ITALIAN TRADE AGENCY
ICE - Italian Trade Commission
Trade Promotion Office of the Italian Embassy

# Desk Macchine Utensili ICE Pechino

# CHINA'S MACHINE TOOL INDUSTRY, MARKET AND REGULATIONS

Newsletter January 2025

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# 1. Machine tool industry in China

## 1.1 Overview of China's economy, market performance, and the main indicators of the machine tool industry

### 1.1.1 Main economy indicators (summary of the highlights)

- **Strong growth in industrial output, with expansions observed in most sectors**

According to data from the National Bureau of Statistics, in November 2024, the value-added of enterprises above the designated size increased by 5.4% year-on-year (in real terms); from January to November 2024, the value-added of enterprises above the designated size increased by 5.8% year-on-year.

By sector, in November 2024, value-added of electronic machinery & equipment manufacturing industry increased by 5.2% year-on-year; value-added of automobile industry increased by 12% year-on-year; value-added of railroad, aerospace & shipbuilding industry increased by 7.9% year-on-year; valued-added of non-metallic mineral products decreased by 2.3% year-on-year.

By product type, in November 2024, the production of steel hit 118.81 million tons, up by 5.1%; the production of cement hit 169.34 million tons, down by 10.7%; the production of new energy vehicles hit 1.57 million units, up by an astounding 51.1%.

- **Mild increase in consumer prices, despite a slight price drop of grains**

In November 2024, national consumer prices index (CPI) rose by approximately 0.2% year-on-year (+0.2% rural, +0.1% urban). From January to November 2024, the average national CPI increased by 0.3% year-on-year.

By consumer product type, food & tobacco & alcohol prices increased by 0.9% year-on-year; living stock & meat prices increased by 2.4% year-on-year; aquatic product prices increased by 1.8% year-on-year; and grain prices showed a slight decrease by 1.1%.

## ➢ Manufacturing PMI index (December 2024)

In December 2024, the Purchasing Manager Index (PMI) for the manufacturing index was 50.2%, (0.1 percentage points lower than the previous month), marking the third time-in-a-row consecutive industrial expansion.

Reasons for the consecutive industrial expansion--

1) *The lasting effects of the basket of stimulative policies (lower bank reserve rate requirement, lower real-estate mortgage rate, huge monetary influx) introduced at the end of September, which injected vitality into the manufacturing industry.*

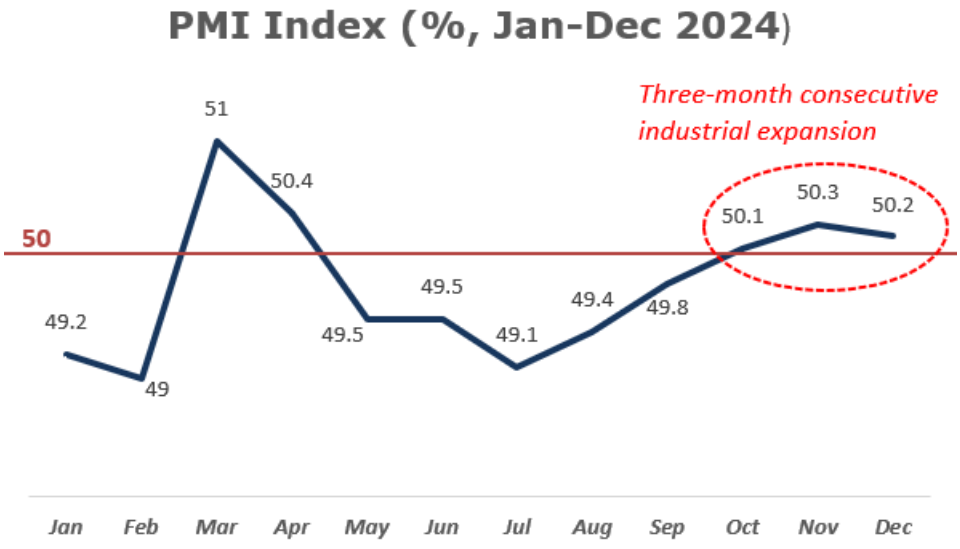
2) *The rise of domestic demand in the manufacturing industry.*

Warning signals to watch out for in the near future--

1) *The decline of foreign demand in the manufacturing industry, indicating the lost of interest from overseas clients.*

2) *Worsening employment situation (enterprises are cutting off staff while the order demand is on the rise).*

3) *The rising costs of raw materials and labor narrowed down the profit margin for manufacturing enterprises.*




**Notes: A PMI index over 50 represents growth or expansion within the manufacturing sector compared with the prior month. A reading under 50 represents contraction, and a reading at 50 indicates an equal balance between manufacturers reporting advances and declines in their business.*

- **PMI and component indexes (%) of China's manufacturing industry**

| | PMI | Production | New order | Raw material inventory | Employee | Supplier delivery time |
|---|---|---|---|---|---|---|
| Jan 2024 | 49.2 | 51.3 | 49.0 | 47.6 | 47.6 | 50.8 |
| Feb 2024 | 49.1 | 49.8 | 49.0 | 47.4 | 47.5 | 48.8 |
| Mar 2024 | 50.8 | 52.2 | 53.0 | 48.1 | 48.1 | 50.6 |
| Apr 2024 | 50.4 | 52.9 | 51.1 | 48.1 | 48.0 | 50.4 |
| May 2024 | 49.5 | 50.8 | 49.6 | 47.8 | 48.1 | 50.1 |
| Jun 2024 | 49.5 | 50.6 | 49.5 | 47.6 | 48.1 | 49.5 |
| Jul 2024 | 49.4 | 50.1 | 49.3 | 49.9 | 48.3 | 49.3 |
| Aug 2024 | 49.1 | 49.8 | 48.9 | 47.6 | 48.1 | 49.6 |
| Sep 2024 | 49.8 | 51.2 | 49.9 | 47.7 | 48.2 | 49.5 |
| Oct 2024 | 50.1 | 52 | 50 | 48.2 | 48.4 | 49.6 |
| Nov 2024 | 50.3 | 52.4 | 50.8 | 48.2 | 48.2 | 50.2 |
| Dec 2024 | 50.2 | 52.1 | 51 | 48.3 | 48.1 | 50.9 |

- The manufacturing industry is maintaining an expanding trend, despite less rapid than the previous month.
- The production activity of the manufacturing enterprises is rapidly accelerating.
- The market order of the manufacturing industry is on the upward trend (driven by the domestic market).
- Inventory of major raw materials is declining.
- The employment situation in the manufacturing industry continues to worsen.
- The delivery speed of raw materials is increasing by a modest extent.

## Part 1.1.2 Machine tool industry indicators

According to data from China Machine Tool Industry Association, from January to November 2024,

- The operating income of the machine tool industry achieved 930.2 billion yuan, down by 5.6% year-on-year. Among them, the operating income of metal-cutting machine tools increased by 6.6% year-on-year; the operating income of metal-forming machine tools increased by 5.5% year-on-year.
- New orders for metal-processing machine tools increased by 3.7% year-on-year; existing orders on hand increased by 4.6% year-on-year.
- For the enterprises above the designated size, the production of metal-cutting machine tools amounted to 612,000 units, up by 8.1% year-on-year; the production of metal-forming machine tools amounted to 144,000 units, up by 4.3% year-on-year.
- The international trade of machine tool products was valued at 28.79 billion USD, down by 1.2% year-on-year. (Import: 9.19 billion USD, down by 9.4%; Export: 19.59 billion USD, up by 3.2%)
- Metal-cutting machine tool production across regions (November 2024):

| Location | Nov (1,000 units) | Jan-Nov Total (1,000 units) |
|---|---|---|
| **Liaoning** | **0.18** | **2.45** |
| **Jiangsu** | **0.66** | **6.73** |
| **Zhejiang** | ***1.62*** | ***17.34*** |
| **Anhui** | **0.17** | **1.78** |
| **Fujian** | **0.10** | **1.13** |
| **Shandong** | **0.68** | **6.87** |
| **Guangdong** | **2.07** | **15.65** |
| **Yunnan** | **0.23** | **2.86** |
| **Shaʻanxi** | **0.13** | **1.32** |

## 1.2 Overview of foreign machine tool manufacturers in China

### 1.2.1 Comparison: Foreign machine tool manufacturers VS Chinese machine tool manufacturers

The comparison between foreign and China's domestic machine tool companies is characterized by a clear division of market segments. Featured by advanced technology and higher precision standards, foreign companies dominate the high-end segment of China's machine tool market, providing sophisticated machine tools and solutions that domestic companies are not capable of. Whereas China, as the world's largest producer, importer, as well as consumer of machine tools, is still focusing on mid-to-low end segment, despite the continuous effort to enter the high-end segment. National and publicly listed local manufacturers are mostly producing large machine tools, with a significant number of private machine tool companies primarily producing general civilian products, rough machining parts, etc.

| | **Foreign** | **Chinese domestic** |
|---|---|---|
| **Level of precision** | Japanese and German machine tool manufacturers, (such as Okuma and Trumpf), can usually achieve an accuracy of 0.005 mm, guaranteeing the advantages in high-end segments, including aerospace and automobiles. | Domestic companies have been catching up and making significant progress in the manufacturing of high-precision machine tools. For example, the processing accuracy of super-heavy CNC horizontal machine tools by Wuhan Heavy Machine Tool Group can be reach 0.008 mm, which is close to international level. |
| **CNC technology** | At the forefront of CNC technology application. | China has been rapidly developing CNC technology, especially in five-axis linkage and heavy machine tool technology, and is beginning to export high-CNC machine tools. |
| **CNC penetration rate** | General CNC rate in Japan > 80% | CNC rate of metal-cutting machine tools: 46.3% |

| | | |
|---|---|---|
| **(according to 2022 data from China Machine Tool Industry Association)** | General CNC rate in USA > 70% | CNC rate of metal-forming machine tools: 11.3% |
| **Quality of accessories and key parts** | Leading foreign companies, (e.g. Okuma and Mori Seiki) can provide more mature and efficient solutions, such as high-efficiency tools, CNC systems, and automation systems. | Chinese companies have made breakthroughs in the R&D of functional accessories and key parts and can provide a variety of additional components such as ball screws and roller guides to meet diverse needs. |
| **Company structure** | Machine tool companies in South Korea and Taiwan are mostly small and medium-sized enterprises that can quickly respond to market changes. | Mostly large state-owned enterprises, with low flexibility and adaptability to market changes. |

### 1.2.2 Geographical distribution

Both Foreign and Chinese machine tool companies tend to locate in developed regions, particularly the Yangtze River Delta region (Zhejiang, Jiangsu and Shanghai accommodates approximately 80% of the machine tool companies in China).

It is worth mentioning that, among these popular cities, Suzhou hosts many Italian and German enterprises, and is recognized as the largest Italian industrial cluster outside of Italy; Taicang (part of Suzhou), known as the "Hometown of German Enterprises", accommodates over 400 German enterprises and is a major hub for German investment in China; and Shanghai is dominated by foreign machine tool companies, due to the international appeal.

| City of HQ/main office | Total amount of analyzed machine tool companies | Amount of Foreign machine tool companies | Amount of Chinese machine tool companies |
|---|---|---|---|
| **Shanghai** | 36 | 36 | 0 |
| **Jiangsu** | 27 | 22 | 5 |
| **Zhejiang** | 10 | 3 | 7 |
| **Guangdong** | 6 | 5 | 1 |
| **Beijing** | 4 | 4 | 0 |
| **Shandong** | 4 | 2 | 2 |
| **Liaoning** | 3 | 2 | 1 |
| **Hubei** | 2 | 0 | 2 |
| **Chongqing** | 1 | 1 | 0 |
| **Hunan** | 1 | 0 | 1 |
| **Shaanxi** | 1 | 0 | 1 |
| **Tianjin** | 1 | 1 | 0 |

*Based on 96 companies' statistics from previous newsletters*

**Geographical distribution of all machine tool companies in China (foreign + domestic)**

**Geographical distribution of foreign machine tool companies in China**


**Geographical distribution of domestic machine tool companies in China**


*Source: ITA Machine Tool Desk, In3act Analysis*

### 1.2.3 Segmentation of downstream application sector

The applications of machine tools are diverse, covering sectors such as automotive, machinery, mold production and aerospace, which have varying efficiency and precision requirements.

In the aspect of precision, high-end machine tools are generally provided by leading foreign and Chinese local machine tool companies, which are typically used to manufacture parts with complex geometric shapes and extremely high precision requirements, such as parts in the aerospace and luxury automobile industry. In contrast, mid-to-low-end machine tools are mostly used for relatively simpler processing tasks, such as traditional turning, milling and drilling, which produce machine parts with lower precision.

In terms of efficiency, high-end machine tools such as Mazak, DMG Mori, etc. have clear advantages in production efficiency due to their advanced automation technology and high-efficiency drive systems. These companies are able to complete multiple machining tasks in a single setup, thereby reducing production cycle time and manual intervention. Conversely, mid-to-low-end machine tools are less efficient and usually require more manual operations and longer production times, especially when frequent tool changes or multiple clamping are required.

## 1.3 Overview of the downstream application industry, company geographical distribution and the demand trends

### 1.3.1 Major downstream application industry overview: metallurgy industry

As a cornerstone of the modern society, the metallurgy industry has been playing a crucial role in China’s economic development, underpinning sectors such as high-tech, infrastructure, and manufacturing. The metallurgical industry encompasses the processes of mining, selecting, sintering, smelting, and refining, with end products (e.g. steel, aluminum, copper) widely utilized for different purposes including construction, transportation, and machinery.

The metallurgical industry can be broadly divided into two segments:

The ferrous metallurgical segment— focusing on the production of iron, chromium, manganese, and the associated alloys. This segment primarily supplies essential raw materials for industries like transportation, construction, and military equipment.

The non-ferrous metallurgical segment— encompassing the refining of non-ferrous metals; included in the processes such as copper & tin smelting, aluminum production, lead & zinc processing, nickel & cobalt extraction, as well as the production of precious and rare metals.

Machine tools play a crucial role in the metallurgy industry, by enabling the processing, shaping, and completion of metal components essential for various applications, as well as enhancing the productivity and precision in the metal-working procedures. Below are the different types of machine tools applied in the metallurgy sector:

- CNC Machine tools— able to automate the machining processes with exceptional precision. CNC machine tool's high-precision and efficiency have greatly improved the quality of metallurgical equipment produced, particularly for cooling equipment, electric air furnaces, casting tools and accessories.
- Lathes— used to shape metal by rotating the workpiece against a cutting tool. Lathes are essential for producing cylindrical parts, and are widely utilized in the manufacturing of shafts, bolts, and other critical components in machinery.
- Milling machines— designed to remove material from a workpiece using rotary cutters. Milling machines are essential for creating complex shapes & features and are particularly employed in the production of parts with intricate geometries (in aerospace and automotive industries).
- Broaching machines— designed to remove material through linear motion. Broaching machines are commonly used for keyway machining in gears and for creating non-circular holes.
- Grinding machines— used in the final stage before completion by removing small amounts of material from metal surfaces. Grinding machines are essential for achieving high precision and smooth finishes on metal components.

### 1.3.2 Company geographical distribution of metallurgy production in China

China is the largest metallurgy market in the world, and also the world's largest steel producer, accounting for approximately 54% of the global steel production in 2023 (source: World Steel Association). This dominance on the global stage is driven by decades-long strong industrial demands in sectors such as automotive manufacturing and infrastructure development.

China's metallurgical industry is dominated by large state-owned enterprises, with a list of representatives listed below:

| Company name | Introduction |
|---|---|
| 中国宝武钢铁集团有限公司<br>**China Baowu Steel Group Co., Ltd.** | ▪ A state-owned iron and steel company headquartered in Shanghai.<br>▪ The company was formed in December 2016 through the merger of Baosteel Group and Wuhan Iron & Steel Corporation, making it the largest steel producer in the world. |
| 河北钢铁集团有限公司<br>**Hebei Iron & Steel Group Co., Ltd.** | ▪ Headquartered in Hebei province, Hesteel Group was established through the merger of two prominent steel companies -- Tangshan Iron & Steel Group and Handan Iron & Steel Group.<br>▪ The company has rapidly grown into a significant player in the global steel industry after the merger. |
| 首钢集团有限公司<br>**Shougang Group Co., Ltd.** | ▪ Founded in 1919, Shougang Group is one of the oldest and largest steel companies in China. The company has evolved significantly since its establishment, playing a crucial role in the development of China's steel industry. |

| | |
|---|---|
| 鞍山钢铁集团有限公司<br><br>**Anshan Iron and Steel Group Co., Ltd.**<br><br>鞍钢集团 ANSTEEL | ▪ Ansteel Group is one of the largest steel producers globally, recognized for its extensive production capabilities and a wide range of steel products.<br><br>▪ The company has a significant historical legacy (one of the first large-scale steel manufacturing enterprises established after 1949 and is often referred to as the "Cradle of the Chinese Steel Industry.") |
| 中国铝业公司集团有限公司<br><br>**China Aluminum Corporation Ltd.**<br><br>CHINALCO 中国铝业集团有限公司 ALUMINUM CORPORATION OF CHINA | ▪ The largest company in China in the field of aluminum, copper, rare earths (as well as related non-ferrous metal mineral products), smelting products, processed products and carbon products. |
| 中国有色矿业集团有限公司<br><br>**China Nonferrous Metal Mining (Group) Co., Ltd.**<br><br>中国有色集团 CNMC | ▪ CNMC is involved in various business areas of the non-ferrous metals industry, including:<br>- Exploration and mining of metals such as copper, aluminum, lead, zinc, nickel, tantalum, niobium, and beryllium.<br>- Construction projects related to the mining industry.<br>- Trade and technological services associated with non-ferrous metals. |

**Geographical distribution of China's metallurgical enterprises**


*Source: ITA Machine Tool Desk, In3act Analysis*

**China's major production regions of the metallurgical industry each exhibits distinctive characteristics:**

- **North China: mainly Hebei and Shanxi provinces**
  - *Hebei Province is China's largest steel production base and home to large enterprises such as Baosteel and Tangshan Iron & Steel.*
  - *Shanxi Province has developed a relatively complete metallurgical industry chain, benefitting from its rich coal resources.*

- **Northeastern China: Liaoning, Jilin, Heilongjiang provinces**
  - *The region is dominated by heavy industry, with large enterprises such as Anshan Iron & Steel playing an essential role. The metallurgical industry in Northeast China is relatively mature in terms of technology and equipment but faces the challenge of transformation and upgrading.*

- **East China: mainly Jiangsu, Anhui, Shandong provinces**
  - *East China has a developed economy, and the metallurgical industry is dominated by small and medium-sized enterprises with diversified products. Among three provinces, Shandong Province has the largest output in steel and non-ferrous metals.*

- **Central and South Region: mainly Hubei and Jiangxi provinces**
  - *The metallurgical industry in Central and South China is developing rapidly, with the rise of large enterprises such as Wuhan Iron & Steel Group Company being witnessed. (It is also worth mentioning that Jiangxi Province primarily produces non-ferrous metals, including tungsten and rare earths.)*

### 1.3.3 Future trends of the metallurgy industry

<table>
<tr><th>Opportunities</th><th>Threats</th></tr>
<tr><td rowspan="2">Rising demand in non-construction sectors<br><br>The demand for steel in non-construction sectors (despite the sluggish demand in the construction sector) such as machinery and automobiles, are gradually increasing.<br><br>For example, as a crucial downstream market for the metallurgical industry, the rapid development of the new energy vehicle (NEVs) sector drives up the demand for lightweight materials, such as high-strength steel and aluminum alloys.</td><td>Demand-supply mismatch<br><br>China’s steel industry is the facing the dilemma of high output and inventory levels, against a sluggish market demand which is primarily due to a prolonged downturn in the real estate market.</td></tr>
<tr><td>Pressure for green development<br><br>According to the national policy requirements, by 2025, more than 80% of the steel production capacity will need to undergo the ultra-low emission transformation. However, higher production costs (due to environmental requirements) make it difficult for companies to find a balance between profitability and environmental protection, let alone persuading</td></tr>
</table>

| | |
|---|---|
| | downstream users to accept higher prices for green steel. |

Machine tool companies should closely monitor the dynamics in the downstream market, adjust the product portfolio, and enhance technological innovation (upgrading/optimizing the CNC systems, transmission systems and other critical components) to meet the growing requirements for high-end machine tools. For instance, the increasing use of non-ferrous metals in high-end manufacturing fields, such as new energy vehicles and aerospace, has directly driven up the demand for advanced machine tools.

# Part 2 .China's latest policy agenda: Support on "Specialized, Refined, Distinctive and Innovative Small Giants"

## 2.1. Definition on "Specialized, Refined, Distinctive, and Innovative Small Giants"

"Specialized, Refined, Distinctive, and Innovative Small Giants" refers to small and medium-sized enterprises (SMEs) that fit the following characteristics:

Specialized ("专")-- *focusing on a specific area/niche, and investing all efforts in developing expertise within this field.*
Refined ("精")-- *meticulous management, high-quality product & services.*
Distinctive ("特")-- *unique technology & craftsmanship & skills that sets the company apart from the competitors.*
Innovative ("新")-- *continuous innovation in organization, technology and market capabilities.*

This concept was initially created to encourage SMEs into making advancements in the area of core components, key materials, advanced processes and industrial technologies, which can eventually elevate China's competitiveness in the global industrial chain.

## 2.2 Historical evolution of the policy initiative

*Jan 2021*

The Ministry of Finance and the Ministry of Industry and Information Technology issued a notice stating that the government would provide financial, technological and talent-seeking support for SMEs. The goal is to help over 1,000 small companies, that are outstanding in specific fields, become industry leaders (through technological innovation and product quality improvement).

*Mar 2022*

The concept of "Specialized, Refined, Distinctive, and Innovative Small Giants" was, for the first time, included in the Chinese government's annual work report. This indicated the significant importance attached to the fitful SMEs.

*Sep 2022*

The Ministry of Industry and Information Technology announced to have cultivated 8,997 "Small Giants" Enterprises under the "Specialized, Refined, Distinctive, and Innovative" concept, and 4,328 new enterprises were added to the fourth batch of cultivations in 2022 (and nearly 50,000 enterprises were to be cultivated at the provincial level). This rapid increase in the number of "Small Giant" enterprises has highlighted the prominence of specialized industrial development.

*2023*

In the 2023 Government Work Report, it was revealed that the number of "Specialized, Refined, Distinctive, and Innovative Small Giants" had surpassed 70,000. This indicated significant advancement and widespread adoption of this development model.

## 2.3 Policy benefits that foreign-invested enterprises can leverage

### ➢ "Specialized, Refined, Distinctive and Innovative" enterprises policy

| | |
|---|---|
| **Policy content** | From 2021 to 2024:<br>The central government will allocate 100 billion RMB in subsidies to facilitate the high-quality development of SMEs. More than 1,000 of such enterprises will be supported, and are later expected to serve as a role model for competitors to learn from.<br><br>From 2024 to 2026, key measures can be summarized as follows:<br>**First batch in 2024**<br>More than 1,000 SMEs will be supported initially, and the support will be expanded depending on the implementation progress.<br>Subsidy standards: each enterprise will receive continuous support for 3 years, with a total subsidy of 6 million RMB per enterprise.<br>**Fund distribution**<br>50% released at the start of the implementation period; remaining 50% released at the end of the period, upon performance evaluation.<br>**Conditions for withdrawing/reducing the funds**<br>Failing to meet the investment target of 20 million RMB or other set objectives. |
| **Eligibility criteria** | **Business field**<br>Operating in a specific niche market for at least two years.<br>**R&D investment**<br>Total R&D expenditure > 1 million RMB; the proportion of R&D expenditure relative to the total revenue >3%.<br>**Operating performance**<br>Total revenue in the previous year > 10 million RMB, or having raised more than 20 million RMB in equity financing (paid-in capital from qualified institutional investors) in the past 2 years.<br>**Technology awards**<br>Satisfying one of the followings conditions:<br>✧ Condition 1: Having received a provincial-level science and technology reward in the past 3 years, ranking in the top three of the award-winning units.<br>✧ Condition 2: Ranked in the top 500 of the "Maker China" national innovation and entrepreneurship competition for SMEs in the past 3 years.<br>✧ Condition 3: The **total new equity financing raised in the past two years** (paid-in capital from qualified institutional investors) **exceeds** |

| | |
|---|---|
| | **60 million RMB**.<br>✧ Condition 4: The **average annual R&D expenditure over the past two years** is **above 10 million RMB**. |
| **Successful cases** | **Pama (Shanghai) Machine Tool Co., Ltd.**<br>2023 Specialized, Refined, Distinctive and Innovative Small Giant Enterprise<br><br>**Youjia International CNC Machine Tool Co., Ltd. (FFG)**<br>2023 National-level Specialized, Refined, Distinctive, and Innovative Small Giant Enterprise<br>2021 Zhejiang Provincial Specialized, Refined, Distinctive, and Innovative SME |

## ➢ High-tech enterprise policy

| | |
|---|---|
| **Eligibility criteria** | **Registration time**<br>The company must be registered at least one year ago.<br>**Intellectual Property Rights (IPR)**<br>The company must have obtained the ownership of IPR related to core technology, either through independent R&D, acquisition, donation, or merger & acquisition.<br>**Core technology in High-tech fields**<br>The core technology supporting the company's main products or services must fall within the scope of the National Key Supported High-tech fields.<br>**R&D personnel**<br>The proportion of R&D and related technological innovation personnel > 10% of total number of employees.<br>**Annual R&D expenses averaged in the last 3 years**<br>Sales revenue less than 50 million RMB: R&D expenses > 5% of sales revenue<br>Sales revenue 50-200 million RMB: R&D expenses >4% of sales revenue<br>Sales revenue over 200 million RMB: R&D expenses >3% of sales revenue<br>(additionally, at least 60% of R&D expenses should occur within mainland China).<br>**High-tech product/sales revenue**<br>Annual revenue from high-tech product/services > 60% of total revenue in the year of application.<br>**No major legal or safety issues** |
| **National tax incentives** | **Corporate Income Tax Reduction**<br>High-tech enterprises enjoy a **10% reduction in corporate income tax**, meaning they are taxed at **15%**, compared to the standard **25%** for non-high-tech enterprises. |

| | |
|---|---|
| | **R&D Expense Deduction**<br>Small and medium-sized technology enterprises can **deduct 75%** of their R&D expenses that do not result in intangible assets, in addition to the actual amount incurred. This means they can **deduct 175%** of their R&D expenses from their taxable income.<br>**Note:** This policy was applied from **January 1, 2017,** to **December 31, 2019**. |
| **Local incentives** | **Beijing**<br>Permanent Residency (Hukou) for high-tech enterprise executives and technicians.<br><br>**Suzhou**<br>✧ **Suzhou Industrial Park (SIP)--** Companies that are certified as high-tech enterprises and have annual revenue below 20 million RMB can receive a one-time reward of 100,000 RMB.<br>✧ **Suzhou Xiangcheng District--** High-tech enterprises can receive a one-time reward of 20,000 RMB for certification.<br>✧ **Suzhou Wuzhong District--** High-tech enterprises in Wuzhong District can receive a one-time reward of 80,000 RMB for certification.<br>✧ **Suzhou High-tech Zone / Gusu District / Wujiang District / Kunshan City / Taicang City / Changshu City--** High-tech enterprises in above areas can receive a one-time reward of 100,000 RMB for certification. |
| **Additional benefits** | ✧ **Promoting technology transformation**<br>✧ **Enhancing brand image**<br>✧ **Boosting market competitiveness**<br>✧ **Bonus points for being listed on the New Third Board (National equities exchanges and quotations)**<br>✧ **Others (e.g. eligibility for future government grants, access to unsecured credit loans, tax deduction on employee training)** |
| **Successful cases** | **Pama (Shanghai) Machine Tool Co., Ltd.**<br>2022 High-tech Enterprise<br>2019 High-tech Enterprise<br>**GROB MACHINE TOOLS (CHINA) Co., Ltd.**<br>2023 High-tech Enterprise<br>2020 High-tech Enterprise<br>2017 High-tech Enterprise<br>**Makino Machine Tool (China) Co., Ltd.**<br>2022 High-tech Enterprise<br>2016 High-tech Enterprise |

| | |
|---|---|
| | **Suzhou Dongyu Machine Tool Co., Ltd. (Tongtai)**<br>2023 High-tech Enterprise<br>2020 High-tech Enterprise<br>2014 High-tech Enterprise<br>**Youjia International CNC Machine Tool Co., Ltd. (FFG)**<br>2020 High-tech Enterprise<br>2017 High-tech Enterprise |

## Part 3. Development trends of the machine tool industry--domestic VS international

### Domestic trends.

#### Trend 1 . Large-scale equipment renewal and upgrading for machine tools

The last round of sales peak for machine tools was witnessed from 2011 to 2014. According to data from Sina Finance, until the end of 2020, China's domestic market owned about eight million units of machine tools, with at least 60% reaching the end-of-life stage (having been in use for more than ten years) and therefore facing replacement in the next few years.

**Example**

To cater to the market demand for equipment renewal and upgrading, since 2023, Qinchuan Machine Tools has been focusing on the mass production of five-axis machine tools and other core components, with the goal of manufacturing 248 units of five-axis machine centers, 380,000 pieces of ball screws/precision screws, as well as 1.44 million pieces of new energy vehicles parts, etc. On top of that, "the large-scale equipment renewal and upgrading can also lead to the high-end transformation of China's machine tool industry at the same time", quoted by Security Market Weekly.

#### Trend 2 .Domestic substitution of core machine tool equipment

China's has been pursuing the independent production of machine tools (in line with the overarching Domestic Substitution Policy Initiative), and has, up till now, achieved a decent production scale in the field of precision CNC system, electric spindle, ball screw, CNC tool holder and servo system, in the domestic market.

**Example**

Haitian Precision has been attaching great importance to the independent development of power turret, torque motor-drive rotary table, non-standard servo tool changer, and other high-end machine tool components. Its signature product- gantry and horizontal machining center- has an average price of 200-240 thousand USD per unit, much cheaper than the US counterparts at 300-400 thousand USD per unit, which is largely attributed to the lower-cost domestic substitution components.

### Trend 3. Hugely driven by downstream industrial demands

- **Rising demand from military & aerospace industry** drives up the production of optical measurement & control instruments and composite materials.

  **Data insights**

  Based on the data from Boeing, China's civil aerospace industry output increased from 376.42 billion yuan in 2015 to over a trillion yuan in 2020, reflecting a CAGR of over 22%. And it is forecasted that China's civil airplane fleets will more than double by 2043, increasing from 4345 to approximately 9740 units of aircrafts.

- **Stringent environmental requirements** drives up the production of turbocharger that is applied in new energy vehicles, particularly electricity vehicles.

  **Data insights**

  According to China's latest "Green Energy" Policy, electricity will become the largest category of end-use energy by 2025; electrification & hydrogenation rate of end-use energy will increase from 32% (2024) to 35% (2030) and to 69% (2060).

- **Wide application of humanoid robots** drives up the production of industrial master batch.

  **Data insights**

  According to data from the National Bureau of Statistics, from 2018 to 2024, China's production of humanoid robots has increased from 148,000 units to 528,000 units, displaying a CAGR of 23.6%.

## International trends

### Trend 1. Inclusion of networking technology

Rapid advancement in networking technology has made it easier to connect smart devices and build local networks for the machine tool industry, leading to a more efficient manufacturing mechanism.

**Example**

Single-pair Etheric cables (SPEs), which can transfer data and power simultaneously, are increasingly useful in the machine tool industry, by connecting sensors and network devices to the powerful computer-driving machining process.

### Trend 2. Integration of AI

As the machine tool industry becomes automated to a greater degree, programs need to be written and executed in real-time for better management. That is where AI came in. AI can be used to monitor the programs, detect wear and tears, and assist in the maintenance of machine tools.

**Example**

MI.RA/Dexter, one of Comau's intelligent tools designed for smart factories, is a meta-language software program that allows operators to set up robots into performing simple commands-- searching for images, locating a response, and executing a requested action. This is a comprehensive solution with a natural and intuitive human-machine interface, which guarantees the highest degree of ease-of-use and optimizes the entire inspection process.

### Trend 3. Cybersecurity issues on the agenda

As the machine tool industry embraces more digital technologies and becomes more automated, the concern of industrial hacking, which can possibly lead to system disorder and even cause severe damage to the operators, is on the forefront of the agenda. Experts are working to enhance the cybersecurity so that a safe manufacturing process can be guaranteed.

**Example**

Spain-- AFM has an active working group that has been conducting research

on the cybersecurity issue and promoting dedicated cybersecurity standards & framework for the machine tool sector; the Spanish Association is implementing projects aimed at assessing the cybersecurity maturity of associated companies and helping prepare for future cyberattacks.
Italy— UCIMU has been providing tailor-made services to Italian machine tool manufacturers so as to raise the public awareness on cybersecurity issue.

## Part 4. Trade Exchange in the Machine Tool Industry between Italy and China (January - September 2024)

**Italy's machine tool imports and exports worldwide (in millions of euro, January – September 2024)**

| | Import | | | Export | | |
|---|---|---|---|---|---|---|
| | Value | YOY change 2023-2024 | Percentage share | Value | YOY change 2023-2024 | Percentage share |
| **Asia** | 211.2 | -44.8% | 27.5% | 518.5 | +9.1% | 18.4% |
| **Oriental Asia** | 203.7 | -44.5% | 26.5% | 224.8 | -9.1% | 8% |
| **China** | 51.16 | -18.7% | 6.7% | 162.92 | -13.7% | 5.8% |
| **Worldwide total** | 769 | -41.3% | | 2822.9 | +7.5% | |

**Italy's machine tool imports and exports with China by category (in millions of euros, January – September 2024)**

Marked blue are the respective indicators for worldwide total

| | | Value | YOY change | Share of worldwide total |
|---|---|---|---|---|
| **Metal-cutting machine tools** | Import | 19.36 (444.3) | -22.7% (-42.8%) | 3.8% |
| | Export | 118.29 (1208.0) | -17.9% (+5.2%) | 9.8% |
| **Metal-forming Machine tools** | Import | 11.54 (121.3) | -14.2% (-43.8%) | 8.6% |
| | Export | 32.69 (1290.8) | +35.2% (+8.3%) | 2.5% |
| **Non-conventional** | Import | 17.7 (118.13) | -20.5% (-42.6%) | 17.2% |

| | | | | |
|---|---|---|---|---|
| **technology machine tools** | Export | 11.94 (323.3) | -41.9% (+13.9%) | 3.7% |

**Key takeaways from the data above:**

- Based on data from January to September 2024, Italy's machine tool import from Oriental Asian countries (China, Japan, South Korea) was cut by almost a half on a year-on-year basis; Italy's machine tool import from China was also dropping but on a much smaller scale.
- From January to September 2024, Italy's machine tool trade with China was significantly decreasing for all categories, except a large rise in the export of metal-forming machine tools.

## Part 5 Tenders and bids (January 2025)

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| Announcement of Procurement for the CNC Surface Grinder Project of Qinhuangdao Tobacco Machinery Co., Ltd.<br>Required by Qinhuangdao Tobacco Machinery Co., Ltd.<br>**Action deadline: Jan 1, 2025** |
| Announcement of Procurement for 31 Machine Tool Parts (PGWZMYHGZHD241226180374)<br>Required by Pangang Group Material Trading Co., Ltd.<br>**Action deadline: Jan 3, 2025** |
| Announcement of Procurement for TET Roll Lathe Device<br>Required by Daya New Energy Materials Technology (Guangxi) Co., Ltd.<br>**Action deadline: Jan 3, 2025** |
| Announcement of Procurement for Tender Announcement for a Batch of Hongjian Heavy Machinery Machine Tools and Crane Spare Parts<br>Required by Sichuan Hongjian Heavy Machinery Manufacturing Co., Ltd.<br>**Action deadline: Jan 8, 2025** |
| Tender Announcement for Metal Cutting Machine Tool Accessories by Hubei Quanli Machinery Group Co., Ltd.<br>Required by Hubei Quanli Machinery Group Co., Ltd.<br>**Action deadline: Jan 10, 2025** |
| Tender Announcement for Jiangsu Yizhong Head Boring Equipment CNC System<br>Required by JiangSu Yizhong CNC Machine Tools Co., Ltd. |

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| **Action deadline: Jan 10, 2025** |
| Tender Announcement for the Procurement of CNC Fixed Beam Vertical Double Column Lathe<br>Required by Luoyang LYC Bearing Co., Ltd.<br>**Action deadline: Jan 12, 2025** |
| Tender Announcement for 2 CNC turret lathes<br>Required by Luoyang LYC Bearing Co., Ltd.<br>**Action deadline: Jan 17, 2025** |
| Tender Announcement for Milling Large Arc Special Machine<br>Required by Wuhan Wanxiang Automobile Brake Co., Ltd.<br>**Action deadline: Jan 23, 2025** |
| Tender Announcement for the Machine Tool Parts Project (BG2025010181) of Bengang Steel Plates Co., Ltd.<br>Required by Bengang Steel Plates Co., Ltd.<br>**Action deadline: Jan 24, 2025** |