

- Design of Off-Road Transportation Equipment and Transportable Power Supplies
- Data Acquisition and Control System for a Petro-Chemical Extraction Plant
- Stress Analysis of Aircraft Structures & Nuclear Equipment Code Verification
- Design and Development of Heat Transfer Apparatus for Steel Mills
- Design of Nuclear Power Plant Equipment, Apparatus, Systems
- Special Industrial Air Handling and Ventilation Design and Development
- Remote Handling Systems Concepts and Design for Fission and Fusion Facilities
- Remote Maintenance and Repair Equipment Development, Design and Construction
- Test Rigs for Aircraft Components, Satellites and Nuclear Service Equipment
- Test and Research Facilities, Environmental Chambers, Wind-Wave Flumes, Particle Accelerators, Engine Test Stands, Hydrogen Fuel Test Facilities, Astronomical Observatories

Keywords: 1 = Aircraft; 8 = Energy; 9 = Environment; 18 = Space Systems; 19 = Testing/Test Equipment; 20 = Miscellaneous; Consulting = 1, 8, 9, 18, 19, 20; Stress Analysis = 1; Test Rigs = 1; Hydrogen Fuel Cells = 8; Transportable Power Supplies = 8; Particle Accelerators = 8; Radiation Protection = 8; Remote Handling = 18; Ground Support Equipment = 18; Payload Equipment Design = 18; Airframe Analysis & Testing = 19; Shaker Table = 19; Wing Tunnel Systems = 19; Engine Test Beds = 1, 19; Studies = 1, 8, 9, 18, 19, 20; Design = 1, 8, 9, 18, 19, 20.

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EBCO INDUSTRIES

Code: EBC

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History: Ebco Industries Ltd is a Canadian owned company formed in 1956 as a small tool and die shop in Vancouver. The company has had a compounded growth rate of 50% per year since that date and now it is a multi-million dollar concern comprising twelve companies. This highly diversified organization, including all subsidiaries and affiliates, has a wide range of expertise that includes all aspects of machining & fabricating, electro-plating, electronic data entry & processing equipment, electronic R&D, data processing, furniture, general & specialty construction, custom wheels & automotive accessories, real estate, upholstery, and stoves. This profile will concentrate only on their machining capability which can vary from a 20 minute grinding or polishing job to an 18 month multi-million dollar custom 50 ft dia atomic cyclotron.

Capability: Ebco Industries is a multi-faceted corporation with a major investment in the machining and fabrication business. Their skills and facilities include:

- Machining of all kinds - milling, grinding, planing, turning, boring, sawing, etc. They also have CNC capability (planer mills and machining center).
- Fabrication and medium and heavy plate work.
- Welding - manual, semi-automatic and automatic in steel, stainless steel, aluminum, T-1, nickel-chrome, titanium, copper, low-temperature steel, etc.

- Thermal stress relieving and heat treating.
- Sand blasting and painting.
- Tool and die work, engraving in metals and plastics.
- Mechanical and hydraulic assembly.
- Metal stamping.
- Tube bending and welding.
- Electro-plating - decorative chrome, brass, copper, zinc, bronze. Industrial hard chrome, cadmium, zinc, iron-manganese and zinc phosphating.
- Galvanizing plant - hot dip galvanizing. Centrifugal system for small hardware.

Ebco specializes in close tolerance machining utilizing Brunson optical transit squares and 3-axis digital readouts. Their quality assurance procedures meet CSA standards Z299.2, Z299.3, Z299.4, and ASME Section VIII. Their fabrication facility has the capability to shear, cut, burn, bend, shape and roll plate.

Ebco custom builds large and small assemblies, and machines and boasts the largest repair capability in Western Canada. This latter capability is especially applied to the repair and rebuilding of sawmill and pulpmill machinery, and mining equipment.

Ebco is developing a new Aerospace Division that will contain the largest and most sophisticated machining capability available. The main machines comprise two bed tables, each 90 ft long by 160 inches wide, having two gantries per table each with three spindles capable of five axis machining, that operate simultaneously by CNC control. They will also have available anodizing and ultrasonic immersion inspection systems.

Average Work Force: Total - 500

Gross Sales: Year ending Sep 83:
\$20.5M (Ebco Industries Ltd)
\$39.6M (Ebco Industries Ltd plus Subsidiaries)

Plant Size: 211,022 sq ft on 13 Acres (additional 52 acres for future development)

Equipment: Facilities: Crane capacity - maximum lift 150 tons, 40 ft under hook (in shops); maximum lift 70 tons, 36 ft under hook (in yard); Door Size maximum 24 x 24 ft; and Shipping facilities - road, rail and water loading capacity. Ebco's equipment list is too voluminous to itemize in this profile, however, the following is a brief summary - punch presses ranging from 15 to 250 tons; overhead cranes ranging from 5 to 80 tons; mobile cranes up to 7.5 tons; cutting equipment - Linde 4 & 8 head with tracers, plasma arc machine, ironworker, sheet metal and plate shears; and Stress Relief Furnace 50 ft, 20 ft wide, 16 ft high, maximum temperature 1000°C and maximum load 100 tons.

Other equipment includes welding manipulators, boring mills, planers, lathes, milling machines, drills, forming presses, plate rollers, welding equipment, planer mills, CNC machines with software preparation and programming system, and various inspection and quality control equipment.

Experience: Ebco's clients include - Boeing Co (MX transporter trailer for USAF and CNC - machined components for jetfoil vessel for USN), Hooker Chemical Co (Electrolytic cathode cells for Chlorine plants), DeHavilland Aircraft (CNC - machined aluminum components for Dash 7 and Dash 8 aircraft), University of British Columbia (56 ft vacuum tank and resonators for the Meson Facility - TRIUMF Project), Robbins Co (underground tunnel boring machines to 32 ft dia),