



The Israel Export & International Cooperation Institute
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ISRAEL Aerospace Industry




Israel's Aerospace – Higher, Faster, and Farther

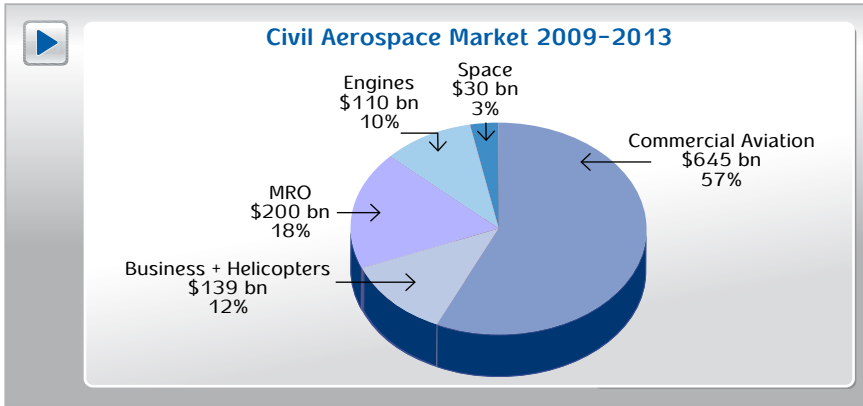
The fields of aviation and space exploration have always inspired mankind. Today, these same fields provide the motivation of the world aerospace industry, in which Israel's aviation, space, and defense companies are highly regarded for their great innovation and achievement.

Aerospace comprises a wide range of activities, covering specific market segments that require special expertise and specialization. Ranging from scientific space exploration and environmental and remote sensing to strategic intelligence gathering and surveillance, satellites and space-oriented technologies are designed to perform in the harshest conditions of outer space.

Commercial air transport operations are defined by safety and efficiency. At the other end of the scale, government and military aerospace users strive for rapid response capabilities in all weather conditions at every range and altitude. These users must be able to see, reach, and execute high precision effects under adverse weather and visibility conditions. Key technologies are weaved into this aerospace matrix, encompassing advanced materials and production technologies, and electronics and optronic design and integration, augmented by sophisticated software to assist, or even replace, the human operator where applicable. According to Forecast International market research, the world aerospace market is estimated to increase by over US\$1.4 trillion over the next five years – 83% of which will be within commercial activities. Over 150 Israeli companies, comprising 44,000 employees, are operating in aerospace-related fields. In 2008 Israel's aerospace related export amounted over US\$5 billion in sales.



Aerospace Market Segments	(\$ Billions)
Military	185
Commercial	934
Business	109
UVS	9
Space	136
Missiles	53



The Israeli Advantage


Tailored to match the country's unique advantages, and operating in close cooperation with the Israel Air Force, Israel's Aerospace Industry offers a "one-stop shop" for every customer – from the largest aerospace conglomerates seeking governments and aircraft operators requiring upgrading, modification and adaptation of main platforms; to end-users exploring a unique tailor-made technological solutions. Based on vast experience, and extensive technical, engineering and operational skills, gained over years of continuous and demanding operational activity, Israel's aerospace companies are always ready and prepared to meet the most challenging demands.

Israeli platforms, including satellites, special mission aircraft, business jets, and unmanned aerial systems, are operating, or under production, for customers around the world. Israeli made subsystems are being integrated in the world's leading passenger planes, fighter aircraft, military transports, helicopters, and trainers.

Key Segments

Airframes & Aerostructures

Israeli manufacturers produce all types of aerospace structure, from full-scale aviation platforms, missiles, and pods, to subassemblies and components. Lightweight structural airframe components are fabricated from aluminum, titanium, steel, and composite materials, which are processed in specialist facilities located throughout the country. By forging, casting, rolling, milling,




and processing materials into complex geometric shapes, raw materials are manufactured into airfoils, shafts, gears, turbines, compressors and other parts, providing critical components for the airframe structures and engines that power the world aviation market. Israeli industries provide key components and subsystems for the world's leading aircraft and engine manufacturers including Boeing, Lockheed Martin, Gulfstream, Pratt & Whitney, General Electric, Snecma, and others. Other subsystems provided to major OEM, include landing gear, rudders, actuators, electrical motors, environmental control systems, heat exchangers, heat shields, fuel tanks, cables and cabling harnesses, valves, seats, instrument panels, and lighting assemblies, these are some of the vital components and parts produced by Israeli aviation manufacturers. Israeli companies are also providing comprehensive development, engineering and certification services, including aeronautical design and engineering, rapid prototyping, simulation, testing, etc.

Unmanned & Autonomous Systems

Israel has established itself as a world leader and innovator, developer, supplier and operator of some of the most advanced unmanned aerial, ground and naval systems in service today. The role of Israel's aerospace and electronics companies has been instrumental in supporting the early adoption of this transformational technology. Today, UAS ranging from sub-kilo micro UAVs to unmanned helicopters and high altitude, long endurance jetliner size aircraft have accumulated over 700,000 flight hours operating in five continents, supporting military, government, and commercial reconnaissance, surveillance, security, law enforcement and scientific operations. These systems are based on platforms, propulsion, avionics, mission payload, communications, and control systems that have all been developed and produced in Israel.

Space Technology

Positioned among the world's leading nations in aerospace technology, Israel was the seventh country to have joined the elite "space club" of nations capable of developing, producing, launching, and operating their own satellites in space. Israel is also among only a few countries that have the comprehensive technology know-how and proven capability to produce observation, scientific, and communications satellites for strategic, commercial, and scientific use. At present, nine Israeli satellites are in orbit, carrying communications, electro-




optical, and radar payloads. More are presently under construction, ranging from larger broadband communications satellites weighing several tons, to multi-spectral imaging for scientific research, and miniature micro satellites weighing 100kg and under, pioneering new horizons for commercial, research and strategic applications of micro- and nano-satellites. Supporting Israel's space operations is a wide range of space qualified hardware, including different propulsion systems, attitude control systems, solar arrays, micro-electronic processors, sensors, and more.

Electronics, Avionics & Optronics

The most prominent advantage of Israel's aerospace industry is its collective portfolio of electronics, optronic, and software capabilities, which improves performance and efficiency, providing an important edge for systems operators. Israel's electronics and aerospace industries offer a wide range of electronic systems to support aerospace applications – spacebound, airborne, or ground-based. Advanced sensors include super-accurate navigation systems; active electronically-scanning radars; and visual, multi-spectral, infrared, laser-based, and various radio-frequency sensors that image the theater in different dimensions. Captured sensor data is processed, and fed through mass-storage systems to be retrieved, synthesized, and displayed to assist pilots, operators, and mission specialists. It can also be presented as "situational awareness" displays on traditional flat multi-function, head-up, or helmet-mounted displays. Advanced avionics are not exclusive to military applications. Commercial and general aviation pilots are also assisted by the latest Israeli avionics, including enhanced vision systems, miniature head-up displays, and the modern "electronic flight bag" managing essential flight data in the cockpit of commercial and military aircraft.

Upgrading, Conversion & Support of Aircraft & Helicopters

The highest professional standards of aerospace design, engineering, manufacturing, and flight testing developed to support Israel's aerospace systems are also employed to sustain existing platforms in service. Structural modifications certified by the world's leading aviation authorities are transforming aging aircraft converted from passenger into cargo or multi-mission planes. The same process can turn surplus, obsolete fighters into effective trainers. Cargo operators and government users are realizing the benefits of aircraft



conversions, which can extend the useful service life of their aircraft fleet, while peacekeepers become better protected installed with add-on armor and missile countermeasures. Maintenance, Repair, and Overhaul (MRO) for aircraft and engines is provided by specialist companies, offering everything from turnkey overhaul and heavy maintenance to repair, coating and reconditioning of specific aviation components. MRO operations can also benefit from the know-how and services of niche experts specializing in diagnostics, prognostics, system health monitoring solutions and system management to improve and optimize maintenance and support of aircraft, engines and UAVs. Israel based logistic services are providing engine and aviation parts supporting customers on a global base.

Training & Operational Support

Training of air crew, ground support technicians, and operators is an indispensable part of the Integrated Logistics Support (ILS) of modern aerospace systems. Harnessing the latest visual display and simulation techniques to present the student with realistic flight and operational conditions, simulators are designed to depict operational conditions and emergency situations, enabling the trainee to rehearse, absorb, and develop life saving skills. Israeli training experts offer complete turnkey training packages, from fighter trainers equipped with “virtual avionics” designed to enhance real flight training employing “in-flight simulation” to state-of-the-art ground-bound full mission simulations, and part-task trainers for fighter aircraft, helicopters, and unmanned systems. Training technical support personnel, maintenance of technical skills, and adherence to maintenance procedures are also provided by advanced simulation, comprehensive self-instruction, while ‘electronic books’ support system documentation from the early design stage.

Airport Operations & Services

Airport operations, management, safety, and air traffic control are essential to the safe and efficient management of modern airports. Facilitating such services, Israeli Information Technology (IT) providers



offer comprehensive operational systems for perimeter, border control and security checks, maintenance, operations, service, and support. Optimizing of routine airport tasks, from traffic and transportation to cargo handling, and from security checks to maintaining safety standards is facilitated by innovative “Intelligent Airport” concept already implemented in more than 100 major airports worldwide. Operational safety is also supported by indigenous systems employing optronic and radar sensors to identify and remove foreign object damage (FOD) hazards from runways. Such technologies are also extended to deconflict air traffic along airport approach and outbound routes.

Aviation Security

Israel is considered a “superpower” in aviation security. Since 9/11, Israeli security experts have implemented, trained, and operated security systems and procedures in many countries, enhancing the security of the traveling public, while accelerating passenger processing, thus minimizing passengers’ loss of time and discomfort. Local companies are kept closely updated on the rules, regulations and procedures pertaining to aviation security, and Israeli companies have established long-standing close cooperation with regulators in the USA and in Europe.

Global Presence & International Cooperation

The prominent position gained by Israel’s aerospace industries is reflected in the participation of Israeli industries in a growing number of projects, either as prime contractors and system integrators or as team members and subcontractors. While striving to maintain their competitive position as main integrators and prime contractors, Israeli companies also work closely with companies and partners around the world, acting as team members in many local programs. BAE Systems, Boeing, CAE, EADS, Embraer, General Dynamics, General Electric, HAL, Lockheed Martin, Northrop Grumman, Pratt & Whitney, Raytheon, Rheinmetall Defence, Rolls-Royce-BMW, Saab Group, Siemens, Snecma, Thales, and many others are among those currently partnering with Israel’s aerospace companies.

The Israel Export & International Cooperation Institute

Founded in 1958 and supported by over 2,600 member firms, private sector bodies, and the Israeli government, the Israel Export & International Cooperation Institute promotes business relationships between Israeli exporters and overseas businesses and organizations.

Aerospace, Defense, & HLS Department

“Your Gateway to Israel’s Aerospace Industry”

The Aerospace, Defense & HLS Department of Israel’s Export & International Cooperation Institute represents 150 companies in the aerospace arena. By providing a wide range of export-oriented services to Israeli companies, and complementary services to the international business community, the institute helps to build successful joint ventures, strategic alliances, and trade partnerships. The department also organizes the Israeli participation in major international venues such as the Paris and the Singapore air shows, where Israel showcases its contribution to aviation, defense, space and civil aviation security.


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The Israel Export & International Cooperation Institute

Production: IEICI Media & Production Division

Copywriting: Tamir Eshel

Design: Studio Billet