



www.ci-metrics.com

## China Risk Assessment: Satellite Manufacturers Snapshot

Chinese Satellite Manufacturers are developing capability at a rapid pace. **This report aims to shed light on China's current capabilities and future plans across satcom and EO.**

A high-level summary is presented as follows, followed by a 1-para summary of each of the operators to give the end-user an overall idea of the report content.

- In today's China, there are conservatively 20 systems-level satellite manufacturers, ranging from fast-growing commercial players such as Galaxy Space (US\$1.6B, >400 employees as of 2023) to very competent but far less ambitious universities (Harbin Institute of Technology, "China's MIT/Caltech").
- This report identifies and profiles the 9 Chinese satellite manufacturers, of which 3 are purely state-owned (SAST, CASC, CASIC), 1 is a commercial spinoff of the Chinese Academy of Sciences (SECM), and 5 are different shades of commercial.
- None of them are expected to be the sole supplier of a Chinese NGSO/EO, and all of them have their own respective strengths and weaknesses.

The report leverages data from a variety of sources, including:

- Phone interviews with Chinese commercial satellite manufacturers (~20 interviews)
- Official Chinese government or state-run media announcements (Links in database)
- Company-linked public WeChat accounts (estimated ~240-250)
- Company-linked public Weibo accounts (estimated ~40-45)
- Commercial media in China (i.e. websites linked to finance, investment, technology)
- Materials obtained at in-person conferences in China and abroad.

The report and associated data can be procured via several **subscription options**, detailed below.

Subscription	Immediate Access	Continued Support	Price
Basic (Single Access)	a. PDF report on China Satellite Manufacturers Snapshot b. Access to Monthly Updates (Dashboards and Market Monitor)	<ul style="list-style-type: none"> <li>• Once a Quarter closed door online webinar briefings to subscribers. (4 in a year).</li> <li>• Plus, 2 hours of follow-up calls with the author (over the course of 1 year) for detailed Q&amp;A</li> </ul>	US\$1,899/year
Premium (Single Access)	All of the above  Additional Access to underlying excel databases of satellite manufacturing & launch and upstream supply chain on the portal. (ogc.ci-metrics.com)	All of the above  4 additional hours of follow-up calls with the author (over the course of 1 year) for detailed Q&A. Total of 6 hours.	US\$3,399/year



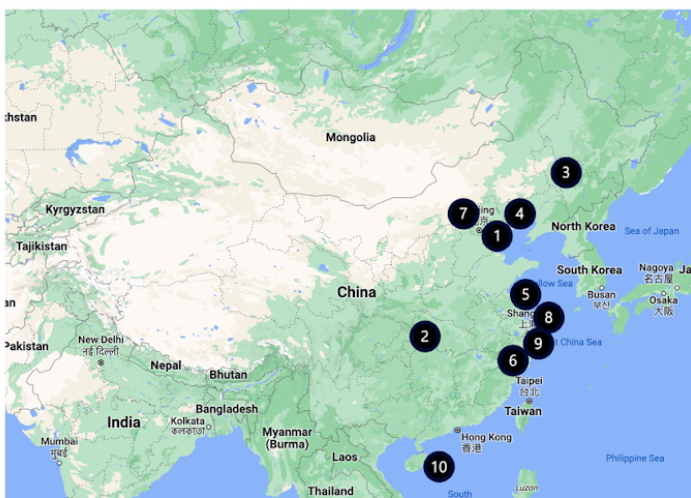
www.ci-metrics.com

Several types of entities should consider subscribing to this report and data options:

- Governmental entities including space agencies, think tanks, and policymakers
- Consultancies and research houses.
- Financial institutions with investment exposure to commercial space sector
- Commercial space company with potential competition or customers in China

Summary of the operators covered in the full report:

#### LOCATION OF FACTORIES (APPROX.)



1=CASC Tianjin	2=CASIC Wuhan	3=CGSTL Changchun
4=Commsat Tangshan	5=Galaxy Space Nantong	6=GeeSpace Taizhou
7=MinoSpace Beijing	8=SAST Shanghai	9=SECM Shanghai
	10=Wenchang Spaceport	

#### CHINESE BATCH SATELLITE MANUFACTURERS

Manufacturer and Factory	Operations
CASC Tianjin	Primary batch LEO satellite factory for CASC, planned capacity of >200 sats/year. Phase 1 by 2023
CASIC Wuhan	Primary batch LEO satellite factory for CASIC, planned capacity of >200 sats/year. Phase 1 already completed
CGSTL Changchun*	Spinoff of Chinese Academy of Sciences. Factory built ~60 EO satellites last year of ~40-50kg each, and could be purposed for comms satellites
Commsat Tangshan	Commercial factory near Beijing with phase 1 completed in early 2023. Planned capacity of ~100 sats/year
Galaxy Space Nantong	Commercial factory near Shanghai with phase 1 expected in late 2023. Planned capacity of 500 sats/year
GeeSpace Taizhou	Believed to have built batch of 9x GeeSpace navigation satellites launched in 2022.
MinoSpace Beijing	Focus on larger satellites rather than more satellites. Recent funding may be used to push into batch manufacturing
SECM Shanghai	Spinoff of Chinese Academy of Sciences. Factory built ~85 satellites over the past decade, and completed expansion in 2021/2022
SAST Shanghai	CASC subsidiary with less emphasis on batch NGSO manufacturing, but major resources and manufacturing abilities.

China's satellite manufacturing industrial base is largely concentrated on its Eastern seaboard. The largest clusters are unsurprisingly around Beijing (CAST Tianjin, Commsat Tangshan, MinoSpace), and Shanghai (SAST, SECM, GeeSpace, and Galaxy Space).

#### A. China Satellite Network Limited (China SatNet)

- One of the ~100 largest State-Owned Enterprises (SOE's)
- China's answer to Starlink
- Planning for 13,000 satellites
- Other SOE constellation plans now merged into SatNet
- A new Chongqing Operation Control Center
- 4 tenders have been issued ([detailed information in the full report](#))
- Fast ramp-up anticipated to match Starlink's ambitions



## B. CAST

- A leading Satellite manufacturer. ~150 satellites launched over the last 8 years, strength of ~20,000 employees, and >10 subsidiaries.
- Main subsidiaries in CAST (CASC 5<sup>th</sup> Academy), Beijing DFH and Shenzhen DFH
- CAST: Build the most complex satellites in GEO Comms, BeiDou and Shijian etc.
- Satellites and type launched per subsidiary [part of the full report](#).
- Facilities description [part of the full report](#).
- Risk evaluation: Technology, Funding, and Reliability [part of the full report](#).

## C. SAST

- 8th Academy of CASC, Beijing based, manufacturing rockets (LM-2,4,6,others) and satellites (SAST1000 and SAST3000)
- Manufactured more than 20 satellites in 2022, of which ~14 were Yaogan remote sensing satellites. Demonstrated solid batch manufacturing capabilities.
- Satellites and Rockets launched per Comms/EO/Other category [part of the full report](#).
- Case study on SAST 812<sup>th</sup> Institute [part of the full report](#).
- Risk evaluation: Technology, Funding, and Reliability [part of the full report](#).

## D. CASIC Wuhan

- Major partnership between CASIC and Wuhan within the Wuhan National Aerospace Industrial Base. Facilities are kept in relatively stealth mode.
- With the increase in launch capacity by CASIC, and the continued emphasis on satellite internet, next year could see a ramping up of SEDC's manufacturing, which could represent a scenario where dozens of Wuhan-built CASIC satellites are launched by perhaps 10 Wuhan-built CASIC rockets.
- Facilities description [part of the full report](#).
- Key development projects include Xingyun (LEO narrowband), Tianping, Tiankun (tracking), and Honygun (LEO broadband). Details [part of the full report](#).
- 2022 saw high progress with Xingyun and Hongyun reflecting China's ambitions, with deeper integration between Xingyun and Sanjiang Group for deployment.
- Full Risk evaluation: Technology, Funding, and Reliability [part of the full report](#).

## E. Galaxy Space

- Vertically integrated, well funded, with 6 subsidiaries accountable for Advanced Comms payloads, EO, batch based superfactory, communications applications, equipment and component manufacturing/antennas.
- 6x satellites with 40 Gbps throughput each, and 5G connectivity tested via LEO satellites (30 mins) with a patent from Xiaomi. Deeper integration expected with Xiaomi and others



www.ci-metrics.com

- A case study on Geo Satellite Quotation is [part of the full report](#).
- Facilities and monitoring thereof is also [part of the full report](#).
- Full Risk evaluation: Technology, Funding, and Reliability [part of the full report](#).

#### F. Commsat

- One of the first commercial space companies, with founders from CAS and CAST teams. Abandoned plans for ~72 satellite constellation and now switching to building an industrial base. Launches in 2018 and 2021
- Facilities likely to start production this year, with 50x standardized or 20 customized satellites per year. Facilities (Tangshan and Yibin) and monitoring thereof is [part of the full report](#).
- Full Risk evaluation: Technology, Funding, and Reliability [part of the full report](#).

#### G. CAS SECM

- Under the Radar Powerhouse – Shanghai Engineering Center for Microsatellites (SECM). One of China's most comprehensively capable satellite manufacturers, with experience building comms, EO, navigation, and science / technology satellites being sent to GEO, LEO, and MEO
- Projects undertaken include BeiDou 3<sup>rd</sup> Gen, Yaogan-30, Shiyang-6, Quantum Satellite, KLEO Connect. Details of these projects and satellites launched per year [part of the full report](#).
- Thought to be the developer of Jinan-1 (quantum communication satellite) with capabilities within space science i.e. Quantum science, the ASO-S Solar Observatory, and the Dark Matter Particle Explorer (DAMPE).
- High strategic relevance moving forward, including development of Guowang satellites
- Design and Technical specifications a small GEO comms satellite with optical link [part of the full report](#).
- Known suppliers and Facilities description [part of the full report](#).
- Full Risk evaluation: Technology, Funding, and Reliability [part of the full report](#).

#### H. CGSTL

- Vertically integrated Remote Sensing Company, spinoff of CAS in 2014, and one of the earliest Chinese commercial space companies.
- Well-funded and has ramped up satellites launches in 2022 to >50.
- Involved in Projects such as Meishan Tianfu (EO) and Yunyao Yuhang (GNSS)
- Key capability in launching SAR Satellites
- Has a massive industrial base with Govt support including several specialized subsidiaries such as Changchun Aerospace Composite Materials Corp., Changchun Yuhang Optical Company Ltd, Changchun Optotech Company Limited and Changchun Gpixel (semiconductors), which also has international presence in Russia, Israel, and Japan.



[www.ci-metrics.com](http://www.ci-metrics.com)

- Large batch manufacturing capabilities exist today and details are [part of the full report](#).
- Full Risk evaluation: Technology, Funding, and Reliability [part of the full report](#).

#### I. Minospace

- A leading commercial manufacturer, with broad ambitions, well-funded, and leading projects Xingshidai (ADA Space) and Taiiing (CAS, Hainan)
- SAR capability with the full 8-satellite product line [part of the full report](#).
- Latest round of funding to be deployed towards batch-sized manufacturing with details [part of the full report](#).
- Full Risk evaluation: Technology, Funding, and Reliability [part of the full report](#).

Contact [blaine@orbitalgatewayconsulting.com](mailto:blaine@orbitalgatewayconsulting.com) or [info@ci-metrics.com](mailto:info@ci-metrics.com) to access the licensed report. Alternatively, request a Custom Consulting Project.