

**Alberta Metal Fabrication and Machinery Manufacturing:
Sector Overview**

Prepared by:

GTS *Group International Inc.*

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**Alberta Finance and Enterprise
Edmonton Economic Development Corporation
Central Alberta Regional Innovation Network
Calgary Economic Development**

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Table of Contents

	<u>Page</u>
Executive Summary	i
1. Introduction	1
2. The Metal Fabrication Industry in Alberta	2
2.1 Industry Summary	2
2.2 The Primary Metal Manufacturing Sub-Sector	4
2.3 The Fabricated Metal Products Sub-Sector	6
2.4 The Machinery Manufacturing Sub-Sector	8
2.5 The Transportation Equipment Manufacturing Sub-Sector	10
2.6 Metal Fabrication Industry Growth Forecast	13
3. Industry Exports	14
3.1 Primary Metals Manufacturing Exports	14
3.2 Fabricated Metal Products Exports	14
3.3 Machinery Manufacturing Exports	14
3.4 Transportation Equipment Manufacturing Exports	14
3.5 Total Industry Exports	16
4. Industry Information from Interviews	16
4.1 Industry Sectors Served by Alberta’s Metal Fabricating Industry. .	16
4.2 Products and Services Provided by the Metal Fabrication Industry.	17
4.3 Capabilities and Areas of Expertise	19
4.4 Geographical Markets Served	19
4.5 Size Distribution by Employees of Firms Surveyed	20
5. SWOT Analysis	21
5.1 Strengths	21
5.1.1 Strengths of Individual Firms	21
5.1.2 Sector Strengths	22
5.2 Weaknesses	22
5.2.1 Weaknesses of Individual Firms	22
5.2.2 Sector Weaknesses	23
5.3 Opportunities	23
5.3.1 Opportunities for Individual firms	23
5.3.2 Sector Opportunities	24
5.4 Threats	24
5.4.1 Threats to Individual Firms	24
5.4.2 Sector Threats	24
6. Conclusions	25
7. Recommendations	25

List of Tables

		<u>Page</u>
Table 2.1	Summary Statistics: Metal Fabrication Industry in Alberta	3
Table 2.2	The Primary Metal Manufacturing Sector in Alberta	5
Table 2.3	Primary Metal Products Composite Statistics	5
Table 2.4	Fabricated Metal Products Base Statistics	7
Table 2.5	Fabricated Metal Products Composite Statistics	7
Table 2.6	Machinery Manufacturing Base Statistics	9
Table 2.7	Machinery Manufacturing Composite Statistics	9
Table 2.8	Transportation Equipment Manufacturing Base Statistics	12
Table 2.9	Transportation Equipment Manufacturing Composite Statistics.	12
Table 3.1	Alberta Metal Fabrication Industry Exports	15
Table 4.1	Industry Sectors Served	17
Table 4.2	Size Distribution by Number of Employees	20

EXECUTIVE SUMMARY

Introduction

Alberta will require more than \$200 billion of new construction and maintenance spending in the next 10-15 years, much of it—approximately \$50 billion—for fabricated metal products. Based on existing activity of approximately \$14 billion per year, in addition to that new spending, Alberta is quickly becoming one of Canada’s major metal manufacturing centres, behind only Ontario and Quebec. A market opportunity of this size has attracted the attention of the world and global supply chains emerging from Alberta have been expanding and forming as project construction cycles continue. This presents a remarkable opportunity for Alberta’s metal fabrication companies to grow.

This report was sponsored by Alberta Finance and Enterprise, Calgary Economic Development, the Central Alberta Regional Innovation Network and Edmonton Economic Development Corporation to support the growth of the metal fabrication and manufacturing industry in Alberta by determining its present status and its future prospects.

The sub-sectors included in this report are:

- Primary Metal Manufacturing (NAICS code 331)
- Fabricated Metal Products (NAICS code 332)
- Machinery Manufacturing (NAICS code 333)
- Transportation Equipment Manufacturing (NAICS code 336)

Collectively, these sub-sectors are referred to as the metal fabrication industry in this report. The report provides an overview of the industry from the year 2000 to 2006 based on Statistics Canada data. In addition, interviews were held with 50 companies located throughout Alberta to develop a “feet-on-the-street” overview, determine markets and customers, products and services, as well as general industry capabilities. Working from those interviews, this report also offers an initial analysis of strengths, weaknesses, opportunities and threats (SWOT) influencing Alberta’s metal fabrications sector.

Summary

The following points are some of the highlights emerging from both the interviews and Statistics Canada data that form the basis of this report.

- The Metal Fabrication Industry in Alberta is substantial, with sales of approximately \$14.1 billion in 2006. It employs almost 60,000 people province wide, and has a payroll of approximately \$3.1 billion.
- The estimated economic impact of the industry on the provincial economy in 2006 was \$28.4 billion, including direct, indirect, and induced impacts.
- The industry in Alberta is very diverse, supplying a wide variety of services and products to a number of sectors, including: conventional oil and gas, heavy oil & oil sands, forestry, construction, agriculture, petrochemicals, mining, food processing and a number of other sectors.

- The industry has considerable capabilities and areas of expertise including design, engineering, fabrication and manufacture, and the ability to produce highly specialized products and equipment.
- In terms of markets, the industry is mainly local to Alberta, with secondary markets being other Western Canadian provinces, the USA, and international markets.
- Companies with niche markets and/or products tend to be the most successful in accessing markets outside the province.
- A good relationship with an Alberta company working internationally will facilitate off-shore exports by an Alberta fabricator, as the senior Alberta contractor often prefers to be supplied by an Alberta partner.
- The industry is comprised primarily of a large number of small businesses, with 85% of metal fabrication firms in the Alberta having fewer than 50 employees, the Statistics Canada definition of a small business.
- Strengths identified by the industry include diversity and flexibility, design and engineering, a highly skilled workforce, quality products and workmanship, and what was considered to be the best apprenticeship program in Canada.
- Weaknesses identified by the industry include a shortage/lack of skilled workers, rising wages and labour costs, increasing costs and availability of material inputs, an over-dependence on the oil & gas sector, and the slowdown in the US economy.

Sector Growth Forecast

- Government of Alberta forecasts see provincial GDP nominally expanding 9.0% in 2008, with a drop to just under 4% in 2009. Economic growth is seen to rebound over 2010 and 2011 with growth averaging 5.1% over the two-year period. Nominal GDP is set to surpass \$300 billion for the first time in 2010.
- Although exports will account for a minority share of rising production, they too will increase over the forecast period.
- Oil and gas activity in the rest of Canada will be the primary determinant of export growth.
- With both exports and domestic demand experiencing robust growth, real production will rise by an average of 9.6 per cent over the forecast period to 2009.
- Increases in labour costs are expected to prove more enduring, with labour shortages and thus rising real wages expected to persist over the forecast period. However, profit margins are not expected to be unduly affected.
 - Producers have considerable pricing power and have proven capable of passing their higher costs on to their customers in the past. This is not expected to change given the robust growth in demand for the sector's products.

- Output prices for the sector are expected to average growth of 2.8 per cent per year through 2009.

Recommendations

There is a need for consultation and cooperation between metal fabrication sector companies, government, professional associations and related organizations to identify and develop:

- ⇒ sources for skilled workers in order to alleviate labour shortages.
- ⇒ productivity, innovation and technology advancements that can be used to expand and increase company competitiveness.
- ⇒ strategies to increase worker training and upgrading skills in order to assist in improving productivity.
- ⇒ areas for cost reductions, such as supply sourcing, transportation costs, energy efficiency, employee productivity, etc.
- ⇒ effective strategies for market entry into the expanding oil sands construction and maintenance markets.
- ⇒ new market and export opportunities and product development, such as aerospace, defence and military, alternate energy equipment, etc.
- ⇒ opportunities to play a role in the facilitation and consultation between major project contractors and metal fabricators to improve design and engineering specifications in order to increase productivity, and delivery times.

1. Introduction

This report was sponsored by Alberta Finance and Enterprise, Calgary Economic Development, Edmonton Economic Development Corporation and the Central Alberta Regional Innovation Network to ascertain the status of the metal fabrication industry in Alberta.

The sub-sectors included in this report are:

- Primary Metal Manufacturing (NAICS code 331), including
 - Iron and steel mills and ferro-alloy manufacturing
 - Iron and steel pipes and tubes manufacturing
 - Rolling and drawing
 - Alumina and aluminum production and processing
 - Extruding and alloying
- Fabricated Metal Products (NAICS code 332), including
 - Forging and stamping
 - Plate work and fabricated structural product manufacturing
 - Prefabricated metal building and component manufacturing
 - Boiler, tank, pressure vessel and heat exchanger manufacturing
 - Machine shops
- Machinery Manufacturing (NAICS code 333), including
 - Agricultural, construction and mining machinery manufacturing
 - Oil and gas field machinery manufacturing
 - Industrial machinery manufacturing
 - Sawmill and woodworking machinery manufacturing
 - Ventilation, heating, air conditioning and commercial refrigeration equipment manufacturing
- Transportation Equipment Manufacturing (NAICS code 336), including
 - Heavy duty truck manufacturing
 - Motor vehicle body and trailer manufacturing
 - Motor home, travel trailer and camper manufacturing
 - Aerospace products and parts manufacturing
 - Railroad rolling stock manufacturing

Collectively, these sub-sectors are referred to as the metal fabrication industry in this report. The report provides an overview of the industry from the year 2000 to 2006 based on Statistics Canada data. In addition, interviews were held with 50 companies located throughout Alberta to develop a “feet-on-the-street” overview, determine markets and customers, products and services, as well as general industry capabilities. Working from those interviews, this report also offers an initial analysis of strengths, weaknesses, opportunities and threats (SWOT) influencing Alberta’s metal fabrications sector.

2. The Metal Fabrication Industry in Alberta

This section contains statistics on the primary metal manufacturing, the fabricated metal products, the machinery manufacturing, and the transportation equipment manufacturing sub-sectors, herein collectively referred to as the metal fabricating industry.

2.1 Industry Summary

Overview

- Summary statistics for the Metal Fabrication Industry in Alberta are contained in Table 2.1. By the end of 2006, the metal fabrication industry in Alberta was a \$14.1 billion industry (sale of manufactured goods) with employment of approximately 60,000 people and a payroll of approximately \$3.1 billion.
- There were approximately 2,600 establishments in the industry in 2006, up from approximately 1,600 in 2000.

Sales of Manufactured Goods

- The industry has experienced substantial growth based on sales of manufactured goods. Between 2000 and 2006, sales have more than doubled.
- Sales of manufactured goods grew by 16% between 2005 and 2006, reaching \$14.1 billion in 2006.

Employment Growth

- Employment growth in the industry has also been substantial, although not at the same pace as sales. Total employment grew by 46% between 2000 and 2006 with total industry employment reaching almost 60,000 people
- In 2006, it is estimated the industry employed more than 44,800 production workers, with a further 14,500 employed in administrative capacities.

Payroll

- Payroll has also grown. It is estimated to have increased by 91% between 2000 and 2006, and grew by 19% in the one-year period from 2005 to 2006.

Economic Impact

- Applying provincial multipliers as developed by Alberta Finance and Enterprise for the NAICS 331, 332, 333, and 336 sub sectors, the total economic impact of the metal fabrication industry (direct, indirect and induced impacts - using sales of manufactured goods) was estimated to be \$28.4 billion in 2006.

Table 2.1**Summary Statistics. Metal Fabrication Industry in Alberta**

	2000	2003	2005	2006	% Change 2000-2003	% Change 2003-2005	% Change 2005-2006	% Change 2000-2006
Number of establishments	1,598	1,694	2,524	2,598	6%	49%	3%	63%
Sales of manufactured goods and other revenue (x 1,000)	\$7,365,142	\$9,042,315	n/a	n/a	23%			
Sales of manufactured goods (x 1,000)	\$6,802,392	\$8,220,448	\$12,216,160	\$14,142,245	21%	49%	16%	108%
Cost of materials, supplies and goods for resale (x 1,000)	\$3,856,076	\$4,985,965	n/a	n/a	29%			
Cost of fuel and utilities (x 1,000)	\$116,458	\$159,024	n/a	n/a	37%			
Cost of materials and supplies (x 1,000)	\$3,466,926	\$4,429,200	n/a	n/a	28%			
Manufacturing value added (x 1,000)	\$3,317,265	\$3,643,102	n/a	n/a	10%			
Production workers (persons) *	32,681	35,125	40,523	44,843	7%	15%	11%	37%
Production workers wages (x 1,000)	1,147,470	1,386,017	n/a	n/a	21%			
Non-manufacturing employees (persons) *	8,031	10,804	13,149	14,564	35%	22%	11%	81%
Non-manufacturing employee salaries (x 1,000)	455,069	645,935	n/a	n/a	42%			
Total employees (persons) *	40,712	45,929	53,672	59,407	13%	17%	11%	46%
Total salaries and wages (x 1,000) **	\$1,602,539	\$2,031,952	\$2,571,244	\$3,068,068	27%	27%	19%	91%
Total value added (x 1,000)	3,503,313	3,900,172	n/a	n/a	11%			

Source: Statistics Canada. Principal statistics for manufacturing industries, by NAICS, annual nominal dollars unless otherwise noted

* Estimates. Worker/employee data is not available for Primary Metal Products (NAICS 331). NAICS 331 account for <7% of total.

** Estimate. Wage/salary data not available for Primary Metal Products (NAICS 331). NAICS 331 account for <7% of the total.

2.2 The Primary Metal Manufacturing Sub-Sector

The primary metal manufacturing sector in Alberta includes iron and steel mills, steel rolling mills, and other primary metal facilities. Table 2.2 provides base statistics for the sector in Alberta for the period 2000 to 2003. For subsequent years, only the number of establishments is available from Statistics Canada due to confidentiality requirements. However, sale of manufactured goods are available from other sources for the years 2005 and 2006. This information has been incorporated into Table 2.2.

Sales of manufactured goods were approximately \$1.2 billion in the year 2000. During the years 2000 to 2003 sales increased by 11%, with a further increase of 46% between 2003 and 2005. With a large single year increase of 18% between 2005 and 2006, sales reached approximately \$2.3 billion. Overall, from 2000 to 2006, sales of manufactured goods increased by 92%, for an average annual growth rate in excess of 15%.

The cost of materials and supplies increased by 41% between 2000 and 2003, and as a result, the cost of materials increased from 52% of sales in 2000 to 66% of sales in 2003.

In 2003, the sector employed some 2,300 production workers, down 18% from the 2,800 production workers employed in 2000. The number of non-manufacturing employees (administrative and professional staff) decreased by 22% during the years 2000 to 2003, from 636 staff to 496. The total number of employees in the sector decreased by 18% between 2000 and 2003, from 3,434 to 2,801.

While the number of production workers decreased, the wage total wage bill for these workers increased by 8% between 2000 and 2003, from \$118.6 million to \$127.9 million. There was a slight decrease in the total salaries paid to non-production workers, from \$40.7 million in 2000 to \$40.1 million in 2003. Overall, total salaries and wages increased by 5% between 2000 and 2003, from \$159.3 million to \$168.0 million.

As per Table 2.3, the average wages for production workers increased by 31% between 2000 and 2003, going from \$42,400 to \$55,500 per year from \$37,500 to \$43,400 per year. The average salary for administrative staff reached \$80,900 in 2003, an increase of 26% over the year 2000.

Dollar sales for each dollar spent on materials and supplies decreased by 21% between 2000 and 2003, from \$2.05 to \$1.61.

Gains in dollar sales per production worker seem to indicate productivity gains. Between 2000 and 2003, sales per production worker increased from \$423,500 to \$571,300, an increase of 35%. If gains in dollar sales per production worker were impressive, they were even more so for administrative staff. Dollar sales for each administrative staff reached almost \$2.7 million in 2003, an increase of 42% over the year 2000.

Table 2.2**The Primary Metal Manufacturing Sector in Alberta**

	2000	2003	2005	2006	% Change 2000-2003	% Change 2003-2005	% Change 2005-2006	% Change 2000-2006
Number of establishments	59	57	75	77	-3%	32%	3%	31%
Sales of manufactured goods and other revenue (x 1,000)	\$1,225,257	\$1,355,060	x	x	11%			
Sales of manufactured goods (x 1,000)	\$1,184,949	\$1,316,819	\$1,925,000	\$2,270,000	11%	46%	18%	92%
Cost of materials, supplies and goods for resale (x 1,000)	\$623,960	\$878,233	x	x	41%			
Cost of fuel and electricity (x 1,000)	\$49,759	\$62,393	x	x	25%			
Cost of materials and supplies (x 1,000)	\$579,121	\$817,547	x	x	41%			
Manufacturing value added (x 1,000)	\$584,019	\$430,543	x	x	-26%			
Production workers (persons)	2,798	2,305	x	x	-18%			
Production workers wages (x 1,000)	\$118,623	\$127,892	x	x	8%			
Non-manufacturing employees (persons)	636	496	x	x	-22%			
Non-manufacturing employee salaries (x 1,000)	\$40,699	\$40,118	x	x	-1%			
Total employees (persons)	3,434	2,801	x	x	-18%			
Total salaries and wages (x 1,000)	\$159,322	\$168,010	x	x	5%			
Total value added (x 1,000)	\$577,109	\$408,084	x	x	-29%			

X - Data suppressed by Statistics Canada

Source: Statistics Canada. Principal statistics for manufacturing industries, by NAICS, annual nominal dollars unless otherwise noted

Table 2.3**Primary Metal Products Composite Statistics**

	2000	2003	2000-2003
Average wages for production workers	\$42,396	\$55,485	31%
Average wages for administrative staff	\$63,992	\$80,883	26%
Dollar sales for each dollar spent on materials/supplies	\$2.05	\$1.61	-21%
Dollar sales for each production worker	\$423,499	\$571,288	35%
Dollar sales for each administrative staff	\$1,863,127	\$2,654,877	42%
Dollar sales for each total employees	\$181,701	\$313,543	73%

Source: Statistics Canada. Principal statistics for manufacturing industries, by NAICS, annual nominal dollars unless otherwise noted

2.3 The Fabricated Metal Products Sub-Sector

The fabricated metal products component of the sector include forging and stamping, plate work and fabricated structural products, boilers and tanks. Table 2.4 provides base statistics for the component for the years 2000 to 2006.

The number of companies in the sector has grown considerably between the year 2000 and 2006. In 2006 there were 1,270 firms, an increase of 54%, or 434 new firms since the year 2000.

Sales of manufactured goods almost doubled between 2000 and 2006, with sales reaching approximately \$4.8 billion. The annual average growth rate was 24% between 2003 and 2005, and sales grew by 18% between 2005 and 2006.

The cost of materials and supplies kept pace with sales, increasing by 91% between 2000 and 2006. It has remained stable, being 48% of sales in 2000 and 2003, and 47% of sales in 2006. In 2005, the cost was 51% of sales.

The fabricated metals sector is a large employer. The number of production workers was just under 20,000 in 2006, an increase of 33% over the year 2000. The increase was particularly high in the one year period from 2005 to 2006, when production workers grew by 16 percent.

Non-manufacturing employees increased from 3,111 to 5,622 between 2000 and 2006, a substantial increase of 81 percent. However, as there were some 1,270 establishments in 2006, that is only an average of 4.4 administrative staff per firm.

The total wage bill for production workers increased from \$492.9 million to \$881.3 million (or 79%) between 2000 and 2006. In the one year period between 2005 and 2006, there was a 20% increase in the total wage bill for production workers.

The total salary bill for non-manufacturing employees increased even more. There was an increase of 144% from 2000 to 2006, when the total salary bill for non-manufacturing employees reached \$415.4 million. Between 2005 and 2006 alone, the salary bill grew by a substantial 23 percent.

The total wages and salaries for the sub-sector grew from \$663.2 million in 2000 to approximately \$1.3 billion in 2006, an increase of 96 percent.

As per Table 2.5, the average wage for production workers grew from approximately \$32,800 in 2000 to approximately \$44,100 (a 34% increase) between 2000 and 2006, an average annual increase of 5.7 percent. The average salary for administrative staff was approximately \$54,700 in 2000, growing to approximately \$73,900 in 2006, an increase of 35 percent.

Table 2.4 Fabricated Metal Products Base Statistics	2000	2003	2005	2006	% Change 2000-2003	% Change 2003-2005	% Change 2005-2006	% Change 2000-2006
	Number of establishments	826	891	1210	1270	8%	36%	5%
Sales of manufactured goods and other revenue (x 1,000)	\$2,697,339	\$3,089,845	\$ 4,444,886	\$5,183,103	15%	44%	17%	92%
Sales of manufactured goods (x 1,000)	\$2,480,581	\$2,804,796	\$ 4,142,709	\$4,792,358	13%	48%	16%	93%
Cost of materials, supplies and goods for resale (x 1,000)	\$1,327,740	\$1,543,042	n/a	n/a	16%			
Cost of fuel and utilities (x 1,000)	\$38,551	\$54,273	\$73,831	\$86,677	41%	36%	17%	125%
Cost of materials and supplies (x 1,000)	\$1,187,401	\$1,333,604	\$2,032,478	\$2,272,945	12%	52%	12%	91%
Manufacturing value added (x 1,000)	\$1,270,900	\$1,421,477	\$2,036,494	\$2,470,147	12%	43%	21%	94%
Production workers (persons)	15,037	16,098	17,163	19,990	7%	7%	16%	33%
Production workers wages (x 1,000)	\$492,928	\$582,324	\$733,577	\$881,308	18%	26%	20%	79%
Non-manufacturing employees (persons)	3,111	4,432	5,275	5,622	42%	19%	7%	81%
Non-manufacturing employee salaries (x 1,000)	\$170,295	\$232,224	\$336,577	\$415,365	36%	45%	23%	144%
Total employees (persons)	18,148	20,530	22,438	25,612	13%	9%	14%	41%
Total salaries and wages (x 1,000)	\$663,223	\$814,548	\$1,070,154	\$1,296,673	23%	31%	21%	96%
Total value added (x 1,000)	\$1,354,732	\$1,496,102	n/a	n/a	10%			

Source: Statistics Canada. Principal statistics for manufacturing industries, by NAICS, annual nominal dollars unless otherwise noted

Table 2.5 Fabricated Metal Products Composite Statistics	2000	2003	2005	2006	% Change 2000-2003	% Change 2003-2005	% Change 2005-2006	% Change 2000-2006
	Average wages for production workers	\$32,781	\$36,174	\$42,742	\$44,087	10%	18%	3%
Average wages for administrative staff	\$54,740	\$52,397	\$63,806	\$73,882	-4%	22%	16%	35%
Dollar sales for each dollar spent on materials/supplies	\$2.09	\$2.10	\$2.04	\$2.11	-	-3%	3%	-
Dollar sales for each production worker	\$164,965	\$174,233	\$241,374	\$239,738	6%	39%	-1%	45%
Dollar sales for each administrative staff	\$797,358	\$632,851	\$785,348	\$852,429	-20%	24%	9%	7%
Dollar sales for each total employees	\$73,162	\$75,160	\$184,629	\$187,113	3%	146%	1%	156%

Source: Statistics Canada. Principal statistics for manufacturing industries, by NAICS, annual nominal dollars unless otherwise noted

The dollar sales for each dollar spent on materials and supplies were relatively stable in the period 2000 to 2006. It was \$2.09 in 2000, decreasing slightly to \$2.94 in 2005, and then increased again to \$2.11 in 2006.

The dollar sales for each production worker rose by 45% between 2000 and 2006 from approximately \$165,000 to approximately \$239,800. This would seem to indicate that there are productivity gains in the metal fabrication sector.

On the other hand, the dollar sales for each administrative staff member increased by only 7% from 2000 to 2006 from approximately \$797,400 to approximately \$852,400. This rate of increase is far below that recorded by each production worker.

2.4 The Machinery Manufacturing Sub-Sector

The machinery manufacturing component includes agricultural, construction, and mining and oil & gas field machinery manufacturing, industrial machinery manufacturing, and sawmill and woodworking machinery manufacturing. It is the largest of the sub-sectors in Alberta's metal fabrication industry, both in terms of sales and in terms of employees.

According to Table 2.6, sales of manufactured goods more than doubled (rising 139%) between 2000 and 2006, from approximately \$2.6 billion to approximately \$6.2 billion per year. On average, sales increased by 23% per year in the six-year period.

If sales rose rapidly, the costs of input materials and supplies kept pace. Input prices more than doubled (147%) between 2000 and 2006, from \$1.4 billion to \$3.5 billion. The cost of materials and supplies has remained relatively stable, accounting for 54% of sales in 2000 and 56% of sales in 2006.

While substantial, increases in production workers were not nearly as dramatic. The sector employed approximately 11,500 production workers in 2000, growing to approximately 19,200 in 2005, a 66% increase. This still translates into an annual average growth of more than 10% over the six-year period.

Growth in the number of non-manufacturing employees was substantially higher than for production workers, increasing by 156% between 2000 and 2006, from approximately 2,800 to approximately 7,300. This indicates an average growth rate of about 25% over the past six years, although the annual growth seems to have moderated between 2005 and 2006.

The wage bill for construction workers essentially doubled between 2000 and 2006 from approximately \$437.7 million to approximately \$876.2 million, while the salary bill for non-manufacturing workers increased by more than 200% between 2000 and 2006, from \$172.6 million to \$519.4 million. The total wage and salary bill grew from some \$610.2 million in 2000 to \$1.4 billion in 2006. In percentage terms the total wage bill has been relatively stable, representing approximately 23% of sales in both 2000 and 2006.

Table 2.6

					% Change	% Change	% Change	% Change
Machinery Manufacturing Base Statistics	2000	2003	2005	2006	2000-2003	2003-2005	2005-2006	2000-2006
Number of establishments	566	594	954	966	5%	61%	1%	71%
Sales of manufactured goods and other revenue (x 1,000)	\$2,830,689	\$3,781,150	\$5,632,339	\$6,668,671	34%	49%	18%	136%
Sales of manufactured goods (x 1,000)	\$2,574,965	\$3,323,433	\$5,280,535	\$6,154,659	29%	59%	17%	139%
Cost of materials, supplies and goods for resale (x 1,000)	\$1,564,158	\$2,139,978	n/a	n/a	37%			
Cost of fuel and utilities (x 1,000)	\$22,259	\$36,142	\$64,305	\$76,941	62%	78%	20%	246%
Cost of materials and supplies (x 1,000)	\$1,402,916	\$1,893,507	\$2,906,879	\$3,463,056	35%	54%	19%	147%
Manufacturing value added (x 1,000)	\$1,188,821	\$1,415,681	\$2,343,499	\$2,834,950	19%	66%	21%	138%
Production workers (persons)	11,511	13,211	17,010	19,161	15%	29%	13%	66%
Production workers wages (x 1,000)	\$437,656	\$546,563	\$747,674	\$876,242	25%	37%	17%	100%
Non-manufacturing employees (persons)	2,844	4,865	6,344	7,273	71%	30%	15%	156%
Non-manufacturing employee salaries (x 1,000)	\$172,550	\$316,544	\$436,717	\$519,363	83%	38%	19%	201%
Total employees (persons)	14,355	18,076	23,354	26,434	26%	29%	13%	84%
Total salaries and wages (x 1,000)	\$610,206	\$863,107	\$1,184,391	\$1,395,605	41%	37%	18%	94%
Total value added (x 1,000)	\$1,289,730	\$1,623,894	n/a	n/a	26%			

Source: Statistics Canada. Principal statistics for manufacturing industries, by NAICS, annual nominal dollars unless otherwise noted

Table 2.7

					% Change	% Change	% Change	% Change
Machinery Manufacturing Composite Statistics	2000	2003	2005	2006	2000-2003	2003-2005	2005-2006	2000-2006
Average wages for production workers	\$38,021	\$41,372	\$43,955	\$45,730	9%	6%	4%	20%
Average wages for administrative staff	\$60,672	\$65,066	\$68,839	\$71,410	7%	6%	4%	18%
Dollar sales for each dollar spent on materials/supplies	\$1.84	\$1.76	\$1.82	\$1.78	-4%	3%	-2%	-3%
Dollar sales for each production worker	\$223,696	\$251,566	\$310,437	\$321,208	12%	23%	3%	44%
Dollar sales for each administrative staff	\$905,403	\$683,131	\$832,367	\$846,234	-25%	22%	2%	-7%
Dollar sales for each total employees	\$108,963	\$118,388	\$226,108	\$232,831	9%	91%	3%	114%

Source: Statistics Canada. Principal statistics for manufacturing industries, by NAICS, annual nominal dollars unless otherwise noted

As per Table 2.7, the average wages for production workers increased by 20% between 2000 and 2006, from \$38,021 to \$45,730. In percentage terms, this translates into an average annual increase of 3.3 percent

The average salary for administrative staff increased from \$60,672 in 2000 to \$71,410 in 2006, an increase of 18%. Again, with an average annual increase of 3%, this rate of growth does not seem to be excessive.

Dollar sales for each dollar spent on materials and supplies have shown some slight variation over the six-year period between 2000 and 2006, fluctuating between \$1.76 and \$1.84.

Dollar sales for each production worker have risen steadily since 2000, from approximately \$223,700 to \$321,200 in 2006, an overall increase of 44%. This would seem to indicate a substantial productivity gain, as the annual average rate of increase over the six year period exceeds 7 percent.

Dollar sales for each administrative staff has decreased between 2000 and 2006, from approximately \$905,400 to \$846,200, a decrease of 7 percent. The ratio of production workers to administrative workers was 4.04:1 in 2000, decreasing to 2.63:1 in 2006. This could indicate some potential for productivity gain, but there may well be valid reasons for the change in the ratio.

2.5 The Transportation Equipment Manufacturing Sub-sector

Transportation equipment manufacturing includes heavy duty truck manufacturing, and trailer and truck body manufacturing. As of 2006, there were some 285 firms in this sub-sector.

Table 2.8 shows that sales of manufactured goods increased by 58% between 2000 and 2006, from \$612 million to \$966 million, for an annual average growth rate in the period of just under 10 percent.

Cost of materials and supplies grew at a somewhat higher rate of 67% in the same period, increasing from \$297.5 million in 2000 to \$496.3 million in 2006. As a percentage of sales, cost of materials and supplies have varied somewhat in the period, from a low of 48% in 2003 to a high of 56% in 2005. In 2006, cost of materials and supplies were 53% of sales.

There was a small increase in the number of production workers from 3,335 to 3,582 from 2000 to 2006, an increase of 7 percent.

There was a different pattern for non-manufacturing employees. The sector shed 30% of its non-manufacturing employees between 2000 and 2006, decreasing from 1,440 to just over 1,000 employees. There was a period low of 878 non-manufacturing employees in 2005.

As can be seen in Table 2.9, production workers' average annual wages increased from \$29,464 in 2000 to \$38,497 in 2006, an increase of 31 percent. The annual average increase in the period amounted to just over 5 percent. Non-manufacturing employees' average salaries increased by 29% between 2000 and 2006, from \$49,670 to \$63,975.

Dollar sales for each dollar spent on materials/supplies showed considerable variation in the period, ranging from a high of \$2.02 in 2003 to a low of \$1.78 in 2005. In 2006, dollar sales for each dollar spent on materials and supplies amounted to \$1.86.

Dollar sales for each production worker increased steadily between 2000 and 2006, from \$168,500 to \$258,300 per worker, a total increase of 53% - or almost 9% per year. Although the annual growth rate was almost 9%, there was a slight decrease in sales per production worker in 2006.

Dollar sales for each administrative staff increased by a substantial 136% from \$390,200 to \$921,500 between 2000 and 2006, for an annual average growth rate in excess of 22 percent. As with the production workers, there was a decrease in dollar sales per administrative staff in 2006.

Table 2.8

Transportation Equipment Manufacturing Base Statistics	2000	2003	2005	2006	% Change	% Change	% Change	% Change
					2000-2003	2003-2005	2005-2006	2000-2006
Number of establishments	147	152	285	285	3%	88%	-	94%
Sales of manufactured goods and other revenue (x 1,000)	\$611,857	\$816,260	\$921,468	\$965,806	33%	13%	5%	58%
Sales of manufactured goods (x 1,000)	\$561,897	\$775,400	\$867,916	\$925,228	38%	12%	7%	65%
Cost of materials, supplies and goods for resale (x 1,000)	\$340,218	\$424,712	n/a	n/a	25%			
Cost of fuel and utilities (x 1,000)	\$5,889	\$6,216	\$8,800	\$9,278	6%	42%	5%	58%
Cost of materials and supplies (x 1,000)	\$297,488	\$384,542	\$487,045	\$496,257	29%	27%	2%	67%
Manufacturing value added (x 1,000)	\$273,525	\$375,401	\$369,754	\$428,954	37%	-2%	16%	57%
Production workers (persons)	3,335	3,511	3,319	3,582	5%	-5%	8%	7%
Production workers wages (x 1,000)	\$98,263	\$129,238	\$121,178	\$137,895	32%	-6%	14%	40%
Non-manufacturing employees (persons)	1,440	1,011	878	1,004	-30%	-13%	14%	-30%
Non-manufacturing employee salaries (x 1,000)	\$71,525	\$57,049	\$49,979	\$64,231	-20%	-12%	29%	-10%
Total employees (persons)	4,775	4,522	4,197	4,586	-5%	-7%	9%	-4%
Total salaries and wages (x 1,000)	\$169,788	\$186,287	\$171,157	\$202,126	10%	-8%	18%	19%
Total value added (x 1,000)	\$281,742	\$372,092	n/a	n/a	32%			

Source: Statistics Canada. Principal statistics for manufacturing industries, by NAICS, annual nominal dollars unless otherwise noted

Table 2.9

Transportation Equipment Manufacturing Composite Statistics	2000	2003	2005	2006	% Change	% Change	% Change	% Change
					2000-2003	2003-2005	2005-2006	2000-2006
Average wages for production workers	\$29,464	\$36,809	\$36,510	\$38,497	25%	-1%	5.00%	31%
Average wages for administrative staff	\$49,670	\$56,428	\$56,924	\$63,975	14%	1%	12.00%	29%
Dollar sales for each dollar spent on materials/supplies	\$1.89	\$2.02	\$1.78	\$1.86	7%	-12%	4.00%	-2%
Dollar sales for each production worker	\$168,485	\$220,849	\$261,499	\$258,299	31%	18%	-1.00%	53%
Dollar sales for each administrative staff	\$390,206	\$766,963	\$988,515	\$921,542	97%	29%	-7.00%	136%
Dollar sales for each total employees	\$71,250	\$93,921	\$206,794	\$201,751	32%	122%	-2.00%	183%

Source: Statistics Canada. Principal statistics for manufacturing industries, by NAICS, annual nominal dollars unless otherwise noted

2.6 Metal Fabrication Industry Growth Forecast

Government of Alberta forecasts see provincial GDP nominally growing 9.0% in 2008, with a drop to just under 4% in 2009. Economic growth is seen to rebound over 2010 and 2011 with growth averaging 5.1% over the two-year period. Nominal GDP is set to surpass \$300 billion for the first time in 2010.

Domestic (i.e. Alberta-based) demand for fabricated metal products will be the key source of growth for the sector. Forecasts are calling for average annual growth in real domestic demand of 10.3 per cent per year through to 2009, though this figure may be reduced slightly as the industry deals with the impacts of the stronger Canadian dollar and the re-profiling of major industrial project schedules.

Although exports will account for a minority share of rising production, they too will increase over the forecast period. This may be affected by the current and near-term weakness of the American dollar and by international economic uncertainties. However oil and gas activity in the rest of Canada will be the primary determinant of in-country export growth.

With both exports and domestic demand experiencing robust growth, real production will rise by an average of 9.6 per cent over the forecast period to 2009. This will have an impact on the trade flows of fabricated metal goods and the steel feedstock demanded by the industry, and is heavily dependent on the timing of major capital projects in the oil sands and energy sectors.

Increases in labour costs are expected to prove more enduring, with labour shortages and thus rising real wages expected to persist over the forecast period. However, profit margins are not expected to be unduly affected.

Producers have considerable pricing power and have proven capable of passing their higher costs on to their customers in the past; this is not expected to change given robust demand growth for the sector's products. Output prices for the sector are expected to average growth of 2.8 per cent per year through 2009.

3. Industry Exports

Industry exports are shown in Table 3.1.

3.1 Primary Metals Manufacturing

Primary metals manufacturing exports have more than tripled from approximately \$435.5 million in 2000 to \$1.5 billion in 2006. While exports represented 37% of total sales in 2000, they have grown to represent some 66% of sales in 2006. Thus, there is a growing export dependency in this sub-sector, with more than half of the output being dependent on export markets.

From 2000 through 2006, the US market grew from 22% of exports to 31%. This would seem to indicate that, notwithstanding the increasing proportion going to the US, there is diversity in export markets for this sector.

3.2 Fabricated Metal Products Exports

Fabricated metal products have the lowest ratio of exports to total sales of all the sub-sectors comprising the metal fabrication industry in Alberta. Exports have remained stable at 13% - 14% of total sales for the entire period from 2000 to 2006, being \$332 million in 2000 and \$635 million in 2006. Consequently, it can be concluded that this sub-sector is essentially domestic.

While overall exports are low, the US market accounts for 72% - 78% of total exports. Thus, exports are largely dependent upon the US market.

3.3 Machinery Manufacturing Exports

Machinery manufacturing exports amounted to more than \$2.1 billion in 2005, the highest of all the sub-sectors. Exports have grown in approximate lock-step with total sales, ranging between 33% and 38% of sales in the 2000 to 2006 period.

The US market accounted for 65% of exports in 2000, and has remained relatively stable, with the US market accounting for 61% in 2006.

3.4 Transportation Equipment Manufacturing Exports

Exports as a percentage of total sales have declined between 2000 and 2006. In 2000, exports amounted to 60% of sales, dropping to 46% in 2003 and 2005, before recovering to 50% of total sales in 2006. Thus, as with primary metals manufacturing, this sub-sector can be deemed to be export dependent, as any disruption in exports would have substantial impact.

In the period 2000 to 2006, the US market accounted for 75% to 85% of total exports. Thus, in terms of exports there is a substantial dependency on the US market.

Table 3.1

Alberta Metal Fabrication Industry Exports (in \$000)

	2000	2003	2005	2006	% Δ 2000 - 2003	% Δ 2003 - 2005	% Δ 2005 - 2006	% Δ 2000 - 2006
NAICS 331 - Primary Metal Manufacturing								
<u>Total Sales of Manufactured Goods</u>	\$1,184,949	\$1,316,819	\$1,925,000	\$2,270,000	11%	46%	18%	92%
<u>Exports as a % of Sales</u>	37%	51%	56%	66%				
Total Exports to All Countries	\$435,536	\$665,649	\$1,073,747	\$1,497,895	53%	61%	40%	244%
US Exports	\$94,174	\$141,247	\$333,187	\$470,014	50%	136%	41%	399%
US Exports as % of Total	22%	21%	31%	31%				
NAICS 332 - Fabricated Metal Product Manufacturing								
<u>Total Sales of Manufactured Goods</u>	\$2,480,581	\$2,804,796	\$4,142,709	\$4,792,358	13%	48%	16%	93%
<u>Exports as a % of Sales</u>	13%	14%	13%	13%				
Total Exports to All Countries	\$331,984	\$383,991	\$522,563	\$634,650	16%	36%	21%	91%
US Exports	\$259,317	\$286,551	\$377,624	\$471,771	11%	32%	25%	82%
US Exports as % of Total	78%	75%	72%	74%				
NAICS 333 - Machinery Manufacturing								
<u>Total Sales of Manufactured Goods</u>	\$2,574,965	\$3,323,433	\$5,280,535	\$6,154,659	29%	59%	17%	139%
<u>Exports as a % of Sales</u>	38%	38%	33%	35%				
Total Exports to All Countries	\$967,630	\$1,273,298	\$1,737,000	\$2,147,597	32%	36%	24%	122%
US Exports	\$632,317	\$735,417	\$1,030,530	\$1,317,900	16%	40%	28%	108%
US Exports as % of Total	65%	58%	59%	61%				
NAICS 336 - Transportation Equipment Manufacturing								
<u>Total Sales of Manufactured Goods</u>	\$561,897	\$775,400	\$867,916	\$925,228	38%	12%	7%	65%
<u>Exports as a % of Sales</u>	60%	46%	46%	50%				
Total Exports to All Countries	\$334,571	\$355,299	\$397,233	\$462,950	6%	12%	17%	38%
US Exports	\$259,704	\$302,691	\$318,550	\$346,093	17%	5%	9%	33%
US Exports as % of Total	78%	85%	80%	75%				
<u>Total Sales of Manufactured Goods</u>	\$6,802,392	\$8,220,448	\$12,216,160	\$14,142,245	21%	49%	16%	108%
<u>Exports as a % of Sales</u>	30%	33%	31%	34%				
Total Exports NAICS 331, 332, 333, 336	\$2,069,721	\$2,678,237	\$3,730,544	\$4,743,092	29%	39%	27%	129%
US Exports NAICS 331, 332, 333, 336	\$1,245,512	\$1,465,906	\$2,059,890	\$2,605,779	18%	41%	27%	109%
US Exports as % of Total	60%	55%	55%	55%				

Source of data: Statistics Canada

3.5 Total Industry Exports

Total industry exports have more than doubled between 2000 and 2006, from \$2.1 billion to \$4.7 billion. In 2006, exports amounted to 34% of total sales for the metal fabrication industry in Alberta. The US market accounted for 55% to 60% of exports, making it the dominant export market for this industry sector.

While there is considerable variation in export dependency between the sub-sectors, overall it can be concluded that the industry is not particularly export dependent, but do depend to a considerable extent on the US market for its exports.

4. Industry Information from Interviews

Some 50 firms located throughout the province were interviewed for this project. Firms were selected by the study's project management team as generally representative of the Alberta metal fabrication industry. While the results of these interviews cannot be considered to be statistically significant, they nevertheless provide good insight into the industry in Alberta.

4.1 Industry Sectors Served by Alberta's Metal Fabricating Industry

The metal fabrication industry in Alberta serves a number of sectors. Table 4.1 provides information on the sectors served by companies interviewed for this report. Some 87% of respondents reported doing work in the conventional oil and gas sector. Geographically, firms doing work in oil and gas were located throughout all the regions in the province. Some 23% of the firms do work for the oil sands in northeastern Alberta. The firms working for oil sands were, with one exception, located from Red Deer and north, with the great majority located in the Greater Edmonton region. The one exception is a firm in southern Alberta doing oil sands work on a sub-contract basis.

Thirteen percent of the firms reported doing work in the forestry, construction, and agriculture sectors. Construction included both industrial and residential. The firms doing work in the forestry sectors were located primarily in Edmonton, but also in northern Alberta. The firms doing work in the agricultural sector tended to be located outside of the Edmonton and Calgary metropolitan areas.

Another 9% of the firms reported doing work in the petrochemical and mining sectors. The firms serving the petrochemical industry were located in Red Deer, Edmonton and in-between, which is where most of Alberta's petrochemical complex is located. Firms serving the mining industry (primarily coal mining) were located in Edmonton, central and southwestern Alberta.

**Table 4.1
Industry Sectors Served**

Sector:	% of Firms
Oil & Gas	87%
Oil sands	23%
Forestry	13%
Construction	13%
Agriculture	13%
Petrochemicals	9%
Mining	9%
Food Processing	4%
Power Industry	2%
Pipelining	2%
Pet Food	2%
Pharmaceuticals	2%
HVAC	2%
n = 47	

Source: GTS Group

The 4% of firms doing work for the food processing industry were all located in southern Alberta. Some 2% of respondent firms serve the pet food, pharmaceuticals, power industry, pipelining, and HVAC (heating, ventilation and air conditioning) sectors. It is also known that the metal fabrication and machining industry serves the defense and aerospace industry in Alberta.

There is considerable variation in the number of sectors served by the metal fabricators.

- 19% reported serving 4 different industry sectors
- 21.3% reported serving 3 different industry sectors
- 12.8% reported serving 2 different industry sectors
- 46.8% reported serving only a single industry sector
 - Of these, some 91% (or 47% of all the firms interviewed) were dependent upon the conventional oil & gas industry. Furthermore, 68% of these firms were located outside of the Edmonton and Calgary metropolitan regions, indicating that these regional firms are sensitive to activity levels in the conventional oil and gas industry.

4.2 Products and Services Provided by the Metal Fabrication Industry

The industry in Alberta supplies a wide range of products and services, indicating that the industry has substantial collective capability. These include, in general:

- Pre-design and design
- Engineering
- Fabrication and manufacturing
- Custom fabrication
- Machining
- Welding

Specific products and services identified included:

- Turnkey screw piles
- Turbine rebuilds for hydro plants
- Water pumps and maintenance thereof
- Vehicles and vans,
- Manufacture of mobile equipment and tank trucks
- Manufacture of trucks for oil services and well sites
- Wireline trucks and skids
- Equipment for oil sands plant maintenance
- Plant maintenance
- Buildings for portable power plants
- Buildings in general
- Roll cages for logging equipment
- Components for cranes moving logs
- Design, engineering, fabrication of pressure vessels
- Custom spooling for pipelines and petrochemicals
- Equipment for oil and gas in general
- Hydraulic rams
- Lime Boring
- Case hole products
- Grease injection
- Pressure testers
- Separation equipment
- Valves
- Wellsite equipment
- Wellhead equipment
- Well control and downhole equipment
- Swabbing units
- Galvanized duct work
- Zed bars
- Prefinished flashing
- Structural steel
- Air cooled heat exchanger assemblies
- Feed mixers
- Refurbishing of agricultural and food processing equipment
- Processing systems and equipment
- Oil & gas processing equipment
- Drilling equipment
- Processing plants
- Global dehydration systems

4.3 Capabilities and Areas of Expertise

The companies reported a wide range of capabilities and areas of expertise. These included:

- Design, drafting, engineering and manufacture
- 3D design
- Product development
- Custom and precision machining
- Welding, including pressure and specialized welding
- Cutting and forming
- Assembly
- Overlay tungsten carbide for buckets
- Fabrication of pressure vessels
- Equipment for transport of dangerous goods
- Screw piles
- Manufacturing and installing heating and ventilation systems
- Process design for oil/water separators
- Well control and wellhead equipment
- Air cooled heat exchanger assemblies
- Manufacturing of roller chain sprockets and specialty sprockets
- Break laser
- Shears
- Plasma burn table
- Packing modularized units

4.4 Geographical Markets Served

The metal fabrication industry serves primarily local Alberta markets, and to a lesser extent markets in western Canada, the United States, and abroad. No detailed information was collected on the relative importance and/or share of various market areas. However, some general observations are possible:

- The industry in Alberta is typically local in nature, to the extent that some companies only do business within the specific region of Alberta in which they are located
- Where they do business in British Columbia, Saskatchewan and Manitoba, Alberta firms' activities in those markets are likely tied mostly to Alberta companies in oil and gas, forestry, agriculture and mining with which they do business in Alberta
- With regard to the US and international markets, these are likely served through Alberta prime contractors on a sub-contract basis, and overwhelmingly related to oil and gas

It can be concluded that the fabrication industry is substantially dependent upon the Alberta home market, and servicing of other geographic market areas is largely facilitated through Alberta companies with which they do business.

4.5 Size Distribution by Employees of Firms Surveyed

The size distribution of the firms interviewed is shown in Table 4.2. Some 60% of the firms had fewer than 50 employees, which Statistics Canada define as small business. Thirteen percent of the firms had fewer than 10 employees. Some 36% of the firms had between 51 and 500 employees, defined as medium sized businesses. The interview set also included a small number of firms that are classified as “Large” companies, with 5% of the firms having more than 500 employees.

Table 4.2
Size Distribution by Number of Employees

Number of Employees	% of Firms Interviewed
< 10	13%
11 - 25	21%
26 - 50	26%
51 - 100	18%
101 - 250	18%
251 - 500	-
501 - 750	-
> 750	5%

n =39

Source: GTS Group

While the firms interviewed are too few to provide any meaningful data on size distribution by geographic region, it is known that outside of the Edmonton and Calgary metropolitan areas, the industry includes a large number of very small portable welding operations

Interview results with respect to size distribution by number of employees are consistent with Statistics Canada data on size of firms presented in a report by Quorum Consulting¹

¹ Advanced Welding Process and Technical Survey. Quorum Consulting. Draft Report, March 2007. Page 8.

5. **SWOT Analysis**

Firms interviewed were asked to provide their opinions on strengths, weaknesses, opportunities and threats, both for their individual firms and for the industry as a whole in Alberta. While most firms did identify their own situation, fewer firms provided an opinion on the industry as a whole or provided identical answers to those for their own firms.

In the lists below, items are arranged in order from most frequently mentioned to least mentioned.

5.1 **Strengths**

5.1.1 **Strengths of Individual Firms**

Strengths of individual firms were identified both in terms of business capabilities and in terms of specific products.

- Diversity and flexibility was identified as strengths by 26% of respondents. This entails capability to produce a variety of products, and a flexibility in terms of manufacturing and meeting customers' requirements
- Design and Engineering was identified by 23% of respondents as corporate strengths
- People/Employees were identified as strengths by 17% of respondents
- Quality, in terms of products and workmanship was identified by 17% of respondents
- Fabrication and manufacturing was identified by 11% of respondents. This included pressure vessels, large structural items, tanks and equipment, and screw piles

Other company strengths mentioned included:

- Possession of CNC pattern cutters, wet jets, laser and plasma
- Cutting and forming capabilities
- Pressure welding
- Stable work force
- Long term relationships with customers
- Product line variety
- Quick decision making ability
- Environmentally responsible people and solar powered separation equipment
- Corporate experience
- Short turn-around capability
- Leader in production of feed mixers
- CNC
- ISO 9001 certification

5.1.2 Sector Strengths

The following sector strengths were identified:

- Skilled people in the industry, including good trades people
- Diverse capabilities
- Experience and expertise at high level
- Knowledge of industries served in the resources and mining sectors
- Ability to deliver
- Location of the industry relative to the oil and gas sector
- Technology and automation
- Alberta has the best apprenticeship program in Canada
- Superior quality and safety regulations in Alberta
- Ability to succeed despite outside forces, i.e. government

5.2 Weaknesses

5.2.1 Weaknesses of Individual Firms

The following weaknesses were identified:

- Labour issues dominated the weaknesses of individual firms
 - 35% of all the firms identified lack/supply of skilled workers as a weakness. As a result, work is being turned down
 - Other labour related weaknesses included:
 - Wages and labour costs
 - Getting the right people to train as journeymen
 - Problems getting skilled floor trades people
 - Retention of skilled workers
 - Inability to attract workers due to lack of rental accommodation (in the Taber area). Workers driving 100 kilometers to work
 - Quality of the labour force
- Availability of technical personnel
- Increasing costs and availability of material inputs
- Over-dependence on the oil & gas industry
- Cyclical nature of the forestry industry
- An over-heated market. Cannot meet demand for product
- Things have slowed down and change could occur
- Work may slow down in 2009
- Slow to automate. Unable to go to robotics at the present time as volumes in the Canadian market are too low
- Transportation-related weaknesses such as location of transportation corridors and weak highways. Power lines being too low, with 25 to 50 lines being located between Innisfail and Fort McMurray. Transportation from Lethbridge to customers.
- The fact that Alberta is land locked makes it difficult to compete internationally

Several companies reported that they did not have any weaknesses at this time

5.2.2 Sector Weaknesses

The following sector weaknesses were identified:

- The overwhelming weakness for the sector is a shortage and retention of skilled workers
- Wages and labour costs, which are higher than for competitors located in Saskatchewan
- Lack of labour training programs
- Regarding apprenticeship programs, other provinces' standards are lower than Alberta, which can cause problems in productivity. Other provinces need to raise their levels. Alberta is the best, British Columbia the worst, Saskatchewan/Manitoba non-existent. There is no shortage of people - the shortage is of skilled, knowledgeable certificate people
- Too many junior people involved in major projects. Engineers need more training
- No trade designation for fabricators
- Increasing costs and availability of material inputs
- Over-dependence on the oil and gas sector. Slow down in conventional oil and gas
- Weakening of the residential construction sector
- No diversification of the provincial economy over the past 4 years
- The slow down in the US economy and its effect on Canada

5.3 Opportunities

5.3.1 Opportunities for Individual firms

The following opportunities were identified:

- Oil sands projects, including new plants and projects, ongoing maintenance of existing plants, Peace River deposits, expansion of heavy oil in the St. Paul region, and oil sands recovery equipment
- Conventional oil and gas industry. However, this is seen as royalty dependent. Things have slowed down and people have been laid off. Royalties and cancelled projects limit new opportunities
- A strong Alberta economy will create opportunities
- Expected recovery in all sectors in 2009 will create new opportunities
- Local Alberta development in key sectors will create opportunities
- There are new and potential opportunities in the biodiesel sector, in upgraders, in nuclear plants, and in a continued construction boom. The commercial and industrial sectors are seen as strong
- Companies see new opportunities in US markets (where they believe manufacturing is maxed out) and in international markets due to oil prices
- There are new opportunities for companies in diversification, new product development and in deployment of new technologies

5.3.2 Sector Opportunities

The following opportunities were identified for the sector as a whole:

- Oil sands and upgraders
- Continued construction activity
- Continued good opportunities in Alberta for a number of years
- Opportunities in the US and in international markets
- Continued heavy involvement by industry in trades training
- Employment of immigration/temporary workers, who are excellent additions

5.4 Threats

5.4.1 Threats to Individual Firms

The following threats were identified:

- Lack/shortage of skilled labour. Need both journeymen and apprentices. It is suggested that for long term growth in Alberta, the Alberta apprenticeship branch needs to be in line with federal government immigration policies. Foreign workers can now only access short term programs, and apprenticeship is long term. Appropriate labour training is required
- Trained personnel leaving for better jobs is a threat and continuous problem
- Design consultants that can't design are being retained by construction owners to manage trades people. They have no knowledge of trades people's skills and knowledge and this slows down the process
- Wages of skilled workers is a long term threat
- The rising Canadian dollar is a threat. Off-shore markets are being lost to Asian companies
- Increasing costs and availability of production inputs
- Increased competition in general from Asia
- Increased competition from out-of-province companies, including Ontario and the US
- Oil and gas sector slow down, believed to be due to increased royalties has resulted in cancelled orders and lack of work for some
- The slump in the forest industry is a threat
- Changes in environmental regulations could be a threat if equipment design specifications are changed as a result thereof
- High transport costs to the Port of Vancouver
- Oversized equipment having to be shipped out through Houston or Montreal due to snow sheds on the Trans-Canada Highway

A few companies did not see any threats to their operations at present

5.4.2 Sector Threats

The following threats were identified:

- Lack of economic diversification in the province
- What to do when oil sands plants and upgraders are completed
- Competition from companies in other jurisdictions, particularly jurisdictions with weaker regulations than Alberta. Price undercutting by such competitors
- Lack/shortage of skilled labour.
- Lack of training and workers not completing apprenticeship programs
- Wage escalations
- Volatility of oil markets and effects of increased royalties
- Oil and gas slowdown believed to be due to increased royalties
- Lack of long term commitments by oil companies
- Low productivity on oil sands projects
- High Canadian dollar
- High transportation costs

6. Conclusions

1. As put by one interviewee, "If it is metal, can be welded and/or machined, the Alberta Fabrication and Machining sector can make it." This sector has diverse, world class, design and engineering, machining and welding capabilities second to none.
2. Most raw materials and inputs are from outside Canada, so Alberta companies are dependent on the world supply, and this supply is affected by increased economic activity in regions such as China, India and, Southeast Asia causing price increases and availability of metals.
3. Transportation costs are a major concern for Alberta companies in remaining competitive in the United States and international markets. Efficient modes of transportation, including road and rail, are very important for the timely movement of goods, especially larger non-containerized types of products.
4. The fabrication sector is dependent on the continuing supply of skilled workers, preferably from local sources, in order to maintain the level of productivity and quality of finished goods. The industry is dependent upon Alberta's apprenticeship programs and the high quality of these programs.
5. Exports are mainly to the United States, therefore any slow down in the American economy has a major effect on Alberta companies.
6. The fabrication sector is mainly focused on the oil and gas activity in Alberta, so any reduction in activity, such as during the fall of 2007 and the first quarter of 2008, has a major negative impact on the companies in our province.

7. Recommendations

There is a need for consultation and cooperation between metal fabrication sector companies, government, professional associations and related organizations to identify and develop:

- ⇒ sources for skilled workers in order to alleviate labour shortages.
- ⇒ productivity, innovation and technology advancements that can be used to expand and increase company competitiveness.
- ⇒ strategies to increase worker training and upgrading skills in order to assist in improving productivity.
- ⇒ areas for cost reductions, such as supply sourcing, transportation costs, energy efficiency, employee productivity, etc.
- ⇒ effective strategies for market entry into the expanding oil sands construction and maintenance markets
- ⇒ new market and export opportunities and product development, such as aerospace, defence and military, alternate energy equipment, etc...
- ⇒ opportunities to play a role in the facilitation and consultation between major project contractors and metal fabricators to improve design and engineering specifications in order to increase productivity, and delivery times.