

3. Automotive

The global automotive industry is dominated by world-scale manufacturers, such as Toyota, General Motors, Ford, Chrysler, Honda, Nissan, and others. These manufacturers outsource much of their parts production to larger "Tier 1" suppliers, who in turn often subcontract production to smaller "Tier 2/3" manufacturers. Parts manufacturers may supply both Original Equipment Manufacturers (OEMs) and the replacement parts market.

a) Representative Operation – Auto Parts

Most "Tier 2/3" suppliers manufacture a specialty or some combination of metal components (approximately 75 percent of a vehicle), plastic components (15 percent), and electronic components (10 percent). The representative operation modeled is a "Tier 2/3" supplier of manufactured auto parts assemblies. As illustrated in Exhibit 3.10, this operation is characterized by:

- Moderate facility and other initial investment requirements
- A balanced workforce of skilled and unskilled workers
- Moderate energy requirements

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

b) International Results

International results are illustrated in Exhibit 3.11. 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 3.12.

c) Selected Cities

Exhibit 3.13 profiles results for selected 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 3.10 – AUTOMOTIVE	
Auto Parts Manufacturing – Summary of Operating Parameters	
Facilities Requirements	
Industrial site purchased	9 acres (3.6 hectares)
Size of factory built	102,000 ft ² (9,476 m ²)
Other Initial Investment Requirements	
Machinery and equipment – US \$'000	\$3,475
Office equipment – US \$'000	\$488
R&D equipment – US \$'000	\$75
Inventory – US \$'000	\$505
Equity financing - % of project costs	47%
Workforce	
Management	4
Sales and administration	15
Production/non-dedicated product development	
- Professional, technical	14
- Operators	42
- Unskilled laborers	18
Other	5
Total employees	98
Energy requirements	
Electricity monthly consumption/peak demand	352,500 kWh and 1,152 kW
Gas monthly consumption	13,295 CCF (37,651 m ³)
Other Annual Operating Characteristics	
Sales at full production – US \$'000	\$18,500
Materials and other direct costs - % of sales	26%
Other operating costs - % of sales	6%
Investment in tax-eligible R&D - % of sales	2.7%

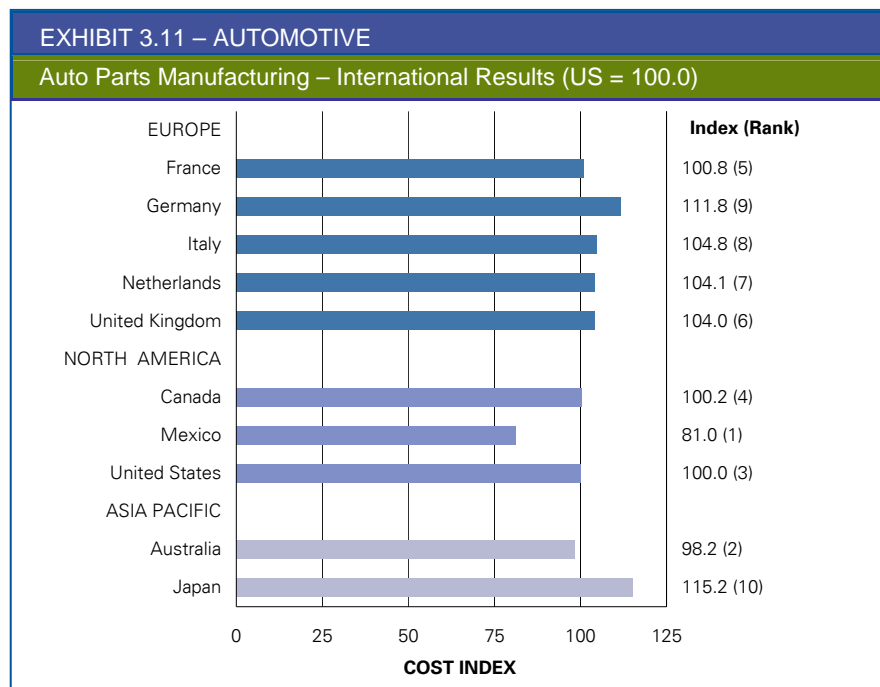


EXHIBIT 3.12 – AUTOMOTIVE

Auto Parts Manufacturing – Costs, by Major Component, US \$'000

	Europe					North America			Asia Pacific	
	France	Germany	Italy	Netherlands	UK	Canada	Mexico	US	Australia	Japan
Revenues	17,600	17,600	17,600	17,600	17,600	17,600	17,600	17,600	17,600	17,600
Costs										
- Salaries & Wages	4,029	6,142	4,058	5,363	4,708	4,698	2,052	4,259	4,663	5,752
- Statutory Plans	1,713	1,012	1,329	703	571	465	247	421	608	526
- Other Benefits	811	1,203	1,059	1,569	1,476	1,001	472	1,188	969	1,884
- Total Labor & Benefits	6,552	8,358	6,446	7,634	6,755	6,165	2,771	5,868	6,240	8,162
- Transportation	779	793	1,188	507	525	1,317	1,883	1,517	621	1,357
- Utilities	650	970	1,158	856	801	501	682	412	736	854
- Interest & Depreciation	1,074	1,420	1,086	1,368	1,438	1,130	(199)	943	1,023	1,536
- Non-income Taxes	334	181	60	51	593	426	35	284	135	417
- Location-insensitive Costs	5,632	5,632	5,632	5,632	5,632	5,632	5,632	5,632	5,632	5,632
Profit Before Income Tax	2,578	247	2,029	1,720	1,857	2,430	6,796	2,953	3,213	(358)
- Income Taxes ¹	776	162	846	257	549	532	1,894	1,011	997	83
Effective Rate	30.1%	n/a	41.7%	24.7%	29.5%	21.9%	27.9%	34.6%	31.0%	n/a
After-tax Profit	1,801	85	1,184	1,295	1,308	1,898	4,902	1,933	2,217	(441)
Total Annual Costs	15,799	17,516	16,417	16,305	16,292	15,702	12,698	15,667	15,384	18,041
Index (US=100.0)	100.8	111.8	104.8	104.1	104.0	100.2	81.0	100.0	98.2	115.2
Rank	5	9	8	7	6	4	1	3	2	10

¹ 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 3.13 – AUTOMOTIVE

Auto Parts Manufacturing – Results for Selected Cities, by Country

Country	City	Index	Rank Among 102 Cities	Country	City	Index	Rank Among 102 Cities	
France	Mulhouse	100.3	49	Canada	Montreal	98.5	34	
	Paris	102.1	63		Sherbrooke	93.2	9	
Germany	Erlangen	113.1	96		Toronto	101.1	54	
Italy	Livorno	104.5	81		Waterloo Region	98.2	32	
	Naples	106.6	88	Mexico	Aguascalientes	81.4	2	
United Kingdom	Manchester	108.2	90			Monterrey	82.7	4
					Puebla	81.7	3	
Australia	Adelaide	95.9	18		Reynosa	77.9	1	
	Melbourne	96.1	19	United States	Charleston	93.7	12	
Japan	Hamamatsu	117.9	101			Detroit	104.7	83
						Greenville-Spartanburg	93.0	7
					Jackson	94.9	13	
					Lexington	93.4	11	
					Montgomery	93.2	8	
					Nashville	94.9	14	
					Saginaw	100.5	51	
					Shreveport	92.4	6	
					Youngstown	99.0	38	