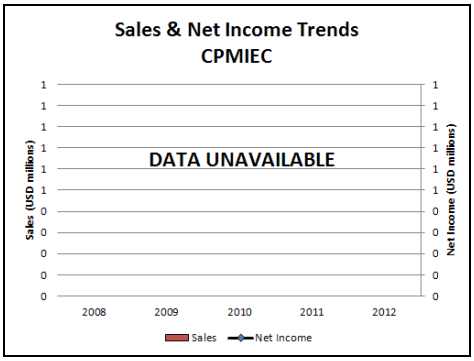
China National Precision Machinery Import/Export Corp (CPMIEC)

Outlook

- CPMIEC is China's primary missile manufacturer
- China is using CPMIEC to expand its strategic influence in the region through technology transfer and production agreements



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Historically, the People's Republic of China depended on the Soviet Union for its military needs. After the 1960 split between the two Communist giants, however, Beijing was forced to diversify its source of military supplies. The country was pushed to greater self-reliance, which resulted in the development of various indigenous military products. In order to satisfy the military hardware needs of the People's Liberation Army, the Chinese embarked on a massive plan to establish their own military industrial base – often copying and then improving on foreign designs to meet the unique demand of their armed forces. Chinese military products, although not very sophisticated, are proving to be very attractive to developing nations because they are relatively cheap and easy to maintain.

The China National Precision Machinery Import/Export Corporation (CPMIEC) was established in the 1950s. It is fair to assume that the Soviet Union might have assisted the Chinese in establishing this organization. Formerly known as the Seventh Ministry of Machine-Building, CPMIEC manufactures most of the missiles produced today by the People's Republic of China. CPMIEC has become a major corporation, and is capable of manufacturing not only a full range of missile systems, but also space-related equipment, optics, and electronics.

The raison d'être of CPMIEC was initially to fulfill the domestic requirements of the People's Liberation Army. However, as CPMIEC's industrial capabilities and expertise expanded, so, too, did its ability to provide its equipment to external customers. The corporation is a major foreign exchange earner and makes every effort to market its weapons systems throughout the world.

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Structure and Personnel

CPMIEC is believed to be headed by its president, Zhang Tong. Current personnel listings are difficult to obtain.

Product Area

CPMIEC is part of the China Aerospace Science and Technology Corporation (CASC), which is in the midst of an industry-wide restructuring (see **China Aerospace Science and Technology Corporation** entry). CPMIEC and China Great Wall Industry Corporation are also members of the New Era (Xinshidai) Group. This group is one of China's primary arms trade organizations. The current organization of the CASC is believed to be as follows:

1. China Aerospace Science and Technology
1.1 China Great Wall Industry Corporation
1.1.1 China National Precision Machinery Import/Export Corporation
1.2 China Academy of Launch Vehicle Technology
1.3 Academy of Aerospace Solid Propulsion Technology
1.4 China Academy of Space Technology
1.5 Academy of Aerospace Liquid Propulsion Technology
1.6 Sichuan Academy of Aerospace Technology
1.7 Shanghai Academy of Spaceflight Technology
1.8 China Aerospace Times Electronics Corporation
1.9 China Academy of Aerospace Aerodynamics

China Aerospace Science and Technology Corporation. CASC produces a broad range of products, including space launch vehicles, missiles, control systems, propulsion systems, liquid-hydrogen- and oxygen-fueled rocket boosters, computers, inertial guidance systems, ground facilities, and satellites.

China Great Wall Industry Corp. CGWIC is responsible for the two international trade arms of CASC: the China Great Wall Industry Corporation and the China Precision Machinery Import/Export Corporation.

China Great Wall Industry Corporation markets a wide range of products and services, including satellite launch services, space technology, and equipment. It is the sole commercial organization authorized by the Chinese government to provide commercial satellite launch services and space technology to international clients. CGWIC produces satellites and the CZ-2, CZ-3, and CZ-4 Long March series space launch vehicles.

China Precision Machinery Import/Export Corporation is a subordinate entity under CASC and the CGWIC. CPMIEC produces various missile systems for the People's Liberation Army (Army, Navy, and Air Force). These missile systems are believed to include the following: surface-to-air missiles (the FM-80, HJ-61, HN-5, HQ-2J, and HQ-61); surface-to-surface medium, intermediate, and intercontinental ballistic missiles (CSS-1, CSS-2, CSS-3, CSS-4, CSS-6, CSS-N-2, CSS-N-3, CSS-NX-4, M-9, M-11, and M-12); and anti-ship missiles (C-101, C-201, C-301, C-601, C-801, C-802, CY-1, HY-2, HY-2B/2J, HY-3, HY-4, HY-5, SY-2, YJ-1, and YJ-6).

CPMIEC also manufactures optical and electronic equipment, most likely relating to military guidance and targeting systems. The extent of CPMIEC participation in these programs is not clear, but the corporation almost certainly has some involvement.

Facilities

Chinese Chamber of Commerce web page for CPMIEC:

http://www.cccme.org.cn/shop/cccme0741/index.aspx

China Aerospace Science and Technology Corporation, 16 Fucheng Rd, PO Box 949, Haidian District, Beijing 100048. Telephone: + 86 10 68 37 00 43.

Website: http://www.spacechina.com

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Website: http://www.cgwic.com

China National Precision Machinery Import/Export Corp (CPMIEC)

Corporate Overview

It is extremely difficult to obtain information on the China National Precision Machinery Import/Export Corporation. The Chinese do not release information pertaining to their military manufacturing organizational structure, nor do they issue annual reports on their companies. Nevertheless, it is widely known that CPMIEC is the PRC's primary manufacturer of missile and space systems, and the corporation competes for Chinese military contracts with China North Industries Corporation and the China Aero-Technology Import/Export Corporation.

In the space-related equipment market, CPMIEC deals with its associated company, the China Great Wall Industry Corporation. This corporation is directly under the Ministry of Astronautics, which fills a role very similar to that of NASA in the United States. Both corporations work together on the import and export of space-related products and other precision machinery and electronic products.

New Products and Services

SH-3. In April 2014, CPMIEC revealed details of its SH-3 unmanned aerial vehicle (UAV). The SH-3 was developed by China Aerospace Science and Industry Corporation (CASIC). The SH-3 is described as a "low-cost, easy-to-operate-and-maintain tactical reconnaissance platform."

Missile System to Turkey Scrapped. In September 2013, Turkey selected CPMIEC to meet its T-LORAMIDS long-range air and missile defense requirement in a deal valued at $3.44 billion. Turkey selected CPMIEC's FD-2000 system (known as the HQ-9 in Chinese service) over Patriot missile interceptors from a U.S. partnership between Lockheed Martin and Raytheon, S-400 missiles from Russia's state-run arms trader Rosoboronexport, and ASTER 30-based SAMP/T surface-to-air missile (SAM) systems by the French-Italian partnership Eurosam. The choice of the system has raised concerns over the Chinese system's compatibility with NATO-owned early warning systems. In October 2013, the Turkish prime minister defended the controversial decision but said no deal had been finalized. According to news reports, the prime minister said, "For the moment, China is offering the best conditions." And those conditions included meeting Turkey's demand to produce the missiles jointly.

However, by November 2015, Turkey had scrapped the plan. Instead, it will likely pursue a system developed by the indigenous Aselsan with outside assistance from either a Raytheon-Lockheed Martin team or Eurosam.

Plant Expansion/Organization Update

U.S. Sanctions. In February 2013, the United States again imposed sanctions on CPMIEC and Poly Technologies for allegedly violating nonproliferation legislation. The move prompted a strong response from Beijing, urging Washington to immediately lift the ban. The report said the sanctions were imposed for military transfers to Iran, North Korea, and Syria.

In April 2007, CPMIEC was sanctioned by the United States under the Iran and Syria Nonproliferation Act, which provides penalties against foreign individuals for the transfer to or acquisition from Iran since January 1, 2005, of equipment and technology controlled under multilateral export control lists or otherwise having the potential to make a material contribution to the development of weapons of mass destruction or cruise or ballistic missile systems; or for the transfer to or acquisition from Syria since January 1, 2005, of equipment and technology controlled under multilateral export control lists or otherwise having the potential to make a material contribution to the development of weapons of mass destruction or cruise or ballistic missile systems. The sanctions applied for two years and barred CPMIEC or its subsidiaries from all exports to the United States. In addition, the sanctions forbade any contracts between the company and U.S. government agencies.

Sanctions Evasion? In 2009 and 2010, the Wisconsin Project alleged that CPMIEC and its subsidiaries had altered their names to evade sanctions. For example, CPMIEC Shanghai Pudong Company used the alias "China JMM Import & Export Shanghai Pudong Corporation."

For more information, see *Chinese Companies Evade U.S. Trade Ban* at http://www.wisconsinproject.org

Industrywide Restructuring. Finding itself lagging behind the global aerospace industry, China decided to make strategic changes to address this situation, creating 10 new state-run corporations on July 1, 1999:

1. China Nuclear Industry Group Corp
2. China Nuclear Industry Construction Group Corp
3. China Aerospace Science and Technology Group Corp
4. China Aerospace Machinery and Electronics Group Corp
5. China Aviation Industry Corporation I (AVIC I)
6. China Aviation Industry Corporation II (AVIC II)

China National Precision Machinery Import/Export Corp (CPMIEC)

7. China Shipbuilding Industry Group Corp
8. China Shipbuilding Heavy Industry Group Corp
9. China Weapons Industry Group Corporation
10. China Weapons and Equipment Group Corp

Note that AVIC I and AVIC II have since been merged. The new entity is simply called AVIC.

The old China Aerospace Corporation Organization, of which CPMIEC was a part, was divided into two state-owned organizations: the China Aerospace Machinery and Electronics Corporation and the China Aerospace Science and Technology Corporation.

Because CPMIEC is the PRC's main missile manufacturer, the company has so far not been overly affected by the changes. Further details as to where CPMIEC falls in the new hierarchy have not been made clear. It is believed to be mostly integrated into the China Aerospace Science and Technology Corporation. Unlike most of the companies the Chinese government is targeting in this restructuring, CPMIEC has a stable position and has expanded its operations into related areas such as space launch vehicles and satellites.

CPMIEC does not release information concerning the expansion, modernization, or organizational restructuring (if any) of its corporations. CPMIEC is said to be continuously engaged in the acquisition of new manufacturing equipment and the modernization of older production plants. The exact extent of these activities is not known, and such information is not expected to be released in the near future.

The Chinese government has initiated a plan to turn some of its defense plants over to the production of consumer goods. This could involve the retooling of certain CPMIEC plants, although no details are available.

Mergers/Acquisitions/Divestitures

There have been no acquisitions and/or mergers with other companies in the strict manner to which Western businesses are accustomed. CPMIEC can divest itself of certain holdings by transferring these businesses to other state-owned companies. However, this involves only the transfer of certain production lines/plants to the control of other state-owned enterprises, possibly in response to contract awards to a particular location where plant management may be different.

Teaming/Competition/Joint Ventures

The Chinese have established some teaming arrangements and joint ventures with Western companies; however, these ventures generally do not involve military technologies. Besides, China has not made any announcement regarding these cooperative arrangements. Of course, some technology transfers have been made, but little information has been provided concerning production startups.

There is, however, some competition among CPMIEC, NORINCO, and AVIC International (formerly CATIC). Although CPMIEC has been the most successful missile manufacturer in the People's Republic of China, NORINCO and AVIC International have managed to establish market niches for themselves through the development of anti-tank and air-to-air missiles.

In 1996, the China Precision Machinery Import/Export Corp delivered 60 C-802 model cruise missiles to Iran. These missiles are mounted on patrol boats for use by the Iranian Revolutionary Guard Navy. The CPMIEC markets the C-802 in its sales brochure as a missile with mighty attack capability and great firepower for use against escort vessels such as the USS *Stark*. As can be expected, these materials caused no small amount of consternation in the U.S. Congress.

Thailand. In December 2014, China and Thailand agreed to increase defense-related industrial collaboration. Potential collaboration includes several land- and sea-based military systems. Programs include the following products of CPMIEC: the WS-1 302mm and WS-32 400mm multiple rocket launchers; the FD-2000 surface-to-air missile system; the FL-3000N ship-based surface-to-air missile system; and the FK-1000 mobile air defense system.

Financial Results/Corporate Statistics

The People's Republic of China does not require its companies to provide such information, although CPMIEC, like NORINCO, earns a hefty amount of foreign exchange for the country.

Strategic Outlook

Details on the firm remain nearly impossible to obtain.

CPMIEC's missile defense system win in Turkey was short-lived, with the effort scrapped in late 2015. When it was originally announced, the deal caused a bit of friction between Turkey and its NATO allies – mostly over security concerns about integrating a Chinese system into the NATO defense network. The drawn-out negotiations on completing the contract were likely a

China National Precision Machinery Import/Export Corp (CPMIEC)

strategy aimed at getting Western manufacturers to offer better coproduction terms. Time will tell if Turkey goes with the second-place bidder, Eurosam, or opts for an offer from a Raytheon/Lockheed Martin team.

Looking abroad for revenue, CPMIEC is seeking to expand its defense industrial collaboration with neighboring countries. Most recently, China has offered Thailand partnership status on a range of military platforms. CPMIEC officials have welcomed the opportunity and are more than willing to transfer technologies to Thailand for local production. Not only does such generosity boost revenues, but it also achieves China's goal of bolstering its strategic influence in the region.

Program Activity

Business Interests. CPMIEC is involved in the design, development, and manufacture of the following:

- Missile systems
- Space launch vehicles
- Satellites
- Electro-optical devices for missile/space applications
- Electronic systems for missile/space applications

Missile Systems

As is the case with other weapons systems, China started its missile fabrication by copying Soviet designs. However, in recent years, the country has not only manufactured improved versions but also designed, developed, and produced new missile systems.

Today, China has a fairly well-diversified missile industry and been busy displaying its military hardware at numerous international arms exhibitions.

Strategic Missiles

Although it is unclear whether CPMIEC was involved in early Chinese strategic missile development efforts, the company has manufactured some of the country's more recent systems. CPMIEC is also involved in the development of China's space launch vehicle capability.

The CSS-1, also known as the DF-2 or Dong Feng-2, was China's first medium-range ballistic missile to enter service. The system is very similar to the Soviet SS.3 and has been in service since 1970. The CSS-2, also known as the DF-3, is an intermediate-range ballistic missile that entered service soon after the CSS-1 in 1971. The CSS-3, also known as the DF-4, was China's first intercontinental ballistic missile. Deployment of the CSS-3 began in the late 1970s, although production of all these missiles has been very limited.

The CSS-4, also called DF-5, is the follow-on to the CSS-3, fielded during the 1980s. China has also manufactured a sea-launched ballistic missile, the CSS-N-3, believed to use technology from the CSS-2. The deployment of this missile has been quite limited.

Surface-to-Surface Missiles

China has also begun to offer a line of battlefield tactical surface-to-surface missiles, similar to the Soviet Frog and Scud series. This family includes the M-9, M-11, and M-12.

Surface-to-Air Missiles

The HQ-2B surface-to-air missile is the Chinese equivalent of the Soviet SA.2 Guideline, which was deployed in the 1950s. Main components of the HQ-2B include the single-round launcher and missile-guidance radar, and ground-support equipment. The missile has two stages in tandem, the booster (Stage I) and sustainer (Stage II), as well as a new high-explosive warhead with improved fragmentation and a larger effective radius.

The HQ-2J is a vehicle-mounted version of the HQ-2B. The system provides the Chinese Army with a mobile air defense capability, but only single-target engagements are possible because of limitations in the fire control system.

The HN-5 is the Chinese version of the SA.7 Grail, although certain improvements have been incorporated into the missile. A more powerful high-explosive warhead has been added, and the detection range of the infrared seeker has been increased by cooling the guidance sensors and reducing susceptibility to background heat images.

China also fields an HN-5C, a system similar to the U.S. Avenger Pedestal Mounted Stinger. The HN-5A missile is mounted on a turret carried by an HRB-230 cross-country vehicle. The control cab is forward of the rear-mounted turret. A total of eight ready-to-fire missiles are carried. The fire control system consists of an infrared tracked laser rangefinder and television camera, with the computer and TV monitor system installed inside the cab. Although the system is being offered on an unarmored cross-country vehicle, the turret can be integrated with various other Chinese armored tracked platforms.

The HQ-61 surface-to-air missile has been developed to meet the Chinese military's need for land-based and

China National Precision Machinery Import/Export Corp (CPMIEC)

shipborne air defense. In some respects, the missile is similar to the U.S. Sparrow, but is larger and heavier. The system is designed to engage targets flying at medium and low altitudes with a minimum range of 13 kilometers in the horizontal plane, extending in an arc up to an altitude of about 8,000 meters. The Chinese Army's typical HQ-61 system consists of four 6x6 launcher vehicles with two missiles in the ready-to-launch position, mobile generators, a command post vehicle, tracking and illuminating radar vehicles, and a target-indicating radar vehicle also based on a 6x6 chassis. The latter is similar in appearance to the Soviet Flat Face target acquisition radar used with the SA.3 Goa surface-to-air missile system.

The Chinese Navy is said to have only one operational surface-to-air missile system, a version of the HQ-61. This missile system, designated RF-61, has been fitted to Jiangdong-class frigates since the early 1980s. Described as comparable to the SeaSparrow, the missile features a single-stage solid-fuel motor and a continuous-wave semi-active radar seeker. The maximum range of the RF-61 is about 10 kilometers, and it can reach a speed of Mach 3. Unlike the HQ-2 and HN-5, the RF-61 and HQ-61 are based on indigenously developed Chinese designs.

CPMIEC is developing a medium- to high-altitude, medium-range surface-to-air missile system, the KS-1, for the People's Liberation Army. It comprises a phased-array radar, four twin launchers, and 24 rounds. The KS-1 is 5.6 meters long and 40 centimeters in diameter, and weighs about 900 kilograms. The multipurpose air defense missile is intended for use against high-altitude reconnaissance aircraft, unmanned vehicles, and/or helicopters.

CPMIEC's PL-9 mobile surface-to-air missile was shown by China North Industries at an exhibition in Chile. Comparable to the U.S. Chaparral system, the unit mounts four Atoll-type air-to-air missiles on a trackable launcher mounted on a six-wheeled WZ-551D armored vehicle. A scan radar mounted on the top rear of the turret is used for target acquisition. The four missiles are stacked in pairs on each side of the turret; on the front is an electro-optical sighting rangefinder window. The PL-9 is infrared-guided, carries a 10-kilogram warhead, and has a maximum speed of Mach 2. Maximum altitude is 5 kilometers, and maximum range is 8.5 kilometers for an approaching target or 5.5 kilometers for other attack altitudes.

The PL-8H is a surface-to-air missile for China's Navy. (This information was provided by China State Shipbuilding Corporation.) The system consists of the Type 715-1 twin 37mm-powered anti-aircraft gun mount fitted with a surface-to-air missile. It has a fire control system and tracking radar. The PL-8H may be an Israeli-exported and/or -copied Python III. The missile has a range of 4.5 kilometers. The system is being offered for new-build surface ships, as well as for retrofits to existing vessels. Details were announced at the Defense Asia exhibition in Singapore in March 1991.

Anti-Ship Missiles

CPMIEC has developed anti-ship missiles for coastal defense, as well as shipborne and airborne deployment. The HY-2 is launched from a much-modified anti-aircraft gun carriage and has a maximum range of 95 kilometers. The design basis for this system was the Soviet SS-N.2 Styx anti-ship missile, which was sold to China in the 1960s. The HY-2A is the passive version and is fitted with an infrared seeker, which is less susceptible to countermeasures than the HY-2G with its active radar homing head and radio altimeter. The missiles are subsonic and launched with the assistance of a booster.

The HY-4 is similar to the HY-2 and can be either ground- or air-launched. However, the HY-4 is equipped with a turbojet engine, with an air duct mounted under the fuselage. Ground equipment includes a launcher, a prelaunch check truck, a fire control director system, generators, and a ground tracking radar station carrying out both target search and tracking.

Another missile produced by CPMIEC is the C-601 air-to-surface anti-ship missile, two of which can be carried by the Xi'an H-6 medium bomber. Also, CPMIEC manufactures the C-101A supersonic shore-to-ship missile and the C-801 multipurpose coastal defense/shipborne system. The C-101 is an air-launched missile equipped with a ramjet. The missile has a maximum speed of Mach 2 and a range of 50 kilometers. The carriage aircraft is the H-6, a version of the Soviet Tu-26 bomber. The C-101 will be the successor to the C-601, which currently equips PLAAF H-6 bombers.

The HY-3 is a larger, 100-kilometer coastal defense missile that uses a rocket-boosted twin ramjet configuration. This anti-ship missile is expected to eventually replace the Chinese inventory of older HY-2 subsonic anti-ship missiles. Both the C-101 and HY-3 are equipped with active radar seekers. Whether any of China's supersonic anti-ship missiles are actually in service has not been documented by sources outside the People's Republic of China.

The C-801 missile is manufactured in ground, air, and ship launch versions. The missile is 6 meters long and can carry a 165-kilogram high-explosive warhead. Maximum range is 8 to 40 kilometers when surface-launched and 10 to 50 kilometers when air-launched.

China National Precision Machinery Import/Export Corp (CPMIEC)

The missile is powered by a sustainer motor and an aft-mounted booster. The air-launched version of the C-801 is said to be designated YJ-1, and the surface-launched version has been designated FL-7.

Two other CPMIEC weapons are the YJ-6 and SY-2. The YJ-6 is a shipborne anti-ship missile with a passive infrared seeker, and the SY-2 is said to be a submarine-launched version of the C-801. Like the YJ-6, the SY-2 is equipped with a passive infrared seeker. To complement the anti-surface ship SY-2, CPMIEC also offers the anti-submarine CY-1 with acoustic/magnetic guidance. The CY-1 can be launched from surface vessels or dropped from aircraft.

YJ-12A. This is a new development program supposedly underway with the assistance, or at least the involvement, of Israel. Details are limited, but the program is aimed at providing a medium-range supersonic missile. This program could provide a follow-on to China's current inventory of supersonic missiles, such as the C-301, and may be largely based on these existing systems.

YJ-62. This is another new development program that may be receiving support from Israel. As with the YJ-12A, specific information on the status of the YJ-62 development effort is limited. The YJ-62 program is believed to be trying to provide a long-range anti-ship missile, but with only a subsonic top speed.

Space Systems

Launch Vehicles and Related Equipment

One of China's space launch vehicles is the CZ-2, also known as the Long March 2. This system's prime contractors are the Ministry of Space Industry, China Great Wall Industry Corp, and Chinese Academy of Space Technology – all of Beijing. CGWIC holds prime responsibility for the marketing of launch equipment. Research into new designs and possible improvements to existing launch vehicle equipment is carried out by the Ministry of Astronautics and Beijing Wan Yuan Industry Corporation. Various machinery factories based in China are responsible for construction of the rocket launcher stages.

The CZ-3 Long March 2 is a three-stage launch expendable vehicle. For its first two stages, the basic CZ-3 uses the two stages of the CZ-2C. The CZ-3 has been commercially available since 1986.

The CZ-4 Long March 4 is a three-stage expendable launch vehicle. The CZ-4 is based on the CZ-2C with a new storable third stage. At the 1988 Farnborough Air Show, the rest of the world was able to see just how many different types of Long March launchers China was making available to the commercial sector. At that time, China exhibited six boosters: the CZ-1D, CZ-2C, CZ-2E, CZ-3, CZ-3A, and CZ-4.

China's new CZ-5 Long March 5 launch vehicle is being designed with modular components, allowing for a wide variety of configurations. The first CZ-5 launch will take place sometime in 2016.

The CZ-6 Long March 6 is the smallest of China's new family of launch vehicles. A first launch will not take place until at least 2017.

CZ-7 Long March 7s fill the midsize launcher role in China's new launch vehicle family. First launch occurred in June 2016. This launch vehicle family, which also includes the Long March 5 and Long March 6, is designed to increase Beijing's launch capabilities.

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