INDUSTRY PROFILE

Industry, Science and Technology Canada
Industrie, Sciences et Technologie Canada

Ferrous Foundries

Canada

INDUSTRY PROFILE

FERROUS FOUNDRIES

1988

FOREWORD

In a rapidly changing global trade environment, the international competitiveness of Canadian industry is the key to survival and growth. This Industry Profile is one of a series of papers which assess, in a summary form, the current competitiveness of Canada's industrial sectors, taking into account technological and other key factors, and changes anticipated under the Canada-U.S. Free Trade Agreement. Industry participants were consulted in the preparation of the papers.

The series is being published as steps are being taken to create the new Department of Industry, Science and Technology from the consolidation of the Department of Regional Industrial Expansion and the Ministry of State for Science and Technology. It is my intention that the series will be updated on a regular basis and continue to be a product of the new department. I sincerely hope that these profiles will be informative to those interested in Canadian industrial development and serve as a basis for discussion of industrial trends, prospects and strategic directions.

Robert de Cotret

Minister

1. Structure and Performance

Structure

The Canadian ferrous foundry sector is made up of iron and steel foundries. These foundries produce castings by a manufacturing process in which liquid metal is poured into a mould cavity, allowed to cool and solidify, and separated from the mould for finishing and use. Most castings have some machining before being used in the end product.

Ferrous foundries usually specialize in either iron or steel castings, with a small number, about 10 percent, producing both types. Iron foundries use iron scrap and pig iron, coke and foundry sand, while steel foundries use steel scrap, ferro-alloys and foundry sand as their main primary raw materials.

The ferrous foundries sector is a supplier to most other manufacturing industries. The main markets for iron castings produced in Canada are: automotive, 65 percent (engines, brake parts); construction, 10 percent (manhole covers, catch basins); the agriculture and mining equipment, five percent. The main markets for steel castings produced in Canada are: railways, 50 percent (freight car and engine wheels and trucks); mining, 15 percent (crusher jaws and bucket teeth); automotive, 13 percent (steering and suspension parts); and miscellaneous industrial machinery, 10 percent.

In 1986, the sector consisted of about 119 iron foundries employing 9900 people and 36 steel foundries employing 3200 for a total of 13 100 persons. Shipments of iron and steel castings were about $817 million and $134 million respectively for a total of $951 million. It is estimated that about 60 percent of iron castings and 25 percent of steel castings were exported in 1986, either as castings or in equipment, giving a weighted average export figure for all ferrous castings of about 50 percent of domestic production.* About 98 percent of exports were to the United States, mainly to the northern states. Slightly more than 25 percent of the ferrous castings used in Canada are imported, mainly from the United States, with a large percentage in the form of equipment spares and replacement parts.

** Statistics Canada provides data on the import and export of raw castings. This does not give a complete picture of trade because a large percentage of imports and exports is in the form of machined castings and castings that are equipment components. These are classified not as castings but to the end-product category. Data on exports and imports used in this report, except when referred to as raw castings, are estimates made since 1983 by the Canadian foundry industry.*

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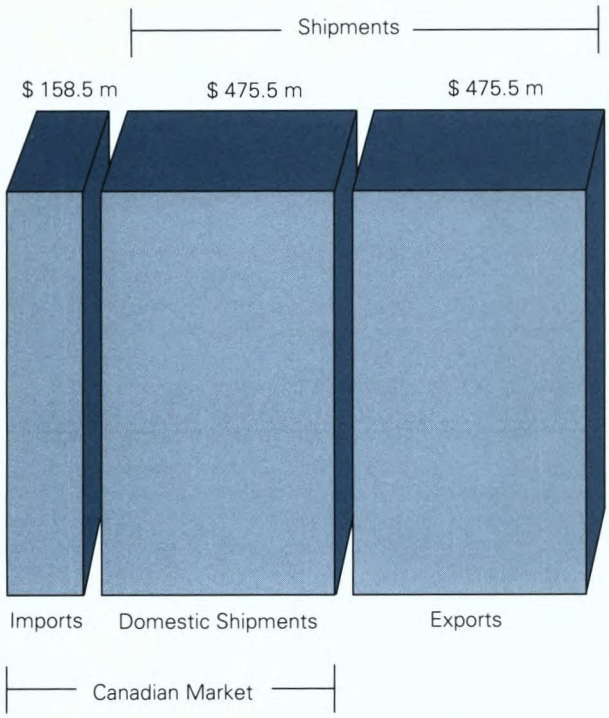


Imports, Exports and Domestic Shipments 1986*

** Based on industry estimates*

Although there are ferrous foundries in every province, they are concentrated in Ontario (52 percent) and Quebec (21 percent). The number of employees at each foundry ranges from five to 2000, with the average being less than 100. The largest foundries are those of General Motors and Ford, which operate highly automated iron foundries producing castings for their own internal use. Two steel companies, Algoma and Dofasco, operate foundries which supply castings for internal use as well as for outside customers. Griffin Canada operates two highly automated steel foundries, one in Manitoba and one in Quebec, which specialize in making wheels for railway locomotives and railway cars.

The majority of firms in the industry are Canadian-owned. However, because of the large size of some of the foreign-owned foundries, such as those of the auto companies, about 50 percent of the production capacity is foreign-owned.

Performance

In the face of declining demand, substantial restructuring has occurred in the industry. Between 1973 and 1986 the number of foundries in Canada decreased from 200 to 155; employment declined from 22 000 to 13 100; and shipments declined from 1 442 000 to 1 145 000 tonnes. Downward adjustments have also taken place in the United States, Europe and Japan. The main causes have been product replacement by other materials, less metals used in the smaller cars produced by the auto industry and increased imports of equipment containing castings. Increased use of capital equipment and automation has raised the productivity and output of those foundries remaining in business.

The Canadian steel foundry industry operated on average at about 50 to 55 percent of capacity between 1983 and 1986. The iron foundry industry has operated at an average capacity of 60 to 65 percent during that period, about the same as in Europe and the United States. The operating level of individual foundries across Canada varies widely, depending mainly on the market niche. Foundries supplying the auto industry are now operating at close to full capacity.

2. Strengths and Weaknesses

Structural Factors

The key factors affecting the competitiveness of Canadian ferrous foundries include economies of scale, labour costs, raw material costs, transportation costs, quality of product, customer service and reliability and prompt delivery.

The methods of producing ferrous castings vary widely, depending on the type and size of the product. It is common for a foundry to have several production methods operating in the same building. Therefore economies of scale are not significant for all parts of the ferrous foundry sector. Iron castings for the automotive industry and many types of steel castings are produced on highly automated production lines with a high capital cost and relatively low labour cost.

Large steel castings, however, such as the turbine rotors used in hydroelectric power plants, are produced individually in large foundry floor cavities. They have high labour costs and relatively low capital costs.

The Canadian ferrous foundry is as modern and efficient as the American and European industries and its other competitors. It competes successfully in the northern U.S. markets. Canadian ferrous foundries, especially the iron foundries active in the automotive market, have made substantial investments to upgrade their production facilities during the past five years.

Production labour costs for ferrous foundries in Canada represented about 26 percent of the value of shipments in 1985. Canadian labour costs were about 10 percent lower than those in U.S. ferrous foundries, after currency exchange rates are taken into account.

In the newly industrialized countries (NICs), labour and pollution control costs are much lower than in Canada; as a result, some of their castings can be exported to and delivered in Canada at prices which Canadian ferrous foundries cannot compete with. As a consequence, since the early 1980s, there has been a flow of standard size, high-volume, iron and steel castings (such as pipe fittings) into Canada from NICs such as South Korea, Taiwan, Brazil and Mexico.

Canadian foundries have been able to retain a great deal of the market to date for most products because of their customer service, reliable quality and prompt delivery. The "just-in-time" delivery of castings is particularly important to the automotive and farm machinery companies and favours North American over offshore ferrous foundries.

Transportation costs also tend to act as a natural barrier to the trade in ferrous castings because most products have a relatively low value per unit of weight. This tends to limit the geographic area supplied by a foundry. However, the labour and pollution-control cost advantages which the NICs enjoy on standard high-volume items outweigh the transportation cost disadvantages.

The costs of the main raw materials, iron and steel scrap, are approximately equal in Canada and the United States after currency rates are taken into account. Most foundry sand, chemicals for bonding of sand, and coke are imported from the United States. Although there is no duty on most of these items, their costs to Canadian foundries are generally higher than those paid by their U.S. counterparts because of the higher transportation costs.

The Canada-U.S. Auto Pact has been important to the ferrous casting industry because the Canadian content rules and duty-free access to the large U.S. market have enabled Canadian ferrous foundries in the automotive market to enjoy economies of scale.

Trade-related Factors

Approximately 80 percent of all foundry products, both as raw and machined castings and as castings incorporated in equipment, now traded between Canada and its major trading partner, the United States, are free of duty. Products that are traded as original equipment under the Auto Pact are duty-free, as is all agriculture machinery and defence-related equipment.

TARIFFS FOR FERROUS CASTINGS ARE AS FOLLOWS:

	Most Favoured Nation (MFN) Tariffs			
	Canada	U.S.	E.C.	Japan
Ferrous Castings	9.0-9.5	4.0-5.0	5.0-5.5	5.0-6.0

The Canadian General Preferential Tariff rate, which applies to most NICs is 6.0 percent.

In the United States, the main non-tariff barriers (NTBs) are government procurement policies, such as the "Buy America" provisions, which restrict the imports of certain types of Canadian castings. Canada, the E.C. and Japan have no significant NTBs on imports of castings.

While the United States has not taken countervail action against Canadian producers of ferrous castings, in 1986 the Americans imposed anti-dumping duties on certain types of iron construction castings imported from Canada. In a separate action, the U.S. casting industry tried to reduce imports of castings from a number of countries, including Canada, by means of a Section 201 safeguard action.

Under the Canada-U.S. Free Trade Agreement (FTA), Canadian and U.S. tariffs on ferrous castings will be reduced to zero over a ten-year period. In addition, the remaining tariffs on machinery will be removed mainly over a five- to 10-year period. The trade-dispute settlement mechanisms and safeguard provisions of the FTA are of interest to this industry. In the event of the imposition of a countervail or anti-dumping duty, either government may request a bi-national review panel to ensure that existing laws have been applied correctly and fairly. Moreover, the safeguard provisions of the FTA ensure that Canada will not be sideswiped by actions primarily directed at other countries.

Technological Factors

Recent technological changes in Canada have featured labour reduction through advanced processes and process equipment, statistical quality control, and the use of computers in casting design, inventory and process control and financial analysis.

The level of technology used in the Canadian industry is as high as that in the United States, Europe and other competitors. However, the Canadian industry does very little of its own research and development. Technology is imported with equipment mainly from the United States but also from Europe and Japan. There has been no difficulty in acquiring state-of-the art technology.

3. Evolving Environment

A major problem facing the industry is the increasing importation of items which contain iron and steel castings into the North American market from newly industrialized, low-wage countries. These items include fully machined and finished castings, automotive engine transaxles and running-gear assemblies, farm and industrial tractors, and forklift trucks.

The automotive industry, which is a major consumer of ferrous castings, is undergoing structural adjustment largely resulting from increased outsourcing by North American assemblers, imports and large increases in automotive assembly capacity in North America by Asian companies. In the case of new investors, while they are significantly increasing their local sourcing of components, it will be several years before they have the very high levels of North American content that the traditional American assemblers are achieving. Consequently, a decline, at least during the next three to five years, could occur in the demand for ferrous castings for use in engines, power trains and brake components.

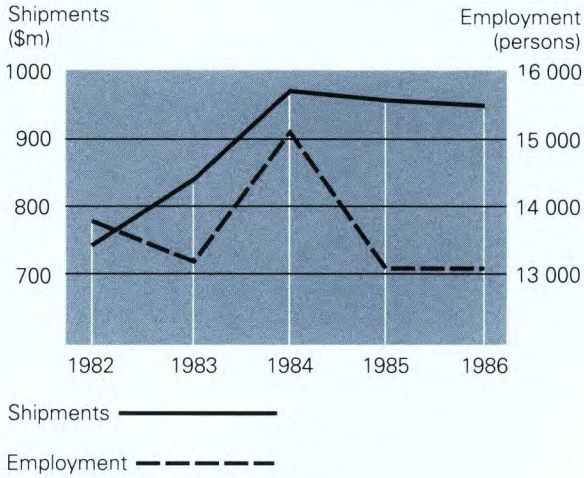
Continued replacement by materials such as aluminum, plastics, and ceramics is also expected to shrink demand for ferrous castings in the automotive, agricultural and mining equipment market in North America. These changes, together with increasing automation, will probably result in a further decrease in the number of foundries (and employees) in the industry.

Under the FTA, the elimination of tariffs will increase the competitiveness of Canadian castings in the United States, although it will also improve access to the Canadian market for U.S. castings. This could cause difficulties for some small, higher-cost Canadian foundries.

The FTA will also reduce the likelihood that safeguard actions will be used unfairly to hinder Canadian exports to the U.S. market. The increased certainty of access will encourage investment in Canadian ferrous foundries and result in improved productivity and product quality. Such improvement would increase the competitiveness of Canadian castings both in the United States and in the domestic market. While this would also make the industry somewhat more competitive in the Canadian market against offshore imports, the latter will continue to enjoy a net cost advantage in certain standard high-volume products.

4. Competitiveness Assessement

Because most ferrous castings have a relatively low value per unit of weight, transportation costs greatly affect their competitiveness. At the existing exchange rate, the Canadian ferrous foundry industry is generally competitive with the U.S. ferrous foundry industry in the northern U.S. market. However, on a cost basis, Canadian iron and steel castings are not competitive on the North American market with some of the castings from newly industrialized countries, mainly because of the very low labour costs in those countries. While there have been increasing imports of certain standard, high-volume items from these countries, customer service, reliable quality and prompt delivery have enabled Canadian foundries to compete successfully in most product lines.



*Total Shipments and Employment**

** Shipments are Statistics Canada estimates for all castings. Employment data are based on Canadian Foundry Association estimates for all castings.*

Large-scale production by the Asian auto assemblers in North America could reduce the market for both Canadian and U.S. ferrous castings until these firms implement their plans to produce, in North America, automotive components incorporating ferrous castings.

Overall, the FTA will have a moderately positive impact on the industry.

For further information concerning the subject matter contained in this profile, contact:

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PRINCIPAL STATISTICS

SIC(s) COVERED: 294 and 2912 (1980)

	1973	1982	1983	1984	1985	1986
*Establishments	200	166	157	149	149	155
**Employment	22 000	13 800	13 200	15 100	13 100	13 100
***Shipments ($ millions)	535	745	835	966	957	951
('000 tonnes)	1442	896	1 093	1 309	1 140	1 145
Gross Domestic Product (constant 1981 $ millions)(1)	363.0	209.5	247.6	352.8	363.6	393.0
Investment ($ millions)(1)	18.0	13.3	13.0	43.2	36.7	47.5
***Profits after tax ($ millions)	12.4	-29.2	18.0	30.0	N/A	N/A
***(% of sales)	4.0	- 4.2	3.3	5.1	N/A	N/A

TRADE STATISTICS

	1973	1982	1983	1984	1985	1986
Exports ($ millions)(2)	83.0	98.4	95.8	126.4	111.0	117.3
****Exports ($ millions)(3)	N/A	N/A	N/A	N/A	478.5	475.5
****Domestic shipments ($ millions)(3)	N/A	N/A	N/A	N/A	478.5	475.5
Imports ($ millions)(2)	57.1	61.7	68.3	102.6	88.0	88.6
****Imports ($ millions)(3)	N/A	N/A	N/A	N/A	159.5	158.5
****Canadian market ($ millions)(3)	N/A	N/A	N/A	N/A	638.0	634.0
*Exports as % of shipments(3)	N/A	N/A	N/A	N/A	50.0	50.0
****Imports as % of domestic market (3)	N/A	N/A	N/A	N/A	25.0	25.0

Source of imports (% of total value) (Raw castings only)		U.S.	E.C.	Asia	Others
	1982	86.7	10.7	2.1	0.4
	1983	92.9	4.7	2.1	0.4
	1984	90.5	5.0	3.6	0.9
	1985	86.7	5.8	5.6	1.9
	1986	83.3	5.4	9.9	1.4

Destination of exports (% of total value) (Raw castings only)		U.S.	E.C.	Asia	Others
	1982	93.6	0.5	0.2	5.7
	1983	96.5	0.2	0.0	3.3
	1984	99.3	0.0	0.1	0.5
	1985	99.5	0.3	0.0	0.2
	1986	99.1	0.1	0.0	0.8

(continued)

REGIONAL DISTRIBUTION — Average over the last 3 years

	Atlantic	Quebec	Ontario	Prairies	B.C.
Establishments – % total	7	21	52	11	9
Employment – % total	5	23	55	9	8
Shipments – % total	4	24	57	8	7

MAJOR FIRMS

Name	Ownership	Location of Major Plants	Type of Foundry
General Motors	U.S.	Ontario	Iron
Ford Motor Co. of Canada	U.S.	Ontario	Iron
Hawker Siddeley Canada Inc., Canadian Steel Foundries Division	U.K.	Quebec	Steel
Dofasco Inc., Foundry Division	Canadian	Ontario	Steel
Griffin Canada Inc.	U.S.	Quebec, Manitoba	Steel
Abex Industries Ltd.	U.S.	Quebec, Manitoba	Steel
Canron Inc.	Canadian	Ontario	Iron
Esco Ltd.	U.S.	British Columbia, Ontario	Steel
Norcast Inc.	Canadian	Ontario, Quebec	Iron
Bibby-Ste Croix Foundries Inc.	Canadian	Ontario, Quebec	Iron

* Industry, Science and Technology Canada estimates
** Canadian Foundry Association
*** Statistics Canada
**** Based on industry's estimates, which include castings incorporated in equipment.
(1) Iron Foundries only.
(2) Raw Castings only.
(3) All Castings - raw, machined and in equipment.

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