Soluzioni ingegneria 2004

Research partnership in technology innovation

Topic

Bus class I/II/III: Certification services

Partnership with

TÜV SÜD Italia

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BU1MA0	22/05/24	0	Deliverable

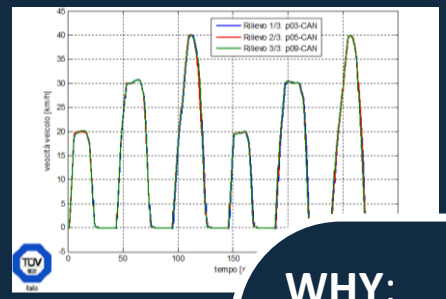
AUTOBUS CERTIFICATION

WHO, WHAT, HOW, WHY

WHO:
SI-TÜV Italia partnership for more than 18 years.

WHAT:
Certification services, through an independent third party, according to ITA-EU standards (CUNA, UITP, ASSTRA, ISO,…).

HOW:
Experimental test, data analysis and technical report.



WHY:
- ❑ Participation in tender.
- ❑ Benchmark between vehicles.
- ❑ Pre/post tender test.
- ❑ Performance evaluation.

INSTRUMENTATION

Vehicle dynamics: IMU+GPS+CAN-BUS

Measurements of electrical quantities

Class 1 sound level meter

Periodically certified by LAT for all measuring needs

High precision fuel consumption volumetric meter

MEMS and piezo accelerometer

Thermoresistances, humidity sensors, anemometers

AUTOBUS CERTIFICATION

PROVIDED SERVICES

STANDARD TEST

Energetic consumption

- *CUNA 503-01*
- *CUNA 003-01*
- *SORT 1-2-3*
- *On road usage*

ALSO FOR ELECTRIC AND HYBRID

Auxiliary performance

- *A/C system:*
  - *ANSI/ASHRAE 51*
  - *CUNA 575-01,02*
  - *CUNA 586-06*
- *ASSTRA electrical system*
- *ASSTRA pneumatic system*

Pollutant emission

- *DIR. 2009/33/CE*
- *On road usage*

Vibration

- *ISO 2631*
- *ISO 5349*
- *EN1032 – EN12096*
- *D.lgs. 81/2008*

Noise

- *CUNA 504-01/02*
- *CUNA 504-03*
- *CUNA 504-04*
- *UNI 9838*
- *UNECE 51*
- *D.lgs. 81/2008*

Dynamic performance

- *CUNA 503-03*
- *CUNA 503-04*
- *CUNA 503-06*
- *CUNA 503-08*

AUTOBUS CERTIFICATION

PROVIDED SERVICES

SPECIAL TEST

Floors friction

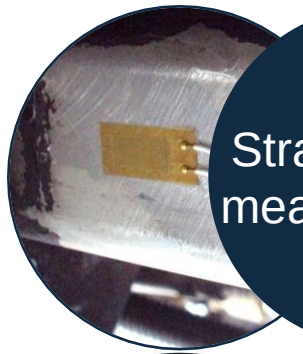
Determination of floors friction coefficient - Method B.C.R.A.

ATS vibration

Measure of the vibration level of the ATS (After Treatment System)

Door closing force

Measure of the door's closing force according to UNECE 107



Strain gauges measurements

Measurement with strain gauges to obtain the stress status

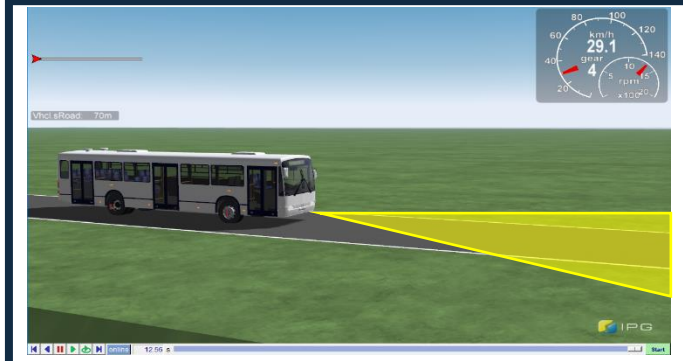
Absorption of platform for disabled

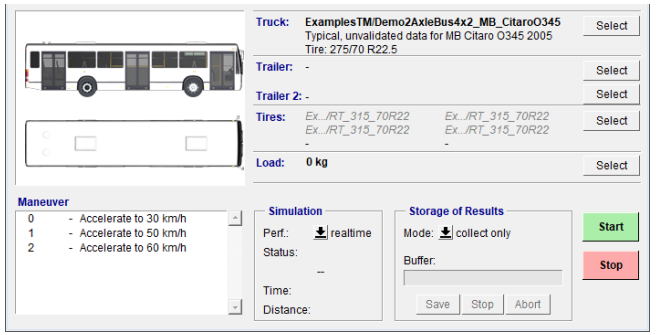
Measurement of the electrical absorption of the platform for disabled

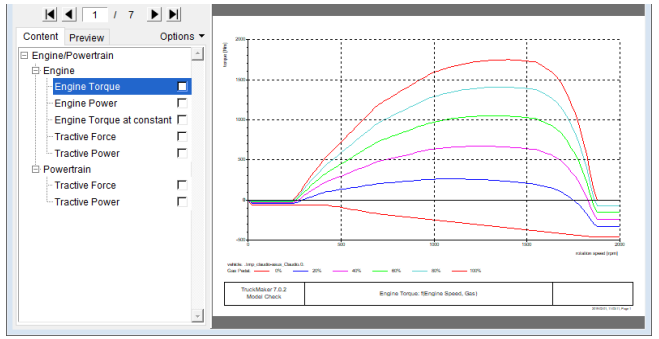
Compliance check

Certification of the compliance to the tender's specifications

VIRTUAL TEST







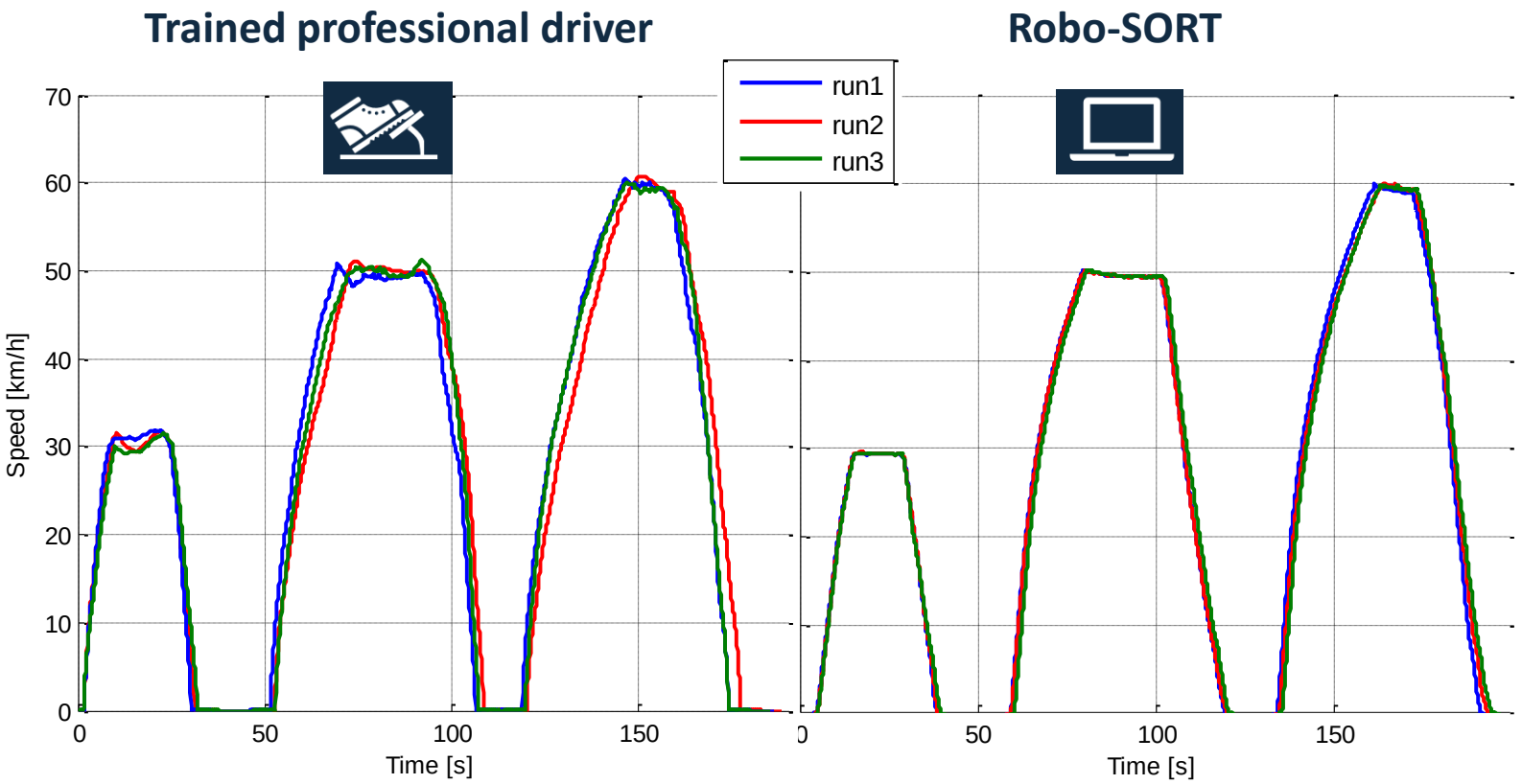
Numerical simulation of the vehicles behaviour on virtual road:

- ❑ fuel consumption calculation (on route test, SORT test…) in different load conditions;
- ❑ longitudinal/lateral/vertical dynamics;
- ❑ hybrid engine optimization;
- ❑ simulation of real road with traffic and pedestrian, radar and ADAS logics…

STRENGTH POINTS

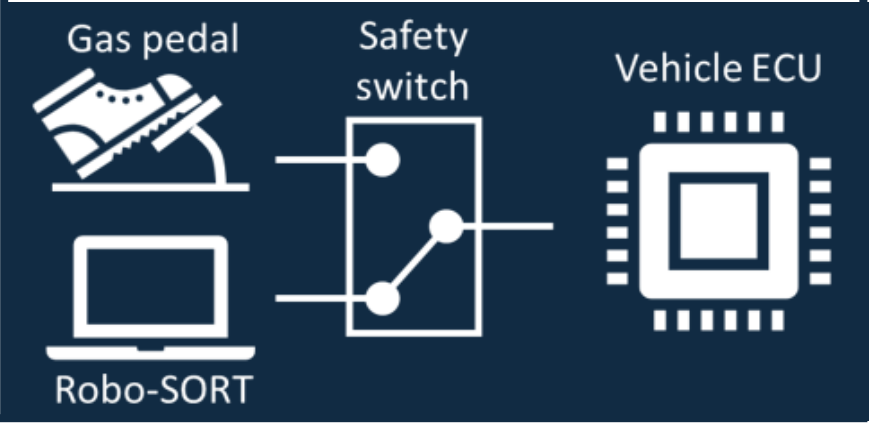
- Compliant to standard ISO 17025.
- Engineering and execution of extra-catalog services requested specifically by the customer.
- Adequacy to standards to provide to customer traceability and repeatability of obtained results.
- Short intervention time (only 5 working days).
- Technical reports within 24 hours from the end of experimental activities.
- Possibility to develop software for data analysis following customer's requirements.

ROBO-SORT



Robo-SORT is able to replace the human driver with an **electronic control** of the **gas pedal** during fuel consumption test**:**

- ❑ energy consumption reduction;
- ❑ **high repeatability** and no human errors → time and money saving;
- ❑ **100% compliant with SORT protocol**: no direct interactions with vehicle ECUs or vehicle CAN-BUS.



TURNKEY SERVICE

We offer a **complete «turnkey service»** for the execution of the test in full autonomy. On request it is possible to provide the following services:

- ❑ vehicle transfer at the place chosen for the test;
- ❑ engagement of professional test driver, with decennial experience in test execution, including test plate and professional liability insurance;
- ❑ test track renting;
- ❑ loading/unloading of the vehicle;
- ❑ controlled temperature room renting for A/C test.

CLIENTS PORTFOLIO

IVECO BUS

INDUSTRIA ITALIANA AUTOBUS

MAN

NEOPLAN

HEULIEZBUS

BMC

Otokar

SOLARIS

BEULAS

YES EU

ISUZU

ALFABUS EUROPA

KARSAN

BYD

SCANIA

rampini

YUTONG

中国中车 CRRC

Thank you!

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