

Precision Solutions for Aerospace & Defense



Esterline focuses on the development and manufacture of highly engineered solutions for aerospace & defense markets. Our Avionics & Controls, Sensors & systems, and Advanced Materials segments cover hundreds of programs around the world. That breadth of market coverage is a fundamental value, enabling us to constantly leverage our core capabilities to solve our customers' toughest challenges.

On the following pages you'll see how Esterline's core capabilities (displayed across the top of the page) come together to support an array of customer needs. We specialize in innovative cockpit systems, advanced sensor and power management solutions and the highly engineered material technologies needed to protect these systems from the harsh environments they face.

An emphasis on research and development has helped Esterline obtain Tier 1 designations on a number of significant new platforms. These include such important military programs as the F-35 Joint Strike Fighter and the T-6B Advanced Primary Trainer. On the commercial side, we have secured important positions on Boeing's innovative 787 and its Airbus counterpart, the A350.



Joint Strike Fighter — US Defense Secretary Robert Gates recently announced that the Department of Defense would buy more than 2,400 JSFs — 500 of them in the next five years. Esterline's avionics systems and engineered materials play a significant role in the performance of this cutting-edge strike aircraft destined to support the U.S. Navy, Air Force and Marines as well as our allies abroad.



Trent-XWB — Esterline Advanced Sensors recently entered into a partnership with leading jet engine manufacturer Rolls-Royce to supply about 30 separate components to the sensors package of their new Trent XWB engine (not shown). The Trent XWB engine is the only engine for the new Airbus A350 XWB family of aircraft. To date, Rolls-Royce has received over 1,000 orders for Trent XWB engines. Delivery of the first Esterline products for the engine is scheduled to begin in early 2010.



787 Dreamliner — Esterline products are found throughout the Boeing 787. From pilot controls in the cockpit to environmental sensors in the cabin and a wide array of specialized materials from nose to tail, Esterline solutions are helping Boeing achieve a new performance standard with this innovative new aircraft.



T-6B Trainer — Esterline has received the first production order for the integrated avionics system on the Hawker Beechcraft T-6B Texan trainer aircraft. The system includes the integrated avionics computer, the up-front control panel, and head-up and other multifunction displays. The avionics system gives the T-6B a state-of-the-art, open architecture avionics suite that mirrors the systems and capabilities of today's front-line military aircraft.

These are just a few samples among hundreds of programs where Esterline solutions are enabling customers to compete with maximum effectiveness.

Esterline combines balance and focus to deliver excellent value to our customers. With roughly 40% of our revenues coming from commercial aerospace, 40% from defense, and 20% from applying these technologies to a variety of industrial markets, our business is spread across hundreds of programs with no single platform accounting for more than 5% of revenue. And Esterline is geographically balanced, too, with about 40% of our sales originating outside the United States.

Esterline also adds value by focusing on products, systems, and services that are critical to the performance of our customers' products. This strategy of balance and focus moves Esterline up the value chain and makes us an even more effective partner.

To us, value means increasing the efficiency through every means available. It all begins with the *Esterline Performance System*, which is designed to help us deliver increasingly complex solutions more efficiently through focused factories. The *Esterline Performance System* also incorporates key company values, such as sustaining an aggressive rate of improvement, emphasizing individual leadership, and fostering a values-based ownership culture. Its overall goal: to help leaders at all levels align business, resources, human energy, and key performance measures.

Esterline is a company you can count on — a company with a clear strategy that has been tested and proven in some of the toughest markets on earth.

You can learn more about Esterline, our core capabilities and products at www.esterline.com.

Esterline Avionics Systems designs and produces leading-edge technology for the aviation and global positioning markets. Featuring innovative cockpit

systems integration and avionics solutions, our breadth of experience extends to commercial and military customers worldwide.

Avionics Systems



Featuring **CMC Electronics** solutions, Esterline is the leading supplier of cockpit avionics for trainer aircraft.

Innovation takes flight in Esterline's *CMC Electronics* integrated cockpit avionics solutions. Our capabilities encompass cockpit retrofits and new cockpit builds as well as human factors engineering.

Leading-edge military and commercial avionics include navigation and flight management systems (FMS); global positioning system (GPS) receivers; satellite communications antenna systems; electronic flight bags (EFB); enhanced vision system (EVS) sensors; head-up and multi-function displays (HUD and MFD); mission computers and

transport, UH-60M Black Hawk helicopter, and a variety of trainer aircraft. In addition, we are the prime contractor, systems integrator and avionics management systems supplier for the Canadian CP-140 Aurora Navigation and Flight Instruments Modernization Program.

Esterline has developed a significant business as a prime contractor, offering turnkey cockpit retrofit solutions based on its FMS product line. More than 100 Classic Boeing 747 aircraft have been modernized for international airlines/cargo operators, including Air France, JAL, Kalitta, KLM, Nippon Cargo, Qantas and Saudi Airlines.



CMC Electronics products are recognized as proven C-130 cockpit upgrade solutions.

portable mission displays. Our product portfolio also features a wide range of custom avionics components and microelectronics.

We have successfully performed cockpit upgrades for the C-130 class of military air transport aircraft. Our proven modernization solutions comprise best-in-class core elements which support worldwide operation within the latest civil airspace global air traffic management environment.

The *CMC Electronics* Cockpit 4000 integrated avionics suite provides a cost-effective, advanced military aviator training solution to air forces around the world. This integrated glass cockpit is designed to lower training costs while offering superior training capabilities.

The Cockpit 4000 has been selected by Hawker Beechcraft for the T-6B Texan trainer aircraft; by Korea Aerospace Industries (KAI) for the KT-1C trainer for the Turkish Air Force; by Patria for the upgrade of Hawk Mk51 trainers for the Finnish Air Force; and the Alenia Aermacchi M-311 jet trainer demonstrator.

Featuring *CMC Electronics* solutions, Esterline is a major supplier of avionics products to the aerospace and high-technology industries, airlines, military agencies and government customers around the world.

The company has world leading expertise in upgrading the cockpits of air transport aircraft such as the B747, DC-10 and MD-80 fleets with GPS, FMS, display systems and sensors. Our breadth of experience extends to military, fixed and rotary wing aircraft such as the P-3 patrol aircraft, C-130 air



PilotView® Electronic Flight Bags are the number one choice of business and commercial air transport aircraft OEMs.



The *CMC Flight Management System* is the leading choice for classic cockpit modernization retrofits.

Esterline Control Systems offers a family of five complementary product and service brands well established in the aerospace and defense industries. The variety and

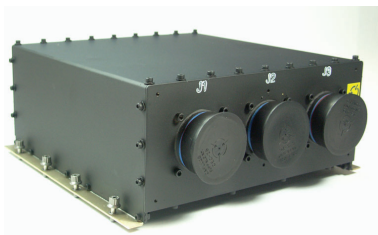
depth of our expertise allow you to select and integrate the right mix of solutions for your human-machine interface needs and other crucial control applications.

Control Systems

Our *Korry* illuminated interface components and subsystems have long been a mainstay of commercial and defense aerospace, with benchmark performance in controls integration, LED illumination, and night vision applications. Product categories include complete display and control solutions, as well as switches, indicators, panels, displays, and specialized illumination and filtering technologies.



The **AVISTA** team has provided software and systems services on virtually every commercial and military aircraft platform in production during the last 20 plus years.



BVR™ Data Concentrator Units are found on leading commercial, maritime, and military helicopters.

For the last dozen years, *Mason* control grips, throttles, and wheels have been integral to our product family, becoming the performance and reliability standard in the aerospace industry, and offering more configurations than available from any other source. In addition, *Janco* MIL-spec rotary switches and potentiometers complement the *Mason* product line, offering a wide range of interface possibilities.

BVR avionics products include solutions for signal conversion, data concentration, and instrumentation. For complex motion-control systems, *BVR* product solutions include a variety of precision gear products, position sensors, actuators and servo mechanisms.

Tying it all together is *AVISTA*, the U.S. leader in mission-critical software and systems engineering services. *AVISTA* specializes in embedded aircraft control systems, including autopilot, flight management, mission planning, and cockpit display systems.



Esterline Control Systems is the world's leading producer of mission-critical pilot interfaces including **Mason** control grips.



Esterline Systems is the Tier 1 supplier for a flight deck control panel on the Boeing 787.



Janco optical encoders are compliant with MIL-DTL-3786 and MIL-STD 202 environmental requirements.

Esterline Interface Technologies specializes in creating state-of-the-art user interface devices. Our product brands are on the cutting edge of specialized medical

equipment, custom-designed data input components, advanced military solutions, and high-tech gaming applications to serve well-known OEMs throughout the world.

Interface Technologies

Advanced Input Systems operates a world-class, ISO 9001:2000 certified facility that incorporates a full service, design to manufacture methodology for its customers. Specializing in custom control panels, input systems, and application specific keyboard solutions, Advanced Input Systems' diverse customer base includes major medical, industrial, military, and gaming industry OEM's worldwide.



This **Memtron** component is a membrane switch used for submersible laser surveying.

Advanced Input Systems
Imaging Diagnostic System

Memtron Input Components produces custom designed input components including membrane switches, passive and active PC board-backed switches, elastomeric keypads, and touch screen integrated panels. A Memtron device can be found in virtually any application imaginable from hospital surgical rooms and restaurants to manufacturing plant floors and oil rigs.



Founded in 2004, ESL Shanghai Ltd. supports major customers in Asia and provides manufacturing and material management capabilities for customers worldwide with interest in products with Asian content.

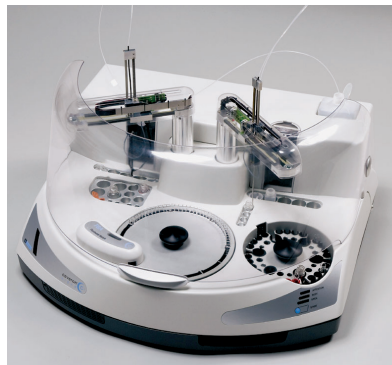


The **Medigenic™** Infection Control Medical Keyboard won a 2009 Medical Design Excellence Award.

Dynamic content and animation can be displayed on each button of this **Advanced Input Systems** programmable panel.



LRE Medical GmbH is a leader in optical and amperometric analytical systems from low end/low cost single parameter analyzers to high-end spectrometers. LRE Medical's ISO 9001:2000 certified facility is located in Germany and is mainly focused on invitro diagnostic devices and med-tech applications for major pharmaceutical companies.



LRE Medical products focus on clinical chemistry, immunology, hemostasis, microbiology, ISE parameters – and more...

Esterline Communication Systems is a world leading supplier of high quality, state-of-the-art military audio and data products designed to operate in the most severe battle environments. From secure audio and

data intercommunication/networking systems to rugged noise-cancelling handsets and headsets, we are on the front lines of battlefield communication.

Communication Systems



Racal Acoustics products in use in the field.

Racal Acoustics products have been at the forefront of military communications for almost 100 years. Today, Racal Acoustics products are the choice of armed forces from over 80 countries across the globe.



RA5000 Raptor Headset

Racal Acoustics RA5500 Frontier1000 System



Products include a range of application-specific noise attenuating headsets that reduce unwanted noise while simultaneously enhancing speech and aural clarity. The inclusion of Passive and Active Noise Reduction technology with

advanced Talk-Through functionality ensures high levels of personal hearing protection and utility.

Light in weight and small in form, Racal Acoustics lightweight headsets maintain the durability and reliability to perform in the most arduous conditions and harshest environments with an effective and unobtrusive means of communication. They are interoperable with ballistic and NBC protective equipment.



RA250 Handset

We also manufacture a variety of handsets for man-portable radios and field telephones, fist microphones for handheld radios, oxygen mask microphones for aircrew, Nuclear, Biological and Chemical (NBC) respirator microphones, an extensive range of front-line field line equipment, and both analog and digital intercom and audio warning systems for many leading aircraft companies worldwide.

In addition, we are a leading developer and manufacturer of complete communications control systems with an emphasis on security and aural clarity in



military applications. Our Palomar products have provided TEMPEST qualified systems to customers throughout the world for over 30 years.



Palomar Products Audio Control Unit (ACU)

These systems include Communications and Audio Control Units flexible enough to accommodate full command and control centers with crypto and data link assignments, radio relay, and simulcast or simple internal/external communication systems.

Palomar products, including Liquid Crystal Control Displays, Crew Station Units and integrated panels are all modular and designed for real-time adjustment of communication assets to meet the unique operational requirements for each mission. These products can be used in a multitude of platforms including aircraft, helicopters, ground shelters, and surface ships.

Palomar Products Liquid Crystal Control Display (LCCDU)

Esterline Power Systems combines leading-edge components with unique design and manufacturing abilities to provide low cost, high reliability custom power distribution

assemblies for aerospace, military, ground transportation and high-end industrial applications worldwide, maintaining a commitment to design innovation since 1919.

Power Systems

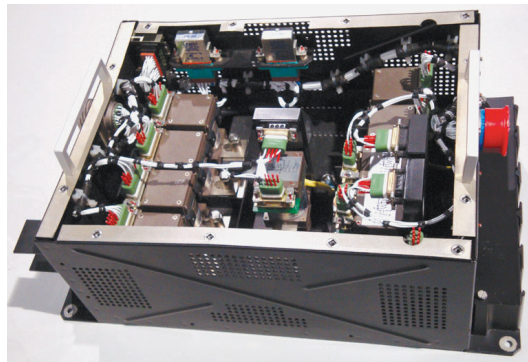
Esterline Power Systems, featuring *LEACH* products, is the world's leading manufacturer of electro-mechanical and solid state switchgear for aircraft, space, rail, and high-end industrial applications worldwide. In fact, nearly 90 percent of all commercial jets, as well as the vast majority of military jets, helicopters and other aircraft use *LEACH* components and equipment.

Our range of products includes: hermetically-sealed, military-qualified subminiature and half-crystal can relays for low-level power switching; sealed and unsealed high power contactors including ground fault interrupt (GFI),



A complete family of LEACH Ground Fault Interrupt Relays and Contactors are available for new and retrofit aircraft.

smart, and busbar mount contactors for modern electrical distribution systems; control devices for timing purposes, sensing (current, frequency and phase) and protection; lighted switches, indicators, keyboards, panels, and custom modules for aerospace and rail



DC Primary Power Distribution Unit for a business jet aircraft featuring LEACH components and equipment design.

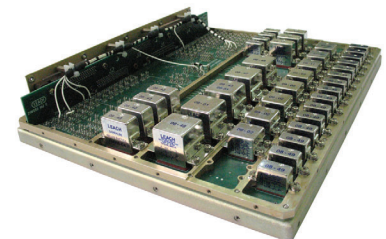
applications; custom equipment such as fast-acting changeover units, logic control, load switching and control/protection units; and solid-state power controllers for future advanced electrical power systems.

Our comprehensive product line and extensive experience in developing component products for electrical systems offer distinct customer advantages for creating solutions-oriented equipment products. Most *LEACH* components feature lightweight, compact, rugged construction, and many are hermetically sealed and qualified to the appropriate military specification. Their use can provide major design advantages coupled with significant cost savings. Typical examples include: AC/DC primary and secondary power distribution assemblies, relay panels, central warning panels, overhead control panels, anti-ice controllers, thrust reverser control assemblies, integrated wiring assemblies and related products.

Whether it is building to print, customizing an existing product or designing to a requirement, specification or replacement product, Esterline Power Systems has the engineering and

manufacturing expertise to handle the job. We manufacture to the exacting customer standards and specifications required by today's sophisticated applications using the latest technological advances and design tools to ensure long-term durability and reliable performance.

With manufacturing facilities in North America, Europe, and Asia, Esterline Power Systems is well positioned to continue its role of leadership as it expands its product offerings and services around the world.



One of four military helicopter Secondary Power Distribution Unit relay panels featuring a total of 150 LEACH relays and interconnection system to allow for future modifications.

Esterline Advanced Sensors specializes in the design and manufacture of a wide range of sensors primarily for gas turbine and airframe applications, supplying complete sensor packages to many of the world's leading engine

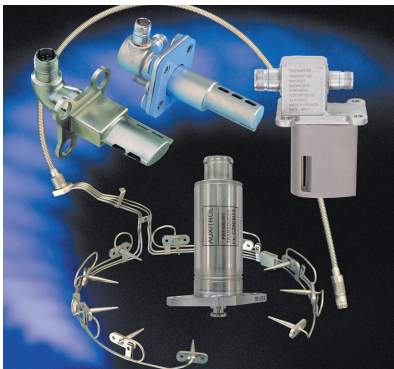
OEMs. Advanced Sensors also provides complete pressure and temperature scanning systems for wind tunnel and turbine test applications.

Advanced Sensors

Esterline Advanced Sensors includes five operating units and a global network of aftermarket service facilities. We are dedicated to serving the needs of our customers and to achieving market and technology leadership within our niche.

Four of our product brands — *Auxitrol*, *Norwich Aero*, *Weston* and *Esterline Mexico* — reflect development and manufacture of sensors (mainly temperature, pressure, speed and mass flow sensors) that cover the spectrum of aero-engine, aero-equipment and airframe applications, as well as industrial and marine derivatives. The fifth brand — *Pressure Systems Inc.* — provides pressure and temperature scanners and systems for turbo-machinery tests, wind tunnels and flight-test applications, complementing its sister companies.

Range of Auxitrol and Weston temperature, speed, pressure, flow and level sensors, plus analog indicators.



We offer customers a full Tier 1 capability, operating as a prime supplier of the engine sensor suite, sourcing a broad range of sensors from within our own operating divisions and the balance from industry-recognized sub-tier partners of equal standing and qualification. Individual products or sub-systems can also be supplied.

Esterline Advanced Sensors offers outstanding research, design, development, testing, manufacturing and aftermarket services, joining together the forces of our world-class people and facilities, combining their strengths with

PSI provides a large selection of pressure systems and scanners.

sub-tiers, and forging partnerships with customers to enable them to compete with maximum effectiveness.

Esterline Sensors Services manages the global aftermarket through our own FAA and EASA (and Chinese) approved repair shops. Our check and test facilities are located in the US, Europe and Asia. We have agents representing Esterline Advanced Sensors in Europe, the Middle East, the Far East and South America, providing a global team committed to satisfying our customer's needs.



Esterline Engineered Materials offers a range of advanced materials, components, and surface-treatment processes engineered specifically for extremes in

temperature, vibration, and chemical exposure.

Innovative research and development assures a continual flow of next-generation technical and design solutions.

Engineered Materials

As modern aircraft push the envelope of performance, thermal management and fire protection become ever more critical issues. Esterline Engineered Materials is an industry innovator in solving high-temperature and thermal engineering challenges for the world's leading aerospace and defense companies.



*Thermal insulation and fire barriers by **Fastblock®** 100, 300, and 800 fire protection systems.*

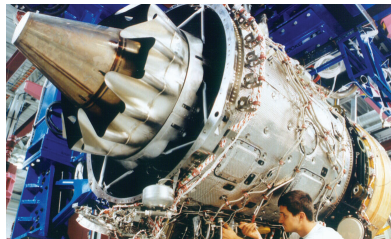
Our specialized capabilities range from innovative clamping devices, fasteners and sealing systems to thermal insulation, fire barriers and critical ducting systems.

At our core is an expertise in highly engineered, organic, and inorganic *Kirkhill-TA* elastomer-based products. We are a world leader in the production of precision silicone seals for commercial and military aircraft, as well as rocket and missile liner insulation material. *Kirkhill-TA* is the largest custom-engineered elastomer manufacturer in the western United States and one of the largest in the world.

Our primary product offerings include radar absorbing (RAM), electromagnetic interference (EMI) and electrostatic dissipating (ESD) material, as well as calendered, extruded, and molded solid and sponge specialty rubber products. Major applications in the aerospace market include aerodynamic seals for

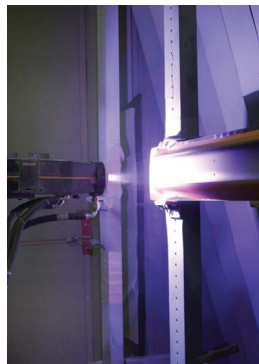
commercial and military airframes, ducts and firewall seals for aircraft engines, seals for cockpit canopies, doors and windows, and aircraft conductive seals for electromagnetic interference survivable conditions.

Darchem Engineering offers a wealth of experience in the design and manufacture of lightweight insulation systems, fire protection products and high temperature metallic fabrications for aerospace customers. Our fabricated advanced material assemblies are a favorite for high temperature exhaust systems and our innovative insulation systems provide protection for products ranging from composite thrust reversers to braking systems and accessories mounted in hostile environments. We also provide



***Darchem** high-temperature engine exhaust systems including exhaust mixers and cones.*

*Robot applies precise thickness of **Hytek** corrosion resistant coating to wing flap tracks.*



***NMC Aerospace™** fasteners, brackets, and clamps, including the **Swiftbond** product line.*

high precision honeycomb wind tunnel flow straighteners and turbulence control screens allowing customers to optimize their aerodynamic designs.

Most recently, we added the *NMC Aerospace™* line of lightweight fasteners and wire management devices.

For over 50 years, *Nylon Molding Corporation* (*NMC Aerospace*) has been a quality supplier to a wide range of industries, from aircraft and electronics to medical and automotive. We offer a line of products that includes plastic clamps, grommets and wiring devices. In addition, we offer custom molded plastic parts for use in all major industries — aerospace, medical, electronics and consumer products.

Our *Hytek Finishes* operation is one of the largest independent suppliers of specialized metal finishing, non-destructive testing, plating, anodizing and organic coating services in North America. We are a fully accredited AS 9100 & NADCAP facility and an FAA repair station. Their customers produce a wide variety of precision machined components for the aerospace, defense, industrial, and recreational markets.

Esterline Defense Technologies is a world leader in combustible ordnance and expendable countermeasures. We develop and manufacture state-of-the-art ordnance

products, infrared decoy flares and radar countermeasure chaff for air and shipboard applications and a variety of pyrotechnic devices.

Defense Technologies

Esterline Defense Technologies serves the widest customer base for combustible ordnance in the world, with over 90 million deliveries to date. Products include *Armtec* mortar propellant containers, combustible cartridge cases for tanks and 155mm modular artillery charge system (MACS) propellant containers for artillery. In addition to high volume production facilities we also maintain modern research and development and pilot plant facilities.

Our UK operation, *Wallop Defence Systems*, has more than 60 years of experience and expertise in defense pyrotechnics. Here we are actively engaged in research, development and production of a wide range of advanced pyrotechnic devices for use in land-based, maritime and airborne applications of armed forces across the world.

Radar countermeasure chaff can be tailored to meet customer requirements.



The Wallop SuperBarricade™ is a ship-borne decoy system designed to counter any type of air, surface-launched, or sub-surface launched anti-ship missile.



We are a principal UK design authority for conventional and advanced airborne IR decoy flares and also produce radar countermeasure chaff, a series of target and tracking flares for airborne use as well as signaling devices for use by naval forces. In addition, we are the design authority and the manufacturer of several types of anti-ship missile countermeasures as well as torpedo decoys deployed from the *Super-Barricade™* launching system.



Esterline Defense Technologies is a leader in the development of combustible ordnance products and applications.

We are also a leading developer and producer of infrared (IR) decoy flares and radar countermeasure chaff. We are the sole producer of chaff and one of two principle producers of pyrotechnic flares for the US military. Our *Armtec* countermeasure products span helicopter, transport and fast jet platforms in all standard NATO form factors. Our traditional point source Magnesium, Teflon, Viton (MTV) flares are designed to counter earlier generation IR MANPADS. Our advanced aerodynamic, kinematic, spectral and dual component flares offer protection against all GEN 1, 2 & 3 threats.



F-16 jets dispensing IR decoy flares.

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