

# MACHINE TOOLS

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The term 'machine tools' covers a wide range of machinery used for cutting, removing or forming metal to produce components which are subsequently assembled into engineering products. Simply, machine tools are "machines that produce machines". Important sectors of the engineering industry include the manufacture of motor vehicles, aerospace products and general industrial equipment. These sectors, together with the subcontractors that supply them, make up the customer base for supplies of machine tools. Thus, it is generally viewed as a strategic sector for a country.

In 2008, the top 28 countries' production of machine tools totaled US 82-billion. That is 15% higher than the value those same nations created in 2007.

## PRODUCTION

Machine tools production started in the mid '60s in Turkey with the production of lathes by private companies. In line with national industrialization efforts state institutions undertook the leading role for the machine tools industry. The first step was the licensing agreements signed with two world famous machine tools manufacturers. After a long, hard period of work the first Turkish-made machine tool came off the production line in 1984. In the following years various machine tools (universal/vertical milling machines, universal/turret turning lathes, cylindrical/surface grinding machines, tool grinding machines, radial grinding machines etc.) have been produced in large numbers in Turkey.

During this period CNC machining centers were introduced to the world market. Both global and Turkish industrial manufacturers demanded these hi-tech, computer controlled machine tools. The Turkish machine tools industry has been able to meet this new demand since the beginning of the '90s. The process of manufacturing better, innovative machine tools with higher technology is an ongoing effort among machine tools manufacturers in Turkey. At present Turkey relies on Turkish-made machine tools.

According to worldwide statistics for the year 2008, Turkey is the 15th largest manufacturer among 28 machine tool manufacturing countries, with a production value of US \$ 583.2 million. 29% of the total is from metal cutting type machining centers and the remaining 71% from metal forming type machine tools. The Turkish machine tools industry partially meets domestic demand and about 88.6% of the production was exported in 2008.

Today the Turkish machine tools industry manufactures and exports various kinds of machine tools including; CNC/conventional machining centers, CNC/conventional lathes, CNC/conventional milling machines, CNC/conventional grinding machines, bending machines, bordering machines, honing machines, presses, shears, press breaks, CNC brakes, CNC cutting machines, profile cutting machines, band saws, seaming machines, welding machines (MIG-MAG, TIG-WIG), planning machines, thicknessing machines, rip saws, resawing machines, CNC/conventional gear hobbing machines, spindle moulding machines, corner notchers, calibrating and polishing machines, chamfering machines for stones, trimming machines for stones, splitting machines, log carriages, dust sucking machines, parts and components of machines tools (electronic components, computer

controls, CNCs, NCs, cam switches, tool holders, chucks, load lifting magnets, magnetic chucks, mandrels, hydraulic cylinders and spare parts, bar feeders for CNC lathes, tooling dies, universal frames/cabinets, CNC cabinets, work benches, material cabinets, tool cabinets etc) and other metal, stone, glass, wood and plastic processing machines.

The Turkish machine tools industry and sub-industries are composed of about 480 companies. These companies are mainly SME's which have less than 200 employees. About 10 companies are large-scale manufacturers of machine tools and parts/components/auxillaries. There are 3 machine tools companies Durmazlar Makina San. ve Tic. A.Ş, Coşkunöz A.Ş. and Baykal Makine San. Tic. A.Ş. in the Turkey's top 500 industrial enterprises in 2008.

Manufacturing sites are mainly located in the Marmara, Central Anatolian and Aegean Regions of Turkey. Istanbul, Bursa, Konya, Izmir, Ankara and Kayseri are the major cities in machine tools and parts/components production. The sector employs about 3200 workers.

## EXPORTS

Turkey's machine tools exports were US \$293 million in 2009. The Turkish machine tools industry exports high-tech machining centers as well as metal-forming type machine tools. Machine tools that are exported are mainly metal-forming types, which take a 77% share from total machine tools exports. Metal cutting types cover 23% of exports.

### *Exports of Metal-Working Machine Tools (Value: US\$ 1000)*

HS	PRODUCT NAME	2007	2008	2009
8456	Mach.-tools for removal of matrl. by laser,photon beam,plasma arc proce.	6,894	16,729	18,714
8457	Mach. Center unit const. mach.&multistation transfer mach. for wrkg metals	4,874	5,947	9,821
8458	Lathes for removing metals	3,481	6,548	5,383
8459	Machine-tools for drill/boring/milling,threading/tapping,o/t hd. no.84.	11,965	13,197	6,311
8460	Mach.-tools for deburring/grinding,etc. for fin. met.,sintered met. carbd./cerme.	13,616	21,741	9,731
8461	Machine-tool for planing/shaping,etc. sawing&other mach.-tool for metals,	24,595	27,741	17,074
8462	Machine-tools for wrkg. metals by forging/hammering;mach.-tool for bending,etc.	321,339	390,736	215,280
8463	Machine-tools for wrkg. metal, nes sintered metals carbd. w/o removing ma.	10,946	20,204	10,525
TOTAL		397,710	502,844	292,840

*Source: Turkish Statistical Institute - TurkStat*

*Exports of Other Machine Tools and Parts (Value: US\$ 1000)*

HS	Ürünler	2007	2008	2009
8464	Machine-tools for wrkg. stone/ceramic/like min. mat./for cold working glass	19,633	19,736	14,083
8465	Mach.-tools for wrkg. wood/cork/bone/ hard rbr.&pla.,ex. nailg./glueing...	76,271	84,369	51,014
8466	Parts&acces. for use solely/ princ. with the mach. of hd. 84.56 to 84.65	46,405	66,976	37,320
TOTAL		142,309	171,071	102,417

Source: Turkish Statistical Institute - TurkStat

The Turkish machine tools industry exports its products to nearly 170 countries worldwide. The main export destinations are Germany, Iraq, Iran, Saudi Arabia, the USA, the Russian Federation, Poland, Italy, and Brazil.

Turkish machine tools manufacturers are closely following international developments in quality, safety and the environmental aspects of production. EU technical harmonization is on force and at the beginning of 2002 it became obligatory to fulfill CE Mark requirements in order to sell products in the Turkish domestic market.

*Exports of Machine Tools by Countries (Value: US\$ 1000)*

Country	2007	2008	2009
Germany	28,750	44,702	22,249
Iraq	2,068	3,953	21,017
Iran	9,870	11,364	16,612
Saudi Arabia	7,940	10,021	11,865
USA	12,148	12,472	11,278
Russian Fed.	19,757	22,821	10,571
Poland	12,182	19,196	9,844
Italy	10,159	15,604	9,297
Brazil	9,925	22,606	8,690
Bursa Free Zone	62,097	53,017	7,771
Azerbaijan	1,759	10,048	7,399
France	5,414	7,044	7,216
Egypt	4,869	6,894	6,497
Australia	5,478	5,043	5,550
Spain	20,000	18,723	5,445
UAE	6,972	7,963	5,307
The Netherlands	4,876	8,638	4,941
Bulgaria	10,913	14,505	4,905
Algeria	1,601	1,994	4,753
Syria	3,625	3,475	4,663
Others	157,308	202,812	106,969
TOTAL	397,710	502,895	292,840

Source: Turkish Statistical Institute- TurkStat

Some of the fairs related to the machine tools industry in 2010 are as follows;

- “EF INDUSTRY 2010” in İstanbul, January 2010.
- “WIN - World of Machinery” in İstanbul, in February 2010
- “KONMAK 2010” in Konya, in May 2010.
- “ÇÜTEK 2010” in Adana, in June2010.
- “TATEF 2010 – 14. International Metalworking Technologies Exhibition” in İstanbul, in October 2010.
- “WOODWORKING 2010” in İstanbul, in October 2010.
- “ANNOFER 2010” in İstanbul, in November 2010
- “BURSA METAL PROCESSING TECHNOLOGIES FAIR” in Bursa, in December 2010.
- “BURSA SHEET METAL TECHNOLOGIES 2010” in Bursa, in December 2010.
- “3T 2009 – 9. International Metalworking, Mould and Automation and Subsidiary Products Fair” in İzmir, in December 2010.