

# TASB BIAS

AUTOMOTIVE TEST CENTER



**Test Infrastructures**



# TOSB BİAS

AUTOMOTIVE TEST CENTER



TOSB BİAS Automotive Test Center is one of the largest private test centers in Türkiye. A wide range of laboratory tests are conducted in accordance with various standards, norms, and regulations. The main test categories include environmental tests, homologation tests, engine tests, structural fatigue tests, and static tests. In addition to laboratory tests, field measurement services are provided. Auxiliary services such as fixture design, analysis, and manufacturing are also available. The test center is accredited by TÜRKAK.

## TEST SERVICES

- Vibration & Shock
- Environmental Tests
- Structural Durability - Performance - Life Tests
- Engine Dynamometer Tests
- Impact - Drop Tests
- Elastomer Tests







## Vibration Shock Electro-Dynamic Shaker - 1

**Maximum Force:** 70 kN (Sine & Random), 140 kN (Shock)  
**Maximum Payload:** 1,000 kg (Fixture + Test Sample)  
**Maximum Acceleration:** 1,000 m/s<sup>2</sup>  
**Maximum Displacement:** 76 mm  
**Frequency Range:** 5-2,700 Hz  
**Sliding Table - Head Expander Size:** 1,200 mm x 1,200 mm - 900 mm diameter  
**Some Standards:** ISO 16750, TS EN 60068, TS EN 61373, MIL-STD-810, MIL-STD-167, RTCA DO-160G, NATO AECTP-400

This system is capable of operating in combination with Climatic Chamber 1.



## Vibration Shock Electro-Dynamic Shaker - 2

**Maximum Force:** 49 kN (Sine & Random), 98 kN (Shock)  
**Maximum Payload:** 1,000 kg (Fixture + Test Sample)  
**Maximum Acceleration:** 1,000 m/s<sup>2</sup>  
**Maximum Displacement:** 51 mm  
**Frequency Range:** 5-2,400 Hz  
**Sliding Table - Head Expander Size:** 800 mm x 800 mm  
**Some Standards:** ISO 16750, TS EN 60068, TS EN 61373, MIL-STD-810, MIL-STD-167, RTCA DO-160G, NATO AECTP-400

This system is capable of operating in combination with Climatic Chamber 1.



## Vibration Shock Electro-Dynamic Shaker - 3

**Maximum Force:** 10 kN (Sine & Random), 20 kN (Shock)  
**Maximum Payload:** 300 kg  
**Maximum Acceleration:** 1,000 m/s<sup>2</sup>  
**Maximum Displacement:** 51 mm  
**Frequency Range:** 5-3,000 Hz  
**Sliding Table - Head Expander Size:** 600 mm x 600 mm - 600 mm diameter  
**Some Standards:** ISO 16750, TS EN 60068, TS EN 61373, MIL-STD-810, MIL-STD-167, RTCA DO-160G, NATO AECTP-400



## ■ Climatic Test Chamber - 1

With Electro-Dynamic Shaker 1&2 It can also work as a 'Combined Cabin'.

**Temperature Range:** -70°C/+150°C

**Humidity Range:** 5%-98% R.H

**Heating Rate:** 3°C/min

**Cooling Rate:** 2°C/min

**Internal Dimensions:** 1,300 mm x 1,300 mm x 1,300 mm

**Some Standards:** ISO 16750, TS EN 60068, MIL-STD-810, RTCA DO-160G



## ■ Climatic Test Chamber - 2

**Temperature Range:** -40°C/+150°C

**Humidity Range:** 10% R.H-98% R.H

**Heating Rate:** 3°C/min

**Cooling Rate:** 2°C/min

**Internal Dimensions:** 1,200 mm x 1,200 mm x 1,200 mm

**Some Standards:** ISO 16750, TS EN 60068, MIL-STD-810, RTCA DO-160G



## ■ Climatic Test Chamber - 3

**Temperature Range:** -40°C/+150°C

**Humidity Range:** 20%-98% R.H

**Heating Rate:** 3°C/min

**Cooling Rate:** 2°C/min

**Internal Dimensions:** 2,000 mm x 2,000 mm x 2,000 mm

**Some Standards:** ISO 16750, TS EN 60068, MIL-STD-810, RTCA DO-160G



## ■ Climatic Test Chamber - 4

**Temperature Range:** -70°C/+180°C

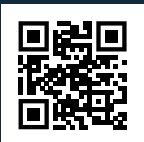
**Humidity Range:** 10%-98%

**Heating Rate:** 4.5°C/min

**Cooling Rate:** 4.5°C/min

**Internal Dimensions:** 1,000 mm x 1,000 mm x 1,000 mm

**Some Standards:** ISO 16750, TS EN 60068, MIL-STD-810, RTCA DO-160G





## Rapid Climatic Chamber with Solar Radiation Simulation

**Temperature Range:** -70°C/+180°C

**Temperature Deviation:**  $\leq \pm 2^\circ\text{C}$

**Heating Rate:** 15°C/min

**Cooling Rate:** 10°C/min

**Humidity Range (Without Solar Radiation):** 10%/95%

**Humidity Range (With Solar Radiation):** 10%/80%

**Beam Field:** 4,200 cm<sup>2</sup>

**Beam Intensity:** 1,200 W/m<sup>2</sup>

**Max. BST:** 125°C

**Internal Dimensions:** 1,000 mm x 1,000 mm x 1,200 mm

**Some Standards:** ISO 16750, TS EN 60068, TS EN ISO 4892, DIN 75220, MIL-STD-810, RTCA DO-160G



## Thermal Shock Chamber

**Hot Cabinet Temperature Range:** +20°C/+180°C

**Cold Cabinet Temperature Range:** -70°C/-10°C

**Temperature Deviation:**  $\leq \pm 2^\circ\text{C}$

**Maximum Mass:** 35 kg

**Maximum Dimension:** 700 mm x 700 mm x 600 mm

**Transfer Time Between Chambers:** <10s

**Transfer Direction:** Vertical

**Some Standards:** TS EN 60068, IEC 60721, DEF-STAN 00-35, GAM EG 13, ISO 16750, MIL-STD-810, RTCA DO-160G



## Dust Test Chamber

**Maximum Test Specimen Dimensions:** 700 mm x 700 mm x 700 mm

**Maximum Mass:** 100 kg

**Temperature Range:** +5°C/+85°C

**Dust Particle Size:** 50 µm - 70 µm

**Test Protection Class:** IP5X, IP6X

**Some Standards:** ISO 20653, IEC 60529, DIN 40050

TS 3033 EN 60529, ISO 16750



## ■ Rain Test Chamber

**Test Specimen Maximum Dimensions:** 400 mm x 400 mm x 400 mm

**Maximum Mass:** 15 kg

**Water Spray Pressure:** 10 kPa - 400 kPa

**Table Diameter:** 400 mm

**Some Standards:** TS 3033 EN 60529, ISO 20653, DIN 40050

**Test Method:** IPX1, IPX2, IPX3, IPX4, IPX4K, JIS D 0203 R1, R2, S1, S2



## ■ Cyclic Corrosion Chamber

**Operation Modes:** Salt Spray, Condensing Humidity, Air Drying and Controlled Humidity Modes

**Temperature Range:** Ambient to 70°C

**Humidity Range:** 95% R.H-100% R.H

**Internal Dimensions:** 1,190 mm x 1,320 mm x 945 mm

**Salt Fog Fallout Rate:** Adjustable between 0.5 and 5 ml per 80 cm<sup>2</sup> per hour.

**Some Standards:** ISO 16750, TS EN 60068, ASTM B117, ASTM B287, ASTM B368EN, ISO 9227, ISO 11997, ISO 14993, MIL-STD-810, RTCA DO-160G



## Vibration

### ■ Servo Hydraulic Shaker

Servo Hydraulic Vibration Test System performs vibration tests of large and heavy parts up to 200 Hz.

3 axes are tested separately. It is suitable for vibration tests of structures such as EV battery packs, train air conditioners, fuel tanks and ship antennas.

**Force:** 250 kN

**Some Standards:** TS EN 61373, ECE R 100, MIL-STD-167





## Engine Dyno Test Room AC Dyno



**Maximum Speed:** 4,800 RPM

**Maximum Power:** 500 kW

**Maximum Torque:** 3,183 Nm@1,500 RPM

**Table Dimensions:** 4,500 mm x 1,500 mm x 300 mm

**Data Collection System:** Temperature 16 TCK, 16 RTD, 32 Analogue Inputs (Pressure, Flowmeter etc.)

**Coriolis Fuel Measuring Instrument:** MASS 2100 DI3 (0-150kg/h)

**AC Test:** ABB

**Controller:** Galantech-Anka

- Controller and software with real-time system control and test run capability
- Engine inlet air measurement, engine water cooling, exhaust pressure, speed and torque control
- 85 kW BOWMAN air cooling system with heat dissipation
- 600 Hp engine power suitable for BOWMAN water cooling system

## Engine Dyno Test Room Eddy Current

**Maximum Speed:** 7,000 RPM

**Maximum Power:** 580 kW

**Maximum Torque:** 4,000 Nm@1,450 RPM

**Table Dimensions:** 4,500 mm x 1,500 mm x 300 mm

**Data Collection System:** Temperature 16 pcs TCK, 16 pcs RTD, 32 Analogue Inputs (Pressure, Flowmeter etc.) 4 Frequency Measurement (Speed etc.), 4 Digital Inputs

**Coriolis Fuel Measuring Instrument:** EMERSON CMFS025 (0-150kg/h)

**Eddy Current Test:** APICOM BRP800

**Controller :** APICOM HORUS-SE

- Controller and software with real-time system control and test run capability
- Engine inlet air measurement, engine water cooling, exhaust pressure, speed and torque control
- BOWMAN air cooling system with 85 kW heat dissipation
- BOWMAN water cooling system suitable for 600 Hp engine power



## Life and Durability Test System

**Total Hydraulic Capacity:** 1,100 lt/min (7 units)

**Linear Actuators:** 30+ actuators with various strokes 0-600 kN

**Rotary Actuators:** 10 kNm torque actuator with 110° angle capacity

**Test Area:** 3 x 6 m x 10 m and 1 x 4 m x 7 m test areas

**Cooling System:** Water Tower (1,860 kcal/h)

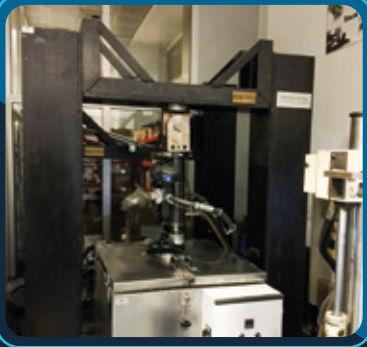


## ■ Elastomer Characterization System

The dynamic resistance of elastomer materials is determined.

**Force:** 25 kN

**Frequency:** Maximum 200 Hz



## ■ Structural Test-Elastomer

Static and fatigue tests of elastomer parts up to 3 axes.  
Conditioning is available with heating cabinet.

**Force:** 25 kN

**Number of Actuators:** 3

## ■ Structural Test-Torsion

Static Torsion Test Apparatus Gear Boxes,  
Gear Carriers Static Strength Test

**Maximum Torque:** 10 kNm

**Maximum Angle:** 110°

**Angle Accuracy:** 0.1°

**Test Specimen Length:** 100 mm - 1,700 mm

**Test Specimen Dia:** 20 mm - 100 mm (with flange) / 100 mm - 400 mm (with bearing)



## ■ Free Rotation Test System

Free Rotation Test System with Revolutions Control  
Flywheel Speed Sensor Test, Rotational Strength Test

**Maximum RPM:** 3,500 RPM

**Maximum Power:** 4 kW

**Maximum Product Diameter:** 500 mm

**Maximum Product Width:** 150 mm





## ■ Pressure-Vacuum Test System

It applies pressure-vacuum cyclic test to products such as fuel tanks.

**Pressure Range:** 20 kPa to - 5.17 kPa



## ■ Impedance Tube

Measurement and reporting of properties such as sound transmission loss and sound absorption coefficient of various materials used for acoustic insulation or reflection reduction are carried out with impedance tubes.

- Sound transmission loss measurement according to ASTM E2611 (4-Pole Transfer Matrix Method) standard
- Sound absorption coefficient measurement according to ASTM E1050 and ISO 10534-2 (Transfer Function Method) standard
- Sound transmission loss and sound absorption coefficient measurement in the 50-6,400 Hz frequency range



## ■ Mobile Emission Measuring Device

**Measured Gases:** CO, CO<sub>2</sub>, NO, NO<sub>2</sub>, THC gases

**Exhaust Flow Rate Measurement Range:** 50 kg/h to 3,000 kg/h



## ■ Accelerometer Calibration

**Maximum Sensor Weight:** 900 g

**Device:** Piezostar Accelerometer

**Nominal Sensitivity:** 100 mV/g

**Frequency Range:** 0.5 Hz - 10 kHz (5% limit)

**Acceleration Range:**  $\pm 50$  g

**Applicable Standards:** BS ISO 16063-21

## ■ Force Calibration Of Testing Machines

**Force Range:**  $0,2 \text{ kN} \leq F \leq 220 \text{ kN}$

**Applicable Standards:** TS EN ISO 7500-1, ASTM E4-21



## Vibration-Shock Electro-Dynamic Shaker - 4

**Maximum Force:** 22.24 kN (sine), 17.8 kN (random), 32 kN (Shock)

**Maximum Mass:** 500 kg (Fixture+Test Specimen)

**Maximum Acceleration:** 1,000 m/s<sup>2</sup>

**Maximum Displacement:** 51 mm

**Frequency Range:** 5-2,000 Hz

**Sliding Table - Head Expander Size:** 900 mm x 900 mm - 900 mm

**Some Standards:** ISO 16750, TS EN 60068, TS EN 61373,

MIL-STD-810, MIL-STD-167, RTCA DO-160G, NATO AECTP-400



It is located in Ankara.



It is located in Ankara.

## Climate Chamber - 5

**Temperature Range:** -70°C / +180°C

**Humidity Range:** 10% / 98% (between 10°C and 90°C)

**Temperature Deviation:**  $\leq \pm 2^\circ\text{C}$

**Heating/Cooling Rate:** 4.5°C/min

**Inner Dimensions:** 1,000 mm x 1,000 mm x 1,000 mm

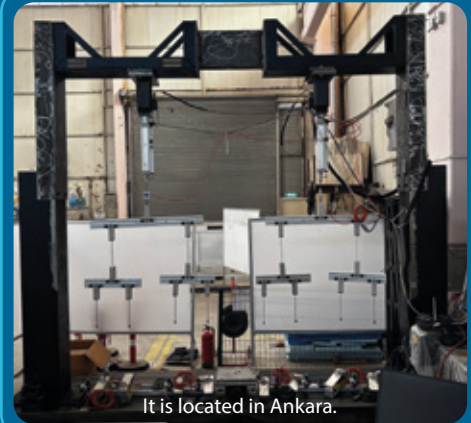
**Some Standards:** ISO 16750, TS EN 60068, MIL-STD-810, RTCA DO-160G

## Structural Test System

Static strength and fatigue tests with electromechanical actuators. Loads are applied with force or displacement control.

**Force Capacity:** 15 kN

**Displacement:** 400 mm



It is located in Ankara.



It is located in Ankara.

## Static Acceleration Test System

**Centrifuge Arm Diameter:** 3,000 mm

**Speed:** 0 - 210 rpm

**Load Capacity:** 50 kg

**Acceleration Range:** 1 g - 50 g

**Applicable Standards:** MIL-STD-810H

Method 513.8

RTCA/DO-160G Section-7 Test Procedure 2  
(Sustained)



## Portable Measuring Arm Absolute Arm 7 - Axis



- 83S 7-axis 2.0m Arm
- Absolute Scanner AS1
- Axis Probes (Ø3-6mm)
- Magnetic Base with Mounting Ring (Operational)
- Tall Fixed Tripod

It is widely used for measuring and/or referencing all kinds of products that require on-site measurements with the laser head and Polyworks software interface, for reverse engineering applications, as well as for post-manufacturing or post-assembly control. It is possible to measure parts and assemblies according to the existing technical drawing and thus check whether they are manufactured according to tolerances. Its advantage is that it enables the measurement of large and non-portable parts. In addition, the measurements of parts that are very difficult to measure on the bench or parts that are not desired to be disassembled and connected can be made quite easily due to the portability of the device.

# TEST & MEASUREMENT SERVICES

Computer Aided Analysis-Simulation  
Data Processing  
Test Specification Development  
Test Specification Creation  
Accelerometer Calibration  
Fixture Design & Manufacturing

AUXILIARY  
SERVICES



FIELD  
SERVICES

Road Load Data Acquisition  
Vehicle Instrumentation (analog, digital, CAN)  
Portable Emission Measurements

MEASUREMENT  
SERVICES

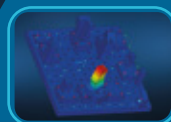
Vibrations  
Acoustics  
Strain Gauge  
Modal Test

ENVIRONMENTAL  
TESTS

Vibration & Shock  
Climate  
Thermal Shock  
Cyclic Corrosion  
Solar  
Dust  
Rain  
Pyro-Shock

STRUCTURAL  
TESTS

Static, Quasi-Static, Dynamic  
Uni-axial/Multi-axial Tests  
Performance/Lifetime/Fatigue/Strength  
Engine Dyno Tests  
Homologation Tests  
Drop Tests  
Elastomeric Part Tests





# TOSB BİAS

## AUTOMOTIVE TEST CENTER



TOSB BİAS Automotive Test Center is one of the largest private test centers in Türkiye. A wide range of laboratory tests are conducted in accordance with various standards, norms, and regulations. The main test categories include environmental tests, homologation tests, engine tests, structural fatigue tests, and static tests. In addition to laboratory tests, field measurement services are provided. Auxiliary services such as fixture design, analysis, and manufacturing are also available. The test center is accredited by TÜRKAK.

### TEST SERVICES

Vibration-Shock Tests  
Climate Tests  
Thermal Shock Tests  
Cyclic Corrosion Tests  
Dust Tests  
SRS Tests  
Rain Tests  
Solar Tests  
Engine Dynamometer Tests  
Dynamic Road Simulations  
Static Strength and Fatigue Tests  
Elastomer Part Tests  
Homologation Tests  
ROPS/FOPS Tests  
Performance Tests  
Acoustic Measurements  
Accelerometer Calibration  
Modal Test

### ASSISTED SERVICES

Computer Aided Analysis  
Road Data Processing  
Accelerated Test Specification Development  
Test Specification Creation  
Measurement Services on Tested Parts  
Training During Testing

### FIELD SERVICES

Road Data Collection  
Vehicle Instrumentation (analog, digital, CAN)  
Exhaust Emission Measurement with PEMS

İSTANBUL  
Head Office

ANKARA  
BIAS ODTÜ  
Technopark Office

ANKARA  
OSTİM  
Test Center

KOCAELİ  
TOSB BİAS Automotive  
Test Center

İZMİR  
BIAS İYTE  
Technology Park Office



info@bias.com.tr | testlab@bias.com.tr | www.bias.com.tr | www.biastest.com.tr