Market Insight Report Reprint

China's traditional iron and steel enterprises transition to the booming datacenter market

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The iron and steel sector has played an important role in China's industrialization; however, it has reached a point of overcapacity. Also, China's 'new infrastructure' strategy signals a further shift of the national government away from its agricultural and industrial roots to a digital future where the datacenter is foundational.

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Introduction

China's iron and steel industry has played an important role in the country's industrialization; however, as the country has continued to develop, the sector has reached a point of overcapacity. At the same time, China's announced 'new infrastructure' strategy signals a further priority shift on the part of the national government away from its agricultural and industrial roots toward a digital future where the datacenter is foundational.

We're now seeing the iron and steel industry realizing the need to transform, and the industry has focused on the datacenter as the means to accomplish this. It is no secret that datacenter construction requires a large-scale site and the land application process is very difficult in China, especially in tier 1 cities. The iron and steel industry has an advantage here, though, because companies seeking transformation can use the original plant land for datacenter construction. Likewise, high-energy-consumption industries, like the datacenter and iron and steel industries, must get a special energy consumption quota, which is generally managed by the local government where the plant is located. Even though the quota for iron and steel manufacturing can't be converted to a datacenter energy consumption quota automatically, the relatively lower energy consumption of a datacenter makes the application easier. These advantages, plus several more, highlight why the iron and steel industry is targeting the datacenter as its way forward into China's new infrastructure future.

THE 451 TAKE

So far, we've seen more than 10 traditional Chinese iron and steel companies entering the datacenter industry, and this is no accident. While at first the two industries perhaps don't seem to be related, a closer inspection reveals that they both have very similar barriers to entry. Both industries have the problem of finding land to operate on, obtaining the energy consumption quotas to run their business, and of course funding. But it's fair to say that land, electricity and money only helps the iron and steel companies gain entry. Cost control, operation and maintenance and these companies' ability to turn sales potential into real growth will ultimately determine whether they can survive. For this to be successful long term, the industry will need to continue the accumulation of professional experience, technical expertise, customer service and talent management.
As an interesting aside, 18 of China's 75 major steel companies are built in major municipalities and provincial capitals, and 34 are built in large cities with a population of more than one million. As existing datacenter providers scour these cities for locations to build new facilities – an asset the iron and steel industry may already have – it presents an opportunity for disruption as a new category of player jumps in the market, and speaks to the scale at which it could happen.

Context

In the past few decades, traditional infrastructure has served an important role in China's economic and social development, and of that, the iron and steel industry has been particularly key in China's industrialization. After many years of large-scale investment, and as the country has entered the later stages of its industrialization age, iron and steel, much like cement and other basic and resource industries, has experienced overcapacity problems and has since been identified by the Chinese government as needing to reduce its overall production capacity.

In 2020, China announced that new infrastructure is its top strategic priority, which includes building 5G networks, artificial intelligence (AI), Internet of Things (IoT), intercity high-speed rail and setting up research and development institutions. Compared with traditional infrastructure, this new infrastructure is centered around 'information, digital and intelligence,' requiring a high level of technology innovation. This aims to speed China's digital transformation and industry upgrade, and datacenters have become underlying infrastructure to support these goals. As a result, datacenters have become a veritable upstart industry under new infrastructure construction, not only with an influx of new investment but also for the transformation of traditional industry.

Professional advantages

Iron and steel companies moving into the datacenter industry have resource advantages such as existing land, energy consumption quotas (required in China) and funding, but also have a special advantage when it comes to professional capabilities. Most iron and steel companies have first-class power supply facilities. They normally build their own power distribution system from the substation to step down transformation to branch feeding at various levels of voltage, all of which is to say that the level of scale, capacity, complexity and redundancy is very similar to a hyperscale datacenter.

Additionally, iron and steel enterprises have accumulated much technical expertise in energy-saving electricity and power generation to recycle waste energy and heat created in the production process, positioning them well to understand efficient design and operation. Further to this point, many of these companies have incorporated information technologies to refine their overall energy management. Since about 2000, roughly 24 iron and steel companies have successively implemented information transformation programs covering multiple functions such as R&D, sales, marketing, supply chain, human resource, safety and environmental protection. Manufacturing execute system (MES), enterprise resource planning (ERP), data warehousing (DW), online analytical processing (OLAP), business intelligence (BI) and production control system (PCS) are widely adopted, all of which reflect similar building and operations management systems leveraged by datacenter providers globally.

Different models and major players

As we've witnessed this transformation of iron and steel manufacturing companies moving into the datacenter industry, we've seen companies take a few different routes. Baosight Software originated from the Shanghai Baosteel Automation Department, which was established in 1978. In 1996, it was separated from Baosteel and became Shanghai Baosteel Software, which was later renamed to Baosight Software in 2001. Over the last 40 years, the company has worked to digitally transform itself through the development of its own industrial software applications, and now works with other industries to do the same, essentially turning its own core competency into a business. Further to that point, Baocloud is the cloud computing brand under Baosight, which includes datacenters and cloud computing. Its datacenter campus is in Baoshan Big Data Industrial Park, Shanghai, where its parent company Baosteel Group and the Shanghai municipal government reached an industrial transformation agreement in 2012 to relocate the steel production capacity of its Luojing plant as a whole and Baosight started to build a datacenter in that location. This datacenter campus is planned for a total of 50,000 racks by 2023, mostly to service hyperscale demand. Currently, 30,000 racks are deployed for cloud customers including Alibaba, Tencent and Huawei Cloud, as well as financial customers such as Pacific Insurance, Ping An of China and Hengfeng Bank.

Another route we've seen taken is through global M&A. Iron and steel giant Jiangsu Shagang Group acquired controlling shares of datacenter operator Global Switch through a series of transactions for a total cost of £6.3bn ($7.7bn or 56bn yuan) during 2016-2020. According to the company, Global Switch operates 13 datacenter facilities across Europe and Asia-Pacific, with 482,000 gross square meters of datacenter space. Further developments are underway.

Maanshan Iron & Steel Corp has participated in major datacenter projects through its holding subsidiary Phimait, illustrating a third route to market, that of direct or indirect equity participation or holding. In 2019, Phimait raised 720m renminbi to invest in the Intelligent Equipment and Big Data Industrial Park project in Maanshan City, featuring 2000 IT racks. The Yangtze River Delta Data Center project, jointly planned by Maanshan Iron & Steel Group, China Unicom Anhui Company, Lenovo Group and Tencent Cloud for a total of 20,000 racks, was officially kicked off in 2020.

The company Giant Data represents the fourth model with a complete rejuvenation. Compared with the abovementioned players developing datacenter businesses while keeping their legacy iron and steel business, Giant Data is all-in, completely exiting the iron and steel business and focusing on datacenter construction and operation. Tianjin Tianzhong Giant Heavy Industry was founded in 2000 but in 2020 rebranded and relaunched as Giant Data. Giant Data envisions a nationwide footprint of datacenters and has established a dedicated site selection team. The company first takes root in Beichen Tianjin, however, where the original Giant Heavy Industry plant is located, to build what it is calling its Around Beijing Big Data Industry Tianjin Campus featuring 40,000 6kW racks and targeting hyperscale customers. Next, Giant Data plans to deploy 100,000 racks for the Beijing-Tianjin-Hebei regional market.

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