



HARCOSEMCO
EMPOWERED 2 BE BETTER

Ready to meet exacting demands.

HarcosSemco a global presence.



You're Building for the Future, We're Designing for it.

With over 6 decades of experience, HarcoSemco's goal has always been the achievement of leadership in product quality, customer satisfaction and innovation. This philosophy has rewarded us with a trusted brand and a loyal customer base.

Our custom designed solutions perform reliably in the most demanding aerospace, and industrial and marine environments.

HarcoSemco products can be found on engines, airframes and aircraft systems, in helicopters, commercial and general aviation.

We offer our customers extensive industry experience, packaged in the spirit of a customer-oriented partnership.

Recognizing that every project is a custom job, we conduct an industry-leading, time honored process with a flexible

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approach that helps our customers realize significant savings, while producing superior quality highly reliable products.

From the precision of our military to the safety of passenger air travel to innovations in energy efficiency, **HarcoSemco** goes above and beyond.



the markets

Aerospace • Industrial and Marine • Repair

Sensors

HarcoSemco's custom engineered range of sensors is designed for superior operation in the most demanding environments.

Applications include commercial and military airframes, and jet engines. In-house testing capabilities allow us to simulate extreme shock, vibration and temperature conditions during development and qualification phases. To ensure maximum quality control standards, all of our solutions are prototyped and tested to the latest DO160 environmental conditions and test procedures for airborne equipment specifications.

Our superior design and construction ensures excellent performance and quality in applications around the world, as well as being highly cost effective.

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Key benefits of HarcoSemco sensors:

- High Accuracy
- Excellent Stability
- Low Maintenance
- High Reliability



Outside Air Temperature Sensors

Ideally suited for operation at Mach 0.8, **HarcoSemco's** OAT Sensors are designed and fabricated to stringent standards utilizing integrated 3D modeling, comprehensive in-house aerodynamic test and evaluation facilities, and specialized manufacturing processes that include customized fine wire winding of sensing elements. Cost effective replacement for Total Air Temperature sensors.

Features

- Tip-sensitive measurement
- Wide temperature range
- No moving parts
- No magnetic materials
- Inertial separation
- Hermetically sealed
- Low excitation current
- Non de-iced fuselage mount
- Custom configurations



Total Air Temperature Sensors

HarcoSemco is one of only a few proven manufacturers of Total Air Temperature (TAT) technology sensors, which enable the computation of static air temperature and true airspeed. Used on U.S. military aircraft, flight test booms, as well as numerous derivative models. We customize features such as the mounting flange and connector, as necessary.

Features

- Fuselage and engine options
- Constructed to prevent de-icing heat from adversely affecting temperature output
- Special designs capability



Pressure Sensors

Our pressure sensors can be configured for gauge, differential or absolute measurement of pressure with output and sensing technology dependent on your application. They are typically housed in stainless steel and can be environmentally sealed or hermetic. We offer two ranges—standard (temperature ranges 125C and below) and high performance (above 125C)—that can be customized to any application.

Features

- Gauge, differential, absolute
- Temperature ranges from -55°C to 205°C
- Pressure ranges up to 10,000 psi
- Most pneumatic and hydraulic fittings
- Lightweight option available
- Technology is ready to be customized for any application
- No active electronics—highly reliable
- Built-in redundancy for critical applications



Proximity Sensors

Proximity sensors are similar in technology to speed sensors, coming in either hall effect or inductive sensing types. They will respond to the presence or absence of a ferrous or non-ferrous target material within or outside of a range of distances, providing an output signal to indicate that location. The housings are typically of durable stainless steel, although lightweight options are available, and the envelope and construction can be customized to fit in any application.

Features

- -55°C to 100°C temperature range
- Flexible Interface: 2 and 3 pin configurations
- Ultralight
- >60,000 cycle life test
- Two technologies available—ferrous and non-ferrous metals
- Very high reliability—no moving parts
- No discreet electronics—COTS ICs
- Technology is ready to be customized for any application

Sensors

Custom engineered for the harshest environments. Our sensors are designed for continued operation in the harshest environments. Applications include industrial land and marine-based gas turbines, commercial and military airframes and jet engines. In-house testing capabilities allow us to simulate extreme shock, vibration and temperature conditions during development and qualification phases. To ensure maximum quality control standards, all of our solutions are prototyped and tested to the latest DO160 environmental conditions and test procedures for airborne equipment specifications.

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Our superior design and construction ensures excellent performance and quality in applications around the world, as well as being highly reliable and cost effective.

Key benefits of HarcoSemco sensors:

- High Accuracy
- Excellent Stability
- Low Maintenance
- High Reliability
- Rugged Construction



Speed Sensors

Used in gas turbine engines and gearbox assemblies in commercial and military aircraft. Equally suited for many industrial applications where demanding environments are expected. Magnetic speed sensors convert motion into an electrical signal without the need for external power. Housed in a one-piece, lightweight, stainless steel assembly, our speed sensors provide extremely high accuracy with no moving parts.

Features

- Excellent positional accuracy
- Wide speed range
- Extreme environment operation
- Extended temperature range
- High shock resistance
- No moving parts/external power source
- Easy installation
- Low cost redundancy/maintenance



Mass Air Flow Sensors

Mass Air Flow Sensors consist of high stability platinum RTD's, a precision heater and an electronic interface that provides analog DC voltages. The basic design and the measurement range are adaptable to any installation. As a pioneer in sensor technology, we offer a variety of sensors that can be customized for your particular environment or application. Our Electronic Flow Sensor is often used in the avionics cooling system for low flow detection and operates on the "thermal dispersion" principle where flow rate is proportional to the temperature of a heated element in cross-flow.

Features

- Mass air flow rate/temperature outputs
- Better than 3% of reading for -40°C to 100°C
- Automated calibration and ATP
- Robust design; no moving parts



Resistance Temperature Detectors (RTDs)

With usage ranging from the relatively benign environment of aircraft cabin temperature control to the extremes of harsh turbine engine environments, our RTDs deliver high-accuracy temperature detection with proven reliability.

Features

- Customized, application-specific designs
- High accuracy platinum wire-wound elements
- Hermetically sealed
- Low excitation current
- High signal-to-noise ratio
- Fast linear response
- Excellent stability
- Wide temperature range
- Low maintenance
- High reliability



Liquid Level Sensors

Liquid level sensors use our thermal dispersion technology to detect the presence or absence of a fluid in a reservoir, including oil or fuel. Construction is stainless steel, hermetically sealed, and uses proven RTD elements with high reliability. They are readily adapted to multiple applications and requirements.

Features

- -60°C to 150°C working fluid
- Flexible interface: 2 and 3 pin configurations
- Minimal electronics; DO-160 compliant interface
- Ultralight
- >60,000 cycle life test
- Very high reliability—no moving parts
- Liquid media agnostic
- Based on field-proven thermal dispersion technology
- Redundancy for safety critical applications

Thermocouples

Quality, Custom Engineered Thermocouples. HarcoSemco is an ISO certified, FAA approved, international award-winning designer and manufacturer of custom designed thermocouple systems. Our wide range of products is designed to meet the highest standards of performance and reliability in the most demanding environments. Building on six decades of application experience, HarcoSemco thermocouples incorporate innovative design and superior construction, ensuring excellent performance and quality in applications around the world. Our cost effective thermocouple solutions measure critical data parameters in commercial and military aircraft, industrial gas turbines, and marine applications. In-house testing capabilities

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allow us to simulate extreme shock, vibration and temperature conditions during development and qualification phases. To ensure maximum quality control standards, all of our solutions are prototyped and tested to the latest DO160 environmental conditions and test procedures for airborne equipment specifications.

HarcoSemco's team, consisting of designers, as well as mechanical and quality engineers, is committed to working with your team as a trusted partner for all your application needs, whether uniquely customized or off-the-shelf.



High Temperature Thermocouples

Available with an exposed junction for quick response, or an enclosed, insulated junction for exhaust gas environments. Replaceable element probes have separate protective body and gas sampling ports. Rugged construction assures low life cycle cost and high reliability. Designed for averaging or individual multiple depth sensing. Standard thermocouple alloy stud and nut output terminals and hermetically sealed connector or flexible leads. Available in standard or custom thermocouple configurations and calibrations.

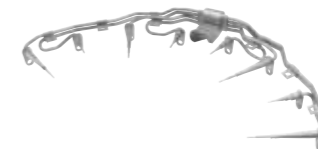


Integrated Thermocouple/Cable Assembly

A high temperature-capable design with cast probe supports, features an overmolded transition at the cable to probe interface, providing a moisture-proof seal to the probe. Coupled with the overmolded connector, the entire cable assembly is waterproof.

Features

- Incorporates EMI/RFI shielding
- Abrasion-resistant jacketing of Teflon® spiral wrap
- Stainless steel or other materials can be utilized based on environmental operating conditions



Rigid Thermocouple Rake Assembly

Custom designs provide cost effective solution for measuring critical temperature parameters in commercial and military aircraft, and industrial and marine gas turbines applications. Hermetically sealed for longer life, these single or dual junction enclosed insulated thermocouples are rugged and reliable. Available in multiple immersion depths with a choice of output configurations: connector, threaded terminal or flex lead. Available in all standard thermocouple calibrations.

Features

- Rugged superalloy construction
- Wide temperature range
- High shock resistance
- Fast response time
- OEM spec compliance
- Multiple measurement points
- Averaging/individual readings



Immersion Probes

Custom engineered for best performance and typically used for total temperature, stagnation, and direct reading applications. Temperature sensing can be incorporated in the same housing. Immersion probes provide specific or averaging of temperatures through single and multi-point immersion measurements, with resistance balancing for true electrical average.

Features

- Individually replaceable sensors
- Enclosed or exposed junctions
- Temperature range of -65°F to 2300°F

Cable Assemblies

Innovative, customized cabling capabilities for demanding environments. ISO certified and FAA approved, **HarcoSemco** is an international award-winning designer and manufacturer of custom interconnect solutions. Customized electrical and high temperature cable harness assemblies are developed to perform in the harshest environments. Our dedication to innovation and overall performance allows your designs to push the envelope with utmost confidence. In-house capabilities allow us to utilize a variety of jacket materials including metallic or non-metallic braid solutions that will stand up to extreme conditions no matter your operating environment. We also offer a variety of termination arrangements; whether your application requires exposed

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pigtails, lugs or terminals, integrated sensors, switches, or connectors available with molded, potted or repairable backshells, our in-house molding capabilities ensure your assembly will meet the highest standards for any operating environment.

HarcoSemco is your best choice for cost effective, highly reliable, quality solutions.

Applications in helicopters, UAV's, weapons systems, military, naval, commercial and general aviation, and industrial environments.



Dynamic Harnesses

Through unique features such as rotating clamps, customized connector overmolds and high-flex wiring, HarcoSemco's harnesses are capable of operation in extreme dynamic applications. For blade-fold and ice protection systems on helicopter blades, for both main and tail rotors, HarcoSemco's harnesses deal with high frequency blade rotation and wide variation of blade pitch-up/pitch-down, tilt/flap and lead/lag angles. Our harnesses excel under extreme structural and fatigue stress during operation, while maintaining a high level of essential environmental protection.



Static Harnesses

HarcoSemco's static harnesses are designed for resilience in the toughest of applications. In order to protect the critical wiring components from exposure to harsh environmental conditions, HarcoSemco utilizes connector overmolds (Polyurethane, Viton, Rubber and Fluoroelastomer) and jacket or coatings (Viton, Neoprene, Silicon, Polyurethane, PEEK). Through custom material selection and detailed design of componentry, HarcoSemco engineers the harness to meet all demands, while maintaining the lightest possible weight.



Engine/FADEC/APU Harnesses

HarcoSemco's engine harnesses withstand the grueling environment of an engine in operation. HarcoSemco has designed and qualified harnesses that are resilient to intense levels of vibration and exposure to potentially harmful fluids. Critical to on-engine applications, HarcoSemco has identified and refined the combination of materials and processes to offer maximum resilience to high temperatures. HarcoSemco can offer the latest advances in lightweight components featuring integral back shells, replaceable shielding at connector transitions and shrink boots lending for on-engine repair.



Fuel Cables

HarcoSemco fuel cables are designed for installation inside the aircraft's fuel tanks and utilize highly flexible conduit assemblies to seal against the intrusion of all aircraft fuels. These conduit assemblies are qualified to seal against fluid ingress with internal pressures up to 50 PSIG.

HarcoSemco has the knowledge, experience and the people necessary to manufacture products that meet the requirements of the following certifications, UL, CSA and ATEX.

Aftermarket Repair Replacement Services

For over 60 years HarcoSemco has been providing quality, cost effective solutions to the aviation industry worldwide. We service the OEM and bring that expertise to the repair and overhaul market, meeting all aftermarket requirements. We are an FAA and EASA approved repair station, with design teams developing new engineering solutions from which we manufacture high quality new replacement hardware. Our engineering teams develop cost effective repair/overhaul and new hardware replacement solutions.

We offer:

- Engineering Development • Repair Development • CMM Repairs • DER Repairs • PMA Replacement Hardware
- Rotable Pools/Exchange Programs • OEM Replacement Hardware

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Whether your hardware needs are for commercial or military, engine, airframe, APU, landing gear, Nacelle or other aircraft/air vehicle sub-systems—choose the company with OEM experience for all your repair/overhaul and new hardware requirements.

For more information on HarcoSemco's available repairs or replacement hardware visit HarcoSemco.com or call 203-483-3700 to speak to someone about developing repair/overhaul capabilities for your specific hardware.



Thermocouples

Testing, Repair/Overhaul and Recertification, including:

- Stud replacement
- Connector repair/replacement
- Element repair/replacement
- Thread repair
- Other repairs as required



Cable and Harness Assemblies

Testing, Repair/Overhaul and Recertification, including:

- Braid repair
- Hardware replacement (clamps, terminals)
- Connector repair/replacement
- Conduit repair/replacement
- Other repairs as required



Landing Gear

Cleaned, inspected, tested and replaced components.

- All new wiring, seamlessly installed
- All new stainless steel over-braiding
- Replaced damaged connectors
- Standard pins replaced with new gold-plated pins



Air Flow Sensors

Testing, Repair/Overhaul and Recertification, including:

- Connector repair/replacement
- Electronic component replacement
- Heater replacement
- Electronic module repair/replacement
- Recalibration

HarcoSemco's Certifications Include: ISO 9001 • AS 9100 • ISO 14001 J-Std Soldering • NADCAP—Welding and Heat Treating FAA and EASA approved repair station, License (YIURO64J and XEMR401L)

It's About Our Commitment...To You. More Than A Vendor: A Partner.

HarcoSemco's commitment to each customer starts with defining and tailoring the initial requirement and continues on through the design, fabrication and post-production phases. Working with customers in a team environment enables **HarcoSemco** to continually provide products that set the standard for innovation, reliability, and quality.

HarcoSemco encompasses an array of capabilities that include:

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- Air Flow Test and Calibration Stands
- Automatic Cable/Harness Testing
- Braiding
- Brazing (torch and vacuum)
- Calibration
- CNC Bending
- Electronic Assembly and Testing
- Fabrication
- HALT
- J-Std Soldering
- Laser Welding
- Machining
- Molding
- Nadcap Accredited Brazing and Welding
- Robotic Welding
- Stress Screening
- Thermal Testing
- Vibration Testing
- Welding
- X-Ray



Global capabilities.



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