

## 7. Metal Components

The fabricated metal products industry encompasses both a wide range of products and production techniques, producing metal components for such applications as building products (hardware), automotive, agricultural, drilling/mining, transportation, appliances, and others. In the United States alone, the value of shipments for this industry totaled over \$315 billion in 2006, up 9.6 percent from 2005, and the industry provided over 1.5 million jobs.

### a) Representative Operation – Metal Machining

The representative operation modeled is a small manufacturer of metal building products using machining tools. As illustrated in Exhibit 3.26, this operation is characterized by:

- Moderate facility and other initial investment requirements
- A workforce with some professional/technical positions, many skilled operators, and some unskilled positions
- Substantial energy requirements

The business is assumed to operate as a stand-alone profit center.

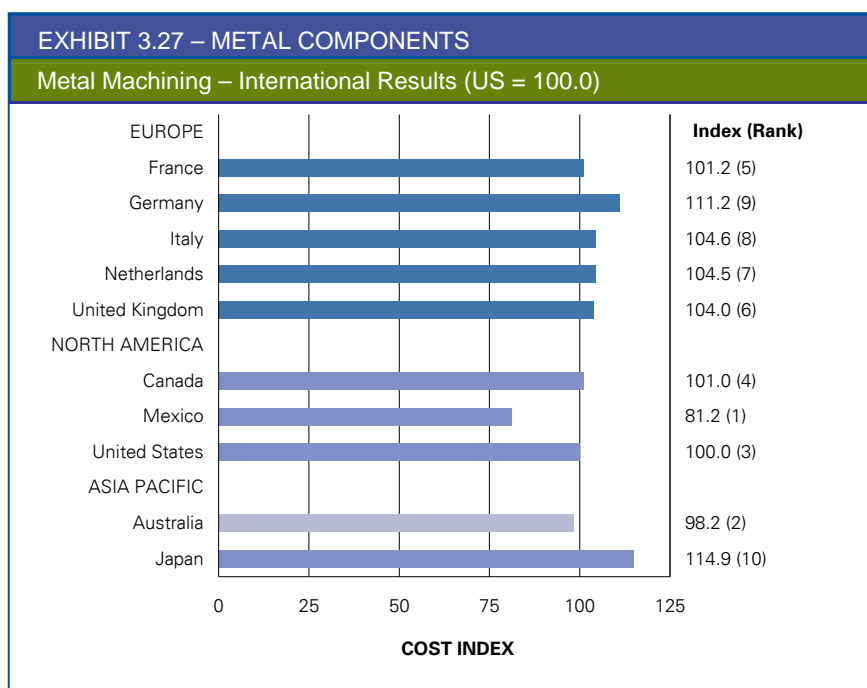
### b) International Results

International results are illustrated in Exhibit 3.27. These results reflect the combined impact of 27 location-sensitive cost components applied to the modeled operation. Detailed results, by key cost component, are presented in Exhibit 3.28.

### c) Leading Cities

Exhibit 3.29 profiles results for the leading (lower-cost) cities, by country, from among the 102 cities featured in this report. Results for all other featured cities can be found in Chapter 4, Exhibit 4.10.

EXHIBIT 3.26 – METAL COMPONENTS	
Metal Machining – Summary of Operating Parameters	
<b>Facilities Requirements</b>	
Industrial site purchased	8 acres (3.2 hectares)
Size of factory built	100,000 ft <sup>2</sup> (9,290 m <sup>2</sup> )
<b>Other Initial Investment Requirements</b>	
Machinery and equipment – US \$'000	\$3,130
Office equipment – US \$'000	\$570
R&D equipment – US \$'000	–
Inventory – US \$'000	\$400
Equity financing - % of project costs	50%
<b>Workforce</b>	
Management	4
Sales and administration	16
Production/non-dedicated product development	
- Professional, technical	10
- Operators	46
- Unskilled laborers	19
Other	5
Total employees	100
<b>Energy Requirements</b>	
Electricity monthly consumption/peak demand	360,000 kWh and 1,170 kW
Gas monthly consumption	15,200 CCF (43,059 m <sup>3</sup> )
<b>Other Annual Operating Characteristics</b>	
Sales at full production – US \$'000	\$19,000
Materials and other direct costs - % of sales	30%
Other operating costs - % of sales	4%
Investment in tax-eligible R&D - % of sales	–



## EXHIBIT 3.28 – METAL COMPONENTS

## Metal Machining – Costs, by Major Component, US \$'000

	Europe					North America			Asia Pacific	
	France	Germany	Italy	Netherlands	UK	Canada	Mexico	US	Australia	Japan
<b>Revenues</b>	18,300	18,300	18,300	18,300	18,300	18,300	18,300	18,300	18,300	18,300
<b>Costs</b>										
- Salaries & Wages	4,092	6,236	4,119	5,455	4,794	4,793	2,057	4,344	4,768	5,866
- Statutory Plans	1,741	1,032	1,351	718	582	479	248	455	623	536
- Other Benefits	822	1,217	1,072	1,584	1,502	1,021	479	1,211	979	1,929
- Total Labor & Benefits	6,655	8,485	6,542	7,757	6,878	6,293	2,783	6,010	6,370	8,331
- Transportation	800	814	1,231	510	530	1,373	1,977	1,587	641	1,407
- Utilities	701	1,038	1,222	910	851	532	718	442	781	914
- Interest & Depreciation	966	1,299	976	1,262	1,293	1,027	(354)	838	876	1,452
- Non-income Taxes	318	177	57	49	572	395	34	248	130	412
- Location-insensitive Costs	6,131	6,131	6,131	6,131	6,131	6,131	6,131	6,131	6,131	6,131
<b>Profit Before Income Tax</b>	2,729	356	2,141	1,682	2,044	2,549	7,011	3,052	3,371	(347)
- Income Taxes <sup>1</sup>	924	194	898	415	705	727	1,956	1,052	1,083	98
Effective Rate	33.9%	54.3%	42.0%	24.7%	34.5%	28.5%	27.9%	34.7%	32.1%	n/a
<b>After-tax Profit</b>	1,805	163	1,242	1,267	1,339	1,822	5,055	1,993	2,288	(445)
<b>Total Annual Costs</b>	16,496	18,137	17,058	17,034	16,960	16,478	13,244	16,308	16,012	18,745
<b>Index (US=100.0)</b>	<b>101.2</b>	<b>111.2</b>	<b>104.6</b>	<b>104.5</b>	<b>104.0</b>	<b>101.0</b>	<b>81.2</b>	<b>100.0</b>	<b>98.2</b>	<b>114.9</b>
<b>Rank</b>	<b>5</b>	<b>9</b>	<b>8</b>	<b>7</b>	<b>6</b>	<b>4</b>	<b>1</b>	<b>3</b>	<b>2</b>	<b>10</b>

<sup>1</sup> Income taxes may be either positive or negative, irrespective of whether profit before income tax is positive or negative, due to the impact of specific expense deduction rules, minimum taxes, and refundable income tax credits. Effective tax rates are not shown where results are not meaningful because of low profitability.

## EXHIBIT 3.29 – METAL COMPONENTS

## Metal Machining – Results for Leading Cities, by Country

Country	City	Index	Rank Among 102 Cities	Country	City	Index	Rank Among 102 Cities
France	Mulhouse	100.6	51	Canada	Sherbrooke	94.1	12
	Paris	102.3	65		Quebec City	97.6	25
Germany	Halle	108.1	91	Charlottetown	98.8	32	
	Erlangen	112.5	96	Waterloo Region	98.8	33	
Italy	Vicenza	103.0	71	Mexico	Reynosa	78.1	1
	Livorno	104.2	80	Aguascalientes	81.6	2	
Netherlands	Utrecht	104.5	82	United States	Shreveport	92.5	6
United Kingdom	Barnsley	101.5	58		Greenville-Spartanburg	92.9	7
	Plymouth	102.4	66		Lexington	93.2	8
Australia	Adelaide	96.0	18		Montgomery	93.2	9
	Melbourne	96.1	19		Little Rock	93.3	10
Japan	Fukuoka	111.9	95		Charleston	93.8	11
	Yokohama	115.3	100		Nashville	94.8	13
				Jackson	94.9	14	
			Atlanta	94.9	15		