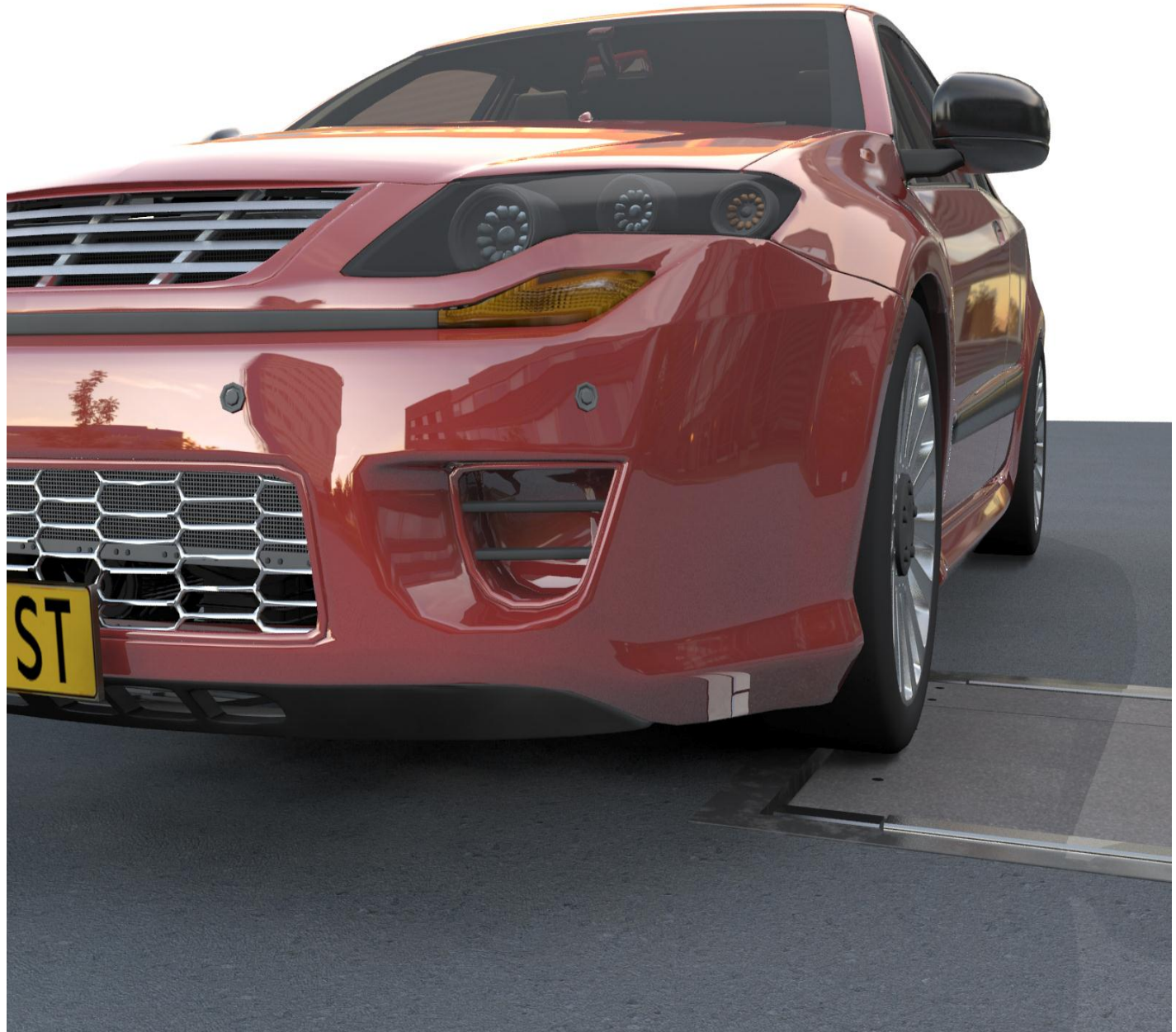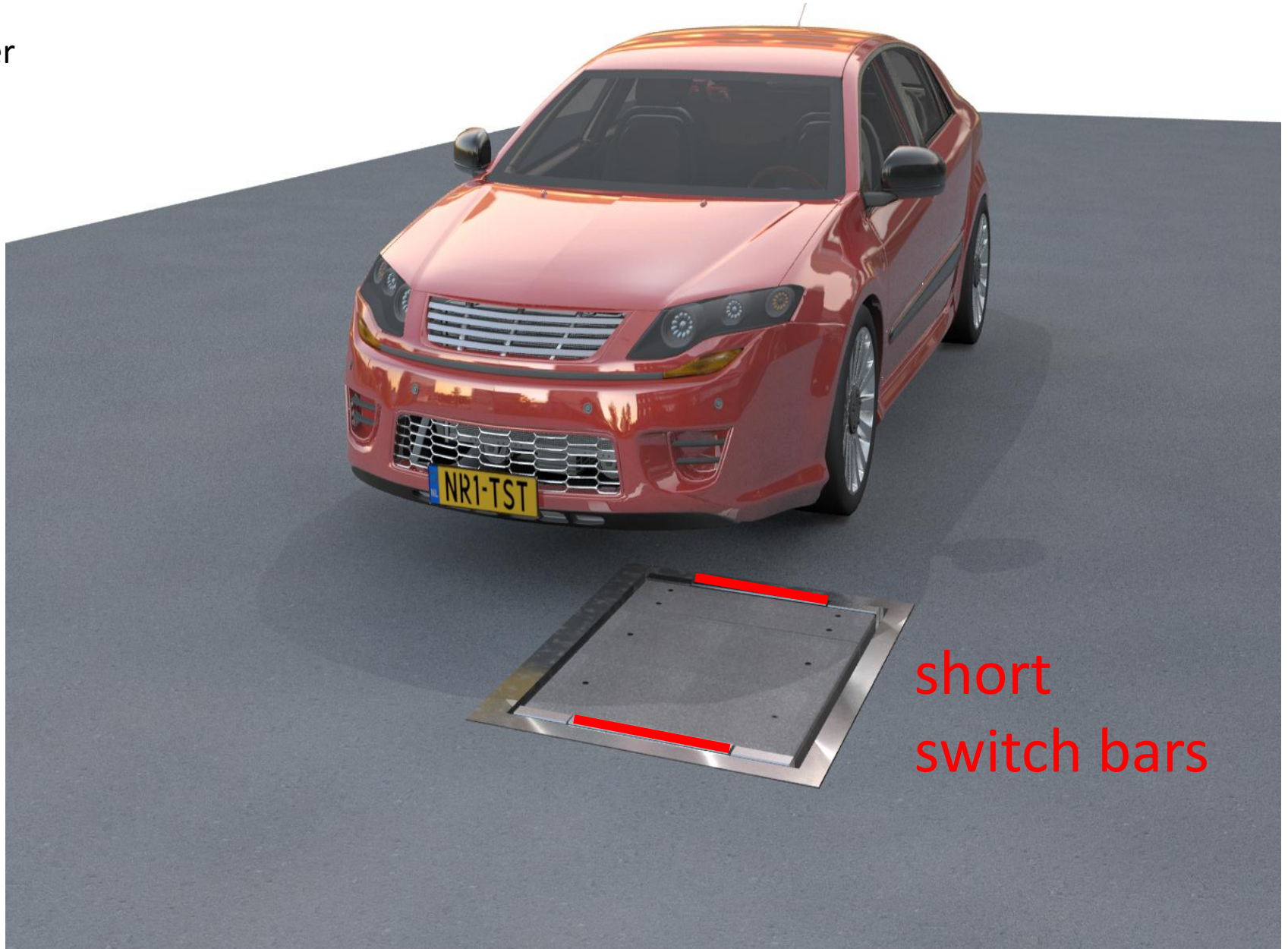
Side slip tester

short
switch bars

Side slip tester
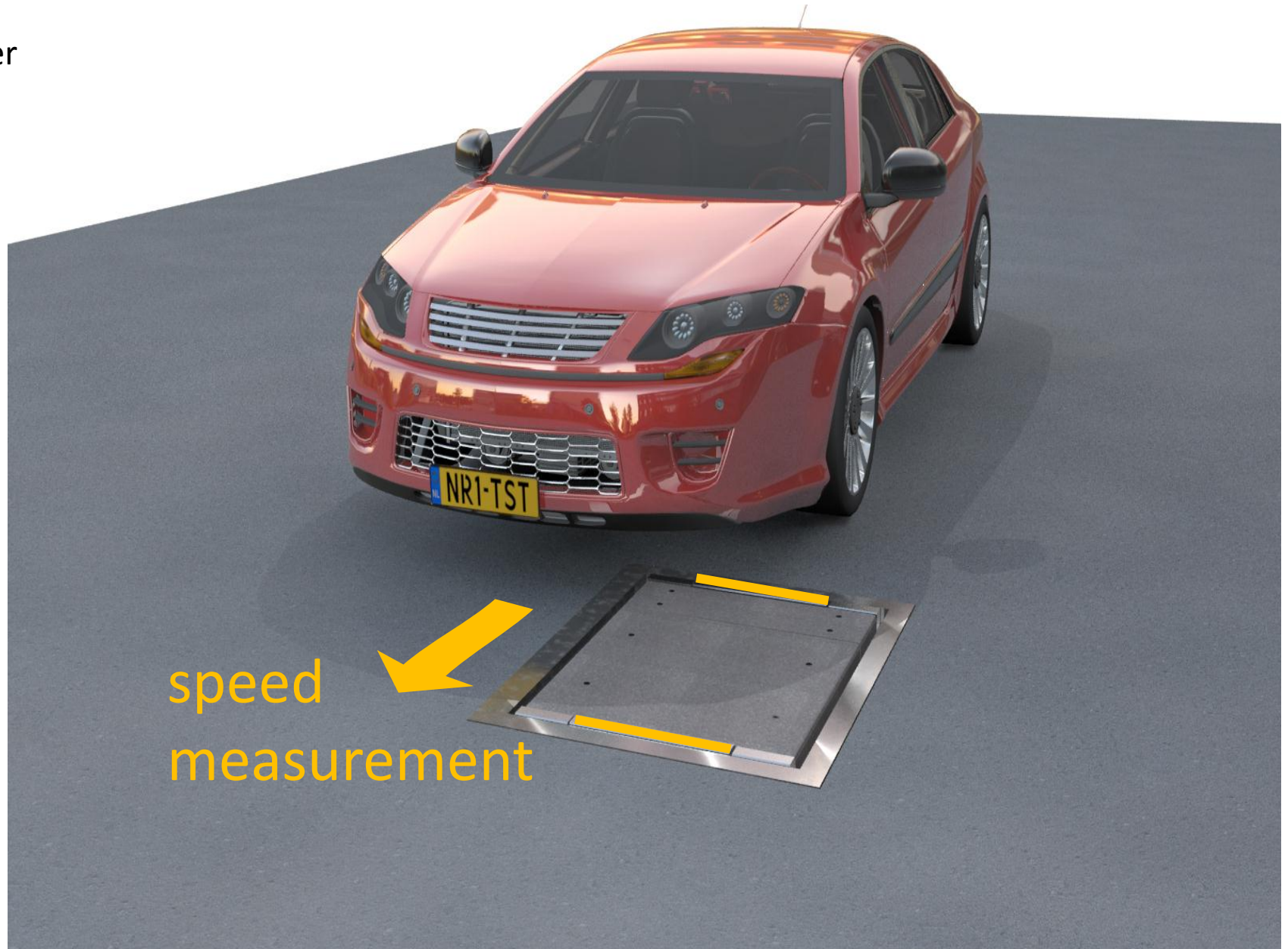
speed measurement

Stage 2, suspension tester
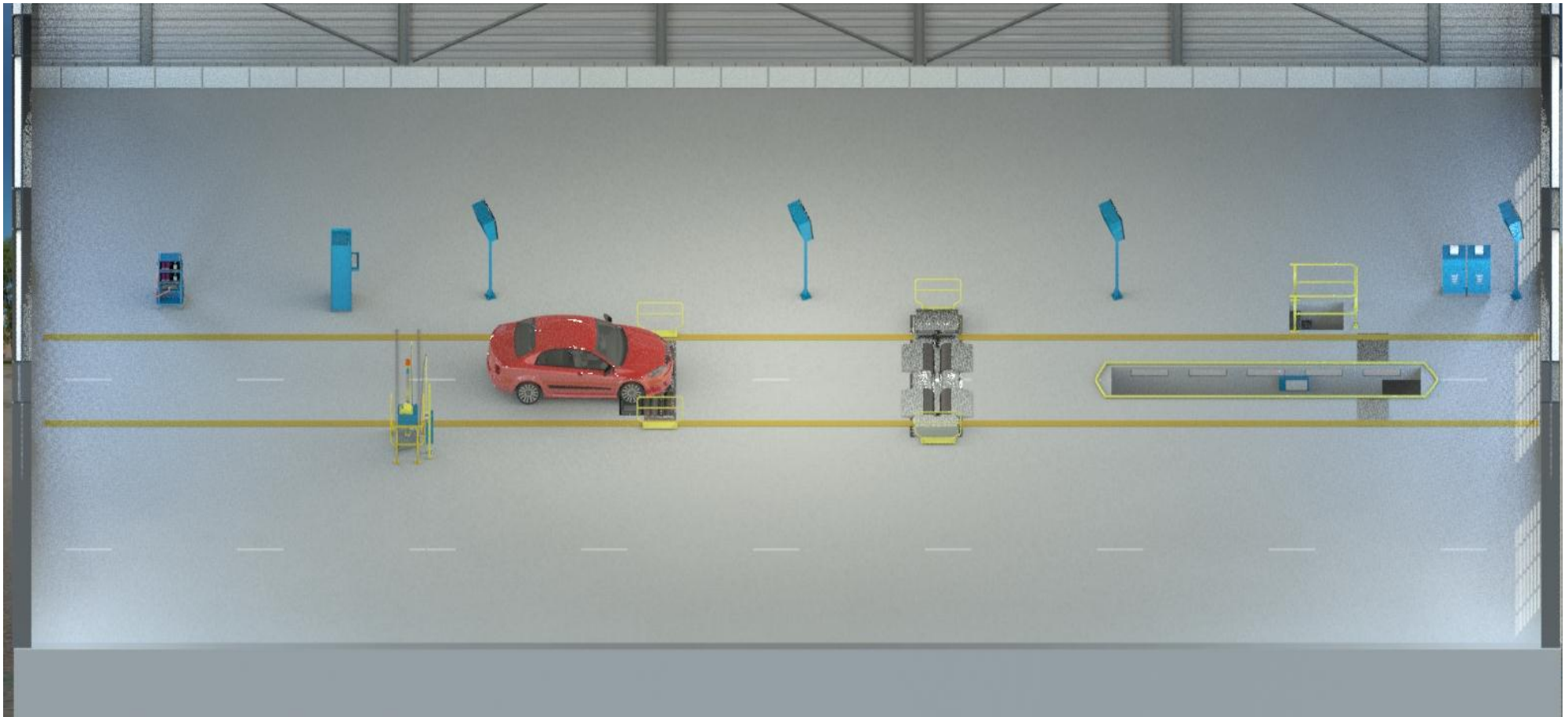
Tracking system controlled cover plates

Movie clip
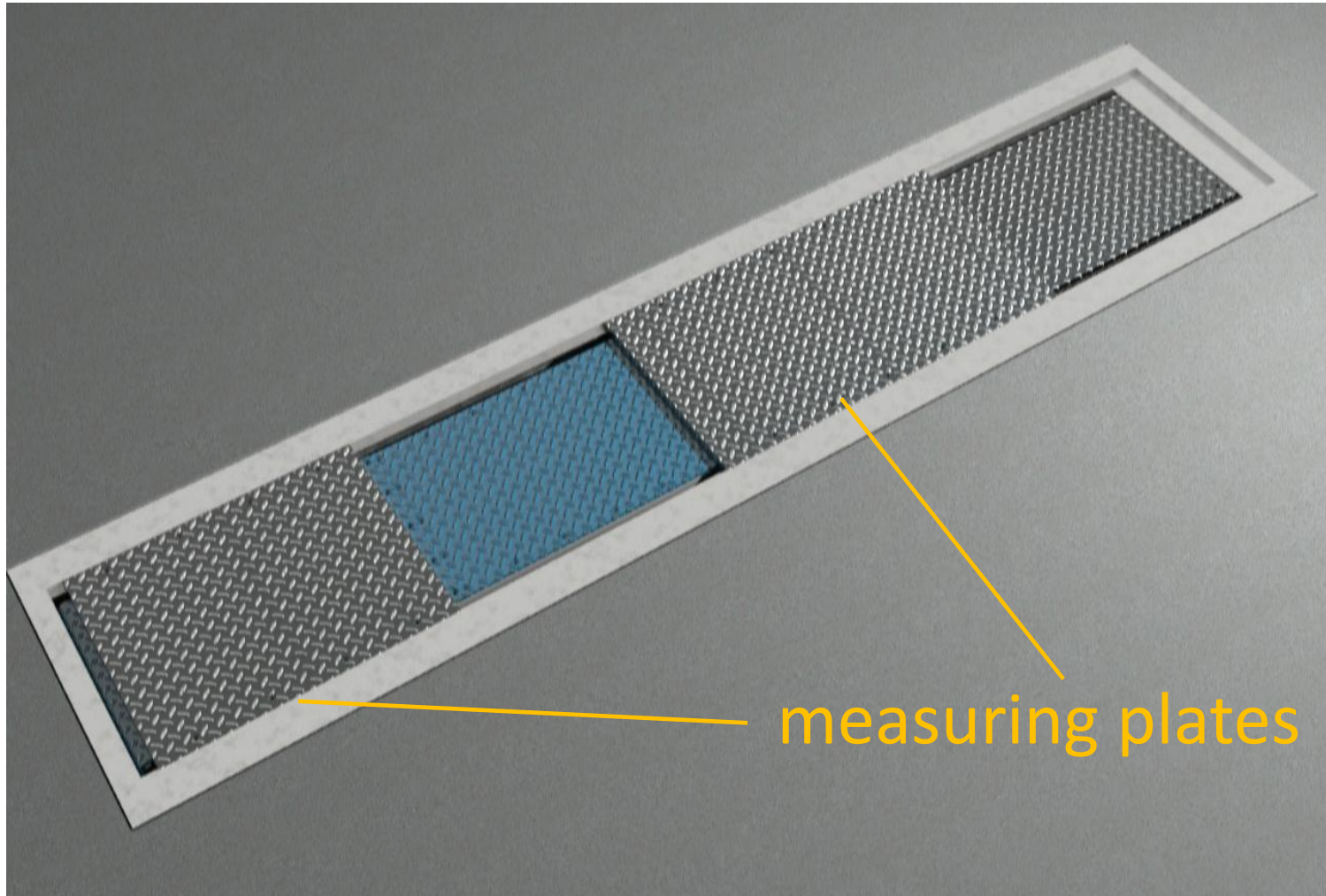
measuring plates

Misalignment

Axle position indication
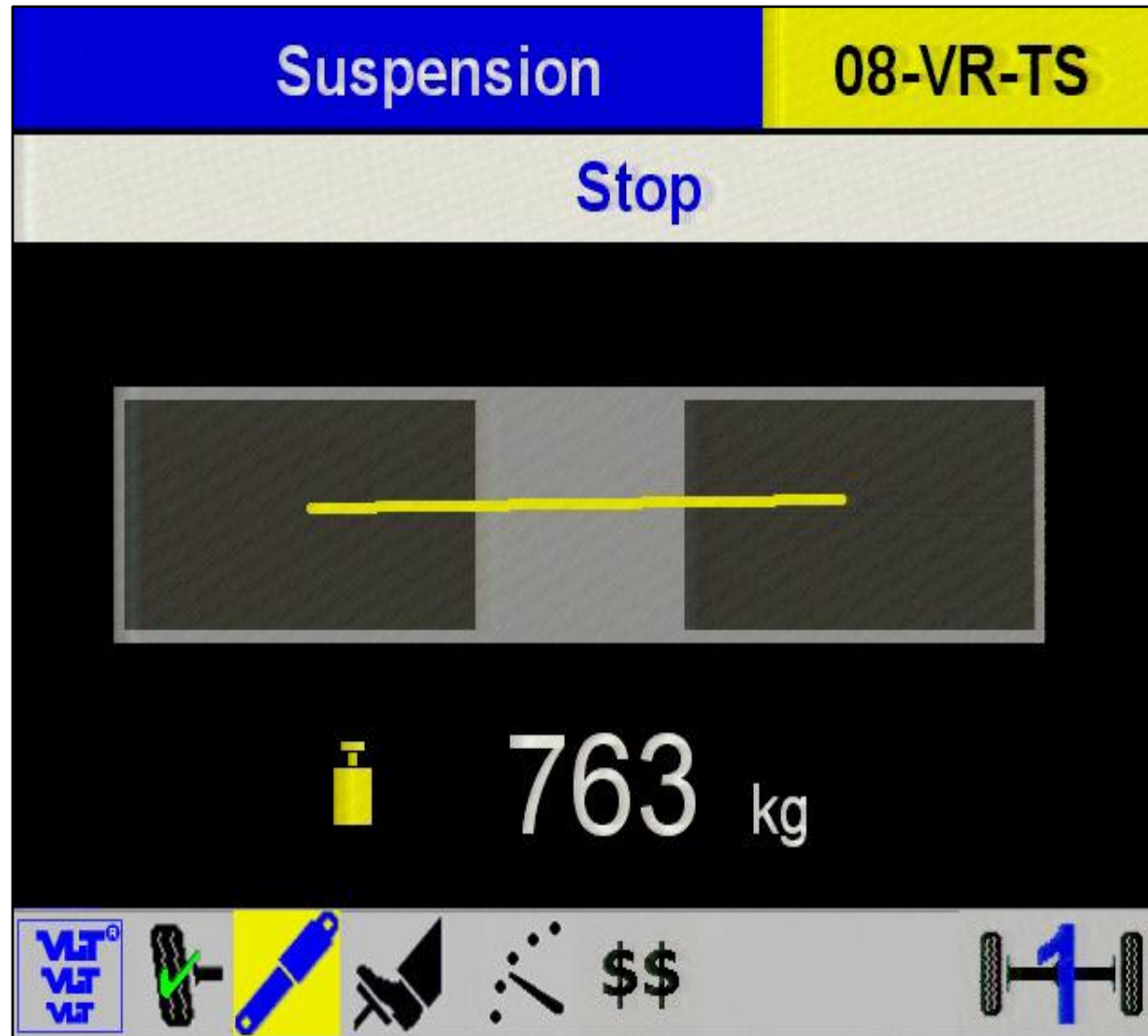
Wheel position check

allowed wheel position area

weight load cell
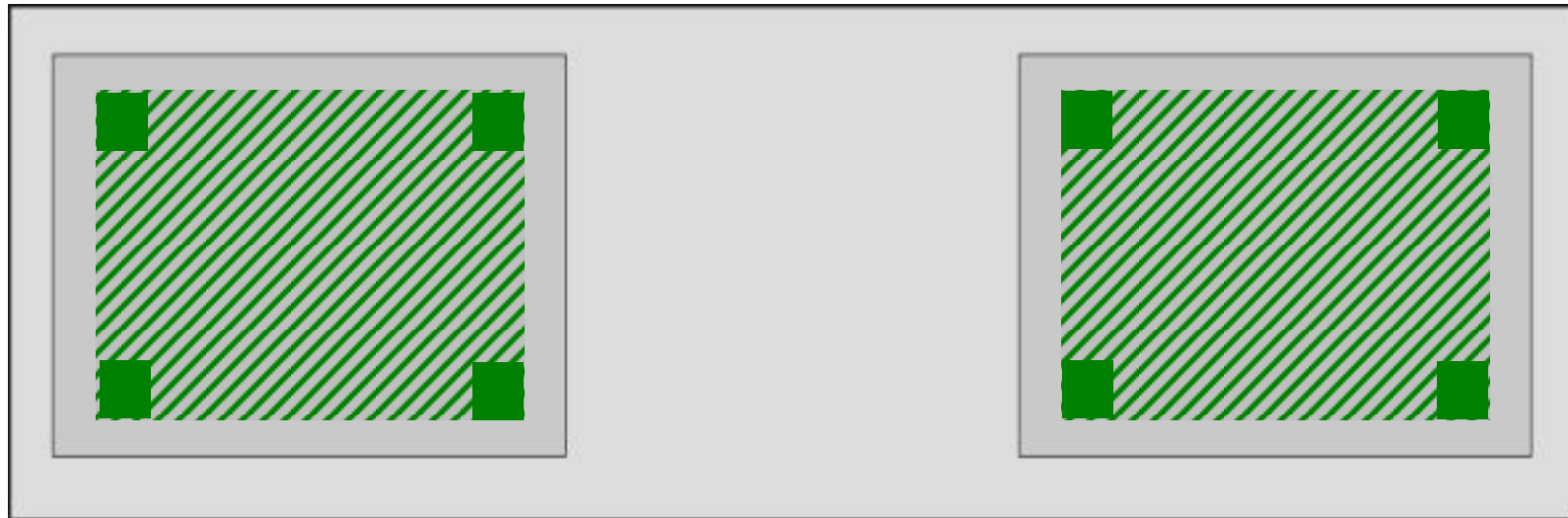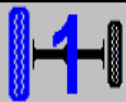
Weight and position change check during suspension test

Anti-Manipulation Measures

Judgement against absolute values, so not only left/right comparison
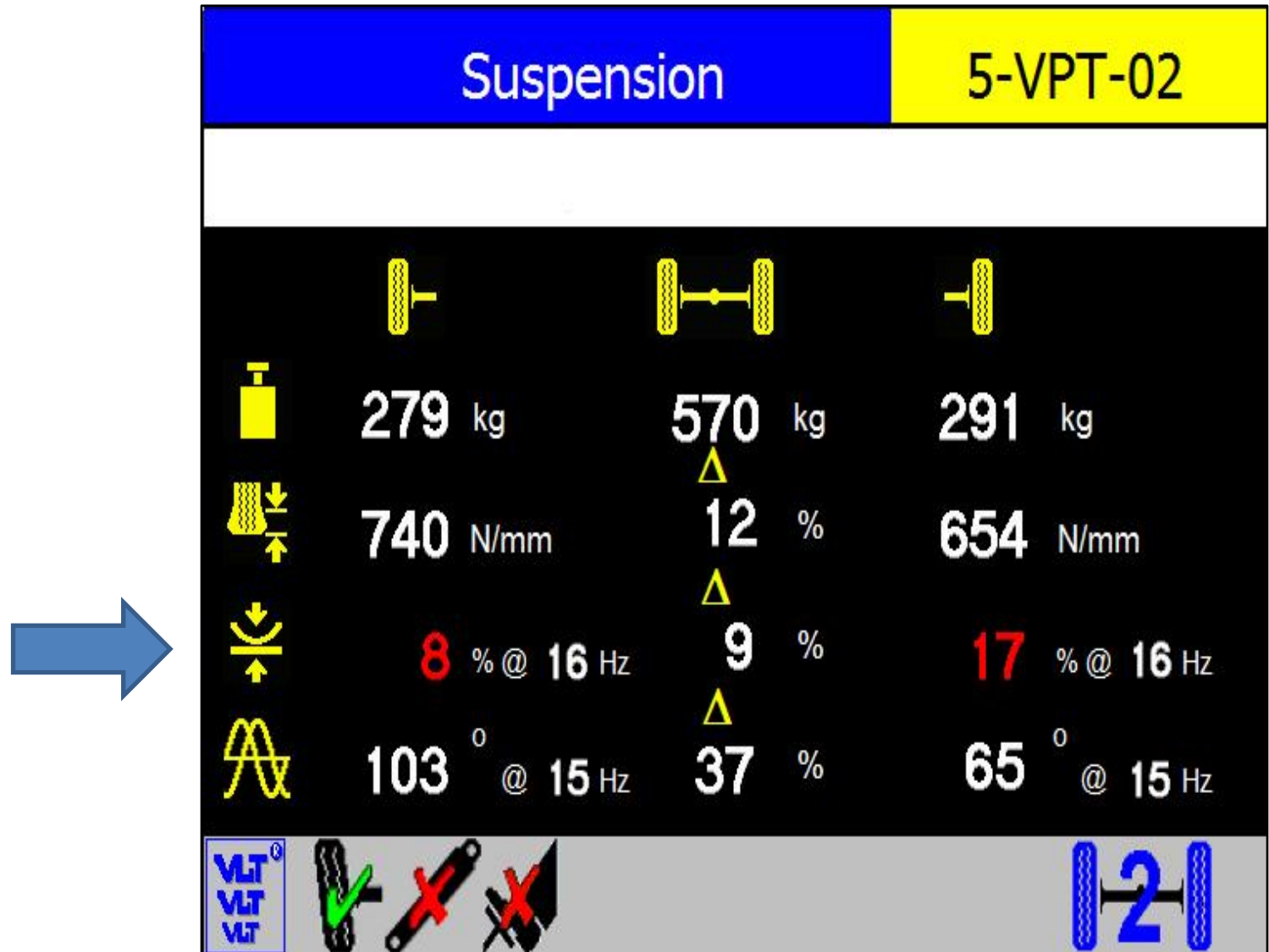
Stage 2, roller brake tester
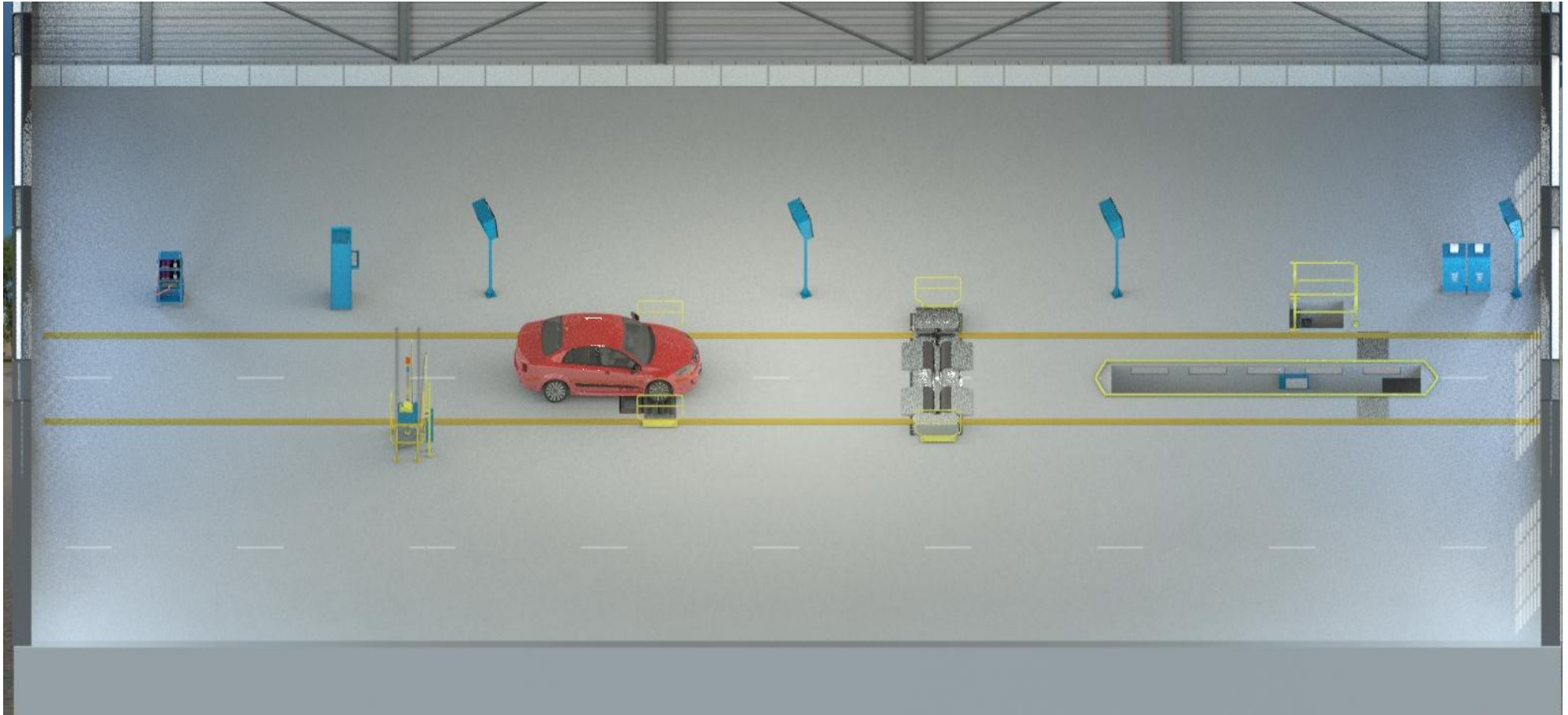
'Safety' barriers around brake tester

Anti-Manipulation Measures
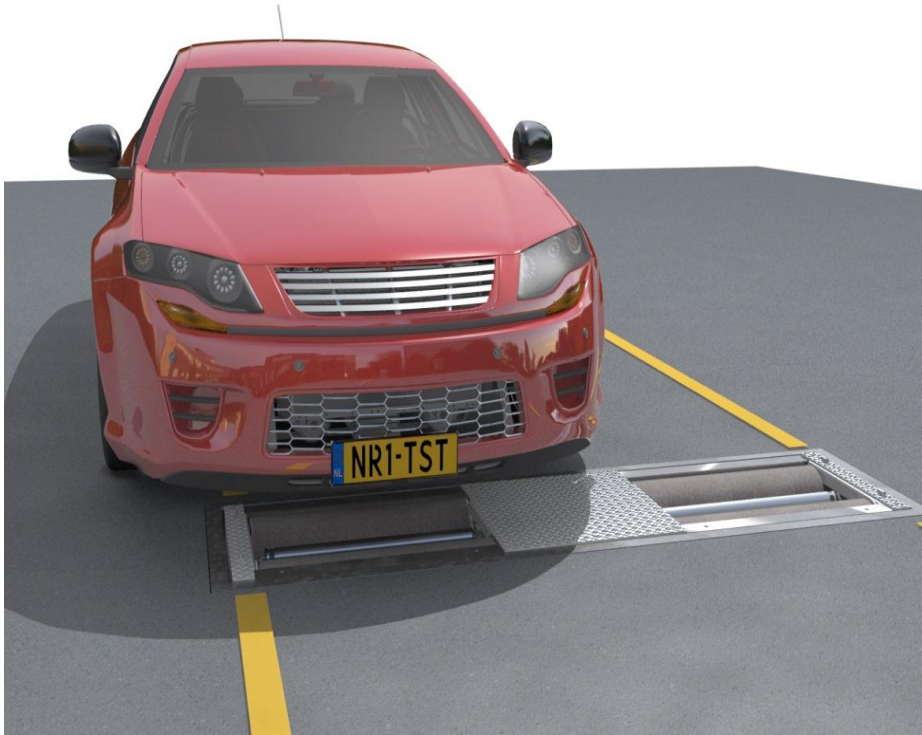
Automatic triggering of retest

Anti-Manipulation Measures
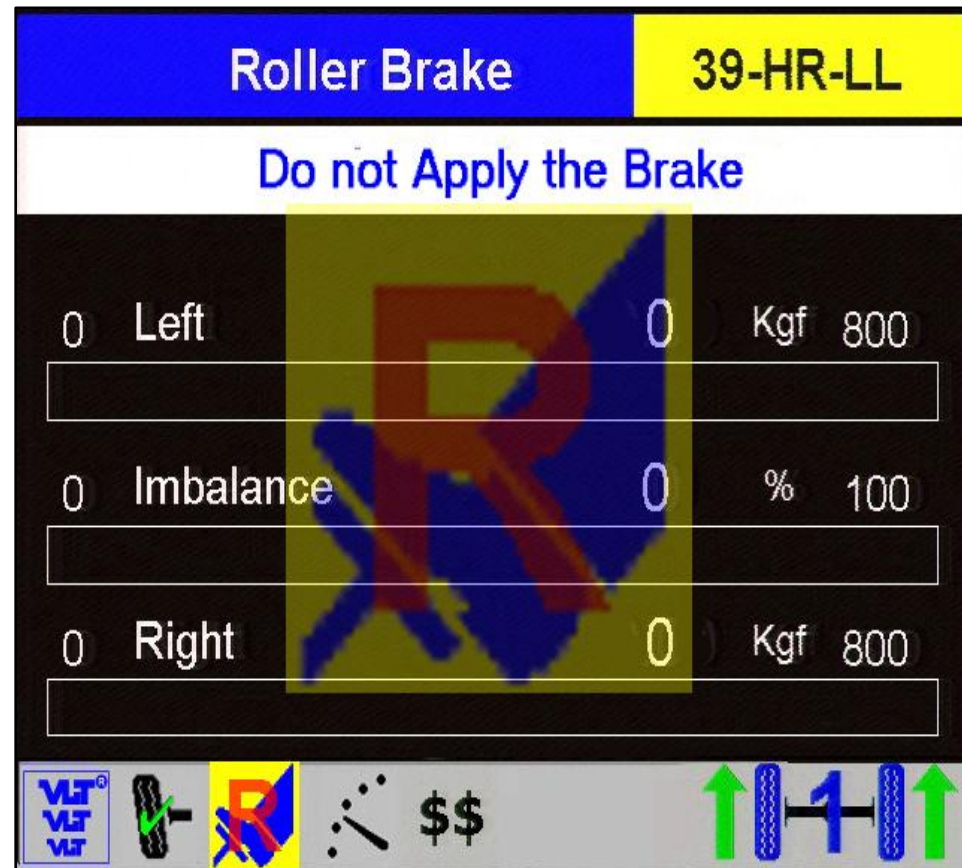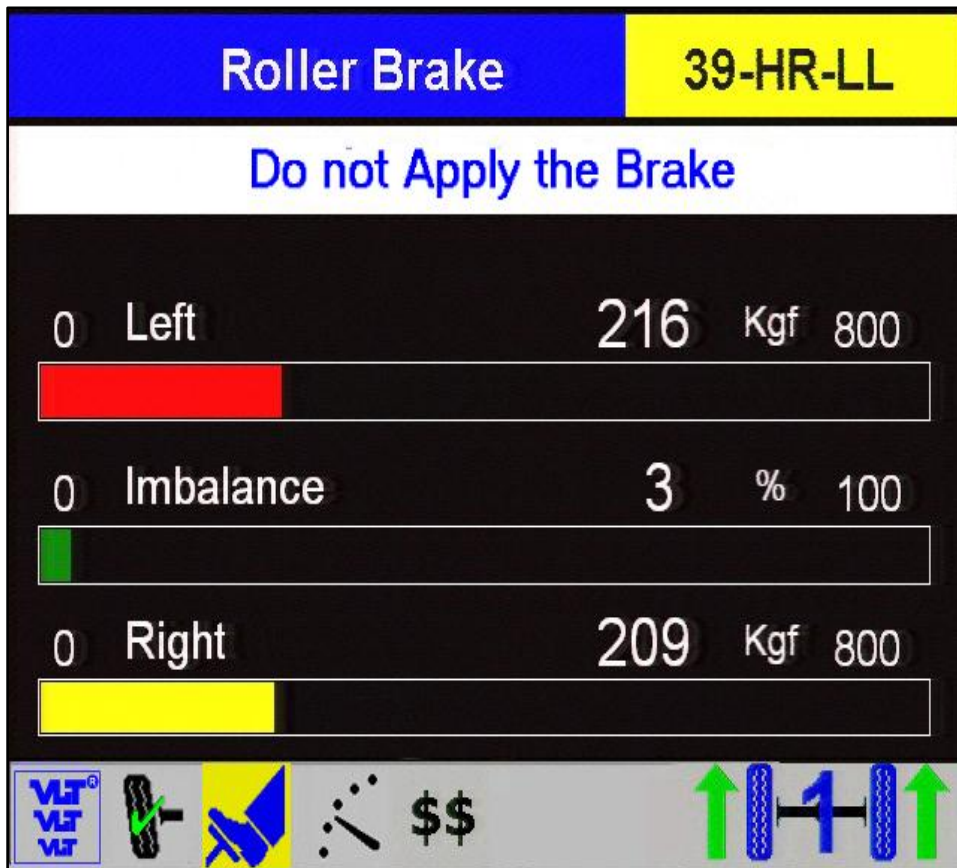
Progressivity check to prevent slamming on the brakes

Movie clip

Anti-Manipulation Measures
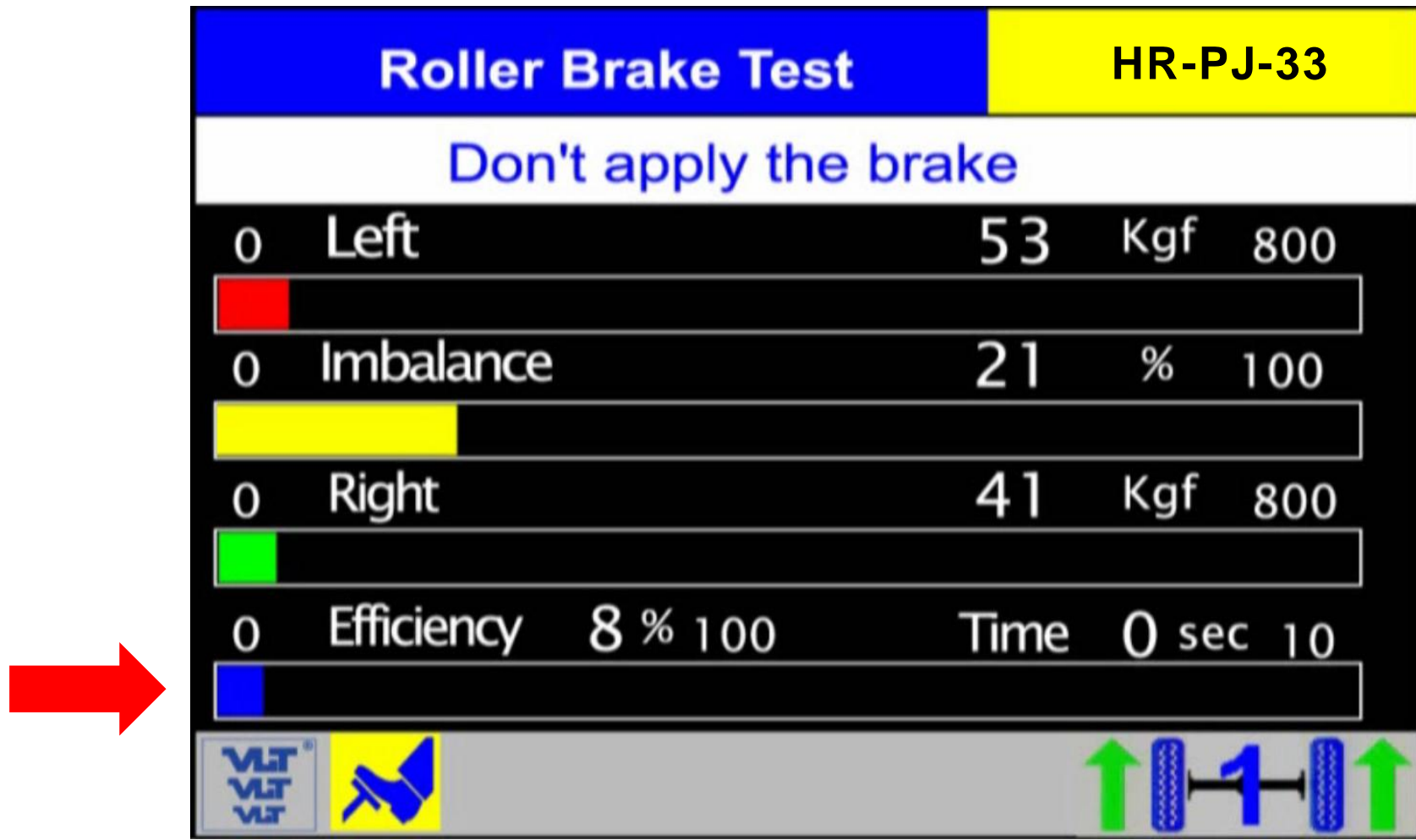
Automatic re-test

In this example:
requirement = 50%
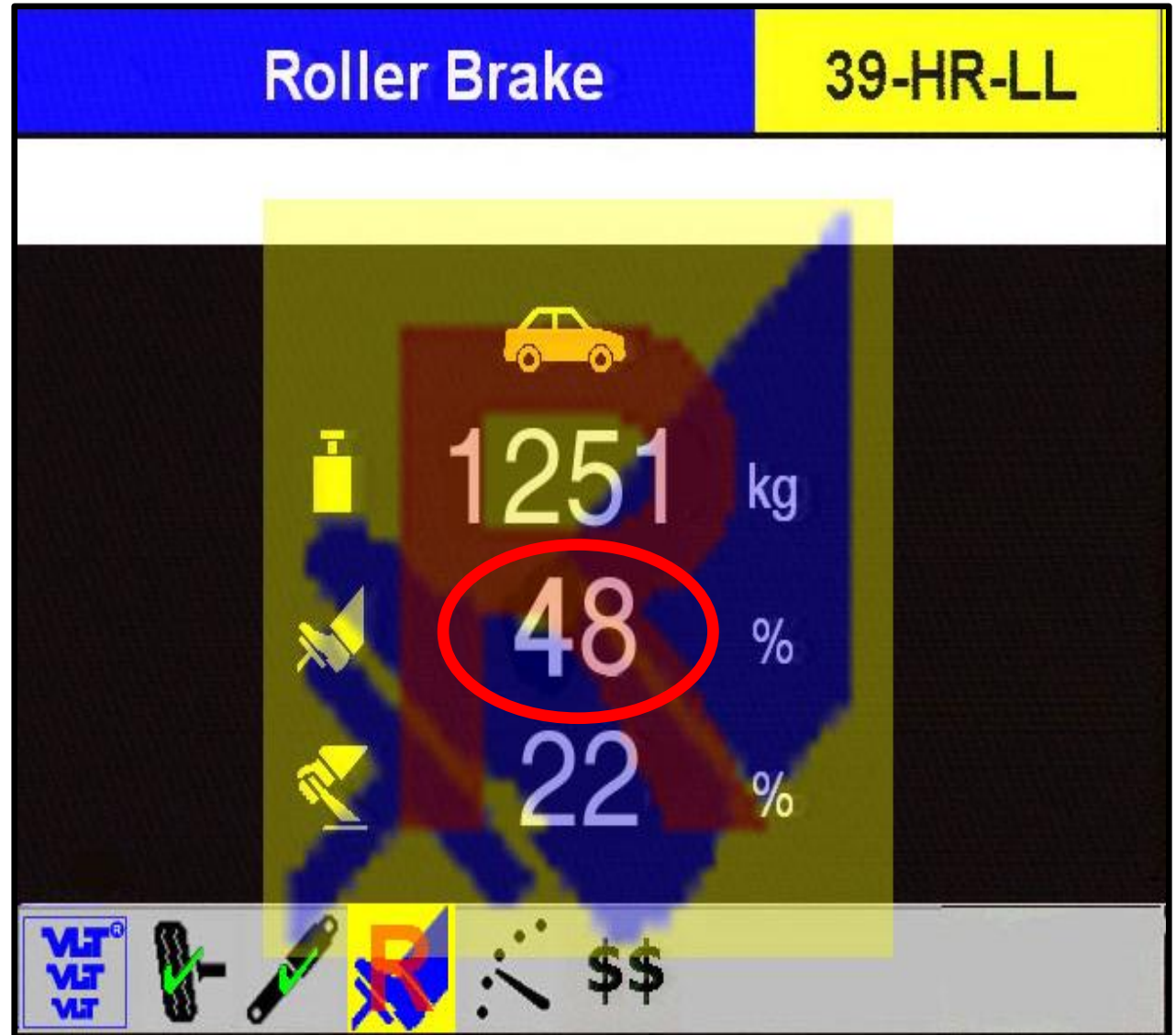
Use of emergency stop detection

Use of emergency stop detection
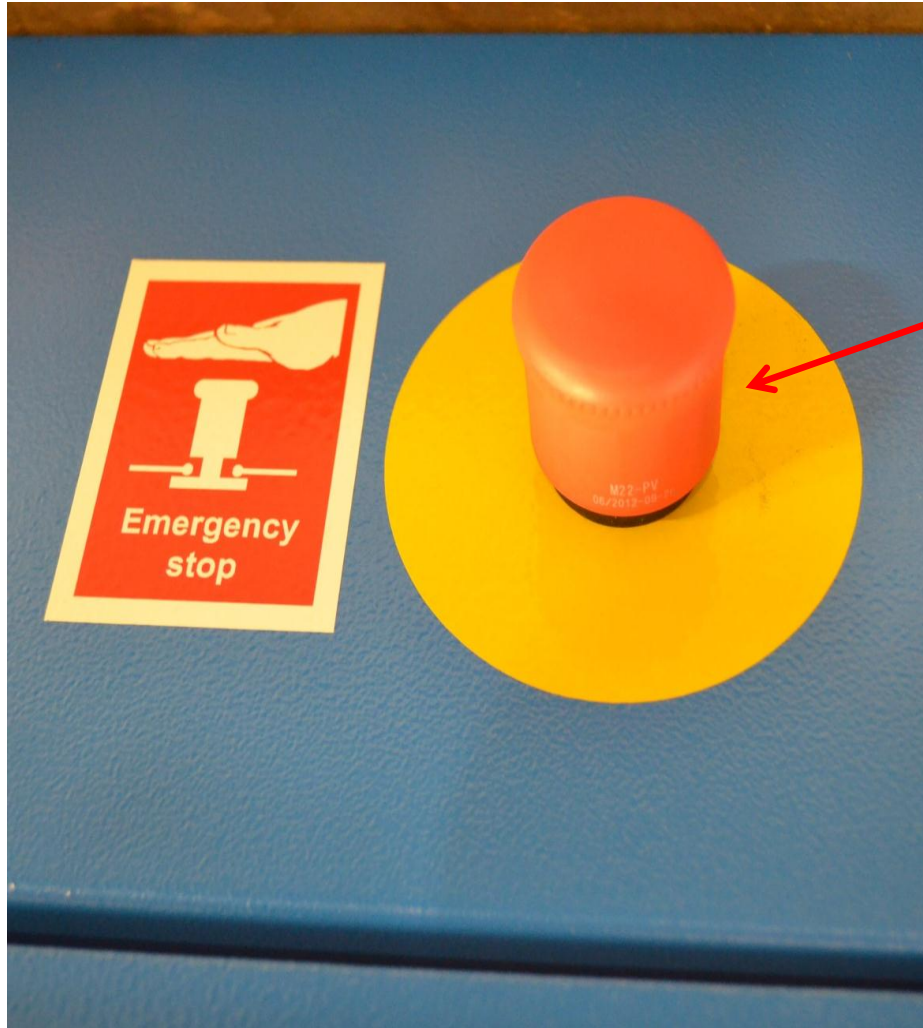
Use of emergency stop detection
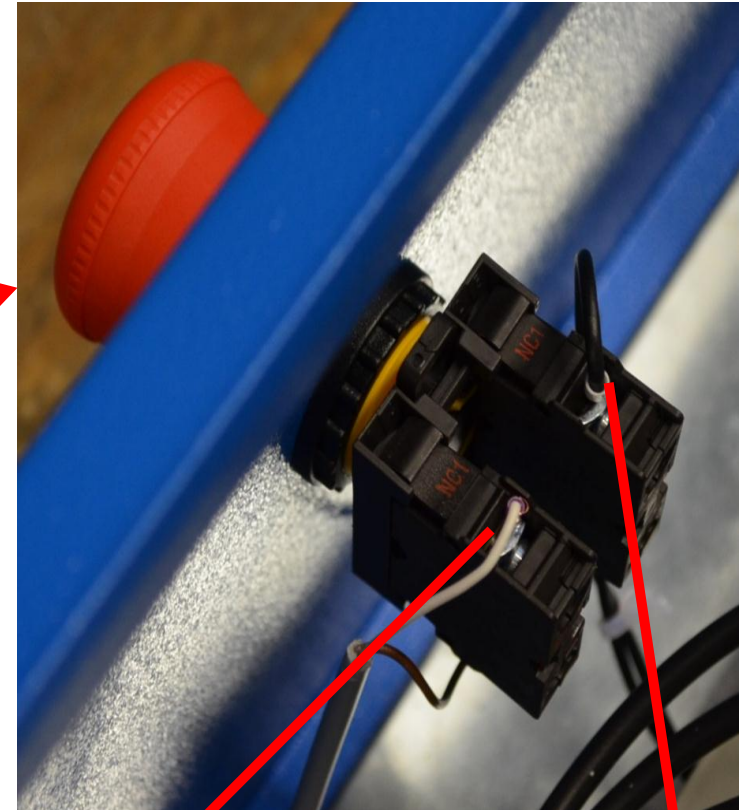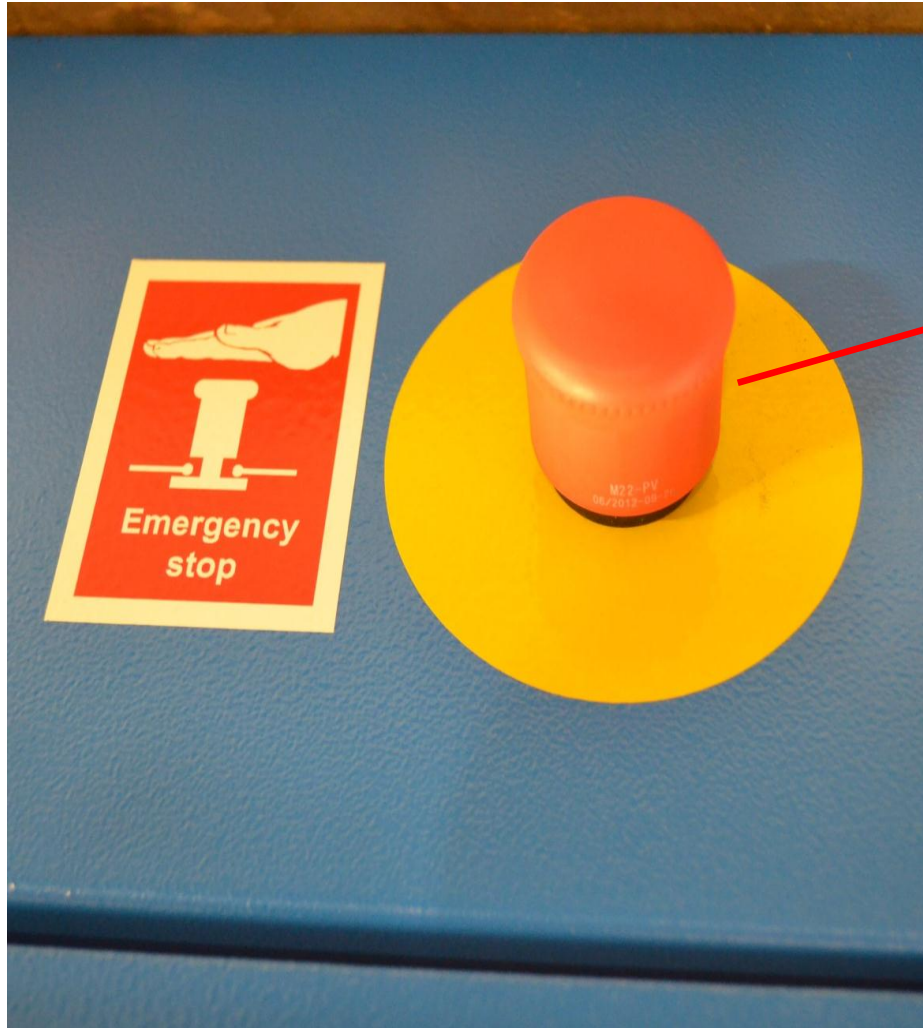
software trigger

power cut

Stage 3
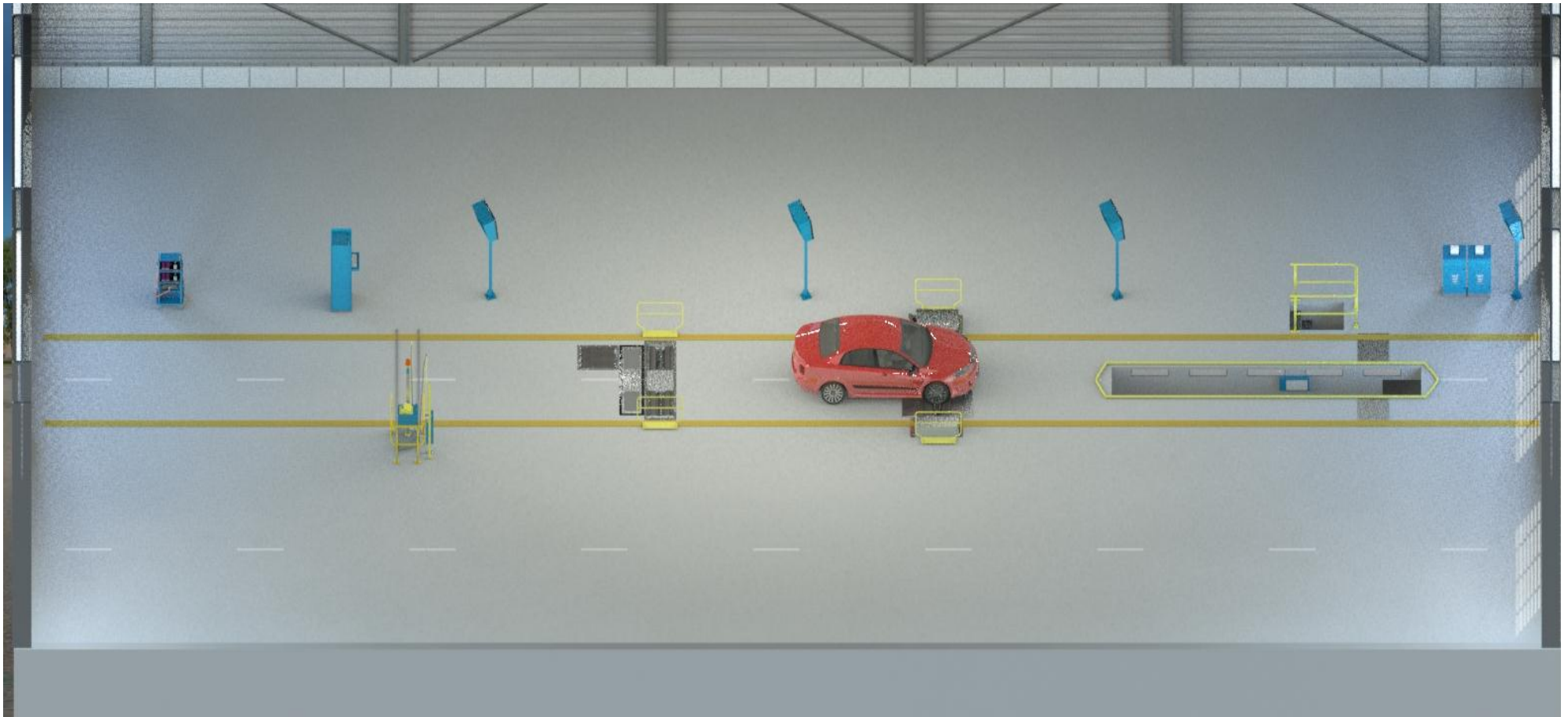
Stage 3, diesel smoke test under full load with CDST
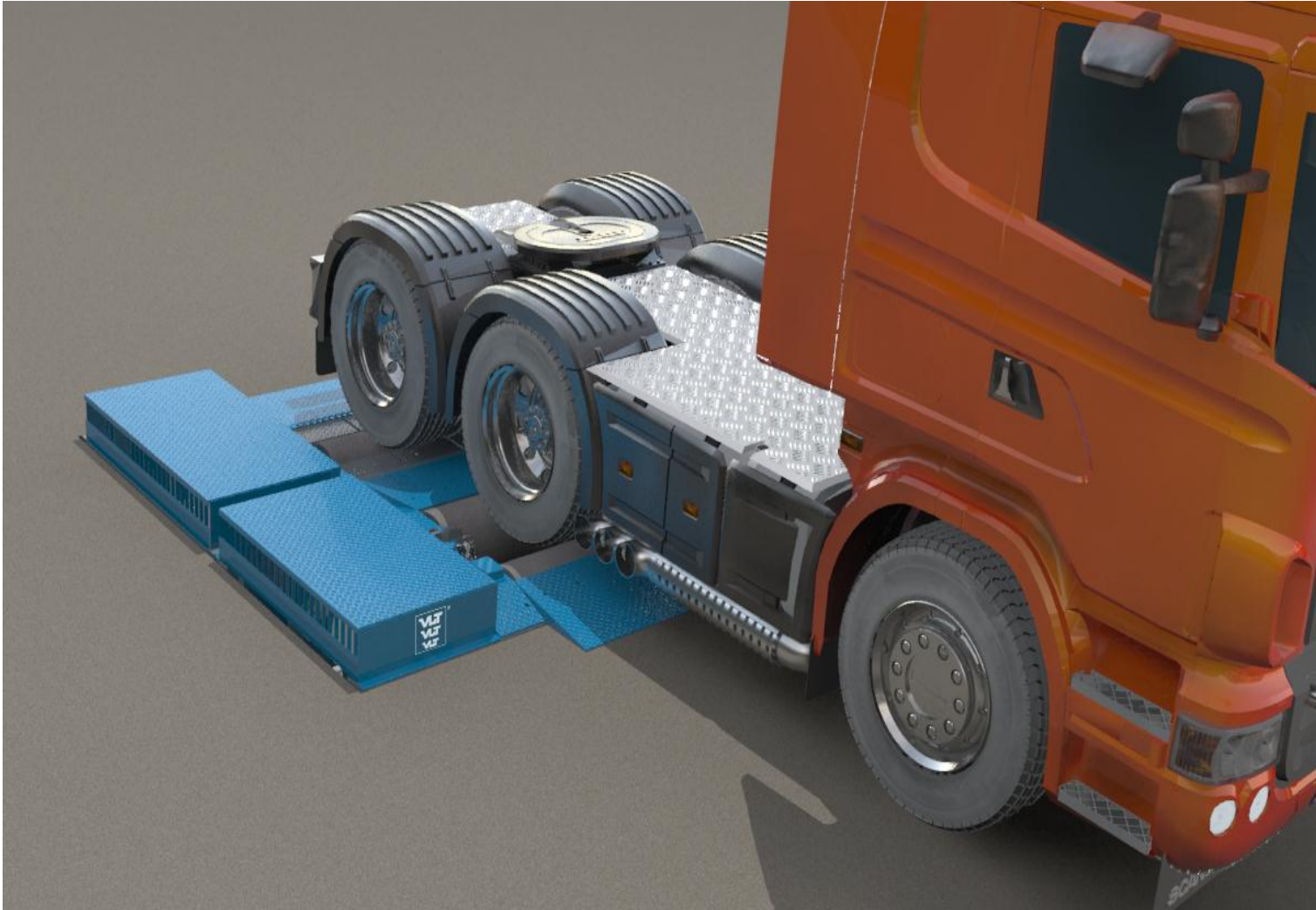
Anti-Manipulation Measures

Controlled
test cycle on CDST
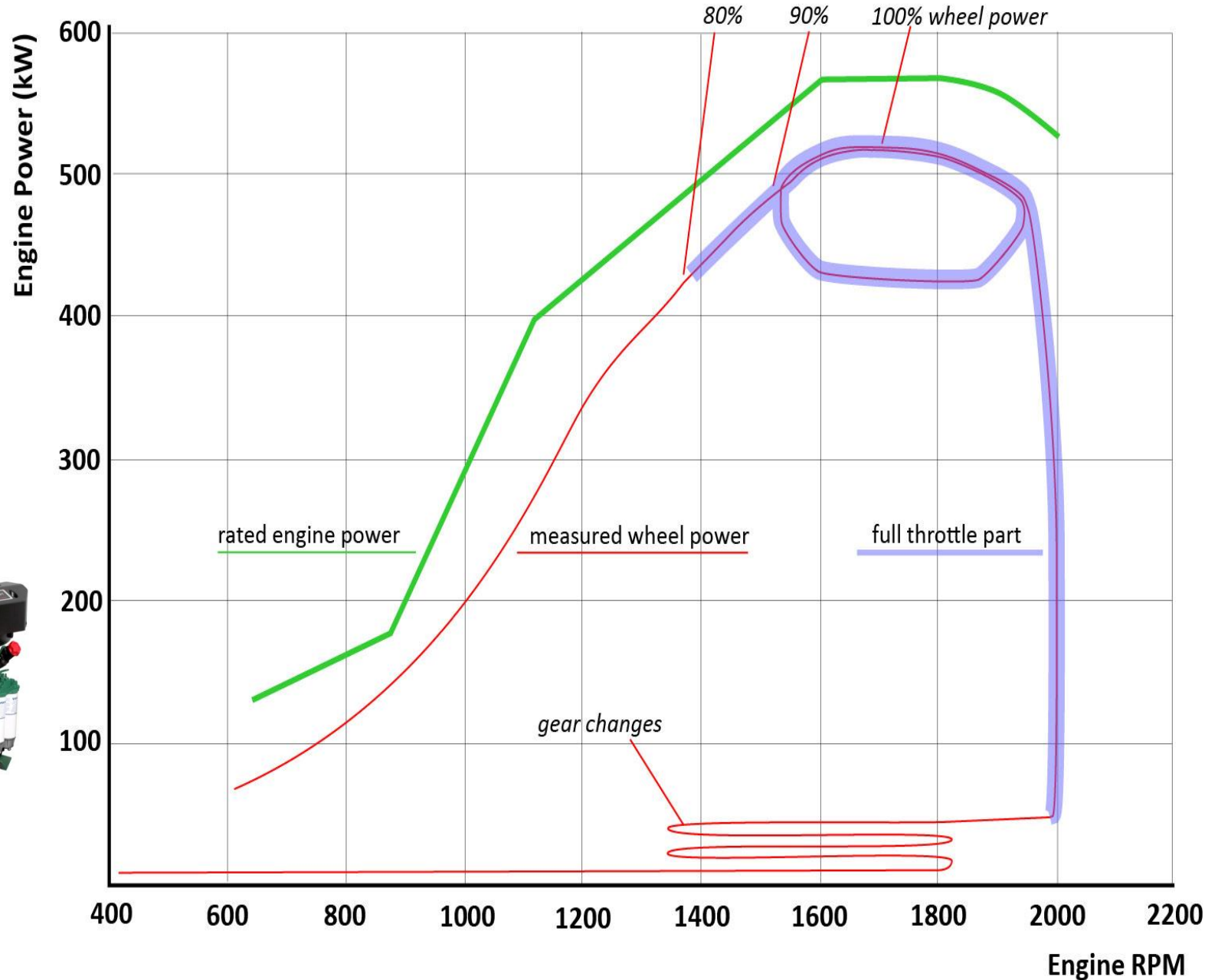
Checks on engine rpm and power

Anti-Manipulation Measures
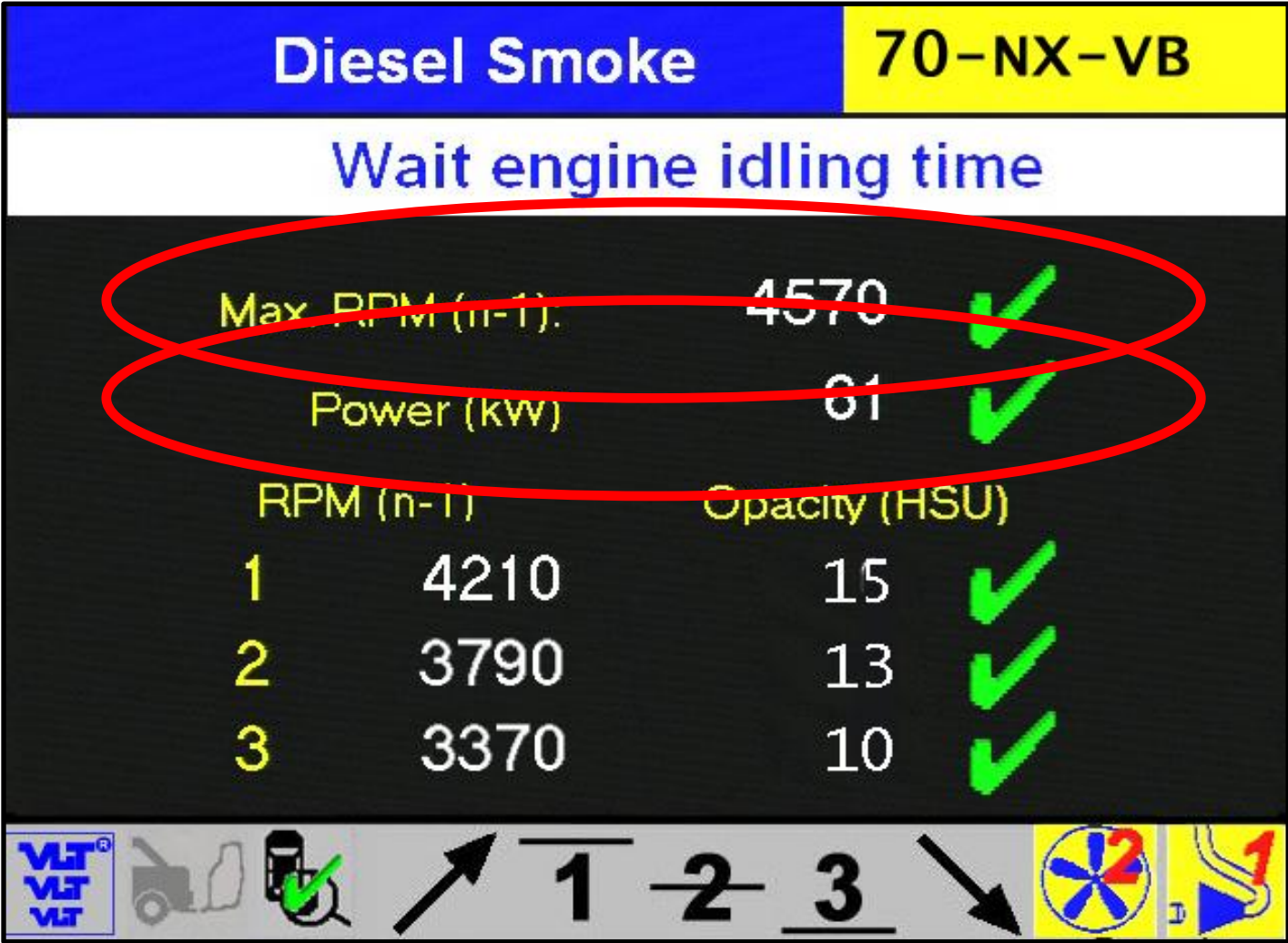
Speedometer test on CDST

No actual speed indication
at speedometer test

Aircon-test: both temperature and air flow measurement

Stage 4

Anti-Manipulation Measures

Inspector identification with RFID tag at each test stage

Anti-Manipulation Measures
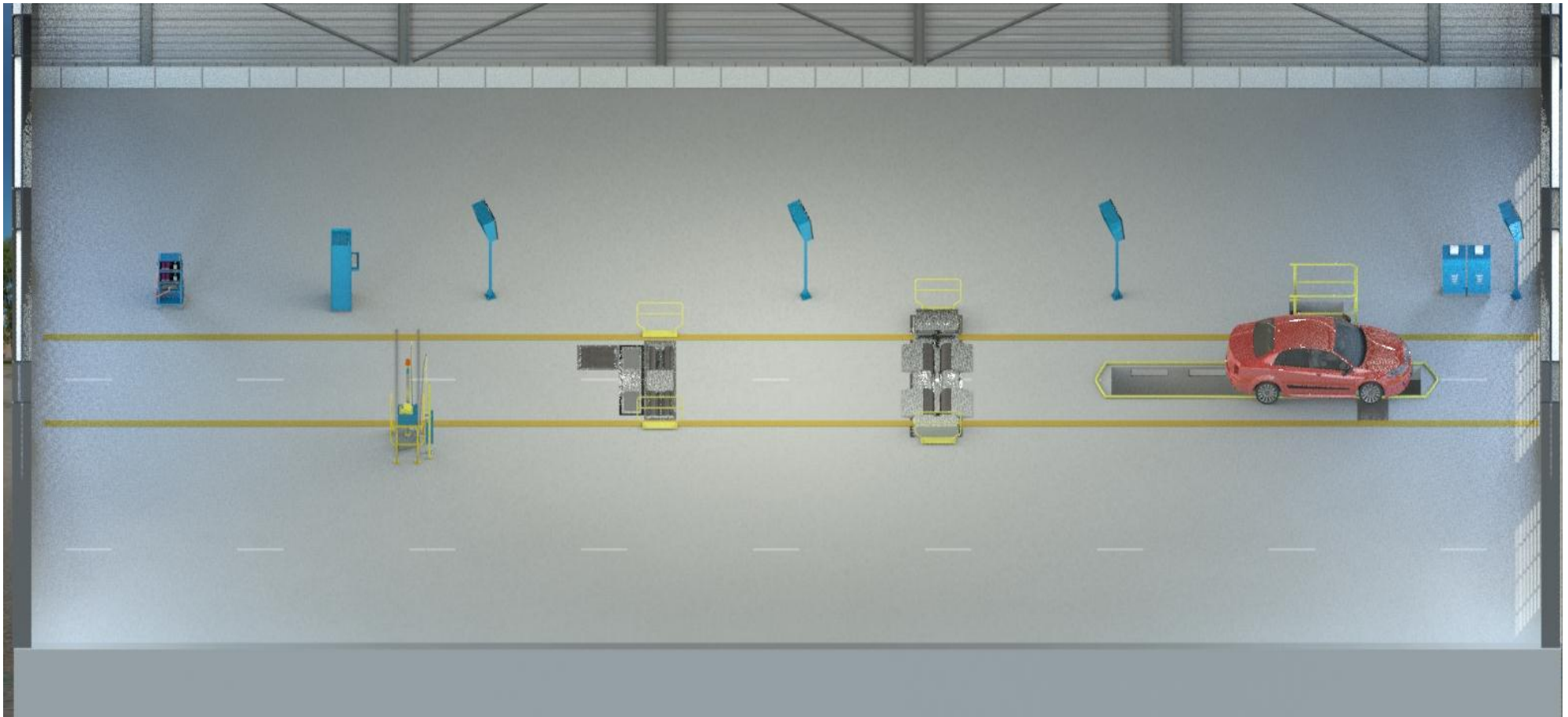
Comparison of test results between inspectors

Inspector vehicle fail rate report by equipment

Inspectors			
From: 27-12-2012		To: 27-01-2014	

Inspector	Performed Test	Total passed	Total failed
	Above Carriage Inspection	106	4
	Above Carriage Inspection	2793	309
	Above Carriage Inspection	1318	66
	Above Carriage Inspection	1216	14
	Total Above Carriage Inspection	5433	393
	Under Carriage Inspection	6	0
	Under Carriage Inspection	1143	11
	Under Carriage Inspection	549	1
	Under Carriage Inspection	568	1
	Total Under Carriage Inspection	2266	13
	Diesel Smoke Test	78	7
	Diesel Smoke Test	2213	109
	Diesel Smoke Test	965	48
	Diesel Smoke Test	1103	4
	Total Diesel Smoke Test	4359	168
	Emission Test	26	0
	Emission Test	562	1
	Emission Test	21	0
	Emission Test	17	0
	Total Emission Test	626	1
	Roller Brake Test	571	966

Test lane output
fraud sensitive documents

Lockable printer cabinet

test certificates

test reports

End of inspection

Anti-Manipulation Measures

Station overview screen
for station manager

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