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OPPORTUNITIES IN MEXICO:
TOOLS, MOULDS AND DIES,
AND SPECIAL MACHINERY



 Department of Foreign Affairs and International Trade
Ministère des Affaires étrangères et du Commerce international
Latin America & Caribbean Branch



M A R K E T P R O F I L E - M E X I C O

OPPORTUNITIES IN MEXICO:

TOOLS, MOULDS AND DIES, AND SPECIAL MACHINERY

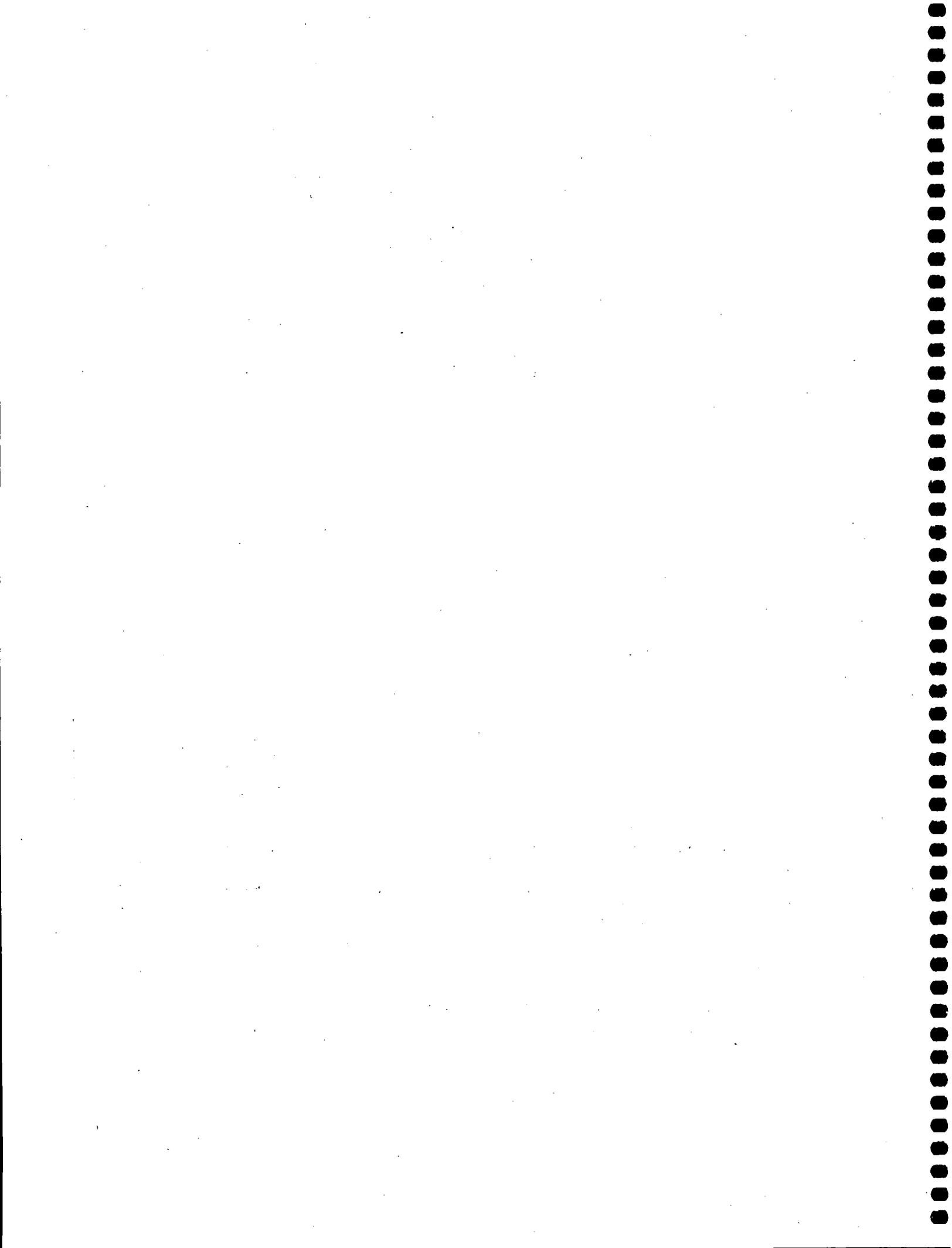
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The NAFTA expands Canada's free-trade area of 270 million people into a market of 360 million — a market larger than the population of the 15 countries of the European Union and one with a total North American output of \$7 trillion.

Mexico is Canada's most important trading partner in Latin America. Two-way merchandise trade with Mexico exceeded \$5.5 billion in 1994 and is expected to exceed \$7 billion by the end of the decade.

Canadian direct investment in Mexico is growing rapidly, increasing from \$452 million in 1992 to over \$1.2 billion in 1994.

This guide has been prepared with the problems inherent to the new exporter in mind. However, it is not exhaustive. The differing circumstances, interests and needs of individual companies will influence their strategies for the Mexican market.

Further assistance can be obtained by addressing requests to:

the provincial International Trade Centres (see Where To Get Help) or contact the InfoCentre at:

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THE NEW REALITY FOR MEXICAN MANUFACTURERS

With the cost of imported machinery nearly doubling by the devaluation of the peso, and with interest rates exceeding 80 percent, "export or perish" is the new reality for many Mexican manufacturers.

Beginning in the late 1980s, the government of Mexico launched a sweeping series of economic reforms including new policies of trade liberalization, deregulation and privatization. As the industrial transformation took hold, Mexican manufacturers scrambled to modernize. Larger firms took over small family-owned enterprises as industry rationalized to meet the influx of foreign competition. Imports of industrial automation equipment doubled in the two years ending in 1993, even though an economic recession cut demand for conventional machine tools. The modernization process continued throughout 1994.

The new government of Ernesto Zedillo came to power on December 1, 1994, and within a few weeks, the administration stopped supporting Mexico's overvalued peso. The market reaction was much more severe than the government had anticipated. Within days, the peso had lost almost half its value. This triggered a major economic crisis, and it ultimately required more than US \$40 billion in foreign loans to prevent the collapse of the financial system.

The devaluation of the peso has had a predictable effect on foreign trade. During the first eight months of 1995, non-petroleum exports surged by 34.2 percent. Total imports fell by less than 8 percent, but imports of capital goods plunged by 32 percent. As a result, Mexico's merchandise trade balance was transformed into a US \$4.5 billion surplus, in contrast to the deficit of US \$12.1 billion in the same period the year before.

As a result of these dramatic changes, Mexican manufacturers now face a new reality. The gross domestic product (GDP) is expected to fall by 4 percent or more during 1995, and this has undermined most domestic product markets. This leaves manufacturers with little choice but to export if they expect to survive and prosper.

In many industries the cheap peso has offset the low productivity that is the legacy of decades of protectionism. But price is not the only factor driving exports. Many Mexican manufacturers cannot take advantage of the export boom because they cannot meet international quality standards. This has added quality and consistency to productivity as motivations for modernization. But nearly all industrial automation machinery is imported, and its cost has nearly doubled in terms of pesos. To make matters worse, interest rates on peso loans now exceed 80 percent per year.

Companies that are experiencing export-led growth are expected to continue the modernization trend established before the devaluation. The higher costs of equipment can be justified by the dramatic rise in export sales. And since many of these companies are multinationals, they have both hard currency earnings and access to foreign capital markets.

Canadian companies that can use their expertise to assist smaller Mexican manufacturers to modernize and capture export sales will find interesting opportunities despite the devaluation. Mexican companies have come to understand the benefits of flexible manufacturing based on computer-controlled machine tools. Compliance with ISO 9000 standards is widely discussed and is the goal of most Mexican manufacturers. Concepts such as total quality management (TQM) and just-in-time (JIT) production are catching on. As young, foreign-trained engineers take over leading Mexican industrial firms, they bring with them a demand for foreign equipment as well as the capability to use it effectively. The key to capitalizing on this potential market is creative financing. Joint ventures, co-manufacturing and other innovative business arrangements offer the best potential for Canadian firms.

THE MACHINE TOOL SECTOR

The need to meet export quality standards is driving a gradual shift towards numerically-controlled equipment for both metalworking and plastics manufacturing.

Machine tools are used by manufacturers to shape or form parts made of materials such as metal, plastic, wood, ceramics and rubber. Traditionally, these functions have been performed using conventional machine tools such as lathes, milling machines, boring machines and the like. Over the past decade or so, machining tasks have increasingly been accomplished using computer-controlled machine tools. This makes the manufacturing process both more flexible and more consistent. The first numerically-controlled (NC) equipment used computers to generate electronic patterns that were then transferred to the machine tool using an intermediate medium, such as punched paper tape. Modern machine tools are completely integrated with the computers that control them.

The trend towards computer-controlled machinery is less advanced in Mexico than it is in Canada. This is partly because there is no significant production of this type of equipment in Mexico. The principal distinction between equipment types in the Mexican market is between computerized numerically-controlled (CNC) and direct numerically-controlled (DNC) tools. As these terms are

understood in Mexico, CNC equipment includes an integrated microcomputer capable of executing externally controlled designs. DNC equipment is connected to an external computer, which may directly control one machine or a network of machines. The latter configuration is known as distributed numerical control. The term NC is widely used to refer to all computer-controlled equipment.

Computer assisted manufacturing (CAM) systems include NC machine tools and related computer assisted design (CAD) and computer assisted engineering (CAE) systems. Industrial robots are also gradually being introduced into Mexican industry. The use of these technologies, however, is not nearly as advanced in Mexico as it is in Canada and the United States.

ESTIMATED INDUSTRIAL AUTOMATION MARKET SIZE, 1994

Component	US \$ millions
Computer software	40
Professional services	150
Support	80
Numerically-controlled hardware	430
Numerically-controlled machine tools	106
Total	806

Source: Interviews.

This market profile deals only with the machine tools themselves including their on-board electronics, but excluding the computers that control them. The market for associated tools, dies, moulds and other ancillary equipment is also discussed in this profile. The technology used to create computerized designs and automate the overall production process is discussed in a separate profile entitled "Industrial Automation".

Notwithstanding the trend towards computer-controlled manufacturing, there is still a substantial market in Mexico for conventional machine tools. According to U.S. Department of Commerce estimates, conventional machine tools account for up to half the total market. But the proportion of computer-controlled equipment is rising and, since there is little domestic competition, the prime export opportunities for Canadian companies are in the area of NC machine tools.

This expansion of the market for NC machine tools has created a parallel market for the professional services needed to design, implement and maintain advanced manufacturing systems. The economic crisis has increased this demand, as manufacturers strive to get the maximum productivity out of the equipment they bought in 1993 and 1994.

Virtually all CAM equipment and almost three-quarters of computer hardware and software is imported. No foreign firms are producing NC equipment in Mexico, and industry experts interviewed for this profile said that they do not expect this situation to change in the foreseeable future.

A trend towards the use of numerical control is an important factor driving the demand for specific types of equipment in Mexico. Even though the overall demand for machine tools fell during the 1993 recession, the demand for NC equipment continued to rise. NC equipment rose from about 16 percent of total metalworking machine tool imports in 1991 to 24 percent in 1994. Mexico has virtually no capacity to produce this type of equipment, and imports represent the bulk of the market. The latest trends are towards integrated machining centres, which are gradually replacing separate machine tools.

MACHINE TOOLS FOR METALWORKING

Machine tools for metalworking make up a large proportion of the overall machine tools market. Excluding parts, imports exceeded US \$441 million in 1994. Canada's share was about 1 percent of this market.

This subsector is highly sensitive to the health of the automotive, capital goods and other metalworking industries. These industries are facing strong pressure to improve quality and productivity. Customers are demanding uniform quality, compliance with international standards, lower production costs, just-in-time (JIT) deliveries and above all, reliable local service and maintenance programs. This market pressure is the driving force behind the expanding market for custom tools, especially those associated with numerical control.

The market for metalworking machine tools has increased rapidly in recent years as the manufacturing industry has expanded. Traditionally, there have been two main categories of machines: those that cut metal and those used for forming and shaping. But increasingly, metalworking is being done using integrated machining centres where this distinction is no longer relevant. In 1994, machining centres, unit construction machines and multistation transfer machines accounted for 20 percent of the market.

The end-user market consists of about 140,000 manufacturing companies and metalworking shops. About 200 medium and large companies dominate the market for advanced equipment. Prior to the devaluation, industry experts were projecting annual growth of this market at roughly 10 percent.

The industrial automation specialists interviewed for this study were unanimous that there are no domestic producers of advanced machine tools in Mexico. There are also very few software developers, and the small amount of domestic computer hardware made in Mexico is assembled from imported components. Local assembly makes it more practical to offer fast delivery on custom configurations, but otherwise Mexico does not have significant capacity in this field.

This finding might seem to be at odds with Mexico's recorded exports of about US \$2 million worth of numerically-controlled (NC) metalworking machine tools in 1993. Industry observers point out that machinery is sometimes tested in Mexico and then returned to the vendor. Also, some used pieces of equipment are re-exported as trade-ins on new machines. Both cases are recorded in the export statistics.

Most industrial automation equipment suppliers have Mexican subsidiaries and can provide support with a combination of local and imported resources. There are also a number of well-developed service firms in Mexico that offer systems design, maintenance, training and consulting services.

PLASTICS MANUFACTURING MACHINERY

Plastics is one of Mexico's most dynamic industries. For more than a decade, its growth has consistently outperformed the gross domestic product (GDP). In spite of this progress, the use of plastics in Mexico is far below the levels of developed countries. Plastics consumption per capita rose steadily from 6 kilograms in 1980 to 26 kilograms in 1994. But this is still far below the 90 kilograms per capita in Canada and the United States. This suggests sustained market growth, as Mexico gradually catches up with the rest of North America in substituting plastics for traditional materials. Per capita consumption is projected to reach 30 kilograms by the year 2000.

The plastics industry, like other Mexican industries, is under great pressure to modernize. Computer assisted design and manufacturing (CAD/CAM) techniques have gained wide acceptance as a result. CAD is used to design parts and tools and CAM is used to program computerized numerically-controlled (NC) machine tools to produce moulds.

The use of computer assisted engineering (CAE) is also spreading in the plastics industry. CAE is used to simulate the injection moulding and cooling processes in order to optimize the production process and to control shrinkage and warpage.

Equipment used by the plastics industry includes blow, injection and extrusion machinery, and moulds and dies used in the process of transforming plastic resins into final products.

PRODUCTION TECHNIQUES

Injection and extrusion moulding are the most widely-used production techniques, because of their versatility. Blowing is becoming increasingly common, as advanced packaging products become more popular. Blowing is required because of the increased use of some new plastics and resins such as polyethylene terephthalate (PET).

The industry has been forced to modernize in the face of foreign competition. Imports of plastics production machinery more than doubled to US \$232 million between 1990 and 1994 according to the *Asociación Nacional de las Industrias del Plástico (ANIPAC)*, National Association of the Plastics Industry, data. The largest increases were for injection moulding equipment (312 percent), vacuum forming machinery (243 percent), blow moulding equipment (227 percent) and extruders (163 percent). Other more sophisticated processes are now being introduced, including laminating, rotational moulding, foaming, compression, coating, metalizing and electro-chroming.

MODERNIZATION OF THE PLASTICS SECTOR

MACHINERY IMPORTS

US \$ MILLIONS

	1990	1992	1994
Injection moulding machinery	31.1	48.8	97.1
Extruders	17.8	25.6	29.1
Blow moulding machinery	24.6	36.7	55.9
Vacuum forming machinery	12.1	15.8	29.4
Auxiliary equipment	6.8	14.5	20.7
Total	92.4	141.4	232.2

Source: *Asociación Nacional de las Industrias del Plástico (ANIPAC)*, National Association of the Plastics Industry. 1995 Annual Report.

Plastics-making equipment is mostly imported, primarily from American and European sources. According to the United States Department of Commerce, the United States had a 43 percent market share in 1993, followed by Italy with 16 percent and Taiwan with 12 percent. Industry experts interviewed for this profile said that Husky is the only major Canadian company active in the Mexican plastics equipment market. They add that the company's products are highly regarded. Mexican-made equipment is considered technically inferior to imports.

Some Asian imports are available in Mexico but apart from those from Japan, they are considered inferior to American and European equipment. The Japanese firm, Tatming, exported 60 machines to Mexico during 1994, but it expects sales to fall by half during 1995.

Mexico represents a promising market for equipment related to the manufacturing of plastic packaging and bottles, spare parts for vehicles and electric appliances, toys, and industrial plastics components. According to representatives of foreign firms and the *Asociación Nacional de las Industrias del Plástico (ANIPAC)*, National Association of the Plastics Industry, most Mexican plastics production companies use technology that is at least 20 years old. Demand for plastics production equipment will also be supported by the trend towards substituting plastics for traditional materials, such as metal, wood, ceramics and glass.

Demand for imported machinery, moulds and dies will grow at an average of 12 percent per year during the next three years.

To market plastics industry production equipment, companies should make a long-term commitment to the Mexican market before finding a representative or entering into a strategic alliance with a Mexican firm. Participating in trade exhibitions in Mexico is an important means of exposure.

ROBOTICS

The use of industrial robots is relatively new in Mexico. So far, robotics has been concentrated in the automobile industry, although universities and technical institutes are also major customers. The Ford Motor Company, for example, has introduced robotics at its Hermosillo and Cuautitlán plants. A Ford executive, quoted in the newspaper, *Reforma*, in 1994, said that their uses have included welding, painting, forging, cleaning, pressing, fusing and materials handling, as well as injection moulding of plastics, chemical treatment and storage. The primary objective has been to achieve better quality and higher precision.

The Hermosillo plant, which was designed to incorporate robotics, includes 117 robots on the production line, six in the paint shop and two in other areas. The Cuautitlán plant, which was designed without robotics, has since incorporated 11 robots and the company plans to install 19 more. Ford officials have pointed out that Mexican accounting practices, which allow for rapid depreciation of plant and equipment, encourage investment in capital equipment.

It is estimated that there are some 950 robots in Mexico, about 550 of which are in the automotive and autoparts industries. Another 300 are in educational institutions and the rest are found in several different manufacturing industries. Virtually all of the robots in Mexico are imported, although about 30 have been custom-fabricated in Mexico.

The total robotics market was estimated by the United States Department of Commerce at about US \$21 million in 1993 and was projected to reach US \$24 million in 1994.

Artificial intelligence is a key factor distinguishing a robot from a numerically-controlled (NC) machine tool. So far, this aspect of robotics has not yet been fully exploited in Mexico. Typically, robots are used in potentially dangerous processes such as assembling, welding and smelting.

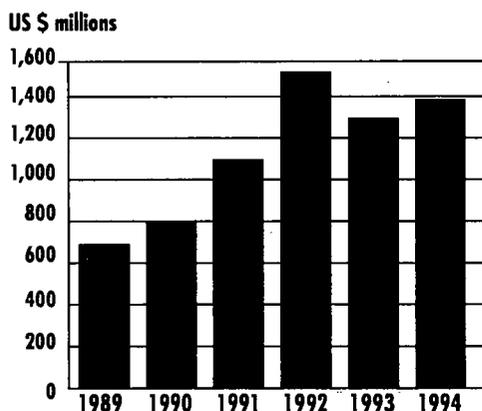
ROBOTS IN USE IN THE MEXICAN AUTOMOTIVE INDUSTRY

Brand Name	Number	Percent	Origin
Asea Brown Boveri (ABB)	32	5.2	Sweden
Cincinnati Milacron	7	1.1	U.S.
Fanuc	147	23.7	Japan
Kawasaki	315	50.9	Japan
Miller	1	0.2	U.S.
Motoman	19	3.1	Japan
Nachi	21	3.4	Japan
Unspecified	77	12.4	—
Total	619	100.0	

Source: *Asociación Nacional de las Industrias del Plástico (ANIPAC)* National Association of the Plastics Industry, *Asociación Mexicana de Distribuidores de Maquinaria (AMDIMA)*, Mexican Association of Machinery Distributors.

THE ROLE OF IMPORTS

MACHINE TOOLS, DIES AND MOULDS, AND RELATED EQUIPMENT, MEXICAN IMPORTS FROM THE WORLD



Source: Secretaría de Comercio y Fomento Industrial (SECOFI), Secretariat of Commerce and Industrial Development, 1995.

There is virtually no Mexican production of numerically-controlled machine tools. The United States and Japan dominate the market, but Canada has achieved significant sales of some products.

There is a wide variety of estimates of the size of the Mexican import market for machine tools and related equipment. Although the Mexican import statistics follow the Harmonized System (HS) of commodity classification, there is no clear definition of which products define this industry. Some published estimates are limited to metalworking tools, and others focus only on numerically-controlled (NC) equipment.

The statistics presented in this section present a very broad view of the industry. They include equipment for both metalworking and plastics manufacture. They include both NC and conventional machine types. In addition, they include tools, dies and moulds as well as the machines that use them. By this definition, imports totalled US \$1.4 billion in 1994.

This total can be divided into three major categories of roughly equal proportions: machine tools for metalworking; machine tools for working non-metals; and tools, dies and parts.

Imports of all categories grew steadily following the introduction of liberalized trade rules in the late 1980s. They fell by almost 16 percent during the recession of 1993, but rebounded by 8 percent the following year.

TOOLS, MOULDS AND DIES, PARTS AND ACCESSORIES, 1994 US \$ '000s

	World	Canada
Interchangeable tools for hand tools or machine tools		
Dies for drawing or extruding	2,167.6	29.9
Tools for tapping, stamping or punching	87,920.9	6,387.3
Tools for tapping or threading	9,259.5	195.9
Tools for drilling, not rock drilling	17,969.0	131.6
Tools for boring or broaching	10,243.7	17.6
Tools for milling	7,394.1	69.8
Tools for turning	1,787.2	0.4
Other interchangeable tools and parts	27,377.8	684.3
Sub-total	164,119.8	7,516.8

continued on next page

	World	Canada
Moulding boxes, bases, etc.		
Moulding boxes	729.6	100.0
Mould bases	612.9	8.1
Moulding patterns	2,446.0	79.5
Moulds for metal or metal carbides, injection or compression types	31,914.4	360.1
Moulds for metal or metal carbides, other than injection or compression	4,340.2	467.6
Moulds for glass	5,667.4	25.4
Moulds for mineral materials	8,870.0	99.8
Moulds for rubber or plastics, injection or compression	188,774.8	19,918.4
Moulds for rubber or plastics, other than injection or compression	39,210.0	2,234.7
Sub-total	282,565.3	23,293.6
Parts and accessories for machine tools		
Tool holders and self-opening dieheads	17,760.3	134.6
Work holders	5,774.5	27.2
Dividing heads and other special attachments	7,182.7	290.4
For machine tools for wood, cork, etc.	4,651.9	63.7
For machine tools for laser operation, metal working machine centre	19,770.8	80.4
For machine tools for forging, die-stamping, shearing metal	40,626.6	551.6
Sub-total	95,766.8	1,147.9
Total	542,451.9	31,958.3

Source: Secretaría de Comercio y Fomento Industrial (SECOFI), Secretariat of Commerce and Industrial Development.

MACHINE TOOLS FOR WORKING METAL, 1994 US \$ '000s

	World		Canada	
	World Total	Numerically-controlled	Canada Total	Numerically-controlled
Tools for working by removal by laser, ultrasonic, electro-discharge, etc.	11,482.0	—	44.5	—
Machine centres for working metal	24,041.8	—	372.5	—
Unit construction machines	1,648.5	—	—	—
Multistation transfer machines	62,186.2	—	986.7	—

continued on next page

	World		Canada	
	World Total	Numerically-controlled	Canada Total	Numerically-controlled
Horizontal lathes	31,543.7	69.5	53.1	92.7
Lathes, excluding horizontal	19,416.3	55.5	24.0	—
Way-type unit head machines	5,680.5	—	—	—
Drilling machines	9,665.1	49.6	39.9	—
Boring-milling machines	6,143.3	64.0	55.2	—
Boring machines	1,449.3	—	13.6	—
Milling machines, knee type	4,118.9	38.6	—	—
Milling machines, not knee type	7,990.2	26.5	84.2	—
Threading or tapping machines	3,715.4	—	—	—
Flat-surface grinding machines	7,020.1	65.1	152.3	98.8
Grinding machines, not flat-surface	20,423.9	55.5	35.3	10.0
Sharpening machines	2,357.4	31.7	9.6	—
Honing or lapping machines	187.0	—	—	—
Machine tools for deburring or polishing	7,890.7	—	166.7	—
Planing machines	601.5	—	—	—
Shaping or slotting machines	453.0	—	—	—
Broaching machines	1,640.7	—	—	—
Gear cutting, grinding or finishing machines	1,234.2	—	5.5	—
Sawing or cutting-off machines	4,967.7	—	21.5	—
Machine tools for removing sintered metal carbides, cermets	3,122.8	—	45.7	—
Forging or die-stamping machines	15,385.9	—	644.9	—
Bending, folding, straightening or flattening machines	64,096.5	31.7	564.9	8.9
Shearing machines	28,510.5	46.3	176.6	92.0
Punching or notching machines	35,003.8	32.9	399.6	13.0
Hydraulic presses	7,764.4	—	—	—
Machine tools for forging, hammering, die-casting, bending	21,308.9	—	38.8	—
Draw benches for bars, tubes, profiles, wire	13,437.6	—	9.3	—
Thread rolling machines	302.8	—	—	—
Wire-working machines	8,697.7	—	—	—
Machine tools for working without removing metal	7,537.1	—	352.6	—
Total	441,025.4		4,297.0	

Source: *Secretaría de Comercio y Fomento Industrial (SECOFI)*, Secretariat of Commerce and Industrial Development.

MACHINE TOOLS FOR WORKING NON-METALS, 1994

US \$ '000s

	World	Canada
Machines for working stone, ceramics, concrete, asbestos-cement or like materials		
Sawing machines	788.8	0.9
Grinding or polishing machines	2,185.4	0.0
Machine tools	13,670.2	16.8
Sub-total	16,644.4	17.7
Machines for working wood, cork, bone, hard rubber, hard plastics or similar material		
Machines performing different operations without tool changes	3,926.5	96.7
Sawing machines	8,234.5	2.1
Planing, milling or moulding machines	7,589.5	0.6
Grinding, sanding or polishing machines	2,548.2	8.0
Bending or assembling machines	4,548.0	104.6
Drilling or mortising machines	1,729.5	12.1
Splitting, slicing, or paring machines	839.9	33.6
Machine tools for nailing, stapling, glueing, etc.	8,904.1	125.4
Sub-total	38,320.2	383.1
Machinery for working rubber or plastics		
Injection-moulding machines	127,901.8	26,369.2
Extruders	34,747.5	36.2
Blow-moulding machines	68,704.5	586.4
Vacuum-moulding and thermoforming machines	19,811.1	844.7
Machinery for moulding or retreading pneumatic tires, inner tubes, etc.	2,821.7	279.8
Other machinery for moulding or forming	17,492.4	24.1
Machinery for working rubber, etc.	54,101.0	1,312.5
Machine parts	28,673.9	1,000.5
Sub-total	354,253.9	30,453.4
Total	409,218.5	30,854.2

Source: Secretaría de Comercio y Fomento Industrial (SECOFI), Secretariat of Commerce and Industrial Development.

CUSTOMERS

Advanced machine tools are used by many industries in Mexico, including the automotive, autoparts, appliance, tools and plastics industries. Large factories operated by multinational corporations are the most important because they are in a better position than smaller firms to invest in imported technology. On the other hand, many of their purchasing decisions are made outside of Mexico. For this reason, the larger Mexican-owned manufacturers, especially those which export, are often the best prospects for Canadian suppliers.

Small- and medium-sized enterprises represent a large untapped market that will develop more fully once the economy has stabilized. They are in great need of modernization and are the target of government programs to encourage the rationalization of Mexican industry. In the short term, however, lack of financing will prevent many of these firms from investing in numerically-controlled (NC) machine tools.

AUTOMOTIVE INDUSTRY

The automotive industry is Mexico's second largest source of foreign exchange, after the petroleum sector. The original equipment manufacturers (OEMs) make up an estimated 20 percent of the market for imported machine tools in Mexico.

According to executives of major automobile manufacturers who were interviewed for this profile, their demand for numerically-controlled (NC) machinery has not been severely affected by the devaluation. This is true even though domestic sales have dropped because of price increases brought about by the decline of the peso in December 1994.

Nissan has recently had to postpone some planned projects that include purchases of NC tools, but their short-term demand has not been reduced. Nissan imports about 85 percent of its requirements from its parent company in Japan. The balance comes from the United States.

MAJOR MEXICAN AUTOMOBILE PLANTS

Company	Location	Production
Nissan	Aguascalientes	automobiles, motors, transmissions, plastic parts
Nissan	Cuernavaca	automobiles and pick-up trucks
Nissan	Toluca	motors
Volkswagen	Puebla	automobiles, motors, transmissions
Ford	Cuautitlán	automobiles, motors, light trucks
Ford	Hermosillo	Escort automobiles
Ford	Chihuahua	motors
General Motors	Mexico City	light trucks
General Motors	Ramos Arizpe	automobiles and motors
General Motors	Silao	light trucks
General Motors	Toluca	motors
Chrysler	Mexico City	light trucks
Chrysler	Toluca	automobiles, motors, transmissions, parts
Chrysler	Ramos Arizpe	motors
Dina	Mexico City	plastic hoods and parts
Dina	Mexico City	urban passenger buses
Dina	Mexico City	freight trucks
Mercedes Benz	Santiago Tianguistenco	tractor trucks and buses
Mercedes Benz	Monterrey	SE-500 automobiles

Source: United States Department of Commerce.

Chrysler de México confirmed in an interview that it has no choice but to continue buying NC machinery at pre-devaluation rates despite the fact that this equipment is now more expensive in terms of the peso. The bulk of Chrysler's imports come from the U.S., followed by Japan, Germany and Canada. Chrysler executives were not willing to compare Canadian NC products with those from other countries.

General Motor's new "Chevy Swing" line has lead to an increased demand for NC tools, especially in the area of engine production. As a result, GM's purchases of NC equipment are expected to continue at pre-devaluation rates. Company representatives said that more than 70 percent of imports will probably come from the United States, and the other 30 percent from Europe. GM executives had little knowledge of Canadian-made NC products.

Products particularly in demand by GM include tools for flexible production, known in Mexico as "universal computerized numerically-controlled (CNC) equipment". The company has encountered problems with spare parts and service availability, and considers this an essential competitive factor. According to GM, when there is need for a spare part for a machine tool it is always urgent, because entire production runs often depend on these machines. Therefore, the company prefers to deal directly with foreign suppliers.

In addition to purchases of new equipment, General Motors has acquired a considerable amount of used NC equipment for its Mexican facilities from factories that it has closed down in the United States.

Honda has recently announced plans to establish car and light truck production capacity in Guadalajara, where it presently produces motorcycles. Since this is a new facility, it will probably require a considerable quantity of NC tools. However, it is most likely that these products will be purchased from traditional suppliers or the parent firm in Japan.

TOTAL SALES BY COMPANY, 1993

UNITS

Company	Cars	Trucks	Other	Total
Chrysler de México	59,614	35,152	—	94,766
Ford Motor Company	52,807	39,342	—	92,149
General Motors	51,267	53,530	—	104,797
Nissan Mexicana	83,358	36,841	—	120,199
Renault de México	—	—	—	—
Volkswagen México	151,697	12,017	—	163,714
Dina Camiones	—	9,481	—	9,481
Famsa/Mercedes Benz de México	—	7,585	—	7,585
Kenworth Mexicana	—	311	—	311
Trailers de Monterrey	—	3	—	3
Sub-total cars and trucks	398,743	194,262	—	593,005

continued on next page

Company	Cars	Trucks	Other	Total
Dina Camiones	—	—	1455	
Famsa/Mercedes Benz de México	—	—	1936	
Kenworth Mexicana	—	—	2374	
Trailers de Monterrey	—	—	76	
Victor Patrón	—	—	180	
Sub-total tractor trucks				6,021
Dina Autobuses			1,818	
Mexicana de Autobuses			1,114	
Trailers de Monterrey			15	
Mercedes-Benz de México			1,075	
Sub-total buses				4,022
Total				603,048

Source: United States Department of Commerce.

AUTOPARTS

The autoparts industry, composed of about 540 firms, accounts for about 15 percent of the numerically-controlled (NC) machine tools market. About two-thirds of autopart manufacturing plants are located in the Mexico City area. Other production centres include Monterrey, Querétaro, Puebla, Toluca and Guadalajara.

The largest autoparts firms produce for original equipment manufacturers (OEMs), for *maquiladora* plants and for export. Mexico directly exports about US \$500 million worth of autoparts annually. But most Mexican-owned parts plants lack the technology and facilities to meet the quality standards required by export markets. The autoparts industry developed and survived mainly because of the domestic content regulations imposed on the vehicle manufacturers by the Mexican government. The pressure to modernize is greater now that these regulations are being phased out. Autoparts manufacturers are more likely than OEM vehicle manufacturers to purchase equipment in Mexico.

Multinational autoparts firms are among the most modern producers, and therefore most likely to buy NC equipment. For example, *GrupoUnicorp*, formerly known as *Spicer de México*, is a major customer. Multinational corporations in the autoparts sector are also known to supply their Mexican plants with used NC equipment from their plants in other countries.

Some autoparts exporters in Mexico have joint ventures with automobile manufacturers. For example, General Motors operates its own parts plants but also has investments in Mexican autoparts companies including *Aralmex* and *Condumex*. Ford has several joint ventures with Mexican autoparts firms. Volkswagen and Nissan have close links with *Bocar* and *Nipomex*, companies in which Mexicans own a majority of the shares.

Mexico has around 200 companies that manufacture plastic autoparts. Among the largest are *DESC*, *Grupo Industrial Saltillo*, *Bayer de México*, *Compañía Industrial Quezada*, *Eagle Auto Partes*, *HCPP Mexicana*, *Industrias Resistol*, *Plásticos Alfa* and *Grupo IMSA*.

Currently, most of the OEM manufacturers are large importers of plastic parts, but some have plans for expanding domestic production, either directly, or through joint ventures with Mexican companies.

HAND TOOLS

There is little data available covering the hand tools industry, because there is no separate association for this industry in Mexico. There are many Mexican companies which serve as representatives and distributors of tools, but very few companies that manufacture in Mexico. The larger Mexican producers include the following:

- Black and Decker
- *Máquinas y Herramientas Proal*
- *Alpha Taquetes*
- *Urrea Herramientas Profesionales*
- *Herramientas Snap-On de México*
- *Industria de Herramientas Accesorios y Refacciones*

Black and Decker is the leading company in the hand tools industry. The company exports extensively, and has therefore benefitted from the devaluation. As a result, it continues to import numerically-controlled (NC) tools at pre-devaluation levels and may increase imports in the future. A Black and Decker representative stated that exports in 1996 are expected to increase by between 40 and 70 percent over 1994 levels.

RAILWAYS

The *Ferrocarriles Nacionales de México (FNM)*, Mexican national railway, uses machine tools extensively in its maintenance operations. Seven of the company's maintenance centres are in the process of privatization. As a result, *FNM* is currently under a strict policy of buying essential products only. Close to three-quarters of the railway's 1995 budget was allocated for the purchase of diesel fuel. Furthermore, only one-third of the goods purchased during the year were to be imports.

Mexico's railroad system has seen very little modernization since it was constructed in the late nineteenth century. As a result, the privatization of the system will involve large investments in new equipment and facilities. Canadian firms could conceivably supply machine tools to firms buying concessions from *FNM*, most of which are expected to be foreign.

Most of Mexico's rail cars, including subway cars, have traditionally been built by *Constructora Nacional de Carros de Ferrocarril (Concarril)*, government-owned railcar builder, which until recently was a state-owned company. In 1992, *Concarril* was purchased by Montreal-based *Bombardier*, one of the largest transportation companies in the world.

FNM PRIVATIZED WORKSHOPS

Workshop	Private Operator
San Luis Potosí	Morrison Knudsen Corp.
Acámbaro	Morrison Knudsen Corp.
Valle de México	GEC Alstrom Transporte, S.A.
Monterrey	GEC Alstrom Transporte, S.A.
Torreón	VMV Enterprise y La Sierrita, S.A.
Chihuahua	VMV Enterprise y La Sierrita, S.A.
Jalapa	GEC Alstrom Transporte, S.A.

Source: United States Department of Commerce.

Bombardier completely overhauled the antiquated *Concarril* plant, and reportedly has restored production to the levels of five years ago, with less than 20 percent of the labour force. The new company lost its first two bids to supply subway cars in Mexico City to *Construcciones y Auxiliar de Ferrocarriles (CAF)* of Spain. It has subsequently landed contracts to supply 23 light rail transit cars in Monterrey as well as 32 in Guadalajara, and to refurbish 234 subway cars in Mexico City. *Bombardier-Concarril* is also part of the consortium that will build Mexico City's new elevated rail system.

The company also expects to participate in *FNM* projects to rebuild inter-city railway cars which have become dilapidated. It currently imports laminated steel, stainless steel, brake systems, wheels and other parts from the United States.

METALWORKING INDUSTRY

The metalworking industry consists of some 140,000 manufacturing plants and metalworking shops. These companies are very diverse in terms of size and level of technology. Although some companies use advanced numerically-controlled (NC) production equipment, most continue to rely upon antiquated conventional machine tools. Equipment in small machine shops is generally 15 to 20 years old. This results in quality variations and makes it difficult to comply with strict international standards. Increasingly, customers are demanding better quality and service, which will create a growing market for NC tools over the medium term.

MAJOR JOB SHOPS IN THE METALWORKING INDUSTRY

Aceros Alme	cutting, folding, rolling, punching
Cortes y Soldadura	cutting, folding
Industrias Marpi	cutting, bending of sheet metal
Servicios y Ventas de Acero (Syvasa)	cutting, bending of sheet metal and plates, punching
Maquilas Ultra	bending of pipes and sheet metal, cutting
Aceros México	wire and sheet metal products, among others
Maza y Arena	metal sheets, rolls, tubes, and crossbeams
Laminados Gilser de México	sheared cuts, lamina and plate bending, rolls
Tecnología en Doblado de Tubo	pipe bending for the construction industry
Talleres Unidos Mexicanos	bending, punching, flattening
Rabel	cuts and bends lamina, pipe, and cross sections
Perfiles Comerciales y Especiales	cuts and bends laminas, etc.
Fabricaciones y Equipos Industriales	makes pipe and other products
Promotora Industrial y Comercial	sheared cuts, plate bending, etc.
Multiformas Metálicas	sheet and plate cutting and bending
Industrias Aaa' Hsa	cuts and bends black lamina
Metal Construcciones	cuts, bends, rolls
Industrias Metálicas Magón	cuts, bends, and punches with computerized numerically-controlled machinery (CNC)
Tubetec	manufactures stainless steel pipe
Micro Aceros	custom cuts, rolls, etc.
Fischer Mexicana	manufactures stainless steel pipe

Source: United States Department of Commerce.

STEEL INDUSTRY

The Mexican steel industry has undergone drastic changes in recent years. In 1982, the Mexican government began to relax its control over steel production by privatizing more than 50 steel production facilities, converting others to different uses and closing down the least efficient.

As in other industries, the devaluation of the peso has sharply cut domestic demand while stimulating exports. According to an executive of *Hylsa*, a major steel producer, domestic demand for steel has fallen by as much as a quarter in 1995. *Hylsa* exported 6 percent of its production in 1994, but expects to export 25 percent in 1995.

MEXICAN STEEL PRODUCERS, 1992

Company	Domestic Market Shares (percentage)
Altos Hornos de México (AHMSA)	34
HYLSA	24
Siderúrgica Lázaro Cardenas "Las Truchas" (SICARTSA)	18
Tubos de Acero de México, (TAMSA)	7
Other micro and mini steel firms Siderúrgica de Guadalajara Acero San Luis Transformadora de Acero Compañía Mexicana de Perfiles y Tubos Mexinox	17

PACKAGING AND BOTTLING INDUSTRY

The packaging and bottling industry has around 350 companies. The largest companies include:

- *Grupo Femsa*
- *Envases Cuautitlán*
- *VISA*
- *Envases y Productos Plásticos*
- *Plásticos Furbi*
- *Cartón Plast*
- *Vitro Envases*
- *Pyn*
- *Plásticos Lynsa*
- *Gil*

Representatives of *Grupo Femsá*, which bottles Coca-Cola, said in interviews that very little NC equipment is used in the bottling process. Custom tools are used for bottling, but they tend to be relatively simple, and the same machines have been used for years. *Femsá* has two NC blowers for making plastic bottles and will be buying one NC can filler. When buying custom tools, *Femsá* tends to deal directly with the producers of the equipment, most of which are from the United States, Germany, France and Brazil.

ADHESIVES, SEALERS AND PLASTICS FOR THE PAINTING INDUSTRY

There are around 100 companies that manufacture adhesives, plastic sealers and plastics for the painting industry. Among the most important are *Grupo Industrial Nilai*, *Grupo Omni*, *Hycoplastic de México*, *Industrias Daroca*, *Manufacturas de Plástico*, *Plásticos Dor*, *Plásticos Especializados*, *Plásticos Líquidos Sylpyl*, *Plásticos Rigar*, *Productos Ideal de México*, *Telas Plast Extruidas*, *Termo Plásticos*, *Compañía Comercial de Telas y Tapices*, *Acrílicos Industriales*, *Fester*, and *Selloplastic*.

THE HOME APPLIANCE AND HOUSEHOLD PRODUCTS INDUSTRIES

The manufacture of home appliance and household products requires the shaping of both metals and plastics. There are approximately 60 companies that manufacture electrical consumer goods. Among the most important are General Electric, Koblenz, Black and Decker, Philips, Braun, Motorola, Panasonic, BENDIX, *Crolls Mexicana*, Whirlpool, Hoover, Kenmore, IEM, and *Sunbeam Mexicana*.

In 1993, the Mexican market for home appliances amounted to almost US \$3 billion and growth for 1994 was projected at 8 percent. The majority of home appliance manufacturers are located in Mexico City, although several also have installations in the State of Mexico, in Puebla, Puebla, and in Celaya, Guanajuato.

The home appliance industry is heavily foreign-owned, with about 70 percent of all investment coming from foreign sources. Many manufacturers are currently allocating resources to comply with a new set of *Normas Oficiales Mexicanas (NOMs)*, official standards, for electrical appliances. Mexico exports to about 30 countries at the present time, with about 80 percent of these exports going to the United States.

According to a report in *Expansión* magazine, August 1993, the largest Mexican manufacturers of home appliances are:

- *Crolls Mexicana*
- *Estufas y Refrigeradores Nacionales*
- *Internacional de Lavadoras*
- *Supermatic*

According to a representative of Philips, 80 percent of its production has traditionally been exported, and the recent crisis will not interfere with its planned purchases of industrial automation technology. On the other hand, all decisions regarding the purchase of such equipment come from the parent firm in Holland. Other Mexican home appliance manufacturers are also major exporters, and their numerically-controlled (NC) tool purchases are likely to be maintained as well.

OTHER END-USER INDUSTRIES

Several other industries are also consumers of machine tools and related equipment. They include the plastic furniture industry, with about 90 firms; toys and recreational products, with 400 companies; and the electric-electronics industry, with some 120 manufacturers.

UNIVERSITIES

University research centres have played a major role in developing advanced technology applications in Mexican manufacturing. They developed the first industrial automation systems and assisted manufacturing firms in installing practical applications. They are both users and developers of advanced technologies. Universities are usually the best systems integrators because they have access to a range of equipment and software, and also to trained personnel. As well, the fact that they are supported by the government means that they can be cost competitive. For these reasons, Mexican companies use the universities and research centres as research and development (R&D) laboratories. The following are some of the most important centres.

NATIONAL AUTONOMOUS UNIVERSITY OF MEXICO

The *Universidad Nacional Autónoma de México (UNAM)*, National Autonomous University of Mexico, is home to the *Centro de Innovación Tecnológica (CIT)*, Centre for Technological Innovation. This is a technological development institution that channels industrial projects to the appropriate departments or faculty within the *UNAM*. The *CIT* plays a coordinating role and does not carry out its own research projects.

The *CIT* coordinates all types of technological projects and is intended to provide industrial clients with "one window" access to the university's facilities, including four computer assisted design (CAD), computer assisted manufacturing (CAM) and computer assisted engineering (CAE) centres. If the particular research needs are beyond the university's capabilities, external consultants are contracted to provide the missing elements.

One of the *UNAM*'s key facilities is the *Centro de Diseño y Manufactura (CDM)*, Design and Manufacturing Centre of the School of Engineering. This is Mexico's largest training and research facility in the area of numerically-controlled (NC) tools. It concentrates primarily on equipment used in manufacturing in medium- and small-sized industries. The purpose of the centre is to train students in order to increase the level of automation in national industry, thus helping it to modernize. Because of the capital squeeze caused by the economic crisis, the *CDM* has stopped purchasing equipment for research and has instituted a five-year program by which equipment will be purchased strictly for academic purposes.

MONTERREY'S TECHNOLOGICAL INSTITUTE

The *Instituto Tecnológico y de Estudios Superiores de Monterrey (ITESM)*, Monterrey's Technological Institute, provides technology consulting services to Mexican companies through its *Centro de Fabricación de Sistemas Integrados*, Centre of Integrated Manufacturing Systems. This centre is entirely devoted to solving production automation problems. The centre's main areas of specialization include design of manufactured products, flexible automation, industrial materials, production engineering and manufacturing systems administration.

NATIONAL POLYTECHNIC INSTITUTE

The *Instituto Politécnico Nacional (IPN)*, National Polytechnic Institute, offers industrial consulting services, but is relatively specialized. Its expertise includes laser technology. In addition, its *Centro de Investigación y Estudios Avanzados*, Centre for Research and Advanced Studies, is developing robot prototypes.

THE ROLE OF THE RESEARCH INSTITUTES

The research institutes play a key role in the numerically-controlled (NC) tool market. They train individuals who will eventually become leaders in Mexican industry. Producers who sell to research institutes gain recognition and promote a familiarity with their particular technologies. Thus, they have been willing to provide the *Centro de Diseño y Manufactura (CDM)*, Design and Manufacturing Centre of the School of Engineering with equipment at lower-than-market costs.

The *Universidad Nacional Autónoma de México (UNAM)*, National Autonomous University of Mexico's major suppliers are German, Austrian and American firms. Although a *CRM* representative stated that he had heard positive comments about Canadian equipment, he said that he had no direct experience with it and no knowledge of particular Canadian suppliers.

The *Instituto Tecnológico y de Estudios Superiores de Monterrey (ITESM)*, Monterrey's Technological Institute, has a more market-oriented approach than the *UNAM*. It focusses on providing software, consulting services and technical support. As a result, its demand for equipment is not expected to grow over the medium term.

The *Instituto Politécnico Nacional (IPN)*, National Polytechnic Institute, has similar projects to those of the *UNAM*. But since it is a government-funded institution, it is suffering from budget cuts as a result of the devaluation. The *IPN*'s facilities are smaller than those of the *UNAM*.

Other Mexican universities have similar programs that are generally smaller in scale, and focus on vocational training or applying new technology to local industry — or both.

COMPETITION

IMPORT SHARES OF NC METALWORKING MACHINE TOOLS, 1994

American, European and Asian manufacturers dominate the market. More and more, they are selling directly to Mexican buyers, and thus bypass the traditional distributors.

Competition for sales of machine tools and related products comes almost entirely from foreign suppliers. The principal competitors are the United States, France, Germany, Italy, Spain and Japan. Interviews with industry experts revealed that Canadian products are almost unknown.

Traditionally, imported machine tools have been sold by Mexican distributors, and several companies have specialized in this field. But in recent years, foreign machine tool producers have begun setting up representative offices in Mexico to bypass local distributors. In other cases, customers are placing orders with foreign suppliers directly, using fax and other recently-available electronic communications. Both developments have caused a crisis among Mexican distributors, and some of them have gone out of business. This trend has been advanced by the economic crisis, because end users are now more dependent on fast service to keep their equipment in operation.

Source: United States Department of Commerce.

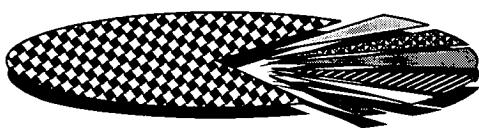
The Mexican distributor *Forel* distributes products for Excelco of Germany, Lucas Advanced Technology and Testing Systems, OGP Optical Gauging Products, National Acme, Bryant Grinder Corporation and Allen-Bradley. Other major machine tools distributors include *León Weill*, *Herramientas Exclusivas y Maquinaria*, *Metal MAQ*, and *Herramientas Stanley*.

IMPORT SHARES OF CONVENTIONAL METALWORKING MACHINE TOOLS, 1994

Market shares differ markedly for numerically-controlled (NC) and non-NC metalworking equipment. In 1993, Japan had 42 percent of the NC equipment market, but only 2 percent of the conventional machine tools market. Canada's share was very small in both categories, but concentrated in non-NC equipment.

For plastics production equipment, the American share in 1993 was 43 percent. Germany, Italy and Taiwan were the other major suppliers. Japan did not have significant sales of this equipment.

Foreign suppliers to the market include EMCO, Matsushita and Hewlett. Products used in the production of autoparts are built by Hitachi, Komatsu and Berson. Brands used in the production of electrical products include AXIS (Italy), Altus (Brazil), Siemens, Allen-Bradley and Cincinnati Milacron.



USA 67%	JAPAN 2%
ITALY 8%	CANADA 3%
GERMANY 8%	SPAIN 7%
OTHERS 5%	

Source: United States Department of Commerce.

Buyers who are familiar with Canadian products generally prefer them over similar Asian products. According to media reports, Newcor supplied a US \$14 million system to one of Ford's plants in Mexico last year.

MEXICAN DISTRIBUTORS OF PLASTICS MACHINERY AND MOULDS

Mexican Firm	Products and Country
Fauzer	Injection machinery and moulds for the toy industry, manufactured in Germany.
Oriente Máquinas y Equipos	Blowing machinery and moulds for the construction and electric industry, manufactured in Taiwan and Italy.
Plastic Tech International	Extrusion machinery manufactured in Japan.
Industrias Plásticas Máximo	Extrusion machinery manufactured in Taiwan, Hong Kong and Canada.
Val	Extrusion and blowing machinery manufactured in Italy.
Marepla	Injection machinery manufactured in Taiwan.
Botellas de Plástico Monterrey	Injection and blowing machinery manufactured in Italy and Taiwan.
Jumbo Steel Machinery Co.	Extrusion machinery manufactured in Taiwan.
Tecnipack	Extrusion and blowing machinery manufactured in Taiwan.
Máquinas Inyectoras de Plástico	Injection machinery manufactured in Taiwan.

Source: United States Department of Commerce.

Quality is the principal advantage enjoyed by American machine tools manufacturers. Industry observers say that Asian competitors offer better prices, technical support and financial assistance. Recently, they have been selling to their Mexican distributors on open account, without letters of credit (L/Cs).

Asian suppliers have overcome the difficulties of distance and now typically offer 48-hour service on replacement parts. They help their dealers participate in trade shows in Mexico and other countries, and offer extensive training for their customers' employees.

DOMESTIC COMPETITORS

Mexican companies produce a small number of conventional non-numerically-controlled (non-NC) machine tools. Production of NC machine tools is limited to few companies that use imported technology to retrofit conventional equipment. A small number of Mexican firms manufacture custom machine tools for specialized industries. For example, one company uses Italian technology to produce custom machinery for the ceramics industry.

According to estimates by the United States Department of Commerce, domestic production of metalworking tools, including both NC and conventional, was only about US \$9 million in 1993, about 5 percent of the market. Production of plastics production equipment was estimated at US \$31 million, or about 10 percent of that market.

MEXICAN METALWORKING MACHINE TOOL MANUFACTURERS

Huramsa, S.A. de C.V.	Manufacturers of machine tools for straightening wire, machine tools for cutting wire, motor-driven machines for bending tubes, sheet benders, guillotines, presses.
Grupa Disma-Mex, S.A. de C.V.	Manufacturers of falders. They also sell European machine tools.
Baleros y Herramientas de Precisión, S.A. de C.V.	Manufacturers of falders, guillotines, and presses (Chicago Dreiss & Krump).
Industrias Jego	Manufacturers of falders, electrical and mechanical guillotines, machine tools for rolling, etc.
Dizher Industrial, S.A. de C.V.	Manufacturers of falders, electrical and mechanical guillotines.

Source: United States Department of Commerce.

TRENDS AND OPPORTUNITIES

Equipment that can raise quality to international standards is in great demand as manufacturers strive to cash in on Mexico's booming export markets.

The market for machine tools, moulds and dies, and related equipment has been profoundly affected by the devaluation of the peso which occurred in late December 1994. The economic crisis has had mixed effects. On one hand, it has increased the need for modernization, because manufacturers must upgrade to participate in booming export markets. On the other hand, it has nearly doubled the price of imported equipment and pushed interest rates to 80 percent or more annually.

According to representatives of the *Cámara Nacional de la Industria de Transformación (CANACINTRA)*, National Chamber of Manufacturing Industry, the devaluation could lead to new investments in numerically-controlled (NC) tools by small- and medium-sized Mexican industries. This is because the reduction of the domestic market makes it essential that firms increase exports in order to survive. But foreign markets are much more demanding in terms of quality standards, and production methods must be updated to meet these requirements. This is particularly true in the autoparts sector, which faces intense international competition.

The market is limited, however, by the difficulty in obtaining capital. In this market, sales to small- and medium-sized Mexican industries depend more than ever on competitive financing packages.

Prior to the devaluation of the peso, one consultant estimated that the Mexican market for metalworking machine tools would grow by 25 percent in 1995. The more optimistic observers are now predicting a return to high growth rates beginning in 1996. The shock of the devaluation has been mostly absorbed and, in the fourth quarter of 1995, the inflation rate had fallen to about 2 percent per month. Nonetheless, it will take time for this shock to work its way through the Mexican economy.

Services offer the best prospects for increased import penetration in the short term. The Mexican industrial automation industry does not have enough well-trained professionals who can use the latest technologies to develop creative solutions. In addition, for the short term, many customers are focussing on getting the most out of their existing equipment. Partnerships with Mexican companies are an excellent vehicle for quickly entering this market.

These optimistic forecasts are based on expectations that the slump in 1995 will postpone projects rather than eliminate them. Most experts believe that the market will have to recover soon because the solutions are needed for survival. Manufacturing industry experts agree that the companies that will stay in the market will be those that adopt new technologies.

On the other hand, none of the manufacturing companies interviewed for this profile were confident enough to say that they will immediately increase their demand for machine tools. The most optimistic firms were those in the automobile, autoparts, tools and home appliances industries. The plastics industry is another promising sector.

Multinational firms are in the best position to continue modernization during the crisis, because they have access to foreign financial markets. But they also tend to have established lines of supply through their parent corporations, and are not necessarily good prospects for Canadian suppliers.

PRODUCT OPPORTUNITIES

According to market participants interviewed for this profile, the following products are particularly in demand in the Mexican market:

- milling machines with teeth for puncturing and cutting materials
- stamping and moulding machines
- dies
- lathes
- numerically-controlled (NC) tools for the production of autoparts, particularly motor components
- NC injectors for metalworking and plastics
- computer assisted design (CAD) and computer assisted manufacturing (CAM) equipment for the manufacturing sector
- multistation transfer machines for the manufacturing industry
- used NC equipment

In the metalworking field, milling, stamping and moulding machines as well as lathes can be either NC or non-NC. But because of the current low level of technology in the manufacturing industry and the need to modernize, NC equipment is in greater demand. In addition, the market is gradually shifting from unit construction machinery to multistation transfer machines.

Plastics production equipment that is particularly in demand includes machinery and moulds for the manufacture of plastic packaging and bottles, and for automobile parts. A variety of specialized moulds are also in demand. They include moulds for orthopedic products, toys and musical instruments.

USED EQUIPMENT

Used refurbished equipment is usually sold through direct contact between buyers and sellers. The periodical *Industria* carries many advertisements for used equipment from firms seeking particular products. It is common for multinational corporations to transfer used equipment from their facilities in other countries. The capital shortage is the principal force driving this market. Rebuilt equipment is likely to be more acceptable if the seller can offer after-sales service.

There is also an interesting market niche for parts to convert existing conventional machine tools and machining centres into numerically-controlled (NC) equipment. Some Mexican machine tool suppliers are starting to import electronics and control equipment to make these conversions.

Canadian machine tool products are virtually unknown in the Mexican market. But when asked, Mexican buyers say that they regard Canadian technology in general to be of high quality. This positive image could be used to promote sales of used Canadian equipment, even if the particular brands involved are unknown.

CONSULTING SERVICES

Consulting services for computer assisted design (CAD) and computer assisted manufacturing (CAM) systems are in particularly high demand, especially in the areas of new programs, technical assistance and training. Many Mexican firms are presently trying to meet the ISO 9000 quality standards. Many see the use of numerically-controlled (NC) tools as part of the solution, and this is creating specific demands for assistance from foreign experts.

Canadian companies have a market advantage in professional services. Services differ from physical products in that there is a human element involved that goes beyond price and technical specifications. Mexican customers regard Canadian consulting companies as both knowledgeable and sensitive to their needs. To some buyers, the ability to acquire leading-edge services from a company that is "not American" is an advantage.

THE REGULATORY ENVIRONMENT

Some 300 Mexican official standards apply to industrial products. But equipment that meets Canadian standards generally faces no obstacles to sale in Mexico.

Compared with other sectors of the Mexican economy, the market for machine tools is not heavily regulated and there are few barriers to foreign participation. In recent years, the government has made an effort to encourage the importation of capital goods that enable Mexican industry to attain a higher level of international competitiveness.

The government is attempting to maintain a register of all industrial machinery and equipment in use in Mexico. For this reason, end users must register all machinery with the *Delegación Federal del Trabajo*, Federal Labour Delegation, which maintains an office in each state. No registration is required for manufacturers, distributors or vendors of machinery.

The *Secretaría de Comercio y Fomento Industrial (SECOFI)*, Secretariat of Commerce and Industrial Development, sets trade policy and administers import regulations. These regulations include labelling requirements and product standards known as the *Normas Oficiales Mexicanas (NOMs)*.

There are some 300 *NOMs* affecting industrial products. Importers of products subject to these standards must have them tested in Mexico and obtain a certificate of compliance prior to importation. The regulations are in a state of constant revision and exporters should verify the requirements with the importer before the goods leave Canada. The requirement for testing to be done in Mexico is being phased out under the North American Free Trade Agreement (NAFTA). In general, equipment that meets Canadian standards will not face obstacles in Mexico.

Many *NOMs* include labelling requirements. There is also a generic labelling decree that applies to all goods not covered by *NOMs*, but capital goods are exempted from this regulation and they therefore do not apply to most machine tools and related equipment.

INTELLECTUAL PROPERTY

Mexico has radically changed its laws on intellectual property to become more competitive with advanced industrial nations. A new law to protect industrial property and amendments to the existing Copyright Law has given foreign companies protection equal to that in the industrialized nations.

The Law for the Development and Protection of Industrial Property covers patents, industrial and trade secrets, industrial designs, trademarks and commercial names. The amendments to the Copyright Law protect production rights of sound and video recordings and copyrights of computer software.

MARKET ENTRY STRATEGIES

The trend is towards direct contact between the manufacturer and the end user. A partnership with an existing Mexican manufacturer is one way for Canadian producers to achieve this local presence.

Canadian companies that have succeeded in Mexico almost always point to the need for a long-term local presence. Mexicans like to do business with people they know, and demonstrated staying power is a key element of market entry. This is especially true for products that are not well-known in Mexico.

Traditionally, an arrangement with a distributor or agent has been the most common method of establishing local presence. Usually, these companies are both importers and distributors, and represent several firms. Distributors usually work through catalogue orders, and they normally do not maintain large stocks of tools or spare parts. As a result they have often been unable to provide the service that customers need. Another problem is that used machinery is very seldom handled by distributors.

As a result of these service difficulties, there has been a trend towards direct purchasing from foreign manufacturers. Some machine tool producers have opened offices in Mexico. Even without local offices, some manufacturers have been able to achieve better service than was formerly provided by distributors.

A practical way to establish local presence is to form a strategic alliance or partnership with a Mexican company. For many small- and medium-sized Canadian companies, this is the only effective way to enter the Mexican market. Canadian firms can provide expertise and technology transfer that mesh well with the market knowledge and relatively low operating costs of local partners. Larger Canadian corporations may prefer to buy an established Mexican company as a way of gaining access to this market, while at the same time maintaining control.

FINANCING

Until recently, virtually all sales of imported custom machine tools were done on a cash basis. Increased competition has since forced importers to offer more flexible financing terms. Manufacturers from Germany and Japan have been able to increase their market share at the expense of American manufacturers by offering more attractive financing packages. Almost all sales of machine tools now include some sort of financing through the manufacturer in order to avoid the high cost of raising capital in Mexico.

This is especially true when selling to small- and medium-sized Mexican-owned firms and government-supported research institutes. These purchasers have virtually no access to credit in Mexico and, unlike their multinational competitors, they lack direct access to foreign lenders.

Sellers can help buyers to gain access to foreign lines of credit. In one recent example, the Mexican equipment distributor *Forel*, was able to arrange a loan from the First National Bank of England to finance the purchase of Bryant equipment by the Mexican autoparts firm *Grupo Unicorp* (formerly *Spicer*).

SERVICE

The availability of after-sales service is a major element in purchasing decisions for machine tools and related equipment. Buyers are looking for technical advice, training and an ongoing supply of spare parts as part of the product package. A few buyers complained that it has taken up to six months to obtain some replacement parts, especially from European suppliers. The lack of adequate service has been blamed for the recent failure of a number of agents and distributors of machine tools.

RESEARCH INSTITUTES

Research institutes play a major role in introducing new technologies to Mexican manufacturers. If engineers trained in these centres are familiar with a particular kind of equipment, they take that knowledge with them when they graduate. Canadian numerically-controlled (NC) machine tool producers might work through Canadian universities with cooperative programs at Mexican universities in order to learn about opportunities and introduce equipment. In general, the *Universidad Nacional Autónoma de México (UNAM)*, National Autonomous University of Mexico, and the *Instituto Politécnico Nacional (IPN)*, National Polytechnic Institute, tends to focus on small- and medium-sized industries, while the *Instituto Tecnológico y de Estudios Superiores de Monterrey (ITESM)*, Monterrey's Technological Institute, concentrates on software for manufacturing.

PROMOTIONAL METHODS

It has been estimated that there are some 150 industry-specific magazines circulated among industrialists in Mexico. These periodicals provide an excellent vehicle for specialized advertising for industrial products. Technical seminars are another common method of introducing new technologies in Mexico. Mexican engineers are eager to learn of new developments. Almost all professionals and engineers in Mexican manufacturing read and understand technical specifications in English, but it is most effective to provide this information in Spanish.

TRADE SHOWS

As in other sectors, trade shows are a popular way to introduce equipment and to meet potential clients and prospective partners. Typically, machine tools and related equipment are shown at trade shows focussing on particular user industries. The following shows usually include participation from machine tool manufacturers:

- *Electric México.* The first annual Mexican Conference and Exhibition on the Electronics Industry was held in September 1995 at the World Trade Centre in Mexico City.
- *Exposición Nacional Ferretera.* The Seventh Annual National Hardware Exhibition was held in Guadalajara in September 1995.
- *Expo Cihac.* The annual Construction and Housing Industry Exhibition was held at the World Trade Centre in Mexico City in October 1995.
- *Plastics USA.* This annual plastics trade show, held in Chicago, is sponsored by the Society of the Plastic Industry and is attended by many Mexican plastics manufacturers. The 1995 show was held in September.
- *Maquinamex y Metalmex.* A machine tools international exposition was held in 1994, at the World Trade Centre in Mexico City. It was organized by the *Asociación Mexicana de Distribuidores de Maquinaria*, Machine Tools Section.

Trade shows are also periodically organized by the Canadian Embassy in Mexico. For example, as part of the Canada High Technology Showcase, an industrial automation exposition was held at the Canadian Business Centre in November 1995. A similar show was sponsored in association with Canada Expo by the Canadian Embassy satellite office in Monterrey in February 1994.

The best source found for information on upcoming trade shows is the periodical, *Industria*. Contact information for these magazines and for the trade shows listed above is provided at the end of this profile.

WHERE TO GET HELP

CANADIAN GOVERNMENT DEPARTMENTS AND SERVICES IN CANADA

DEPARTMENT OF FOREIGN AFFAIRS AND INTERNATIONAL TRADE

DFAIT is the Canadian federal government department most directly responsible for trade development. The InfoCentre should be the first contact point for advice on how to start exporting. It provides information on export-related programs and services, acts as an entry point to DFAIT's trade information network, and can provide copies of specialized export publications and market information to interested companies.

InfoCentre

Tel.: 1-800-267-8376 or (613) 944-4000

Fax: (613) 996-9709

FaxLink: (613) 944-4500

InfoCentre Bulletin Board (IBB):

1-800-628-1581 or (613) 944-1581

The Latin America and Caribbean Branch promotes trade with Mexico. There are several trade commissioners at the Embassy of Canada in Mexico City, as well as in the satellite offices in Monterrey and Guadalajara. Trade commissioners can provide a range of services including introducing Canadian companies to potential customers in Mexico, advising on marketing channels, assisting those wishing to participate in trade fairs, helping to identify suitable Mexican firms to act as agents, and compiling strategic business intelligence on potential foreign customers.

Latin America and Caribbean Branch

Department of Foreign Affairs and International Trade
Lester B. Pearson Building

125 Sussex Drive

Ottawa, ON K1A 0G2

Tel: (613) 996-5547

Fax: (613) 943-8806

INTERNATIONAL TRADE CENTRES

International Trade Centres have been established across the country as a convenient point of contact to support the exporting efforts of Canadian firms. The centres operate under the guidance of DFAIT and all have resident trade commissioners. They help companies determine whether or not they are ready to export, assist firms with market research and planning, provide access to government programs designed to promote exports, and arrange for assistance from the trade commissioners in Ottawa and trade officers abroad. Contact the International Trade Centre nearest you:

Newfoundland

International Trade Centre
P.O. Box 8950
Atlantic Place
215 Water Street
Suite 504
St. John's, NF A1B 3R9
Tel.: (709) 772-5511
Fax: (709) 772-2373

Prince Edward Island

International Trade Centre
P.O. Box 1115
Confederation Court Mall
134 Kent Street
Suite 400
Charlottetown, PE C1A 7M8
Tel.: (902) 566-7400
Fax: (902) 566-7450

Nova Scotia

International Trade Centre
P.O. Box 940, Station M
1801 Hollis Street
Halifax, NS B3J 2V9
Tel.: (902) 426-7540
Fax: (902) 426-2624

New Brunswick

International Trade Centre
1045 Main Street
Unit 103
Moncton, NB E1C 1H1
Tel.: (506) 851-6452
Fax: (506) 851-6429

Quebec
International Trade Centre
5 Place Ville-Marie
Seventh Floor
Montreal, PQ H3B 2G2
Tel.: (514) 496-4636
Fax: (514) 283-8794

Ontario
International Trade Centre
Dominion Public Building
1 Front St. West
Fourth Floor
Toronto, ON M5J 1A4
Tel.: (416) 973-5053
Fax: (416) 973-8161

Manitoba
International Trade Centre
P.O. Box 981
330 Portage Avenue
Eighth Floor
Winnipeg, MB R3C 2V2
Tel.: (204) 983-4540
Fax: (204) 983-2187

Saskatchewan
International Trade Centre
The S.J. Cohen Building
119-4th Avenue South
Suite 401
Saskatoon, SK S7K 5X2
Tel.: (306) 975-5315
Fax: (306) 975-5334

Alberta
**Edmonton office is also responsible for Northwest Territories*
International Trade Centre
Canada Place
9700 Jasper Avenue
Room 540
Edmonton, AB T5J 4C3
Tel.: (403) 495-2944
Fax: (403) 495-4507

International Trade Centre
510-5th Street S.W.
Suite 1100
Calgary, AB T2P 3S2
Tel.: (403) 292-6660
Fax: (403) 292-4578

British Columbia
**Vancouver office is also responsible for the Yukon*
International Trade Centre
300 West Georgia Street
Suite 2000
Vancouver, BC V6B 6E1
Tel.: (604) 666-0434
Fax: (604) 666-8330

WORLD INFORMATION NETWORK FOR EXPORTS (WIN EXPORTS)

WIN Exports is a computer-based information system designed by DFAIT to help Canada's trade development officers abroad match foreign needs to Canadian capabilities. It provides users with information on the capabilities, experience and interests of more than 23,000 Canadian exporters. To register on WIN Exports, call (613) 996-5701, or fax 1-800-667-3802 or (613) 944-1078.

PROGRAM FOR EXPORT MARKET DEVELOPMENT (PEMD)

PEMD is DFAIT's primary export promotion program. It supports a variety of activities to help Canadian companies expand into export markets.

PEMD shares up to 50 percent of eligible expenses. Program financial assistance is a repayable contribution, not a grant, and must be approved in advance. Funded activities include:

- Market Development Strategies, which consist of a package of support for visits, trade fairs, and market support initiatives, under one umbrella of the company's marketing plan.
- New to Exporting Companies, which provides a vehicle for these companies to seek out individual export opportunities, either through a market identification visit or participation in an international trade fair.
- Capital Projects Bidding for specific projects outside Canada involving international competition/formal bidding procedures.
- Trade Association Activities undertaken by non-sales national trade or industry associations on behalf of their member companies.

Support is provided for certain types of government-planned activities, such as outgoing trade missions of Canadian business representatives and incoming missions to Canada of foreign business persons and officials who can influence export sales. For general information, call the InfoCentre at 1-800-267-8376. For applications for assistance, call the International Trade Centre nearest you.

INTERNATIONAL FINANCING

DFAIT helps Canadian exporters interested in pursuing multilateral business opportunities financed by international financing institutions (IFIs). Canadian exporters and trade associations can access market data, obtain a better understanding of the competition, and determine if an IFI-funded market opportunity is practical and worth pursuing. DFAIT can provide information and advice on the availability of Canadian government-funded assistance programs and can assist companies in developing effective export marketing. For further information, contact:

International Financing Division

Department of Foreign Affairs and International Trade
Lester B. Pearson Building
125 Sussex Drive
Ottawa, ON K1A 0G2
Tel.: (613) 995-7251
Fax: (613) 943-1100

TECHNOLOGY INFLOW PROGRAM (TIP)

Managed by DFAIT and delivered domestically by the National Research Council, TIP is designed to help Canadian companies locate, acquire and adopt foreign technologies by promoting international collaboration. The Department of Industry (DI) also helps in program promotion. TIP officers respond to requests to identify technology sources and opportunities for cooperation between Canadian and foreign firms. The Program also helps Canadian firms make exploratory visits abroad to identify and gain first-hand knowledge of relevant foreign technologies, as well as how to negotiate to acquire them. For information, call (613) 993-5326.

INVESTMENT DEVELOPMENT PROGRAM

The Investment and Technology Bureau (TID) promotes Canada as an attractive, competitive destination for business investment to potential foreign investors. It actively encourages investments that take the form of new plant and equipment, joint ventures or strategic partnerships. The Bureau is especially interested in attracting investment that introduces new technology into Canada, which is key to creating new jobs and economic opportunities. It also helps Canadian companies to find international investment partners and to access international sources of capital and technologies. TID provides support to the chief executive officers of Canadian subsidiaries of multinationals which are seeking to attract manufacturing and R&D mandates to Canada. It also monitors and analyzes investment trends and perceptions of Canada as an investment site. TID works closely with

the "geographic" branches of DFAIT and the investment counsellors at Canadian missions around the world, as well as with provincial and municipal authorities, and professional and business organizations. For more information, contact:

Investment and Technology Bureau (TID)

Department of Foreign Affairs and International Trade
Lester B. Pearson Building
125 Sussex Drive
Ottawa, ON K1A 0G2
Tel.: (613) 995-4128
Fax: (613) 995-9604

DEPARTMENT OF INDUSTRY (DI)

DI was created with a broad mandate to make Canada more competitive by fostering the growth of Canadian businesses, by promoting a fair and efficient marketplace for business and consumers, and by encouraging commercial ventures in scientific research and technology. In the area of small business, it has been given specific responsibility to:

- develop, implement and promote national policies to foster the international competitiveness of industry; the enhancement of industrial, scientific and technological development; and the improvement in both the productivity and efficiency of industry;
- promote the mobility of goods, services, and factors of production within Canada;
- develop and implement national policies to foster entrepreneurship and the start-up, growth and expansion of small businesses;
- develop and implement national policies and programs respecting industrial benefits from procurement of goods and services by the Government of Canada; and
- promote and provide support services for the marketing of Canadian goods, services and technology.

The regional offices of DI work directly with Canadian companies to promote industrial, scientific and technological development. They help clients recognize opportunities in a competitive international marketplace by providing services in the areas of business intelligence and information as well as trade and market development. DI also promotes and manages a portfolio of programs and services.

The following are areas in which DI regional offices have special competence:

- access to trade and technology intelligence and expertise;
- entry points to national and international networks;
- industry-sector knowledge base;
- co-location with International Trade Centres connected to DFAIT and Canadian posts abroad;
- client focus on emerging and threshold firms; and
- business intelligence.

For more information, call (613) 941-0222.

Automotive Branch

Department of Industry Regional Office
1 Front Street West, 4th Floor
Toronto, ON M5J 1A4
Tel.: (416) 973-5167
Fax: (416) 973-5131

Business Service Centre

Department of Industry
235 Queen Street
First Floor, East Tower
Ottawa, ON K1A 0H5
Tel.: (613) 952-4782
Fax: (613) 957-7942

NAFTA Information Desk

Department of Industry
235 Queen Street
Fifth Floor, East Tower
Ottawa, ON K1A 0H5
Fax: (613) 952-0540

THE BUSINESS OPPORTUNITIES SOURCING SYSTEM (BOSS)

BOSS is a computerized databank that profiles over 25,000 Canadian companies. It lists basic information on products, services and operations of use to potential customers. The system was established in 1980 by the Department of Industry (DI) in cooperation with participating provincial governments. BOSS was originally established so that trade commissioners posted around the world by DFAIT could find Canadian companies that might be able to take advantage of foreign market opportunities. Today, more

than 11,000 domestic and international subscribers use the system, not only to locate Canadian suppliers, but also to obtain market intelligence and identify market opportunities. The majority of subscribers are Canadian companies. For more information, call (613) 954-5031.

MARKET INTELLIGENCE SERVICE (MIS)

MIS provides Canadian businesses with detailed market information on a product-specific basis. The service assists Canadian companies in the exploitation of domestic, export, technology transfer and new manufacturing investment opportunities. The intelligence is used by Canadian businesses in decisions regarding manufacturing, product development, marketing and market expansion. A request for information can be custom-tailored to meet each client's particular need. Previously-published customized reports are also available on request. The database is updated quarterly and annually. MIS is offered free of charge by fax, letter or telephone. For more information, contact:

Strategic Information Branch

Department of Industry
235 Queen Street
First Floor, East Tower
Ottawa, ON K1A 0H5
Tel.: (613) 954-5031
Fax: (613) 954-1894

REVENUE CANADA

Revenue Canada, Customs Program Branch provides a NAFTA Help Desk telephone line with service available in Spanish. Revenue Canada publications and customs notices are available by calling or faxing the NAFTA Information Desk. For more information, contact:

NAFTA Spanish Help Desk

Tel.: (613) 941-0965

NAFTA Information Desk

Revenue Canada, Customs Programs Branch
191 Laurier Avenue West
Sixth Floor
Ottawa, ON K1A 0L5
Tel.: 1-800-661-6121, or (613) 941-0965
Fax: (613) 952-0022

CANADIAN INTERNATIONAL DEVELOPMENT AGENCY (CIDA)

An important possible source of financing for Canadian ventures in Mexico is the special fund available through CIDA under the Industrial Cooperation Program (CIDA/INC). This program provides financial contributions to stimulate Canadian private-sector involvement in developing countries by supporting long-term business relationships such as joint ventures and licensing arrangements. INC supports the development of linkages with the private sector in Mexico by encouraging Canadian enterprises to share their skills and experiences with partners in Mexico and other countries. A series of INC mechanisms help enterprises to establish mutually beneficial collaborative arrangements for the transfer of technology and the creation of employment in Mexico.

There are five INC mechanisms that help eligible Canadian firms to conduct studies and that provide professional guidance and advice to potential clients. Where a project involves environmental improvement, technology transfer, developmental assistance to women, job training or job creation, early contact with CIDA's Industrial Cooperation Division is suggested. An important CIDA criterion is that the project creates jobs in Mexico without threatening jobs in Canada. In fact, most CIDA-assisted projects have produced net increases in Canadian jobs. For more information, contact:

Industrial Cooperation Division
Canadian International Development Agency
200 Promenade du Portage
Hull, PQ K1A 0G4
Tel.: (819) 997-7905/7906
Fax: (819) 953-5024

ATLANTIC CANADA OPPORTUNITIES AGENCY (ACOA)

Atlantic Canadian companies seeking to develop exports to Mexico may be eligible for assistance from the ACOA. The Agency works in partnership with entrepreneurs from the Atlantic region to promote self-sustaining economic activity in Atlantic Canada.

ACOA provides support to businesses as they look to expand existing markets through the development of marketing plans. Efforts include monitoring trade opportunities arising from global economic change, communications efforts to promote the region, trade missions and associated activities, as well as better coordination with federal and provincial bodies that influence trade and investment opportunities. For more information, contact:

Atlantic Canada Opportunities Agency
Blue Cross Centre
644 Main Street
P.O. Box 6051
Moncton, NB E1C 9J8
Tel: 1-800-561-7862
Fax: (506) 851-7403

WESTERN ECONOMIC DIVERSIFICATION CANADA (WD)

WD is responsible for federal economic development activities in Western Canada. The Department works in partnership with the western provinces, business, industry associations and communities to stimulate the western Canadian economy.

WD's "New Directions" program will work to enhance the export position of western companies by boosting their competitiveness in domestic and global markets.

The Department no longer provides repayable loans to individual companies, but seeks new innovative partnerships within both the public and private sectors. These partnerships will address the needs of small- and medium-sized enterprises for information, business services and capital, particularly for high growth industries critical to Western Canada's economic diversification.

One of WD's new products focused on export development is the International Trade Personnel Program. This federal-provincial initiative links export-focused western firms with recent post-secondary graduates. The program accomplishes two important socio-economic goals: it gives companies the extra person-power they need to penetrate new markets, and it gives recent graduates valuable work experience. Under the new program, the length of export-development projects may vary from one to three years. Approved projects will be eligible for assistance ranging from \$7,500 for one year, to a maximum of \$37,500 per graduate over the 3 year period. For more information, contact:

Western Economic Diversification Canada
The Cargill Building
240 Graham Avenue
Suite 712
P.O. Box 777
Winnipeg, MB R3C 2L4
Tel.: (204) 983-4472
Fax: (204) 983-4694

EXPORT DEVELOPMENT CORPORATION (EDC)

EDC is a customer-driven, financial services corporation dedicated to helping Canadian businesses succeed in the global marketplace. EDC provides a wide range of risk management services, including insurance, financing and guarantees to Canadian exporters and their customers around the world.

EDC's products fall into four main categories:

- export credit insurance, covering short- and medium-term credits;
- performance-related guarantees and insurance, providing cover for exporters and financial institutions against calls on various performance bonds and obligations normally issued either by banks or surety companies;
- foreign investment insurance, providing political risk protection for Canadian investments abroad; and
- export financing, providing medium- and long-term export financing to foreign buyers of Canadian goods and services.

EDC has established relationships with leading commercial and public sector institutions in Mexico and Latin America. Exporters can call (613) 598-2860 for more information.

Smaller exporters, with annual export sales under C \$1 million, should call the Emerging Exporter Team at 1-800-850-9626.

Exporters in the information technology sector can call EDC's Information Technologies Team at (613) 598-6891.

For information on the full range of EDC services, contact any of the following EDC offices:

Ottawa Export Development Corporation
151 O'Connor Street
Ottawa, ON K1A 1K3
Tel.: (613) 598-2500
Fax: (613) 237-2690

Vancouver Export Development Corporation
One Bentall Centre
505 Burrard Street
Suite 1030
Vancouver, BC V7X 1M5
Tel.: (604) 666-6234
Fax: (604) 666-7550

Calgary

Export Development Corporation
510-5th Street S.W.
Suite 1030
Calgary, AB T2P 3S2
Tel.: (403) 292-6898
Fax: (403) 292-6902

Winnipeg

**office also serves
Saskatchewan*

Export Development Corporation
330 Portage Avenue
Eighth Floor
Winnipeg, MB R3C 0C4
Tel.: (204) 983-5114
Fax: (204) 983-2187

Toronto

Export Development Corporation
National Bank Building
150 York Street
Suite 810
P.O. Box 810
Toronto, ON M5H 3S5
Tel.: (416) 973-6211
Fax: (416) 862-1267

London

Export Development Corporation
Talbot Centre
148 Fullarton Street
Suite 1512
London, ON N6A 5P3
Tel.: (519) 645-5828
Fax: (519) 645-5580

Montreal

Export Development Corporation
Tour de la Bourse
800 Victoria Square
Suite 4520
P.O. Box 124
Montreal, PQ H4Z 1C3
Tel.: (514) 283-3013
Fax: (514) 878-9891

Halifax

Export Development Corporation
Purdy's Wharf, Tower 2
1969 Upper Water Street
Suite 1410
Halifax, NS B3J 3R7
Tel.: (902) 429-0426
Fax: (902) 423-0881

NATIONAL RESEARCH COUNCIL (NRC)

Canadian companies hoping to succeed in the Mexican marketplace may require additional technology to improve their competitiveness. The NRC works with Canadian firms of all sizes to develop and apply technology for economic benefit. The Council manages the Industrial Research Assistance Program (IRAP), a national network for the diffusion and transfer of technology.

The IRAP network supports the process of developing, accessing, acquiring, implanting and using technology throughout Canadian industry. IRAP has been in existence for 50 years and has acquired a reputation as one of the most flexible and effective federal programs. IRAP takes advantage of an extensive network of more than 190

different locations within approximately 90 communities across Canada, including numerous provincial technology centres, the NRC's own laboratories and research institutes, federal government departments, and technology transfer offices in Canadian universities. For further information, contact:

Industrial Research Assistance Program
National Research Council
Montreal Road
Building M-55
Ottawa, ON K1A 0R6
Tel.: (613) 993-1770
Fax: (613) 952-1086

KEY CONTACTS IN CANADA

SPONSORING ORGANIZATIONS

BAKER & MCKENZIE

Baker & McKenzie is one of the largest international law firms with offices in 35 countries. They presently have four offices in Mexico, in the cities of Juárez, Mexico City, Monterrey and Tijuana. In addition to providing legal advice, the firm's offices in Canada and Mexico work to assist Canadian companies to find the right partner to enable them to establish or expand their activities in Mexico. For more information, contact:

Baker & McKenzie
Barristers & Solicitors
BCE Place
181 Bay Street
Suite 2100
Toronto, ON M5J 2T3
Tel.: (416) 865-6910/6903
Fax: (416) 863-6275

BUSINESS AND PROFESSIONAL ASSOCIATIONS

Canadian Tooling and Machining Association
140 McGovern Drive
Unit #3
Cambridge, ON N3H 4R7
Tel.: (519) 653-7265
Fax: (519) 653-6764

Canadian Association of Mold Makers
424 Tecumseh Road East
Windsor, ON N8X 2R6
Tel.: (519) 255-7863
Fax: (519) 255-9446

Canadian Plastics Institute
5925 Airport Road
Suite 515
Mississauga, ON L4V 1W1
Tel.: (905) 612-9997
Fax: (905) 612-8664

Society of Plastics Institute
5925 Airport road
Suite 500
Mississauga, ON L4V 1W1
Tel.: (905) 678-7748
Fax: (905) 678-0774

Aerospace Industries Association of Canada
60 Queen Street
Suite 1200
Ottawa, ON K1P 5Y7
Tel.: (613) 232-4297
Fax: (613) 232-1142

Machinery and Equipment Manufacturers' Association of Canada
Suite 701
116 Albert Street
Ottawa ON K1P 5G3
Tel.: (613) 232-7213
Fax: (613) 232-7381

Canadian Council for the Americas (CCA)
The Council is a non-profit organization formed in 1987 to promote business interests in Latin American as well as Caribbean countries. The CCA promotes events and programs targetted at expanding business and building networking contacts between Canada and the countries of the region.

The Canadian Council for the Americas
Executive Offices
145 Richmond Street West
Third Floor
Toronto, ON M5H 2L2
Tel.: (416) 367-4313
Fax: (416) 367-5460

Canadian Exporters' Association
99 Bank Street
Suite 250
Ottawa, ON K1P 6B9
Tel.: (613) 238-8888
Fax: (613) 563-9218

Canadian Manufacturers' Association
75 International Boulevard
Fourth Floor
Etobicoke, ON M9W 6L9
Tel.: (416) 798-8000
Fax: (416) 798-8050

The Canadian Chamber of Commerce
55 Metcalfe Street
Suite 1160
Ottawa, ON K1P 6N4
Tel.: (613) 238-4000
Fax: (613) 238-7643

Forum for International Trade Training Inc.
155 Queen Street
Suite 608
Ottawa, ON K1P 6L1
Tel.: (613) 230-3553
Fax: (613) 230-6808

Language Information Centre
240 Sparks Street RPO
Box 55011
Ottawa, ON K1P 1A1
Tel.: (613) 523-3510

Open Bidding Service
P.O. Box 22011
Ottawa, ON K1V 0W2
Tel.: 1-800-361-4637 or (613) 737-3374
Fax: (613) 737-3643

Canadian Standards Association
178 Rexdale Blvd.
Rexdale, ON M9W 1R3
Tel.: (416) 747-4000
Fax: (416) 747-4149

Standards Council of Canada
45 O'Connor Street
Suite 1200
Ottawa, ON K1P 6N7
Tel.: (613) 238-3222
Fax: (613) 995-4564

MEXICAN GOVERNMENT OFFICES IN CANADA

The Embassy of Mexico, Mexican Trade Commissioners in Canada, and Mexican consulates can provide assistance and guidance to Canadian companies in need of information about the immigration regulations related to doing business in Mexico. For more information, contact:

Embassy of Mexico
45 O'Connor Street
Suite 1500
Ottawa, ON K1P 1A4
Tel.: (613) 233-8988
Fax: (613) 235-9123

Mexican Consulate in Ottawa
45 O'Connor Street
Suite 1500
Ottawa, ON K1P 1A4
Tel.: (613) 233-6665
Fax: (613) 235-9123

OTHER MEXICAN CONSULATES GENERAL IN CANADA

Consulate General of Mexico
2000 Mansfield Street
Suite 1015
Montreal, PQ H3A 2Z7
Tel.: (514) 288-2502/4916
Fax: (514) 288-8287

Consulate General of Mexico
199 Bay Street
Suite 4440
P.O. Box 266, Station Commerce Court West
Toronto, ON M5L 1E9
Tel.: (416) 368-2875/8141/1847
Fax: (416) 368-8342

Consulate General of Mexico
810-1139 West Pender Street
Vancouver, BC V6E 4A4
Tel.: (604) 684-3547/1859
Fax: (604) 684-2485

MEXICAN FOREIGN TRADE COMMISSIONS

Banco Nacional de Comercio Exterior (Bancomext) is the Mexican Foreign Trade Commission and has offices in Canada. It offers credits, export guarantees and counselling services to Mexican companies seeking to do business in Canada.

Banco de Comercio (Bancomer)

The Royal Bank Plaza
South Tower
Suite 2915
P.O. Box 96
Toronto, ON M5J 2J2
Tel.: (416) 956-4911
Fax: (416) 956-4914

MEXICAN BANKS WITH OFFICES IN CANADA

Banco Nacional de México (Banamex), *Banco de Comercio (Bancomer)*, and *Banca Serfin* are private-sector banks which offer specialized services through their international trade information centres. The centres participate in a computerized communications network with access to numerous economic, governmental and financial databases throughout the world. These banks are located throughout Mexico and maintain offices in Toronto.

Banca Serfin

BCE Place
Canada Trust Tower
161 Bay Street
Suite 4360
P.O. Box 606
Toronto, ON M5J 2S1
Tel.: (416) 360-8900
Fax: (416) 360-1760

Banco Nacional de México (Banamex)

1 First Canadian Place
Suite 3430
P.O. Box 299
Toronto, ON M5X 1C9
Tel.: (416) 368-1399
Fax: (416) 367-2543

CANADIAN GOVERNMENT DEPARTMENTS AND SERVICES IN MEXICO

COMMERCIAL DIVISION

THE EMBASSY OF CANADA IN MEXICO

The Commercial Division of the Canadian Embassy in Mexico can provide vital assistance to Canadians venturing into the Mexican market. The trade commissioners are well-informed about the market and will respond in whatever measures possible to support a Canadian firm's presence in Mexico.

Note: to telephone Mexico City, dial 011-52-5 before the number shown. For contacts in other cities in Mexico, consult the international code listing at the front of your local telephone directory for the appropriate regional codes.

Commercial Division

The Embassy of Canada in Mexico
Schiller No. 529
Apartado Postal 105-05
Col. Polanco
11560 México, D.F.
México
Tel.: 724-7900
Fax: 724-7982

Canadian Consulate

Edificio Kalos, Piso C-1
Local 108-A
Zaragoza y Constitución
64000 Monterrey, Nuevo León
México
Tel.: 344-3200
Fax: 344-3048

Canadian Consulate

Hotel Fiesta Americana
Local 30-A
Aurelio Aceves No. 225
Col. Vallarta Poniente
Guadalajara, Jalisco
México
Tel.: 15-8665
Fax: 15-8665

MEXICAN GOVERNMENT AGENCIES

Secretariat of Commerce and Industrial Development
Secretaría de Comercio y Fomento Industrial (SECOFI)
Sub-Secretaría de Promoción de la Industria y el Comercio Exterior

Insurgentes Sur No. 1940 — P.H.
Col. Florida
01030 México, D.F.
México
Tel.: 229-6560/6561/6100
Fax: 229-6568

Secretariat of Commerce and Industrial Development
Bureau of Standards

Secretaría de Comercio y Fomento Industrial (SECOFI)
Dirección General de Normas
Av. Puente de Tecamachalco No. 6
Col. Lomas de Tecamachalco
53950 Tecamachalco, Estado de México
México
Tel.: 729-9300
Fax: 729-9484

Mexican National Railway
Ferrocarriles Nacionales de México (FNM)

Jesús García No. 140
Piso 13, Ala A
Col. Buenavista
06358 México, D.F.
México
Tel.: 541-4004, 547-9317
Fax: 547-0959

National Oil Company
Petróleos Mexicanos (PEMEX)

Av. Marina Nacional No. 329
Col. Huasteca
11311 México, D.F.
México
Tel.: 725-2200, 250-2611
Fax: 625-4385

Houston Purchasing Offices
Petróleos Mexicanos (PEMEX)

3600 South Gessner, Suite 100
Houston, TX 77065
U.S.A.
Tel.: (713) 978-6269
Fax: (713) 978-6298

BUSINESS AND PROFESSIONAL ASSOCIATIONS IN MEXICO

National Chamber of the Iron and Steel Industry
Cámara Nacional de la Industria del Hierro y del Acero (CANACERO)

Amores No. 338
Col. del Valle
03199 México, D.F.
México
Tel.: 543-4443 to 4447
Fax: 687-0517

Mexican Industrial Plastics Institute

Instituto Mexicano del Plástico Industrial, S.C. (IMPI)
Insurgentes Sur No. 954, Piso 1
Col. del Valle
03100 México, D.F.
México
Tel.: 669-3325
Fax: 687-4960

National Association of the Plastics Industry
Asociación Nacional de las Industrias del Plástico, A.C. (ANIPAC)

Av. Parque Chapultepec No. 66-301
Col. El Parque
53390 Naucalpan, Estado de México
México
Tel.: 576-5547
Fax: 576-5548

National Association of the Computer Programming Industry

Asociación Nacional de la Industria de Programas para Computadoras (ANIPCO)
Insurgentes Sur No. 1677-304
Col. Guadalupe Inn
01020 México, D.F.
México
Tel.: 663-3510/662-3632
Fax: 662-5880

Association of Representatives, Importers and Distributors of Auto Repair Parts and Accessories
Asociación de Representantes, Importadores y Distribuidores de Refacciones y Accesorios para Automóviles, A.C. (ARIDRA)
Morelia No. 38-305
Col. Roma
06700 México, D.F.
México
Tel.: 514-3721, 525-2820
Fax: 207-6476

National Auto Parts Industry
Industria Nacional de Autopartes, A.C. (INA)
Amatlán No. 19
Col. Condesa
06140 México, D.F.
México
Tel.: 553-2224/0921
Fax: 286-4101

Association of Auto Repair Shops
Asociación Nacional de Talleres Automotrices, A.C.
Fernando Rosas No. 745
Col. Barrio de San Miguelito
78330 San Luis Potosí, San Luis Potosí
México
Tel.: 12-4766
Fax: 12-5706

Mexican Association of Machinery Distributors
Asociación Mexicana de Distribuidores de Maquinaria (AMDIMA)
Tenayuca No. 107
Col. Vertiz Narvarte
03600 México, D.F.
México
Tel.: 604-8654/8753
Fax: 605-2877

National Chamber of Manufacturing Industry
Cámara Nacional de la Industria de Transformación (CANACINTRA)
Av. San Antonio No. 256
Col. Ampliación Nápoles
03849 México, D. F.
México
Tel.: 563-3400
Fax: 563-5381

The Canadian Chamber of Commerce in Mexico
Cámara de Comercio de Canadá en México
c/o Bombardier
Paseo de la Reforma No. 369, Mezzanine
Col. Juárez
06500 México, D.F.
México
Tel.: 729-9903, 207-2400
Fax: 208-1592

National Chamber of Commerce of Mexico City
Cámara Nacional de Comercio de la Ciudad de México (CANACO)
Paseo de la Reforma No. 42
Col. Juárez
06030 México, D.F.
México
Tel.: 592-2677/2665
Fax: 705-7412, 592-3571

MEXICAN COMPANIES

Bombardier-Concarril, S.A. de C.V.
Paseo de la Reforma No. 369, Mezzanine
Col. Juárez
06500 México, D.F.
México
Tel.: 729-9903
Fax: 525-0338

Grupo UNICORP
Bosques de Ciruelos No. 278, Piso 3
Col. Bosques de las Lomas
11700 México, D.F.
México
Tel.: 726-8101
Fax: 726-8109-46

Grupo Desc
Bosques de Ciruelos No. 304
Col. Bosques de las Lomas
11700 México, D.F.
México
Tel.: 251-4082
Fax: 251-8535

Industrias Resistol

Bosques de Ciruelos No. 99
Col. Bosques de las Lomas
11700 México, D.F.
México
Tel.: 596-3300, 729-9011
Fax: 596-1819

Altos Hornos de México, S.A. (AHMSA)

Campos Eliseos No. 1
Col. Ricón del Bosque
11580 México, D.F.
México
Tel.: 250-0112/0126/0139
Fax: 254-3220

HYLSA, S.A. de C.V.

Jaime Balmes No. 11
Torre D, Piso 3
Col. Los Morales
11510 México, D.F.
México
Tel.: 728-9909
Fax: 728-9291

Tubos de Acero de México (TAMSA)

Campos Eliseos No. 400
Col. Polanco
11560 México, D.F.
México
Tel.: 282-9900
Fax: 282-9964

Fomento Económico Mexicano (FEMSA)

Alfonso Reyes No. 2202
Col. Bellavista
64442 Monterrey, Nuevo León
México
Tel.: 328-6017
Fax: 328-6029

Envases Cuautitlán

Kilómetro No. 39.3
Carretera México-Querétaro
54730 Cuautitlán Izcalli, Estado de México
México
Tel.: 227-9812/9800
Fax: 227-9845

VISAPACK

Henry Ford No. 31, Bodega No. 1
Fraccionamiento Industrias San Nicolás
54030 Tlanepantla, Estado de México
México
Tel.: 310-5295/5437
Fax: 310-5538

Envases y Productos Plásticos

Av. 1o. de Mayo No. 153-B
53470 Naucalpan, Estado de México
México
Tel.: 300-5299/5924
Fax: 300-5364

VITRO ENVASES

Aristóteles No. 77, Piso 7
Col. Chapultepec Polanco
11560 México, D.F.
México
Tel.: 227-9500
Fax: 281-2085

Fester

Thiers No. 248
Col. Anzures
11590 México, D.F.
México
Tel.: 255-2713, 726-9966
Fax: 726-9966

Crolls de México

Av. Talisman No. 4012
Col. San Pedro el Chico
07840 México, D.F.
México
Tel.: 760-1613

UNIVERSITIES

National Autonomous University of Mexico
Advanced Computer Applications Laboratory
Universidad Nacional Autónoma de México (UNAM)
Facultad de Ingeniería
Circuito Escolar, Ciudad Universitaria
Col. Coyoacán
04510 México, D.F.
México
Tel.: 622-3278
Fax: 616-1037

Monterrey's Technological Institute
Instituto Tecnológico y de Estudios Superiores de Monterrey
Campus Monterrey (ITESM)
Av. Eugenio Garza Sada No. 2501 Sur
Sucursal de Correos "J"
64849 Monterrey, Nuevo León
México
Tel.: 358-2000
Fax: 358-8931

National Polytechnic Institute
Instituto Politécnico Nacional (IPN)
Av. Instituto Politécnico Nacional No. 2508
Col. San Pedro Zacatenco
07300 México, D.F.
México
Tel.: 747-7000/7001
Fax: 747-7002

TRADE SHOWS

Expo-CIHAC
Promotion Centre for Construction and Housing
clo Centro Impulsor de la Construcción y la Habitación (CIHAC)
Av. Minerva No. 16
Col. Crédito Constructor
03940 México, D.F.
México
Tel.: 661-0844, 662-5085
Fax: 661-0600

Exposición Nacional Ferretera
c/o Expo Nacional Ferretera A.C.
Calzada de la Viga No. 398, Piso 4
esquina con Viaducto Miguel Alemán
Col. Jamaica
15800 México, D.F.
México
Tel.: 538-6133/4546
Fax: 538-7776

PERIODICALS

Industria
Confederation of Industrial Chambers
c/o Confederación de Cámaras Industriales (CONCAMIN)
Manuel María Contreras No. 133, Piso 1
Col. Cuauhtémoc
06597 México, D.F.
México
Tel.: 592-0529, 566-7822
Fax: 535-6871

HELP US TO SERVE YOU BETTER

We are interested in your views on this publication. Please take a few minutes to respond to the questions below.

1. What is your overall opinion of this publication?

- very useful
- useful
- moderately useful
- not useful

2. Please provide your assessment of each of the following aspects of this publication.

a) Quality of text discussion (mark one only):

- excellent
- good
- fair
- poor

b) Presentation of information (mark one only):

- excellent
- good
- fair
- poor

c) Use of graphics and other visual aids (mark one only):

- excellent
- good
- fair
- poor

3. If this publication were updated, revised and re-issued in the future, would you be interested in receiving a copy?

- yes, very interested
- probably interested
- no, not interested
- not sure

4. How did you find the structure and format of this publication?

- clear and easy to follow
- confusing and difficult to follow

5. For your purposes, did this publication provide a sufficiently complete treatment of the subject(s) reviewed?

- yes, definitely
- to some extent
- no
- can't say/don't know

6. This publication would have been more useful to me if it had (mark all that apply):

- provided more qualitative information
- provided less quantitative information
- made greater use of graphs, charts and tables
- contained a longer textual discussion
- contained a shorter textual discussion
- used more examples, case studies, company profiles

7. In your opinion, was there important information missing from this publication?

yes — please specify:

8. Are there any issues relevant to the subject of this publication that you would like to have seen covered in more detail?

9. Please offer any suggestions for improving the next version of this publication.

10. Will this publication assist you in your business development?

yes no

11. a) Does your company currently export?

- Yes, go to 11 b)
- No, go to 11 c)

b) If yes, to which foreign markets?

- U.S.A. Europe Japan
- Mexico Latin America
- Other (please specify) _____

c) If not, are you planning to export within the next 12 months?

- Yes, where?
- U.S.A. Europe Japan
- Mexico Latin America
- Other (please specify) _____

12. What is the approximate size of your company?

- under \$1 million
- \$1 to 5 million
- \$5 and \$10 million
- over \$10 million

To discuss this evaluation may we contact you? If so,

Name: _____

Company: _____

Address: _____

Tel.: _____ Fax: _____

Please return the completed survey by fax to (613) 943-8806 or to the address below:

Latin America and Caribbean Branch
Department of Foreign Affairs and International Trade
Lester B. Pearson Bldg., 125 Sussex Drive
Ottawa, Ontario K1A 0G2





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