



Robotics

Overview

Benchmark's advanced technologies are expanding our ability to provide enhanced connectivity, longer battery life, and improved systems integration to our robotics customers. With increased efficiency, improved quality and reliability, customers also benefit from lower production costs and reduced waste at the factory and warehouse level.

Benchmark Robotic Solutions

- Design of High-Speed, High-Precision Systems
- Optimization of Design for Industrialization and Manufacturing
- IoT Design for Sensors, Connectivity
- Replication and After-Installation Support
- Industrial Design with Strong Attention to Aesthetics
- Programmable Logic Controller Software Development and Verification Test Planning
- Optical System Design
- Design for Excellence (DFX)
- Leak Testing using Pressure Decay or Helium Leak
- Implementation of Robotics into OEM Manufacturing Lines

Engineering Expertise

- 3D Mechanical Design
- Electromechanical Design
- Electronics Design
- Industrial Design/UX
- Optical Design
- RF & Wireless Solutions
- Software Development



Robotics Manufacturing Capabilities

Highly Complex Mechanical Requirements

- CMM Capability for Complex Mechanical Inspection
- Customized Test Requirements
- Ability to Develop Assembly Instructions from Drawings or Model Files
- Kanbans for Subassembly Builds for Volume Production
- Full Traceability - "As Built" Configuration Reports

Testing Capability

- Module Levels
- Full System Ranging from Functional Verification to Full Unit HASS Testing
- Wi-Fi at Range
- Payload Verification Load Testing/Actual Use Modeling

Field Response Unit And Service Level Support

- Upgrade and Re-Configuration Capabilities
- Software/Firmware Updates
- Flexible Configuration Capability
- Multiple End-Customer Test Requirements

Control Systems

- Collaborative
- Semi-Autonomous
- Remote

Agency Approval Support

- TUV
- UL
- Bureau Veritas
- Nemko

Robotics Time Line

Year	Achievement
1998	<ul style="list-style-type: none">• Developed and implemented first robotic solution for highly complex automated cells• Certified systems integrator for Denso Robotics
2001 - 2003	<ul style="list-style-type: none">• Certified systems integrator for ABB FlexPicker Delta, Motoman, and Yaskawa robot lines
2008	<ul style="list-style-type: none">• Established first robotics EMS account• Robot builds in Engineering lab
2009 - 2010	<ul style="list-style-type: none">• Shipped full turnkey Small Unmanned Ground Vehicle (SUGV) system• Supported Production Readiness Reviews and Defense Contract Management Agency on-site acceptance activities
2011	<ul style="list-style-type: none">• Added large version, 225 lb. payload robot and throwable robot to portfolio
2012	<ul style="list-style-type: none">• NPI services for Remote Presence and Industrial robots• Field return support on multiple programs
2013 - 2014	<ul style="list-style-type: none">• Ongoing production for SUGV, throw-able, and large format robots• Expanded production volumes, multiple versions of industrial robots
2015 - Present	<ul style="list-style-type: none">• NPI services for next generation industrial robot• Ongoing robot production volumes in multiple sectors



SUGV System



Throwable Robot

For more information, contact robotics@bench.com

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