

## DATA LEADS TOMORROW



**HEXIA**  
Hybrid Edrive Intelligent Autonomous



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Zhejiang Hexia Technology Co., Ltd.

# COMPANY PROFILE

Zhejiang Hexia Technology Co., Ltd, founded in 2011, the company is headquartered at Changxing National Economic and Technological Development Zone, covering an area of 36 acres, including 27,000 square meters for plant, focusing on intelligent driving and V2X, chassis dyno, thermal management, power system R&D and testing. Shanghai test base is located in Jinshan Industrial Zone, covering an area of 1 square km, plant occupied more than 4,000 square meters. Focus on electric drive bench and ADAS closed area and public road testing. Also, we established branch in Jinan, Guangzhou, Chongqing and Wenzhou. Hexia is one of the rare third-party automotive product testing organizations in Zhejiang with CNAS certification; We are recognized as a Zhejiang Province high-tech enterprise, a Zhejiang Province "Specialized New" SME, a Huzhou "South Tai Lake Elite Plan" Leading and a Shanghai Science and Technology small "Giant" Enterprise.

**2011.07**  
Company Established

**2013.10**  
Shanghai High-tech Enterprise



**2017.02**  
Jinan Test Centre



**2018.07**  
Changxing Test Center launch

**2019.12**  
Shanghai JiaoTong University "Advanced Industrial Technology Research Institute", "Chang Xing (Hexia) Innovation and Entrepreneurship Base

**2020.12**  
Hexia Technology successful completion second phase

**2022.05**  
Hexia Technology completes series A Founding

**2011.09**  
Ji'nan Laboratory launch

**2016.12**  
Chongqing Test Centre



**2017.10**  
Zhejiang Hexia Technology Co., Ltd. established and construction of Changxing Test Centre started

**2018.08**  
Obtained OHSAS18001:2007 Occupational Health and Safety Management System Certificate, ISO14001:2015 Environmental Management System Certificate

**2020.05**  
Hexia Technology and SMVIC sign strategic cooperation agreement

**2022.01**  
Hexia Technology was selected as one of the Specialized New company in Zhejiang Province

**2023.07**  
The 5th batch of Nation Little Giant Firm



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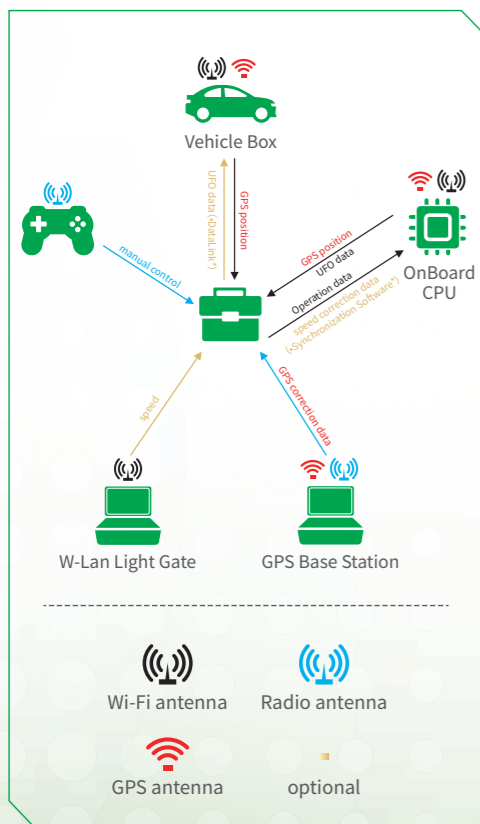
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## INTELLIGENT DRIVE

Shanghai test base is located in Jinshan Industrial Zone, covering an area of 1 square km, with flat and wide long straight and roundabout roads. Our experienced testing team capable to integrate test systems and develop test scenarios. They developed an intelligent driving test system including ADAS and V2X, which combines virtual and practical scenarios. For OEM and Tier 1, we undertake businesses including intelligent driving site testing, road testing, and comprehensive evaluation of whole vehicle testing services.



	UFOpro target carrier <sup>2</sup>	UFO nano target carrier <sup>3</sup>	UFOmicro target carrier <sup>4</sup>
Speed Range	-20/+100 km/h*	-10/+20 km/h	-20/+80km/h
Targets -Main Use Case	Vehicle Target	Pedestrian Adult; Pedestrian Child; Bicyclist; E-Scooter, PCT (Playing Child Target)	PTW(Powered Two Wheeler); CNCAP E-Scooter
Targets -With Add Ons	Pedestrian Adult; Pedestrian Child; Bicyclist		Pedestrian Adult; Pedestrian Child; Bicyclist
Footprint	2950x1690 mm (test ready) 1605x 1110 mm (transportation)	800x700 mm	1050x 980 mm (propulsion module)
Overrun Height	98 mm*	20 mm(VRU mounting module) 60 mm (propulsion module)	70 mm (propulsion and PTW mounting module) 20 mm(VRU mounting module)
Overrun*	Passenger Vehicles Commercial Vehicles	Passenger Vehicles Commercial Vehicles	Passenger Vehicles Commercial Vehicles
Minimum Turning Radius	6m	0 m (turn on the spot)	Lane Changes
Motion Accuracies	In line with Global NCAP and ISO requirements	In Line with Global NCAP and ISO Requirements	In Line with Global NCAP and ISO Requirements
Positioning System**	RTK DGNS single antenna unit with GPS/GLONASS	RTK DGNS dual antenna unit with GPS/GLONASS	RTK DGNS dual antenna unit with GPS/GLONASS
Communication to Base	RTK DGNS single antenna unit with GPS/GLONASS	UFObase, Compatible with multiple robots for swarm testing	UFObase, Compatible with multiple robots for swarm testing

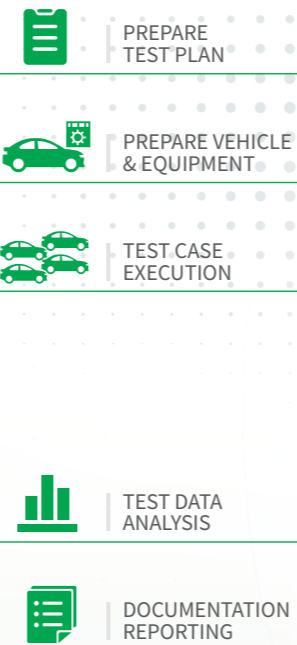


### Test Preparation-Execution

- # A wide range of preconfigured test scenarios utilizing UFO target carrier and/or DrivingRobot are part of the library (Euro NCAP and others)
- # Scenarios are adapting based on data input from test engineer (ex: overlap based on vehicle's width)
- # Robots are self-calibrated
- # Functions for testing efficiency automatic return to start

### Test Evaluation-Reporting

- # Instant validation of the test case
- # Test plan is automatically identified in order to eliminate potential human errors
- # Automated report generation with standardized set of NCAP report templates, which can also be adapted according to customer requirements



## Site test ENCAP/CNCAP All regulatory items and their extensions

Shanghai test base-ADAS intelligent driving development test								
Test Item	Description	Scenario	Refer Standard	Speed	500m Road	900m Road	50m*50m Cross	
AEB/ FCW	Automatic emergency braking/Front collision warning	CCRs (Car to Car Stationary)	EuroNCAP2021/2023 CNCAP2021	10~80km/h	●			
		CCrm (Car to Car Moving)		30~80km/h		●		
		CCRb (Car to Car Braking)		50km/h		●		
		CCFtap (Car-to-Car Front Turn-Across-Path)		10~20km/h				●
		CPFA (Car-to-Pedestrian Farside Adult)		10~60km/h	●			
		CPNA (Car-to- Pedestrian Nearside Adult)		10~60km/h	●			
		CPLA (Car-to- Pedestrian Longitudinal Adult)		10~60km/h			●	
		CPRA (Car-to- Pedestrian Reverse Adult)		20~80km/h	●			
		CBNA (Car-to- Bicyclist Nearside Adult)		4~8km/h	●			●
		CBNAO (Car-to-Bicyclist Nearside Adult Obstructed)		10~60km/h	●			●
		CBFA (Car-to-Bicyclist Farside Adult)		10~60km/h	●		●	
		CBLA (Car-to-Bicyclist Longitudinal Adult)		10~60km/h		●	●	
LDW	Lane departure warning	Road Edge		25~80km/h		●		
LKA	Lane maintenance assistan	Solid Line		72/80km/h		●		
BSD	Blind area monitoring	Blind Spot Detection		50~70km/h		●		
LSS	Lane support system	Lane Support Systems	EuroNCAP2021/2023	72/80km/h		●		

## CHASSIS DYNO WITH ENVIRONMENTAL CHAMBER & THERMAL MANAGEMENT

Zhejiang Changxing headquarter test base has several sets of chassis dyno with high and low temperature environmental chamber, sunlight simulation test room, etc. We have the ability to test various thermal performance and power performance vehicles & systems, including vehicle thermal balance capability tests and vehicle power-train environmental tests.

### Equipment Photo



### Equipment Parameters

#### Environmental Chamber (Satake)

- Internal Size: 17m(L) \* 10.5m(W)\*6.8m(H)
- Temperature Range: -40°C ~ 60 °C

#### 4WD Chassis Dyno (MAHA AIP)

- Roller Diameter: 48 inch
- Maximum Speed: 250km/hr
- Simulated Vehicle Weight: 454kg ~ 7000kg
- Maximum Torque: 7600N

#### Emission Analyzing system (Horiba)

- Contaminant Analysis: CO2, CO, THC, CH4, N2O, NOX
- Particle Sampling: PM & PN measurement

#### Sun-ray Simulation

- Simulated Sun-ray Irradiance: 600~1200W/m2
- Uniformity of Simulated Sun-ray: ±5% W/m2 (Adjustable off-ground distance, 1.0m~3.0m)

Thermal management laboratory focuses on system experiments, with multiple sets of environmental simulation systems, thermal load simulation systems and related refrigerant and air characteristics collection systems, which can be freely combined and can basically cover most of the operating conditions of the new energy thermal management systems. Meanwhile, on the basis of the current mainstream enthalpy difference system test bench, Added front and rear air conditioning box air supply system, can quickly achieve air condition required, improvised to flexible and frequent switching test. (e.g., complex thermal management system control strategy development and validation tests) efficiency.

Item	Parameter Range	Item	Parameter Range
Front End Heat Sink/Condenser	Outlet air relative humidity range: 0~100 % Outlet air average humidity range: -50°C ~ 100°C	Thermocouple	K-Type: 160 pieces
Air-conditioning box	Outlet air relative humidity range: 0~100 % Outlet air average humidity range: -40°C ~ 80°C	Electric compressor	Input Power Range: 0~15 kW Speed detection range: 0~10,000 rpm
R134a/R1234yf Refrigerant	Temperature Range: -50°C~200°C (10 Set) Pressure Range: 0~4MPa A (5 Set) Pressure Range: 0~1MPa A (5 Set) Flow Rate Range: 0~600kg/h (1 Set) Flow Rate Range: 0~300kg/h (2 Set)	Air-conditioning box	Outlet air relative humidity range: 0~100 % Outlet air average humidity range: -40 °C ~ 80°C
R744 Refrigerant	Temperature Range: -50°C~200°C (10 Set) Pressure Range: 0~4MPa A (5 Set) Pressure Range: 0~1MPa A (5 Set) Flow Rate Range: 0~600kg/h (1 Set)	PTC heater	Input Current Range: 0~100 A
Piping	Pressure Range: 0~1MPa A (10 Set)	Belt Compressor	Torque Range: 0~100 Nm Speed detection range: 0~6,500 rpm
Heat Exchanger	Inlet and outlet water temperature range: -50°C~150°C Inlet and outlet water resistivity range: 0~62kPa	Oil content rate	Measurement Range: 0~12%

### Individual Experimental Projects

- Heat Exchanger Test
- Air-water Heat Exchanger
- Condenser
- Evaporator
- Outdoor Heat Exchanger
- HVAC Linear Test
- PTC Wind Warming Test
- Cooling Fan
- Blower
- Battery Charging And Discharging Test

### system text program

1. Flush Volume Calibration Test
2. Oil Residual Test
3. Oil Content Rate Test
4. System Matching Experiments:
  - Single Steam Air Conditioning System Matching
  - Double Steam Air Conditioning System Matching
  - Battery Cooling System Matching
  - Cooling System Matching
  - CO2 System Matching
5. System Performance Detection Test
  - Cooling
  - Heating
  - Dehumidification
  - Defrosting
6. Control Development And Validation Tests
  - Air Conditioning Control System
  - Battery Cooling Control System
  - Heat Dissipation Control System

### Advantages

- A light vehicle emission test chamber with perfect pollutant emission measurement and environmental and sunlight simulation control. It meets the requirements of whole-vehicle thermal management, range of new energy vehicles, the emission performance and the strict environmental requirements of the entire vehicle calibration test. A thermal management system development laboratory is available to meet complex thermal management system control strategy development and verification tests.
- Equipped with complete test-related high-precision auxiliary equipment to meet the relevant test requirements
- Complementary of test managers and test executives to complete relevant test requirements efficiently and with high quality.

# ELECTRIC DRIVE

Currently, the company has more than twenty sets of various electric drive test benches, including Sinfonia 25,000 rpm high-speed motor bench, AVL 20,000 rpm motor bench, ZF 23,000 rpm three-motor bench, NVH three-motor bench and a large number of dual-motor (pure electric/hybrid) test benches.

## Equipment Photo



## Equipment Photo



## Equipment Parameters

Dyno Parameter	Torque Sensor	Test Bench Software	Battery Simulator	Power Analyzer	Cooling Unit	Environmental Chamber	Early Fault Analyzer
Brand: TT (AMP280)	Brand: HBM (T12HP)	AND	Brand: Kewell	Brand: Yokogawa	Brand: Linggong	Brand: Tomilo	Brand: Reihofler KG
Rated Power: 405kW	Range: 5000Nm	iTest Pro-4.1	Rated Power: 500kW	Model: (WT5000) 4 Channel	Cooling medium: glycol	Internal Size: 1.4m*1.2m*1.4m	Model: Delta Analyzer
Rated Torque: 31510Nm	Accuracy: 0.02		Output Voltage: 12-1200V	Power Analyzer, with oscilloscope function, on-line waveform display, raw data storage, 4-cell current sensor, current sensor measurement range: ±1000A (DC)	Temperature control range: 40°C-110°C Temperature control accuracy: ±0.5°C Flow range: 2-20L/min Flow rate control range: ±0.2L/min Dual channel.	Temperature range: -40°C-150°C Temperature Fluctuation: <±0.5°C Humidity range: 10%-95% (10-85°C) Humidity Fluctuation: <±3°C Heating and cooling speed: Linear 5°C/min	Model: Delta Analyzer Vibration Analyzer Channel: 2
Max Rpm: 3300 rpm			Output Current: ±1000A Voltage Fluctuation: 0.1% FS Current Fluctuation: 0.1% FS				

### Torque Diagram

### Power Diagram

## Equipment Parameter

Dyno Parameter	Torque Sensor	Test Bench Software	Battery Simulator	Power Analyzer	Cooling Unit	Environmental Chamber	Early Fault Analyzer
Brand: SINFONIA	Brand: HBM (T40MS)	iTest	Brand: Kewell	Brand: Yokogawa	Brand: Linggong	Brand: Tomilo	Brand: Reihofler KG
Rated Power: 300kW	Range: 10000Nm		Rated Power: 500kW	Model: (WT5000) 4 Channel	Cooling medium: glycol	Internal Size: 1m*1m*1m	Model: Delta Analyzer
Rated Torque: 500Nm	Accuracy: 0.05		Output Voltage: 12-1200V	Power Analyzer, with oscilloscope function, on-line waveform display, raw data storage, 4-cell current sensor, current sensor measurement range: ±1000A	Temperature control range: 40°C-110°C Temperature control accuracy: ±0.5°C Flow range: 2-20L/min Flow rate control range: ±0.2L/min Dual channel.	Temperature range: -40°C-150°C Temperature Fluctuation: <±0.5°C Humidity range: 10%-95% (10-85°C) Humidity Fluctuation: <±3°C Heating and cooling speed: Linear 5°C/min	Model: Delta Analyzer Vibration Analyzer Channel: 2
Max Rpm: 25,000 rpm			Output Current: ±1000A Voltage Fluctuation: 0.1% FS Current Fluctuation: 0.1% FS				

## Test content

Transmission efficiency, dynamic sealing, temperature rise performance, high-speed performance, high and low-temperature performance, differential reliability, road simulation, static torque performance, motor performance, safety performance, life-cycle test, NVH

## Advantages

- Equipped with high speed and high precision test benches for high speed motors, gearboxes/reduction gearboxes, and 3-in-1 powertrain products, with testing capabilities for performance & durability
- Excellent service capability: in Shanghai, Zhejiang Huzhou and other places have a laboratory to meet the needs of customers in close proximity, customer experience-oriented, responsive to customer needs and feedback on the progress of the test
- Professional manpower: with rich experience in testing projects, 40 lab technicians with 60% of bachelor's degree. Engineers have background in new energy components and automotive enterprises, with extensive knowledge of new energy triboelectric products.

## ENGINES (HYDROGEN, METHANOL & OTHER FUELS)

Hydrogen Fuel Test Base is located in Rugao, Nantong City, Jiangsu Province, with hydrogen ICE test benches, hydrogen fuel cell test benches, hydrogen fuel cell vehicle test benches, hydrogen fuel cell parts test benches, etc. The facility is equipped with compliant hydrogen supply facilities (torpedo filling), Class-A hydrogen plant, professional safety management system, human-machine isolation layout, professional hydrogen measurement equipment, high-purity high-pressure gas source (99.999%, 20~150 bar), continuous and stable H2 supply all day long, full power coverage testing capability, rich testing experience, and high-quality testing service

### Hydrogen Refueling Station



### Hydrogen-related Factory



### Hydrogen Engine Lab



### Test Cell



### Equipment Parameters

- |                             |   |   |
|-----------------------------|---|---|
| 1. Air Flow Meter           | 2. Back pressure Valve, Exhaust Flow Mate | 3. Combustion Analysis, Piston Pressure Sensor                            |
| 4. Blowby Meter             | 5. Hydrogen Flow Meter                    | 6. Adaptation of hydrogen internal combustion engine exhaust gas analyzer |
| 7. Hydrogen Intensity Meter | 8. 10micron Particle Sampling             | 9. Adaptation of hydrogen internal combustion engine exhaust gas analyzer |
| 10. Particle Sampling (PM)  | 11. Smoke Meter(415/439/483)              |   |

Changxing headquarters has 16 engine test benches, including hybrid test benches are in operation. It is available for various tests such as reliability, performance development and calibration development of engines, motors and powertrain for commercial vehicles and passenger cars. Compliance fuel supply facilities, full fuel type coverage, full power coverage testing capability (0~ 3200KW), professional safety management system, more than ten years of professional testing experience, professional emission testing equipment, CNAS capability qualification, R&D/regulatory certification capability range, professional QMS, high-efficiency bench operation rat.

### Traditional Engine Test Cell Layout



### Traditional Engine Operating Room



### Measuring Equipment for China Emission Standard



### Equipment Parameter

- |  |  |
|--|--|
| 1. Smoke Meter AVL415                            | 2. Ammonia nitrogen analyzer IAGMU-1590        |
| 3. Exhaust Measurement System AVLi60             | 4. Emission Measurement System HORIBA MEXA ONE |
| 5. Emission Measurement System HORIBA MEXA1600DS | 6. Micro Soot SensorAVL483                     |
| 7. PN AVL489                                     | 8. Combustion Analysis AVL622                  |
| 9. Combustion Analysis KISTLERKIBOX              | 10. PM AVL478                                  |
| 11. PM HORIBAMDLT-1302TM                         | 12. CVS HORIBA MEXA-7400D                      |

## ENGINEERING CONSULTANCY

The company is committed to providing customers with powertrain technology development and advanced technology consulting services that meet the requirements of current laws, regulations and customer targets. This includes the complete calibration development of gasoline, diesel, gas, methanol, hybrid powertrain, and complete vehicles, as well as the development of energy-saving and emission-reduction services to meet the new regulations in the future.

Now we have cooperated with many domestic OEMs and completed the corresponding supporting development services. At present, we have a complete calibration development team involving engine module combustion development and performance emission calibration. The whole vehicle module drivability, Emission, Post-Processing. High-Temp, High-Altitude and Low-Temp Test Calibration Development as well as OBD module calibration. In addition to the calibration and development capabilities of traditional fuels, we have extensive project development experience in alternative fuels.

