

# METALWORKING Insiders' Report

THE GLOBAL NEWSLETTER ON FACTORY EQUIPMENT

## The 2010 World Machine-Tool Output & Consumption Survey

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### About the Survey

This is the 45th edition of an annual survey that collects statistics from machine-tool-producing countries and compares them in U.S. dollars. It is conducted by Joe Jablonowski, editor of this newsletter, and Nancy Eigel-Miller, research manager at Gardner Publications, Inc.

Methodology remains constant. Data comes from official sources including trade associations and government ministries. Local currencies are converted to U.S. dollars at average interbank rates for the entire year, not at end-of-year rates. For the complete methodology—and for revisions throughout the year—please visit [www.gardnerweb.com/consump/survey.html](http://www.gardnerweb.com/consump/survey.html). The Web site also includes links to sites of reporting agencies. For detailed statistics, we recommend the *Economic Handbook of the Manufacturing Technology Industry*, published on CD-ROM by AMT ([www.amtonline.org](http://www.amtonline.org)).

### THE WORLD SURVEY AT A GLANCE

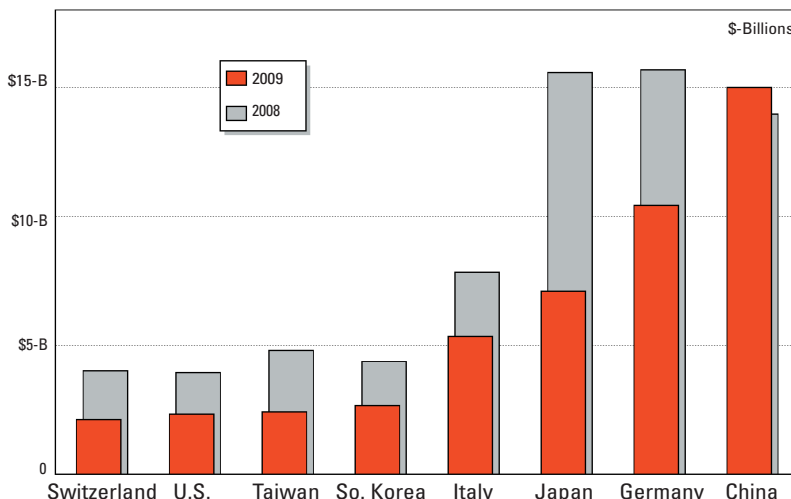
**China**, for years the world's largest consumer of machine tools, became its **number-one producer**, as well (chart, below), as 2009 output from other major producing countries fell by double digits. Last year **total world output declined one-third**, to \$55.2-billion.

**Japan's** machine-tool-producing industry suffered a decline of 59% (measured in yen). It moved into third place among producers; in recent decades it has usually topped the list. The **German** sector experienced a 30% drop and comes in second. The **U.S.** remains in seventh place, after Italy, South Korea, and Taiwan.

On the consumption side of the equation, **China** is estimated to have remained level and thus is far and away the **world's largest consumer** of machine tools, installing over \$19.4-billion.

### Big Drops in 2009 Shipments for All Except China

Output of Top Machine-Tool-Producing Countries



Source: 2010 World Machine Tool Output & Consumption Survey; Gardner Publications, Inc.

## Machine Tool Production

Country	2009 (est.)			2008 (rev.)			Change	
	\$-millions	Cut	Form	\$-millions	Cut	Form	in local currency	in U.S. dollars
1. China, Peoples Rep.	15,000.0	73%	27%	13,960.0	72%	28%	\$	7%
2. Germany ‡	10,428.8	75%	25%	15,680.2	77%	23%	-30%	-33%
3. Japan	7,095.1	83%	17%	15,566.5	87%	13%	-59%	-54%
4. Italy ‡	5,239.4	49%	51%	7,831.3	50%	50%	-30%	-33%
5. Korea, Rep. of	2,665.0	64%	36%	4,372.0	64%	36%	\$	-39%
6. Taiwan	2,419.4	80%	20%	4,807.1	80%	20%	-47%	-50%
7. United States	2,324.4	73%	27%	3,938.5	80%	20%	\$	-41%
8. Switzerland ‡	2,118.4	81%	19%	4,013.4	86%	14%	-47%	-47%
9. Brazil	u1,288.7	81%	19%	1,288.7	81%	19%	\$	0%
10. Spain ‡	1,060.3	66%	34%	1,544.8	67%	33%	-28%	-31%
11. Austria ‡	857.3	50%	50%	1,227.3	50%	50%	-26%	-30%
12. France ‡	764.8	73%	27%	1,276.0	67%	33%	-37%	-40%
13. Czech Republic ‡	589.5	87%	13%	963.6	87%	13%	-39%	-39%
14. United Kingdom ‡	499.1	75%	25%	760.3	77%	23%	-23%	-34%
15. Canada	c434.0	62%	38%	c645.9	55%	45%	-33%	-33%
16. Belgium ‡	369.9	10%	90%	499.0	10%	90%	-22%	-26%
17. Netherlands ‡	340.7	20%	80%	512.1	20%	80%	-30%	-33%
18. Turkey ‡	327.0	29%	71%	442.0	26%	74%	\$	-26%
19. India	268.2	80%	20%	403.6	86%	14%	-26%	-34%
20. Russia	230.1	59%	41%	420.5	59%	41%	-30%	-45%
21. Finland ‡	180.8	10%	90%	300.0	10%	90%	-37%	-40%
22. Sweden ‡	147.4	35%	65%	248.8	35%	65%	-38%	-41%
23. Australia	135.0	81%	19%	133.0	85%	15%	\$	2%
24. Mexico	c132.5	52%	48%	c164.6	51%	49%	\$	-20%
25. Denmark ‡	112.6	40%	60%	168.3	40%	60%	-30%	-33%
26. Portugal ‡	80.7	5%	95%	81.9	5%	95%	4%	-2%
27. Romania	u52.0	71%	29%	54.8	71%	29%	0%	-5%
28. Argentina	29.3	44%	56%	36.7	47%	53%	\$	-20%
<b>Total</b>	<b>55,190.3</b>			<b>81,340.9</b>				<b>-32%</b>
Asia	27,447.7			39,109.2				-30%
Western Europe ‡	23,116.6			35,549.0				-35%
Americas	4,208.9			6,074.4				-31%

‡ = CECIMO member.

u = unrevised from previous year but converted at current rates.

c = circa; rough estimate from fragmentary reports.

\$ = reported in U.S. dollars.

% = ratio of cutting/forming production; in some cases estimated from previous reports.

Exchange Rates are average daily commercial interbank rates for the entire year, from [www.oanda.com](http://www.oanda.com).

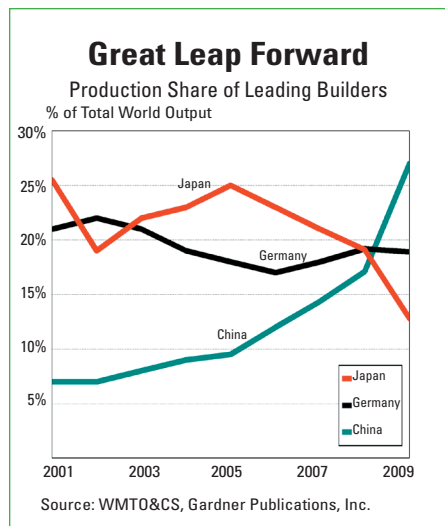
Source: Gardner Publications, Inc.

## World Output Down by One-Third Last Year

On average, machine-tool output by the 28 leading countries during 2009 fell 32% from the year before. Those industries were able to post \$55.2-billion in shipments, compared to the \$81.3-billion they sent to customers in 2008.

Some countries were hit harder than others. Japan, which has been the world's leading producer for 22 out of the last 25 years, saw its output plummet 59% when measured in yen. It's now in third place, behind fast up-and-comer China and traditional rival Germany. Other significant declines from 2008 output were experienced by Taiwan (down 47% when measured in new Taiwan dollars) and Switzerland (down the same percentage, measured in Swiss francs).

With the exception of China and Australia, every country in the Survey saw a drop in output. The machine-tool builders' organization in Beijing estimates that country's production actually increased 7%, moving it for the first time into the number-one spot among builders.



Moreover, with output of other major producing nations declining, China's estimated \$15-billion in shipments boosts its share of last year's total world output to a jaw-dropping 27% (see graph).

Several factors likely contributed to this exceptional performance. China's tremendous growth in manufacturing (factory employment grew 10% in the four years

## Exports of Machine Tools

Country	\$-millions 2009 (est.)	\$-millions 2008 (rev.)	Change in local currency	Change in U.S. dollars	Exports* as % of prdctn
1. Germany	7,202.8	10,261.8	-26%	-30%	69%
2. Japan	4,219.0	8,516.8	-55%	-50%	59%
3. Italy	3,316.4	4,691.2	-26%	-29%	63%
4. Taiwan	1,935.5	3,700.6	-45%	-48%	80%
5. Switzerland	1,823.7	3,333.9	-45%	-45%	86%
6. China, Peoples Rep.	1,400.0	2,106.0	\$	-34%	9%
7. United States	1,214.5	1,892.8	\$	-36%	52%
8. Korea, Rep. of	1,212.0	1,910.0	\$	-37%	45%
9. Spain	799.8	1,077.0	-22%	-26%	75%
10. Austria	681.9	1,025.2	-30%	-33%	80%
11. Belgium	627.1	1,100.4	-40%	-43%	170%
12. United Kingdom	569.3	931.0	-28%	-39%	114%
13. France	556.2	822.3	-29%	-32%	73%
14. Czech Republic	516.0	859.7	-40%	-40%	88%
15. Turkey	269.0	350.0	\$	-23%	82%
16. Canada	246.8	379.9	\$	-35%	57%
17. Netherlands	243.3	425.8	-40%	-43%	71%
18. Brazil	u196.2	196.2	\$	0%	15%
19. Sweden	144.6	242.9	-37%	-40%	98%
20. Finland	139.1	231.2	-37%	-40%	77%
21. Australia	100.0	93.0	\$	8%	74%
22. Russia	79.6	145.6	\$	-45%	35%
23. Denmark	76.5	155.1	-48%	-51%	68%
24. Romania	u73.0	76.8	0%	-5%	140%
25. Portugal	59.8	48.3	30%	24%	74%
26. Mexico	33.1	41.2	\$	-20%	25%
27. Argentina	19.5	14.6	\$	34%	67%
28. India	12.3	22.2	-38%	-45%	5%

u = unrevised from previous year but converted at current rates.

\$ = reported in U.S. dollars.

\* = includes re-exported machines

Source: Gardner Publications, Inc.

to 2006 according to America's Bureau of Labor Statistics) had created an enormous appetite for production equipment. China became the top consuming country in this survey in 2002 and has remained number one ever since. In recent years

many if not most global players ranging from Mazak to Hardinge have expanded their Chinese plants, often at first to meet internal demand. Production also soared at huge Chinese-owned builders like Dalian and Shenyang.

## Effects of Trade

While China's appetite keeps it the leading importer of machine tools (it's led every year since 2002), its ratio of imports to consumption has been declining. The measure of imported machines as a percentage of total installations (last column in table at right) shows a figure of 30% for 2009, down from 39% in 2008 and higher still in years previous. Domestic Chinese machine-tool-producers, while still not well-regarded internationally for long product-service life, are clearly stepping up to meet local demand.

China exported an estimated \$1.4-billion last year (table, previous page), down a third from the year before. Its exports as a percentage of production fell in 2009 to 9% from 15% the previous year, further evidence of a machinery-producing industry turning inward.

As markets shriveled, exports of all top-tier producers diminished. Japan was among the worst hit, with a yen-measured drop of 55%, double the percentage decline experienced by Germany, its rival in exports. On the import side Japan has never been a large market for outside producers, preferring instead to rely on its own well-developed industry; last year Japan's imports declined 46%. Japan's trade balance in machine tools fell to \$3.78-billion in 2009, down from a whopping \$7.77-billion the previous year when it exceeded Germany's \$5.92-billion.

The United States, too, experienced a large decline in imports, but it remains second only to China in volume of imported machines. American exports fell by a third, and its trade balance in machine tools amounts to a negative-\$1.05-billion, compared to the \$2.98-billion deficit it showed in 2008.

The American market remains very open, even in recession. Imports as a percentage of total consumption were still high at 67%, only slightly changed from the 70% import penetration seen the previous year.

The last column in the table at right calculates each country's import penetration; a similar column on the export table on the previous page looks at exports as a percentage of production, an interesting

perspective on a country's reputation as a supplier to outside nations (e.g., Swiss exports equal 86% of local output). The ratios must be used with caution, however. Some entrepôt nations like Belgium

have imports that are far in excess of their consumption as they take in machines for later re-export. Similarly, exports for these trading nations can easily exceed local production of equipment.

## Machine Tool Imports

Country	2009	2008	Change in local currency	Change in U.S. dollars	Imports* as % of cnsmptn
1. China, Peoples Rep.	5,800.0	7,587.0	\$	-24%	30%
2. United States	2,259.6	4,874.0	\$	-54%	67%
3. Germany	2,224.8	4,337.1		-46%	41%
4. Brazil	u1,454.7	1,454.7	\$	0%	57%
5. Korea, Rep. of	1,133.0	1,334.0	\$	-15%	44%
6. France	924.7	1,417.9		-31%	82%
7. Mexico	c906.3	1,422.9	\$	-36%	90%
8. India	900.7	1,573.2		-36%	78%
9. Italy	817.6	2,151.0		-60%	30%
10. Belgium	721.7	1,132.6		-33%	155%
11. Switzerland	571.0	887.3		-35%	66%
12. Russia	541.5	989.5		-30%	78%
13. Canada	532.9	890.1	\$	-40%	74%
14. United Kingdom	467.9	953.2		-42%	118%
15. Austria	447.1	702.2		-33%	72%
16. Japan	442.8	743.2		-46%	13%
17. Turkey	392.0	706.0	\$	-44%	87%
18. Taiwan	362.9	1,531.3		-75%	43%
19. Romania	u3,62.6	381.6		0%	106%
20. Sweden	308.7	519.5		-37%	99%
21. Spain	299.1	692.6		-55%	53%
22. Czech Republic	264.6	777.6		-66%	78%
23. Netherlands	250.3	439.0		-40%	72%
24. Australia	199.0	360.0	\$	-45%	85%
25. Argentina	139.8	250.7	\$	-44%	93%
26. Portugal	119.6	139.0		-9%	85%
27. Finland	111.2	317.5		-63%	73%
28. Denmark	100.1	330.7		-68%	73%

\* = includes imports for re-export

u = unrevised from previous year but converted at current rates.

c = circa; rough estimate from fragmentary reports.

\$ = reported in U.S. dollars.

Source: Gardner Publications, Inc.

## Production Minus Exports and Plus Imports

That's the formula for calculating what economists call apparent consumption. For machine tools, it's the measure of how a country is investing in its manufacturing capacity.

As noted, back in 2002 China moved ahead of the United States, Japan, and Germany into the top spot in world machine-tool consumption and has remained there ever since. With installations totaling an estimated \$19.4-billion in 2009, virtually identical to the previous year, China's

consumption accounts for more than a third of total shipments by all the producers in the survey (pie chart, next page).

Everywhere else, consumption declined steeply in a very bad year for durable goods producers (table, below). Among the hard-

est hit was Taiwan, which with the dollar equivalent of \$846.8-million in installations fell to twelfth place among consumers. A year ago it was seventh.

Germany remains the world's second-largest consumer, despite its 41% decline

## Trade Balance

in Machine Tools, 2009

Country	\$-Millions
1. Germany	4,978.0
2. Japan	3,776.1
3. Italy	2,498.7
4. Taiwan	1,572.6
5. Switzerland	1,252.6
6. Spain	500.7
7. Czech Republic	251.4
8. Austria	234.9
9. United Kingdom	101.4
10. Korea, Rep. of	79.0
11. Finland	27.8
12. Netherlands	-7.0
13. Denmark	-23.6
14. Portugal	-59.8
15. Belgium	-94.6
16. Australia	-99.0
17. Argentina	-120.3
18. Turkey	-123.0
19. Sweden	-164.1
20. Canada	-286.1
21. Romania	-289.6
22. France	-368.5
23. Russia	-461.9
24. Mexico	-873.2
25. India	-888.4
26. United States	-1,045.1
27. Brazil	-1,258.5
28. China	-4,400.0

Exports Minus Imports  
Gardner Publications, Inc.

## Consumption of Machine Tools

Country	\$-Millions 2009	\$-Millions 2008	Change in local currency	Change in U.S. dollars
1. China, Peoples Rep.	19,400.0	19,441.0	\$	-0%
2. Germany	5,450.8	9,755.5	-41%	-44%
3. United States	3,369.5	6,919.7	\$	-51%
4. Japan	3,319.0	7,792.9	-61%	-57%
5. Italy	2,740.7	5,291.1	-45%	-48%
6. Korea, Rep. of	2,586.0	3,796.0	\$	-32%
7. Brazil	u2,547.2	2,547.2	\$	0%
8. India	1,156.6	1,954.6	-34%	-41%
9. France	1,133.3	1,871.5	-36%	-39%
10. Mexico	1,005.7	1,546.3	\$	-35%
11. Switzerland	865.8	1,566.8	-45%	-45%
12. Taiwan	846.8	2,637.7	-66%	-68%
13. Canada	720.1	1,156.1	-38%	-38%
14. Russia	692.0	1,264.5	\$	-45%
15. Austria	622.4	904.4	-28%	-31%
16. Spain	559.5	1,160.4	-49%	-52%
17. Belgium	464.4	531.2	-8%	-13%
18. Turkey	450.0	798.0	\$	-44%
19. United Kingdom	397.7	782.5	-40%	-49%
20. Netherlands	347.6	525.3	-30%	-34%
21. Romania	341.7	359.6	0%	-5%
22. Czech Republic	338.1	881.5	-62%	-62%
23. Sweden	311.5	525.3	-38%	-41%
24. Australia	234.0	400.0	-42%	-42%
25. Finland	153.0	386.3	-58%	-60%
26. Argentina	149.6	272.8	\$	-45%
27. Portugal	140.4	172.7	-14%	-19%
28. Denmark	136.3	343.9	-58%	-60%

Consumption = a country's Production, less its Exports, plus Imports  
\$ = reported in U.S. dollars. u = unrevised.

Source: Gardner Publications, Inc.

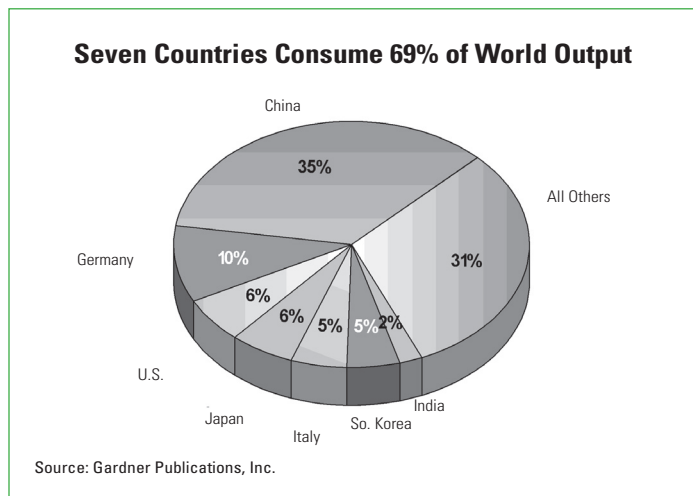
in 2009, and the United States moves into third position with expenditures of \$3.37-billion, or a 51% decline from 2008. That still puts America ahead of Japan, whose consumption declined even more precipitously.

Other countries where consumption declined dramatically include Spain, the Czech Republic, Finland, and Denmark.

Countries included in this annual WMTO&CS generally are those that have established production capacity and therefore effective internal data collection. The authors estimate that the 28 countries that are part of the study represent more than 95% of world output, with the larger producers consuming the bulk of the annual shipments, as seen in the pie chart below.

An interesting variation on the consumption measure here is consumption weighted for population (table, right). By that measure, Switzerland again tops the metalworking world with an average expenditure on new machine tools of almost \$114 per resident (down from around \$200 per Swiss in 2008). Austria, Germany, and South Korea also show a tendency to be more industrialized with expenditures in excess of \$50/capita/year.

China, with its huge population, in previous surveys had ranked near the bottom of the list, near India. This time, however, with China's increasing development in the face of retreat by other nations, it places near the middle of this list with nearly \$15 spent per person on new machines. The United States ranks further down, with less than \$11 spent per capita.



The World Machine Tool Output & Consumption Survey presented in this newsletter also appears on the Internet at <http://www.GardnerWeb.com/consump/survey.html>. As figures for the year just ended are revised, updates will be posted there.

## Per-Capita Consumption

Country	Cnsmptn \$-Millions	Population 000s	2009 M-T Expenditure Per Capita
1. Switzerland	865.8	7,604	\$113.86
2. Austria	622.4	8,215	\$75.76
3. Germany	5,450.8	82,329	\$66.21
4. Korea, Rep. of	2,586.0	48,508	\$53.31
5. Italy	2,740.7	58,126	\$47.15
6. Belgium	464.4	10,414	\$44.60
7. Taiwan	846.8	22,974	\$36.86
8. Sweden	311.5	9,059	\$34.38
9. Czech Republic	338.1	10,211	\$33.11
10. Finland	153.0	5,250	\$29.13
11. Japan	3,319.0	127,078	\$26.12
12. Denmark	136.3	5,500	\$24.78
13. Canada	720.1	33,487	\$21.50
14. Netherlands	347.6	16,715	\$20.80
15. France	1,133.3	64,420	\$17.59
16. Romania	341.7	22,215	\$15.38
17. China	19,400.0	1,323,591	\$14.66
18. Spain	559.5	40,525	\$13.81
19. Portugal	140.4	10,707	\$13.12
20. Brazil	2,547.2	198,739	\$12.82
21. Australia	234.0	21,262	\$11.01
22. United States	3,369.5	307,212	\$10.97
23. Mexico	1,005.7	111,211	\$9.04
24. United Kingdom	397.7	61,113	\$6.51
25. Turkey	450.0	76,805	\$5.86
26. Russia	692.0	140,041	\$4.94
27. Argentina	149.6	40,913	\$3.66
28. India	1,156.6	1,156,897	\$1.00

Source : Gardner Publications, Inc.

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