

TEAM ADAS

Wellness Package



About us

LEANE INTERNATIONAL

Active since 1978 in the field of industrial sensors and testing equipment for R&D. Our headquarter is in Parma, branch offices in Milano and Torino.

Since the 90s we develop custom solutions for data acquisition systems, test rigs and control systems. On the Italian market, we represent and operate on behalf of leading brands such as ABDynamics, GeneSys, Dewesoft, Rototest.

We are supplier and partner of the main companies in the automotive sector in Italy: Stellantis Group, Ferrari, Lamborghini, Porsche Engineering Nardò Technical Centre, Iveco, CNH, Piaggio Group, Ducati, Pirelli, Bridgestone.

In 2016 our “ADAS Team” was born, with the mission of supporting our customers in all their activities related to the ADAS/AD testing, from the management of their testing equipment to the test execution and data analysis.

“Alone you go fast, but together you go further!”

Our added value



Consulting



Custom solutions



Support



Maintenance



Wellness Package

Leane officially represents **AB Dynamics** in Italy.

The test engineers in our **ADAS Team** are entitled to train new robot users and they have the competence to use and the AB Dynamics equipment at its best and to guarantee its correct maintenance.

Based on this and in line with our vision, we can support customers with our **Wellness Package**, a complete solution where the testing equipment is just a part of a number of services including:

Training

Basic training, always included with the hardware

- On-site, theoretical and on the track
- Safety rules
- HW and SW operation
- Training certificate

Additional training, on customer's request

- Further theoretical / practical training
- On-site or online
- On-the-job training of the customer's employee

Support

- System installation
- Configuration and functionality check
- Troubleshooting
- Test execution support
- EuroNCAP test protocols
- Implementation of custom test protocols

Maintenance

- Management of the systems
- Remote support and inspection on-site
- Software and firmware upgrade
- Ordinary maintenance, periodic check and consumable material and worn parts
- Extraordinary maintenance, repair or replacement of components, on-site or at our labs



Case studies

Besides the usual support on the application of the standard EuroNCAP test protocols, our ADAS Team carries out studies and implementation of customized test scenarios with ABDynamics robot systems.

■ Calibration and validation test for MOIS/BSIS

Reference regulation:

- **UN reg 159: Moving Off Information System** for the Detection of Pedestrians and Cyclists.
- **UN reg 151: Blind Spot Information System** for the detection of bicycles

Test equipment:

- Driverless robot kit AB Dynamics
- (steering robot + brake and accelerator robot)
- VRU carrier AB Dynamics Launchpad 50 with Pedestrian dummy

Involved vehicles/targets:

- 1 vehicle (VUT), 1 target (VRU)



■ Scenarios for false positive AEBS

Reference regulation:

- **UN reg 152: Advanced Emergency Braking System (AEBS)** for M1 and N1 vehicles

Test equipment:

- Complete robot kit AB Dynamics (steering robot + brake and accelerator robot)
- GVT carrier AB Dynamics platform GST with SoftCar 360 vehicle target
- Static VRU targets

Involved vehicles/targets

- 1 vehicle (VUT), 1 static target (VRU), 1 vehicle target (GVT)



Swarm tests/Highway scenarios for Highway autonomous driving test cases



Reference regulation:

- the test protocols are developed by the customer in order to investigate typical real world driving scenarios

Test equipment:

- Complete robot kit AB Dynamics (steering robot + brake and accelerator robot)
- GVT carrier AB Dynamics platform GST with SoftCar 360 vehicle target
- Sync-0 controller AB Dynamics

Involved vehicles/targets:

- 1 human driven vehicle (VUT), 1 vehicle target (GVT), up to 6 robot driven vehicles)

High speed LSS (ELK) test

Reference regulation:

- EuroNCAP 2020 protocol: Emergency Lane Keeping.** Test protocol adjusted for 100km/h and 130 km/h

Test equipment:

- Complete robot kit AB Dynamics (steering robot + brake and accelerator robot)

Involved vehicles/targets:

- 1 vehicle (VUT)



Extra ADAS activities:

■ *Driverless Durability test on asphalt and special pavements*

Reference regulation:

- Custom test based on customer's requirements:
Test sequence with multiple repetitions driven on special pavements with different road surfaces; endurance test (12 hours) on the Low Speed Ring at Nardò Technical Center, with driverless vehicle driving at 120/130 km/h

Test equipment:

- Driverless robot kit AB Dynamics with specific durability options (steering robot + brake and accelerator robot)

Involved vehicles/targets:

- 1 vehicle (VUT)



■ *Vehicle Dynamics and Braking*



Reference regulation:

- Several ISO standards dealing with the objective evaluation of the vehicle dynamics, including **ISO 4138**, **ISO 7401**, **ISO 13674**, **ISO 3888**, **ISO 9816**, **ISO 7975**, **ISO 21994**
- **Reg. ECE 139** Uniform provisions concerning the approval of passenger cars with regard to Brake Assist Systems (BAS)
- **Reg. ECE 140** Uniform provisions concerning the approval of passenger cars with regard to Electronic Stability Control (ESC) Systems (protocollo di prova Sine With Dwell)

- Legacy test protocols for the verification and validation of the handling and braking performance

Test equipment:

- Steering Robot AB Dynamics SR-60 Torus, in alternative new SR Halo lightest carbon fiber version
- Combined braking and accelerator robot AB Dynamics CBAR-600

Involved vehicles/target:

- 1 vehicle (VUT)



Additional skills

During a long lasting cooperation with leading manufacturers of automotive sensors, inertial navigation systems, data acquisition systems and with its customers, Leane worked also as a system integrator and acquired a comprehensive competence in the field of vehicle track testing. This allows us to offer complementary solutions:



- Interfacing the **AB Dynamics** systems with third party equipment in order to expand the sensor setup, signal conditioning and data acquisition capability, covering analog and digital inputs, CAN / Ethernet interface, USB / Gige cameras, lidars, etc.
- Post processing of the test data: besides using the standard processing tools like the AB Dynamics Post Processor, we can develop custom solutions for the subjective and objective evaluation of the test data, by means of specific applications or based on Matlab/Python scripts.
- Implementation of tailored solutions, including the integration of additional devices and the development of test automation applications with custom hardware and software interfaces optimized for in vehicle operation.



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