# GARRETT CANADA

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**HISTORY**: Garrett Canada is a division of Allied-Signal Canada Inc. The company is supported by the Allied-Signal Aerospace Company's worldwide network of field sales and services offices.

A Garrett office was established in Canada in 1952 to provide sales and services support for Garrett products in Canada. One year later, the company established a repair and overhaul facility near Toronto International Airport and added an engineering department to support this endeavor.

Throughout the 1950s, Garrett expanded its engineering department, added a production department and began the design and manufacture of ground equipment for the Canadian aircraft industry. In 1961, Garrett Manufacturing Ltd assumed a world product mandate for design, development and production of electronic temperature controls.

**CAPABILITY**: Backed up now by a quarter-million square feet of modern design, manufacturing, testing and support facilities, Garrett Canada markets electronic environmental control systems, communications systems, thick and thin film hybrid microcircuits, illuminated information panels, peripheral vision display systems, advanced systems and subcontract services, and employs approximately 1200 people of which 30% are engineering or engineering support staff. Garrett Canada now has six facilities in Rexdale, Ontario.

Garrett Canada's engineering facilities have expanded significantly and their marketing efforts have yielded important accomplishments in all of the company's product lines. Garrett Canada:

- Has developed a new and innovative system controlling the temperature and pressure of aircraft bleed air. The electronic bleed air system promises to increase reliability and fuel economy, while reducing weight and maintenance costs.

- Has developed an Electro Impulse De-Icing system for the leading edge surfaces of aircraft wings, stabilizer, engine cowls and inlets.

- Has developed the Peripheral Vision Display system, intended to prevent pilot spatial disorientation.

- Is completing a study of the ICECS (Integrated Closed Loop Environmental Control System) concept for the Advanced Tactical Aircraft.

- Has developed a portable test system for airport instrument landing systems that require ground inspection, calibration, alignment and trouble shooting. Easily carried with a shoulder strap, the lightweight system performs test procedures more quickly in locations far from active runways without interrupting air traffic.

- Has been certified to Military Standard 1772. Certification to this new and more stringent standard is mandatory for all hybrid microcircuit manufacturers submitting proposals for new military contracts let by the US Department of Defense.

- Has been selected second source for the electronic control unit on the GBU-15 fin actuation system.

- Has been selected as the Canadian Contractor for the NATO ASRAAM Program. Garrett Canada's responsibility includes not only the design and development of the missile fin control actuation system, but other elements of the total weapon system. Garrett Canada's marketing efforts are supported in the field by the Allied-Signal Aerospace Company's sales and service organization with offices in most major cities in the world.

Garrett Canada is actively engaged in the research and development of control systems, RF communications, analog and digital circuit design, power and hi-speed digital hybrids, and display technology. Approximately 20% of annual sales is spent on research.

Environmental and EMI qualification testing to military/aerospace standards is performed in their government-approved test facility. The facility includes a Canadian Government TEMPEST test facility. This facility is staffed to perform tests for equipment accreditation based on compliance with NACSIM 5100. A simple standard quality control system than conforms to NATO AQAP-1 and MIL-Q-9858 is employed.

*Electronic Environmental Control Systems (EECS)*: Garrett Canada EECSs are a major subsystem of the Environmental Control Systems that fly on more than 70 percent of the commercial and military aircraft in the western world. EECSs are used in cabin, cockpit and compartment air-conditioning systems; wing anti-ice temperature control systems; window heat control systems, and some liquid coolant systems.

Garrett Canada is under contract to McDonnell Douglas and Boeing to develop and manufacture a new and innovative system controlling the temperature and pressure of aircraft (C-17A, MD-11, 767-300) bleed air. The electronically controlled bleed air system is software adaptable to various engine choices. It promises to increase reliability and fuel economy, while reducing weight and maintenance costs.

In 1984, Garrett Canada is completing a contract sponsored by the Flight Dynamics Laboratory, Aeronautical Systems Division at Wright Patterson AFB to study and demonstrate the life cycle costs related to advanced digitally controlled Integrated Closed-Loop Environmental Control Systems (ICECS). Four years of research has involved analysis, simulation and development of a full scale laboratory system.

Garrett Canada is internationally known for its expertise in digital control. The ICECS program further enhances the company's technology base with the implementation of modern control theory techniques within a fully integrated aircraft system. Several advanced digital technologies will also be studied.

*Communications Systems*: Emergency Locator Beacons developed by Garrett Canada are used throughout the world in military, commercial and general aviation applications. These low power transmitters automatically provide an emergency homing signal to assist search aircraft to locate an aircraft in distress.

Personal Locator Beacons and Survival Radio Sets for military users permit two-way voice communications with search aircraft as well as providing an emergency homing signal. These radios are being used by the Canadian Forces and the Swedish Air Force.

VHF/AM Single Channel Transmitters and Receivers are produced for civil and military aviation air traffic control communications. Contracts have been received from the Ministry of Transport to update all Canadian air traffic control towers. This type of equipment offers many performance and maintenance features not previously available.

The ILS (Instrument Landing System) test set is a new product which performs ILS test procedures more quickly and far from active runways without interrupting air traffic. Using a shoulder strap, the lightweight system is easily carried by the operator.

The system is unique in the number of functions it combines from various existing pieces of equipment. This test set's integrated design and digital processor technology ensure significantly reduced maintenance costs while enhancing measurement accuracy.

Designed and developed by Garrett under license to British Aerospace PLC, the Low Profile Antenna (LPA) replaces the commonly used vehicular end-fed whip antenna. The LPA's unique design – reduced height and robust construction – makes it ideal for use in the tactical arena where a reduced visual signature and excellent operational capability are desirable.

*Microcircuits (Custom Thick and Thin Film Hybrid Circuits)*: Garrett Canada's microcircuits are produced in a fully integrated facility with a dedicated engineering, sales and production staff. The facility,