

# MACHINE TOOLS

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# MACHINE TOOLS INDUSTRY

The term 'machine tools' embraces 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 2006, the top 29 countries' production of machine tools totalled US 60-billion. That is 10% higher than the value those same nations created in 2005.

## 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 2006, Turkey is the 16th largest manufacturer among 29 machine tool manufacturing countries, with a production value of US \$ 426.2 million. 30% of the total is from metal cutting type machining centers and the remaining 70% from metal forming type machine tools. The Turkish machine tools industry partially meets domestic demand and about 84% of the production is exported.

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 479 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 (Çoşkunöz, Durmazlar and Şahinler Metal) in the Turkey's top 500 industrial enterprises in 2005.

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 3212 workers.

## Exports

Turkey's machine tools exports have an upward trend and reached US \$357 million in 2006. 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 59.8% share from total machine tools exports. Contributions of the other machine tools sub-categories to the total machine tools exports are as follows: machine tools for working wood, cork, bone, hard rubber etc.15%; parts and components of machine tools 6%.

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

HS	PRODUCT NAME	V 2004	V 2005	V2006	The share of major markets(%) -in 2006
8456	Mach.-tools for removal of matrl. by laser,photon beam,plasma arc proce.	1 521	2 007	5 110	Russian Federation 20, India 15, Germany 8, Estonia 7, USA 4, Israel 4, Lebanon 4
8457	Mach. Center unit const. mach.&multistation transfer mach. for wrkg metals	3 709	9 440	3 013	Germany 64, Poland 7, Sudan 3, Uzbekistan 3
8458	Lathes for removing metals	1 713	3 999	2 418	Germany 15, Northern Cyprus 8, Iran 5, Russian Federation 4
8459	Machine-tools for drill/boring/milling,threading/tapping,o/t hd. no.84.	3 860	7 102	8 529	Germany 35, Russian Federation 12, Ukraine 8.3, Saudi Arabia 7, Spain 5, Bulgaria 3
8460	Mach.-tools for deburring/grinding,etc. for fin. met.,sintered met. carbd./cerme.	5 533	11 451	8 784	Bulgaria 11, Russian Federation 9, USA 6, Italy 5, Germany 5, Iran 4, Ukraine 3
8461	Machine-tool for planing/shaping,etc. sawing&other mach.-tool for metals,	11 369	13 028	17 350	Russian Federation 6, Romanian 4, European Free Zone 3.1, Italy 2

8462	Machine-tools for wrkg. metals by forging/hammering; mach.-tool for bending, etc.	120 511	161 109	213 547	Bursa Free Trade Zone 22, Spain 8, Germany 6, USA 4, Italy 3,7, Poland 3,6, Russian Federation 3
8463	Machine-tools for wrkg. metal, nes sintered metals carbd. w/o removing ma.	3 183	7 170	12 844	Uzbekistan 29, Romania 15, USA 7, Ethiopia 6,5, Algeria 4,2, Azerbaijan 4
8464	Machine-tools for wrkg. stone/ceramic/like min. mat./for cold working glass	10 455	12 403	11 559	Russian Federation 10, Kazakhstan 7, Ukraine 6,9, Egypt 6.5, Iran 6.4, Bulgaria 5, Romania 4.6
8465	Mach.-tools for wrkg. wood/cork/bone/ hard rbr.&pla., ex. nailg./glueing...	24 979	33 181	54 159	Russian Federation 16, Bulgaria 13, Romania 9, Ukraine 7 Iran 6.8, Georgia 6.7, Kazakhstan 4
8466	Parts&acces. for use solely/ princ. with the mach. of hd. 84.56 to 84.65	10 168	15 105	19 940	Germany 25, Italy 6, France 4, Iraq 2.3, Holland 2
Total		197,001	275,995	357, 253	Germany 7, Russian Federation 6, Spain 5, Bulgaria 4, USA 3, Romania 3, Italy 3

Source: Undersecretariat for Foreign Trade of Turkey (DTM)

The Turkish machine tools industry exports its products to nearly 120 countries worldwide. The main export destinations are, Germany, the Russian Federation, Spain, Bulgaria, the USA, Romania and Italy.

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

Some of the fairs related to the machine tools industry in 2007 and 2008 are as follows;

Tüyap Fairs and Exhibitions Organization, In	KONMAK Konya Metal Processing Machines, Welding, Cutting, Drilling Technologies, Equipment and Hand Tools Pneumatic and Hydraulic Fair	26Apr-29Apr2007	KONYA	www.tuyap.com.tr	E-mail oyaakgun@tuyap.com.tr
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Tüyap Fairs and Exhibitions Organization, In	Bursa Metal Processing Technology Fair	05Dec-09Dec 2007	BURSA	www.tuyap.com.tr	artlink@tuyap.com.tr
ITF - Istanbul Trade Fairs,	TATEF International Metalworking Technologies Fair 2008	14Oct-19Oct2008	CNR International Exhibition Center-Istanbul	www.itf-exhibitions.com	e-mail: info@itf-exhibitions.com,
Hannover-Messe Ankiros Fuarcilik A.S.	ANNOFER International Non-Ferrous Metals Technology, Machinery and Products Trade Fair	14Oct-15Oct2008	CNR International Exhibition Center-istanbul	www.ankiros.com	info@ankiros.com
Hannover-Messe Ankiros Fuarcilik A.S.	ANKIROS International Iron-Steel and Foundry Technology, Machinery and Products Trade Fair	14Oct-15Oct2008	CNR International Exhibition Center-istanbul	www.cnrexpo.com	info@ankiros.com
Tüyap Fairs and Exhibitions Organization, In	KONYA WOOD PROCESSING MACHINERY Wood Processing Machines, Cutting Tools, Hand Tools Fair	01-05 Mar 2007 2008	KONYA	www.tuyap.com.tr	E-mail oyaakgun@tuyap.com.tr
CNR International Trade Fairs	WOODWORKING SHOW Wood Processing Machines, Cutting Tools and Hand Tools Exhibition	19Apr-23Apr2007 13Feb-17Feb2008	ISTANBUL	www.cnr.net	E-mail: ebru.ildan@cnr.net
Tüyap Fairs and Exhibitions Organization, In	WOOD PROCESSING MACHINERY Wood Processing Machines, Cutting Tools, Hand Tools Fair	10Nov-14Nov2007	Tüyap Fair, Convention and Congress Center	www.tuyap.com.tr	fairarea@tuyap.com.tr