

Ready to unlock the full potential of your automotive test equipment?
Contact Kollmorgen motion control experts to discuss your automotive test equipment needs and goals.

Kollmorgen Automotive Test Industry Solutions



Empowering Innovators, Creating Excellence

About Kollmorgen

Kollmorgen, a Regal Rexnord Brand, has more than 100 years of motion experience, proven in the industry's highest-performing, most reliable motors, drives, AGV control solutions and automation platforms. We deliver breakthrough solutions that are unmatched in performance, reliability and ease of use, giving machine builders an irrefutable marketplace advantage.

www.kollmorgen.cn

KOLLMORGEN
A REGAL REXNORD BRAND



Kollmorgen
WeChat Official
Account



Kollmorgen
WeChat Video
Channel

Specifications are subject to change without notice. It is the responsibility of the product user to determine the suitability of this product for a specific application. All trademarks are the property of their respective owners.

KM_BR_000001_RevA_EN
©2026 Kollmorgen Corporation. All rights reserved

KOLLMORGEN
A REGAL REXNORD BRAND

Why Kollmorgen

Who Are We?

Kollmorgen — Motion Control System Expert

Founded in 1916, with a century of deep cultivation in the motion control system field, Kollmorgen has become a trusted brand in the industry through profound technical accumulation and innovation strength. It provides global OEM machine manufacturers with a full range of products and solutions, including servo/direct drive/stepper motors, drives, motion control systems, and AGV vehicle control systems.

In China, with its Tianjin factory as the core, Kollmorgen strictly implements unified global processes and quality standards, integrating the local supply chain with global R&D resources to customize high-performance, cost-effective products and services for customers, driving the development of various industries: Kollmorgen boosts test efficiency and reliability in the automotive test industry; drives critical equipment for precise and stable production in the semiconductor sector; empowers joint actuation and precise manipulation in robotics; innovates core processes including coating, die cutting, winding and stacking within lithium battery manufacturing; supports high-resolution imaging and stable operation of imaging equipment in the medical field; delivers micron-level high-precision machining for machine tools; enhances dynamic cutting and stamping performance in metal forming; and improves the efficiency of screen printing and other equipment in the photovoltaic industry. Innovation leads the way, Kollmorgen creates countless legends!



01 Localized Manufacturing with High Efficiency and Cost-effectiveness

90% locally made, fast delivery, lower cost via local supply chain, great value.

03 Industry Deep Expertise, Rich Experience

Years of practice across diverse fields, precise demand matching, and capability to tackle complex challenges.

05 Professional Support, Precise Selection

One-on-one engineer service, customized solutions on demand.



02 Product Excellence, Efficient Service

International quality, reliable performance; local fast delivery and service, rapid response.

04 Global Presence, Empowering Overseas Expansion

Global network, supporting Chinese customers in overseas expansion.

06 Rich Tools, Solid Design

Diverse design tools and resources, empowering innovation throughout the design process.

01 Industry Value Targeted Empowerment

Core Values	Advantages Demonstrated
Boost Performance and Precision	• High Dynamic Response: The AKD drive adopts a 1.5 MHz current loop and a 16 KHz velocity loop to accurately reproduce test working conditions. • High Control Precision: 27-bit feedback and cogging compensation enable smooth speed and torque control. • Superior Smoothness: Multiple designs of motors and drives suppress vibration and speed fluctuation.
Expand Testing Boundaries	• Ultra-high Thrust: The linear motor delivers a maximum continuous thrust of 13 kN, with packaged solutions offering peak thrust up to 25 kN. • Complex Multi-axis Synchronization: PCMM2G or PDMM paired with EtherCAT easily coordinates multiple axes to realize complex synchronous testing. • Extreme Environment Adaptability: The low-temperature series and standard coils of AKM motors operate within the range from -40°C to 155°C, with optional explosion-proof and waterproof specifications.
Accelerate Development and Launch	• Strong System Compatibility: The drives support mainstream protocols including EtherCAT, CANopen and PROFINET, and seamlessly work with mainstream automotive test controllers. • Simplified Development: KAS automation suite and function blocks lower the barriers for development and commissioning. • Fast Delivery and Customization Service: Localized production, joint engineering capability and original authorized packaging enable fast delivery, integration and customized motor solutions to help customers quickly capture market opportunities.
Professional Support and Assurance	• One-stop Technical Solutions: Full-cycle support ranging from requirement analysis and precise product selection to on-site service and after-sales support. • Global Footprint and Local Service: Global manufacturing standards paired with local technical support. Complete product certifications including UL, CE, CCC and ATEX or IECEx explosion-proof certifications, supporting long-term stable equipment operation and overseas market expansion.
Centennial Motion Control Heritage Empowering Global Automotive Testing	

Servo Motors

Product Series ▼	Specifications and Features ▼	Typical Automotive Test Applications ▼
AKM / AKM2G Servo Motor	Specifications: Frame Size: 40-260 mm for AKM, 58-192 mm for AKM2G Power Range: 0.08-19.5 kW Voltage Range: 75 Vdc, 120-480 Vac Maximum Speed: 8000 RPM Features: High performance and high reliability with high torque density and great flexibility. Multiple winding options are available to meet application requirements ranging from low speed high torque to high speed scenarios.	It covers full-scenario tests for automotive steering, braking, pedals, wipers, seat belts, seats and fuel tanks. It precisely meets differentiated requirements such as low speed ripple, high torque overload, force-position switching, high-frequency dynamics and durability under extreme environments.
AKM Low Temperature Servo Motor	Specifications: Frame Size: 40-260 mm, Power Range: 0.08-19.5 kW, Operating Temperature down to -40°C. Features: Designed for extreme low-temperature environments to ensure reliable operation under harsh conditions such as freezing and cold storage.	It ensures reliable motor operation and high performance under harsh low-temperature test environments for automotive door and body testing.
AKM2G Low Voltage Servo Motor	Specifications: Frame Size: 58-88 mm, Voltage Range: 24-96 Vdc, Maximum Speed up to 8000 RPM, Power Range: 0.175-2.85 kW, supports multiple rotor length combinations. Features: Designed for low-voltage power supply scenarios. It maintains dynamic performance at high rotational speeds under low-voltage power supply. It also delivers high flexibility with various feedback and optional accessories and strong customization potential to meet compact and energy-saving non-standard application requirements.	It delivers high dynamic response and stable torque output within the compact space of automotive steering test systems, and is compatible with low-voltage power supply scenarios.
AKM3C / AKME Explosion-proof Servo Motor	Specifications: Two explosion-proof motor models are available including AKM3C and AKME. They comply with CCC for gas Zone 2 and dust Zone 21, and ATEX and IECEx requirements for gas Zone 2 and dust Zone 22. Multiple frame sizes are offered. The maximum speed reaches 8000 RPM for AKM3C and 5000 RPM for AKME. Features: Designed for environments with potentially flammable gas or dust. It features high power density and supports a variety of standard mounting and feedback options. Localized support and fast delivery are available.	It is suitable for automotive test environments with flammable dust or gas. It serves as the drive for test equipment in potentially explosive hazardous areas such as fuel system tests and battery pack thermal runaway safety tests.

Frameless Direct Drive Motors

Product Series ▼	Specifications and Features ▼	Typical Automotive Test Applications ▼
KBM / CBM Direct Drive Torque Motor	Specifications: Stator Outer Diameter: 60-850 mm, Continuous Torque: 0.49-3445 Nm, Peak Torque up to 12,812 Nm, Rotational Speed up to tens of thousands of RPM. Features: High torque density, zero backlash, smooth operation, flexible structure for seamless integration and high reliability.	High-precision rotary table for dynamic performance and durability testing of automotive steering systems, door and body components.
CDDR Direct Drive Motor	Specifications: Frame Size: 108-350 mm, Continuous Torque: 4.57-510 Nm. It is a plug and play housed motor with proprietary structural design, enabling installation and removal within 5 minutes. Features: Factory pre-calibrated for easy installation similar to conventional servo motors. It delivers high torque density which is approximately 50 percent higher than traditional servo motors, greatly shortening customer integration cycles.	It directly couples with loads in tire and wheel test systems for dynamic balancing, enabling rotary tests with high speed, high precision and low vibration.

Linear Motors

Product Series ▼	Specifications and Features ▼	Typical Automotive Test Applications ▼
Iron-core Linear Motor	Specifications: Maximum Peak Force: 13,448 N, Maximum Continuous Force: 5834 N, offering high force density. Features: High stiffness and high force density with excellent heat dissipation performance. Suitable for heavy-load applications requiring high continuous force and high rigidity.	It replaces hydraulic solutions with high dynamic response and high force in steering and suspension system tests, meeting the requirements for accurate simulation of high-frequency vibration, emergency braking and high-frequency shock signals.
Ironless Linear Motor	Specifications: Maximum Peak Force: 1600 N, Maximum Continuous Force: 262 N. Zero cogging effect delivers extremely smooth motion with minimal force ripple. Features: No magnetic attraction and zero cogging effect for ultra-smooth motion. Lightweight, suitable for scenarios requiring ultra-high motion precision and low-mass moving components.	Zero cogging effect ensures smooth motion and high dynamic response. It can be used for component reliability testing.
Water-cooled Linear Motor	Specifications: Maximum Peak Force: 12,705 N, Maximum Continuous Force: 8211 N. Integrated high-efficiency water cooling channels increase continuous thrust by 30 to 50 percent compared with non-water-cooled iron-core linear motors. Features: Superior heat dissipation capacity allows the motor to operate stably over long periods under high duty cycle and high continuous force conditions, greatly boosting power output and reliability.	It features high force, high frequency and outstanding heat dissipation capacity in automotive brake system testing and component fatigue test systems, which effectively controls temperature rise under continuous heavy-load operation.

Drive and Control Systems

Product Series ▼	Specifications and Features ▼	Typical Automotive Test Applications ▼
AKD / AKD2G Servo Drive	Specifications: AKD2G is the latest member of the AKD series. Voltage Range: 24-100 Vdc and 120-480 Vac, Rated Current Range: 3-24 A. It supports single-axis or dual-axis configuration with integrated functional safety options up to SIL3 and PLe. Compatible with multiple industrial buses including EtherCAT, CANopen, PROFINET and Ethernet / IP. Features: High performance and high reliability with integrated safety functions to facilitate equipment export. Modular design supports various feedback types and delivers high compatibility with the full range of motors.	- It delivers high-performance drive and control for motors in a wide range of test applications, serving as the core drive unit of motion control systems for test benches. - It provides a new-generation drive core for automotive test benches demanding ultra-high dynamic performance and fast response, and supports complex control algorithms and rapid data acquisition.
PCMM2G Programmable Motion Controller	Specifications: As a new-generation controller, it supports synchronized path motion control for up to 64 axes. Features: Powerful performance and excellent scalability. It is suitable for multi-axis motion control with an open and flexible hardware and software platform.	Complex test sequences such as high-frequency actions like sudden pressing can be flexibly programmed in automotive pedal test systems to realize multi-axis coordinated motion and high-speed command execution.
AKD PDMM Programmable Motion Controller with Integrated Drive	Specifications: It integrates servo drive, multi-axis motion controller and PLC functions into one single hardware unit, capable of controlling 8 axes or more. Features: The three-in-one design significantly reduces system complexity, cabinet space and wiring costs. The unified programming environment shortens development cycles.	It integrates motion control, logic control and data acquisition for automotive wiper motor testing and automotive door and body durability testing, replacing conventional discrete solutions consisting of PLC plus motion controller plus drive.

Automotive Suspension Test System

The automotive suspension test system simulates diverse road conditions and driving scenarios to validate and develop the durability, performance and matched electronic control systems of vehicle suspensions. The system accurately reproduces complex real-road excitations, including high-frequency shocks and low-frequency undulations, to evaluate shock absorption, handling stability and ride comfort of suspensions. It serves as a key part of vehicle dynamic performance development.

Motion Control Requirements

- Resolve response and precision limitations of traditional hydraulic servo systems
- Deliver 25 kN high thrust for impact conditions
- Ensure test accuracy at low speeds



Kollmorgen Product Solutions: AKD Servo Drive / DDL Linear Motor / AKM Servo Motor

Solution Values

- » The high three-loop refresh rate of AKD servo drives delivers ultra-fast response and high control bandwidth, enabling precise tracking of complex excitation signals.
- » DDL and AKM motors feature high power density and strong overload capacity. The linear motor package can deliver peak thrust up to 25 kN to meet high thrust requirements under impact conditions.
- » Electromagnetic design with low cogging inherently ensures smooth low-speed operation, and drive algorithms further suppress speed fluctuations.



Automotive Brake Test System

Automotive brake test systems verify and evaluate the performance, reliability, safety and durability of brake systems. The system simulates high braking force during emergency braking, precisely controls the pressure applied to pedals or calipers, and rapidly builds up or modulates pressure. It also handles large regenerative energy and heat dissipation generated during braking.

Motion Control Requirements

- Supports high-speed high-thrust braking
- Flexibly simulate diverse vehicle conditions
- Thermal management capability



Kollmorgen Product Solutions: AKD Servo Drive / DDL Linear Motor / AKM Servo Motor

Solution Values

- » Linear motors generate linear thrust directly without transmission chains, delivering high thrust and fast response to accurately simulate emergency braking.
- » AKM motors offer a wide power range, enabling adjustable output torque to match test requirements and improve test efficiency.
- » Equipped with water cooling kits, the motors effectively control temperature rise under continuous heavy-load operation.



Automotive Steering Test System

Automotive steering test systems verify and evaluate the performance, reliability, safety and comfort of steering systems. The core is to precisely simulate the drive of steering assist and the reaction resistance (aligning torque). The servo system is required to deliver ultra-low speed fluctuation and high dynamic response.

Motion Control Requirements

- Does not mask mechanical abnormal noise
- Captures subtle steering wheel tactile fluctuations
- Highly integrated for compact installation space



Kollmorgen Product Solutions: AKD Servo Drive / KBM Frameless Direct-Drive Motor / DDL Linear Motor / AKM Servo Motor / AKM2G Low-Voltage Servo Motor

Solution Values

- » AKD drives incorporate multiple configurable electronic filters to effectively suppress mechanical resonance and speed fluctuation.
- » KBM features a frameless direct-drive design. Combined with the high three-loop refresh rate of AKD drives, it achieves high dynamic response and reduces test errors caused by latency.
- » AKM servo motors deliver extremely high power density, generating high torque within a relatively small frame size.



Tire and Wheel Test System (Dynamic Balancing)

A tire and wheel test system mainly verifies and evaluates the performance, safety, durability and dynamic characteristics of tire and wheel assemblies. Test items include rolling resistance, uniformity, dynamic balancing, high-speed standing wave, radial/axial fatigue strength, as well as durability tests simulating harsh road conditions and safety limit tests. It serves as core test equipment to guarantee driving safety, comfort and energy efficiency.

Motion Control Requirements

- Ultra-low vibration ensures test accuracy
- High requirements for speed stability
- Improves test efficiency



Kollmorgen Product Solutions: AKD Servo Drive / CDDR Direct-Drive Motor

Solution Values

- » The AKD is equipped with four electronic filters to greatly reduce inherent mechanical vibration and preserve test accuracy.
- » The CDDR directly couples with the load, eliminating backlash, wear and vibration introduced by mechanical transmission components. Its low cogging design further ensures smooth operation at both low and high speeds.
- » CDDR motors feature high torque density, enabling rapid acceleration and deceleration to shorten individual test cycles and boost equipment throughput.



Control Component Testing

Automotive Pedal Test System

Automotive pedal test systems verify and evaluate the performance, durability and functionality of accelerator, brake and clutch pedals. The system precisely simulates complex pedalling conditions and failure modes, with stringent requirements for smooth switching of control modes and long-term precision stability.

Motion Control Requirements

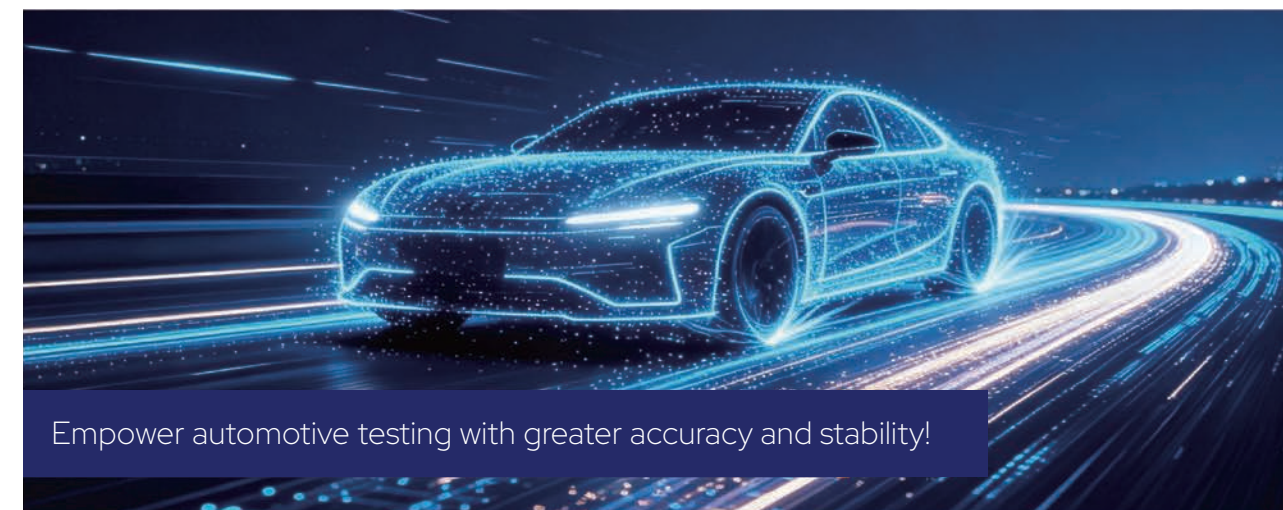
- Simulate complex pedal conditions
- Seamless switching among force, durability and impact tests
- Ensures test consistency



Kollmorgen Product Solutions: PCMM Motion Controller / AKD Servo Drive / AKM Servo Motor

Solution Values

- » The PCMM controller flexibly programs complex test sequences and communicates rapidly with drives over EtherCAT. Paired with AKD's fast response, it accurately replicates high-frequency actions like rapid pedal pressing.
- » AKD servo drives support seamless bumpless switching between position, speed and torque modes, building a full closed-loop system with external high-precision sensors.
- » AKM motors maintain highly stable key parameters with little long-term degradation. AKD uses high-reliability components and temperature compensation algorithms for sustained control stability.



Empower automotive testing with greater accuracy and stability!

03 Successful Case Experienced

Body and Accessory System Testing

Automotive Door / Body Component Durability Test System

This system is critical for reliability and lifespan verification of automotive components. It mainly simulates long-term operating scenarios such as door opening/closing and body component actuation to verify design life and identify potential defects and wear. The test imposes extremely high requirements on the service life and reliability of the drive system.

Motion Control Requirements

- Accurately simulate real operational feel
- Supports millions of non-stop tests
- Suitable for fatigue tests under extreme temperatures

 **Kollmorgen Product Solutions:** PDMM Motion Controller / AKD Servo Drive / KBM Frameless Direct-Drive Motor / AKM Servo Motor / AKM Low-Temperature Servo Motor

Solution Values

- » AKD servo drives support torque, speed and position modes with seamless switching. With high-resolution feedback and advanced control algorithms, they deliver micron positioning and precise torque control.
- » AKM servo motors use premium materials and precision manufacturing for long service life and high MTBF, suited for continuous long-duration operation.
- » AKM low-temperature and standard coils withstand -40°C to 155°C, satisfying strict durability control under extreme temperature conditions.



Automotive Seat Belt Test System

Seatbelts are core passive safety components of automobiles. The test aims to ensure reliable occupant restraint under extreme conditions such as collisions and emergency braking, so as to reduce injury and fatality risks. The tests cover four categories: static strength test, dynamic impact test, locking performance test, and durability & environmental test.

Motion Control Requirements

- Test data accuracy
- Guarantees test consistency and service life
- Stable and reliable in durability tests

 **Kollmorgen Product Solutions:** AKD Servo Drive / AKM Servo Motor / DDL Linear Motor

Solution Values

- » AKD drives paired with AKM servo motors deliver smooth high-speed operation and high-resolution feedback. The 1.5 MHz current loop bandwidth ensures accurate torque control.
- » AKM motor coils withstand up to 155°C. With special sealing and anti-corrosion coatings, and optional air cooling, they adapt to temperature cycling and salt spray environments for various aging tests.
- » Direct-drive linear motors have no backlash or wearable parts, offering high thrust and maintenance-free operation. Combined with AKD's high refresh rate, they achieve fast dynamics and precise waveform reproduction to meet high-precision and heavy-duty durability test requirements.



Automotive Wiper Motor Test System

Automotive wiper motor test systems mainly verify and evaluate the performance, reliability and durability of the core driving components of wiper systems. The system has strict requirements for torque/speed control accuracy, cycle life, low-speed smoothness and dynamic response.

Motion Control Requirements

- Protects DUT motor against gear tooth damage
- Low torque ripple prevents test distortion
- High cycle life and reliability

 **Kollmorgen Product Solutions:** PDMM Motion Controller / AKD Servo Drive / AKM2G Servo Motor

Solution Values

- » PDMM controllers enable flexible, smooth torque adjustment to prevent gear knocking on motors under test.
- » Optimized motor electromagnetic design reduces cogging torque and torque ripple. Combined with AKD's cogging compensation for extra feedforward current, speed fluctuation is nearly eliminated.
- » Built with premium materials, precision manufacturing and robust construction, AKM2G motors deliver high MTBF for continuous heavy-duty operation.



Vibration and Comfort Testing

Automotive Seat Vibration Test System

Automotive seat vibration testing is a core verification method that systematically evaluates the structural durability, dynamic comfort and safety of automobile seats by simulating the vibration environment vehicles experience under real road conditions. It provides core data support for product design and quality validation.

Motion Control Requirements

- Maintains precise coordination under complex multi-axis conditions
- Simulates various road conditions
- Delivers outstanding performance in compact equipment space

 **Kollmorgen Product Solutions:** AKD2G Servo Drive / AKM Servo Motor

Solution Values

- » AKD2G supports dual-axis configuration to reduce axis count, with built-in gantry synchronization for precise dual-motor positioning. It delivers efficient synchronous control via high-speed EtherCAT and CANopen buses.
- » AKM motors paired with multi-turn high-resolution absolute encoders and high three-loop refresh rate AKD2G drives offer fast response, suited for frequent forward / reverse rotation and alternating loads.
- » AKM motors provide excellent power density with compact size at the same output power. Their torque output meets acceleration and deceleration demands for high-frequency vibration.



Automotive Fuel Tank Vibration Test System

Automotive fuel tank vibration testing serves as a core verification method to assess the capability of fuel tanks to withstand vibration environments during real vehicle operation. Its fundamental objective is to ensure no structural damage or fuel leakage occurs to the fuel tank during long-term service, so as to guarantee driving safety.

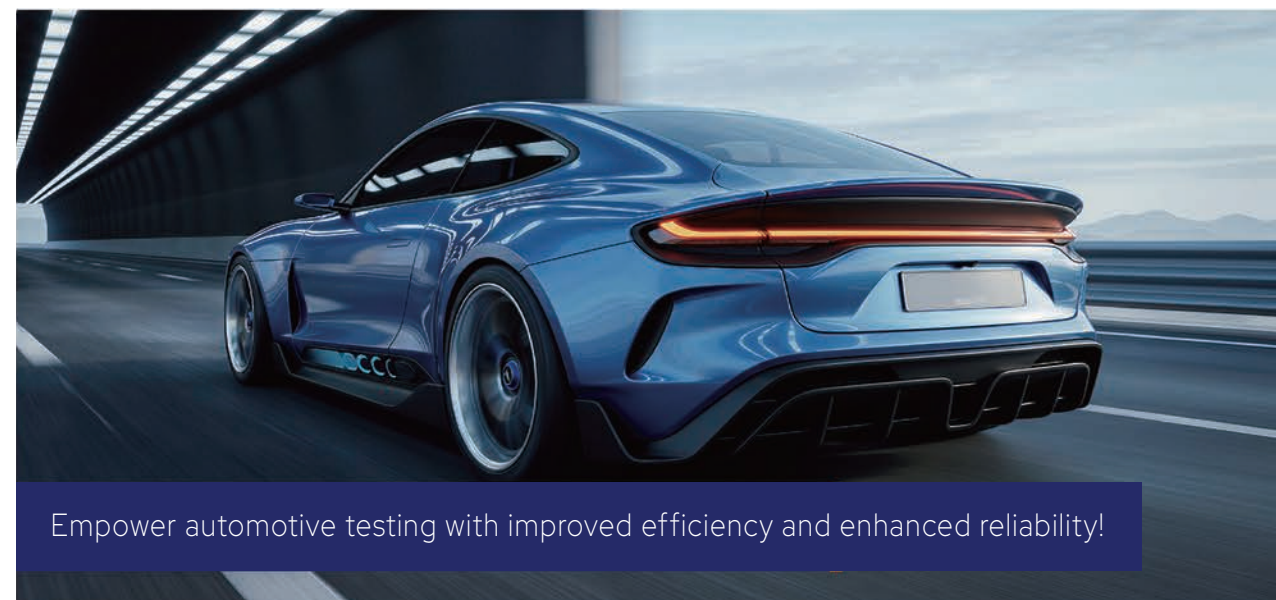
Motion Control Requirements

- Accurately simulates various test scenarios
- Ultra-low mechanical vibration ensures test accuracy
- Maintains long-term reliability under extreme environments

 **Kollmorgen Product Solutions:** AKD Servo Drive / AKM Servo Motor

Solution Values

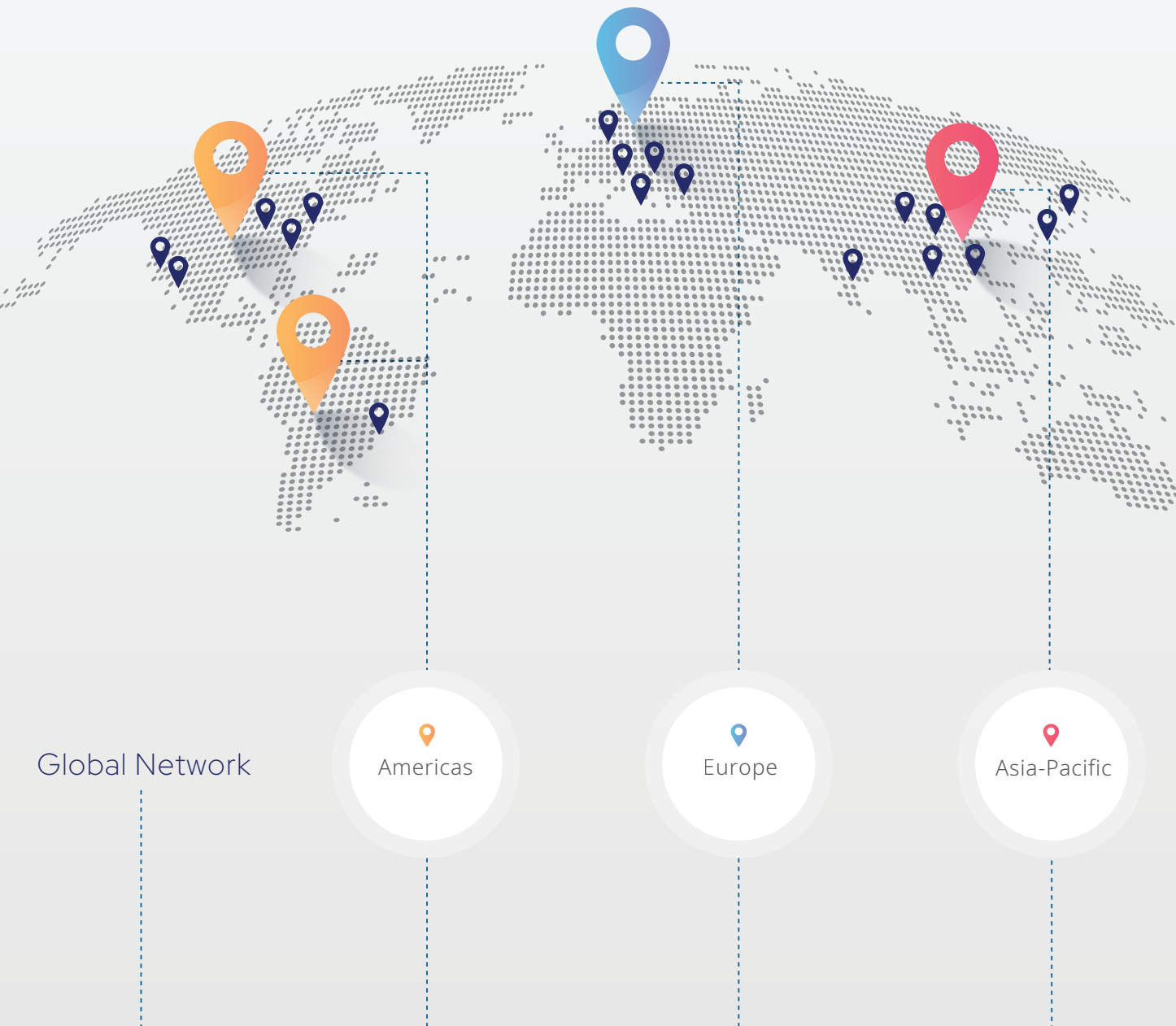
- » AKD drives feature high three-loop refresh rate. Paired with servo motors equipped with high-precision encoders for high speed and high torque, they meet multi-scenario demands of high frequency and high acceleration.
- » AKD comes with a 4-channel electronic filter system supporting multiple filter modes for ultra-smooth motor operation, minimizing noise and test errors.
- » Servo motors adopt an extreme-environment resistant design. Their coils withstand up to 155°C. With special sealing and anti-corrosion coatings, they adapt to harsh conditions such as salt spray and temperature cycling.



04 Global Footprint Timely Support

Value to Customers:

- ✓ Kollmorgen’s multiple global production bases adhere to unified professional design, manufacturing, process management and ISO 9001:2015 quality management system standards.
- ✓ Local production supports fast and stable delivery as well as technical services.
- ✓ Global business cross-regional collaboration provides comprehensive support, including on-site technical services, troubleshooting and on-site product application technical training.



05 Professional Support Precise Selection

One-stop Technical Solutions

Customer-centric, providing full-process support from requirements to after-sales service, ensuring your equipment operates more stably and efficiently!



Requirements Analysis

- Recommend the suitable motor type based on the customer's application scenario.
- If standard products cannot meet the requirements, provide customized motor solutions through CoE (Customization of Engineering).



Precise Selection

- Quickly match motors using intelligent selection software based on load and motion profiles.
- Recommend highly compatible encoders according to accuracy requirements to ensure performance meets specifications.



On-Site Commissioning

- Provide detailed manuals and documentation before commissioning.
- Offer on-site training and technical support when needed to ensure customers fully understand and complete the commissioning smoothly.



Comprehensive Support Capability

- Real-time Online Technical Support.
- Efficient Product Repair and RMA Service.

Intelligent Self-Service Selection Tool

Offering a variety of tools including a servo selection tool, performance curve generator, and 2D/3D model downloads, comprehensively supporting self-service selection to easily meet your personalized needs!



Learn with me! Quick servo system design and selection!

We invite you to explore the secrets of precise, fast and efficient servo system design and selection!

Watch Now



- Motioneering sizing software, performance curve generator
- Comprehensive product catalogs with detailed parameters, informative installation manuals
- Training courses and videos

Each regional engineer provides 1:1 support for model selection and collaborative development.

400-668-2802 www.kollmorgen.cn