

The company's products include: flight simulator bodies, surveillance aircraft nose and tail cones, fighter aircraft canopies, passenger cabin windows, cockpit glare shields, fairing, moldings, doors, wheel well bins, aircraft ducting, satellite earth station and ship antennae, wingtip lenses, window surrounds, interior paneling and more.

**AVERAGE WORK FORCE:** Engineers - 1  
QC - 2  
Staff - 5  
Others - 30

**GROSS SALES:** 1986 - \$2.6M  
1987 - \$2.6M

**PLANT SIZE:** 22,000 Sq Ft

**EQUIPMENT:** Plastal Inc's equipment includes composite curing ovens, an autoclave, and an environmentally-controlled composite lay-up facility.

**EXPERIENCE:** Plastal Inc's customers include McDonnell Douglas Canada Ltd, The Boeing Co, British Aerospace PLC, Canadair Ltd, Innotec Aviation Enterprises Ltd, CAE Industries Ltd, and Pratt & Whitney Canada Ltd.

**KEYWORDS:** Composite Components; Composite/Fiberglass Components; Plastic Fabrication; Plastic Molding; Antennas (Ground Station); Canopies; Transparencies; Aircraft Transparencies.

**REVISED:** March 88

## PRA LASER Inc

**ADDRESS:** 45 Meg Drive  
London, Ontario, Canada  
N6E 2V2

**CONTACT:** Dr R C Miller, General Manager - (519) 686-2950

**HISTORY:** In early 1987, assets of PRA International Inc were acquired by Laser Photonics Inc of Orlando, FL. PRA Laser Inc is now a subsidiary of LPI and a member of the Laser Photonics family of companies.

**CAPABILITY:** PRA Laser Inc is involved in the design, development and manufacture of gas/dye laser systems specifically UV nitrogen lasers and associated dye lasers. Through our association with Laser Photonics, PRA is also actively involved in the development of waveguide CO2 lasers and pulsed YAG lasers.

In addition to manufacturing standard products, PRA and the Laser Photonics family of companies operate research and laboratory facilities for custom manufacturing, contract research, and consulting. PRA Laser Inc operates on an international basis through offices in Canada and the US, as well as through distributor networks in Europe and the Far East.

**AVERAGE WORK FORCE:** Scientists/Engineers - 5  
Others - 15

**GROSS SALES:** 1986 - \$3.0M  
1987 - \$2.0M

**PLANT SIZE:** 10,000 Sq Ft

**EQUIPMENT:** No Data

**EXPERIENCE:** PRA has sold their off-the-shelf products to a variety of academic, industrial, and government research facilities including Lawrence Livermore Laboratories, Oak Ridge National Laboratories, Los Alamos Scientific Laboratories, Solar Energy Research Institute, Exxon Research, Bell Laboratories, Western Electric, Eastman Kodak, and Wright-Patterson AFB, OH.

**KEYWORDS:** Electro-Optical Instrumentation; Dye Lasers; Lasers; Nitrogen Lasers.

**REVISED:** January 88

## PRATT & WHITNEY CANADA Ltd

**ADDRESS:** 1000 Marie Victorin  
Longueuil, Quebec, Canada  
J4G 1A1

**CONTACT:** Mr S Monaghan, Chief R&D Support - (514) 647-7557

**HISTORY:** Established in 1928 as a Canadian center for the overhaul of Pratt & Whitney Aircraft radial piston engines, Pratt & Whitney Canada Ltd (P&WC) took over full responsibility for this function prior to moving into small gas turbine development and production. They are a wholly owned subsidiary of the Pratt & Whitney Aircraft Group, a division of United Technologies Corporation.

**CAPABILITY:** P&WC has the mandate to develop and produce all small gas turbine engines typically for general aviation, commuter, paramilitary and for aircraft auxiliary power units. Their primary business areas are:

- Small gas turbine engine development
- Small gas turbine engine production
- Small gas turbine engine oriented research

The development of gas turbine engines at P&WC started in the late 1950s with the early PT6. This turboprop engine was introduced to the commercial market in 1963. The military designation for this engine is the T74-CP-701. In 1979, the development started on the PW100 turboprop engine. This fuel efficient engine is used primarily in commuter and short-haul aircraft.

The JT15D turbofan engine was introduced in 1967. It is the power plant of the Cessna Citation series of corporate jets, and the Beech Diamond aircraft. P&WC has also developed a twin turboshaft engine for helicopter use. These are designated the PT6T-3 and -6 series (military designation is T400-CP-400,-WV-402). Other engine families are also under development which include a series of small turbo shaft engines, a new fan engine and auxiliary power units.

By 1987, the company had delivered 31,053 engines for the world market.

**AVERAGE WORK FORCE:** Company Total - 7,625  
R&D Center - 2,232

**GROSS SALES:** 1986 - \$816M  
1987 - \$981M

**EQUIPMENT:** Equipment includes extensive manufacturing and R&D equipment and facilities for all aspects of small aviation gas turbines - test cells, spin pits, fatigue test facilities, metallurgical test facilities, gear test facilities, strain gauging/thermocouple applications, photoelasticity, acoustics, etc.

**EXPERIENCE:** P&WC has had experience with the following organizations:

- United States Air Force - (1) Research on High DN Value Roller Bearings - a program to determine the influence of geometric variable etc., on small high-speed roller bearings (carried out as a shared development program); and (2) Alternate Fuels Combustion Research - an experimental study of the effects of alternate jet fuels on small gas turbine combustion systems (also carried out as a shared development program).
- United States Army - (1) Subcontractor in Cooled Radial Turbine Program to Pratt & Whitney, Government Products Division (GPD) (1969-1971). Pratt & Whitney Canada Ltd was responsible for the Aerodynamic design and participated in the structural analysis and mechanical design of the turbine; (2) Consultant to P&W (GPD), on ST9 1500 horsepower demonstrator program for new US Army helicopter engine - first stage was scaled P&WC research rotor and second stage was centrifugal compressor (1966-1969); (3) Consultant to P&W (GPD), for the demonstration of a 10:1 Pressure Ratio single centrifugal compressor - P&WC provided data from previous in-house demonstrations of 10:1 Pressure Ratio Compressors