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CHINA UP-CLOSE

Huairou Science City ups China's R&D cachet

Tech center hour's drive from central Beijing already home to more than 37 innovative sites

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It was in May 2017 that a sparsely populated suburb dotted with farmland received approval to be developed into a global high-tech and innovation hub named Huairou Science City, an hour's drive from central Beijing.

Seven years later, it is home to more than 37 science facilities, including six major national scientific and technological ones, a key project to drive important scientific innovations.

It is now one of the most densely packed areas for groundbreaking scientific research.

Not only that, Huairou Science City has attracted over 23,000 leading researchers, including 77 academicians from the Chinese Academy of Sciences and the Chinese Academy of Engineering, 28 highly cited international scientists, and over 600 foreign experts.

This quick transformation is part of Beijing's broader efforts to develop a lively science center that integrates basic science and research, scientific and technological services, to drive the country's innovative development on the global stage.

Huairou Science City is also one of the four science centers outlined in China's 14th Five-Year Plan (2021-25) for national economic and social development and long-range objectives through the year 2035.

The other science centers are located in Zhangjiang, Shanghai; Hefei in Anhui province; and the Guangdong-Hong Kong-Macao Greater Bay Area.

As the first rays of the sun illuminate a multimodal biomedical imaging center cradled by several surrounding laboratory buildings, equipment inside the advanced biomedical imaging facility, dubbed the National Multimode Trans-Scale Biomedical Imaging Center, is scanning and imaging the entirety of a human body to visualize diseases.

Whether it is the minor details of a single cell or the intricacies of a complete organ, the high-end equipment is able to image data into a cohesive whole with unprecedented precision.

With its potentially significant role in biomedical research, the center has been recognized as a major national scientific and technological facility.

Sun Yujie, deputy head of the Academy for Advanced Interdisciplinary Studies at Peking University and deputy director of the National Biomedical Imaging Center, said: "As the development of contemporary life sciences is inseparable from imaging technology, such a biomedical imaging facility will help create a 'life observatory' from macro to micro scales for better advancement of human life."

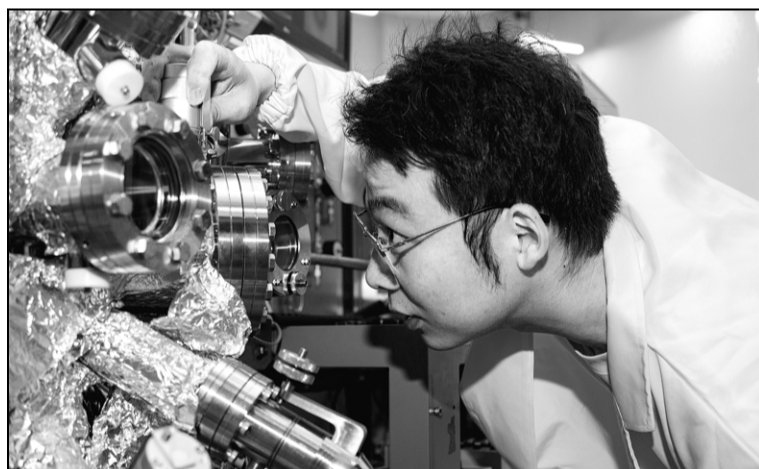
Following its initial trial opera-



An aerial view of the Urban Living Room, a major function zone in Huairou Science City, which is an hour's drive from central Beijing. PROVIDED TO CHINA DAILY



An aerial view of the High Energy Photon Source project, one of the major scientific and technological programs in Huairou Science City. PROVIDED TO CHINA DAILY



An expert from the Chinese Academy of Sciences carries out research at a lab in Huairou Science City. PROVIDED TO CHINA DAILY

tion at the end of last year, the center promises to provide unprecedented precision in visualizing disease progression and enable comprehensive research and analysis of significant biomedical scientific questions, Sun added.

Similar to this center, other major scientific and technological ones in Huairou Science City include the Synergetic Extreme Condition User Facility, High Energy Photon Source, Earth System Science Numerical Simulator Facility, Ground-based Space Environment Monitoring Network and Human Organ Physiopathology Emulation System.

In addition, the city is also home

to 37 science facilities that span material, space, life, earth systems, and information and intelligence; 14 cross-disciplinary research platforms covering material genome research and advanced light source technology research and testing; as well as 17 foundational scientific and educational facilities, including an intelligent analysis and testing platform for new and emerging infectious disease vaccines and antibodies.

As of now, the construction of 29 facilities and platforms has already been completed, with 16 currently operational. The momentum has continued this year, with eight new



Technicians conduct advanced light source technology research and testing at a lab in Huairou Science City. PROVIDED TO CHINA DAILY

facilities and platforms being introduced and some already commencing construction.

With such major science facilities put into use, a corresponding industrial system is also accelerating its construction in Huairou Science City, to translate such technological advances into application or commercialization.

In March, Beijing Chunfeng Pharmaceutical, a high-tech pharmaceutical group, expanded its second factory in Huairou Science City.

According to Li Yi, an executive of the pharmaceutical company, as a high-tech modern pharma group, the company is in urgent need of expansion and upgrading, and Huairou Science City offers "sound fertile soil".

Li said the company plans to develop a 70,000-square-meter project in the city, including an intelligent drug production workshop, an inspection center, a medical device achievement transformation center, an academician workstation and a traditional Chinese medicine culture exchange and exhibition center.

"Once completed, the project is also expected to boost the entire industry chain in the life sciences sector for Huairou Science City," Li said.

In order to convert scientific and technological achievements into applications or commercialization, Huairou Science City has been attracting more companies in the industry chain, especially in high-end science facilities and sensors, new energy and new materials as well as life sciences.

In the life sciences sector, for instance, the city has attracted 20 big biopharmaceutical companies or projects in the sector of medical imaging detection and pathological analysis, brain science and information science, and cell and gene therapies.

More innovation

How will Huairou Science City remain a magnet for continuous technological innovations?

For instance, Shing-Tung Yau, or Qiu Chengtong, one of the most influential mathematicians globally, and Zeng Qingcun, a famous meteorologist from the Chinese Academy of Sciences who received China's top science award, have been enticed to work in the city.

Young talents also continue to inject vitality.

In 2016, to address the bottleneck problem of low-temperature strong magnetic fields, several PhD gradu-

ates from the Chinese Academy of Sciences jointly founded Multi-Fields Tech.

According to its founder Cong Junzhuang, the company mainly consists of talented people under the age of 30, with the youngest PhD student born in 1997.

As the company moved into Huairou Science City, the Huairou government offered substantial support by way of rent reductions, financial investment and personnel settlements, he said.

"With such support, the company is now in rapid development. We are able to not only provide the country technical support for related fields, but also possess sufficient competitiveness in the international market," Cong added.

Industry experts believe that such top-level talent will inject a steady stream of vitality into the construction of an international innovative ecosystem and continuous scientific and technological development of Huairou Science City.

According to its development plan, Huairou Science City is expected to basically form an urban framework for growth, significantly enhance its influence and become an important support for the country's construction of an international science and technology innovation center.

By 2035, it aims to become an internationally renowned science city and national science center, offering crucial support for Beijing's development as an international science and technology innovation center and for China's advancement to the forefront of innovative countries.

By 2050, the city has vowed to fully develop into a world-leading science city and national science center to support China's emergence as a global science and technology powerhouse.

Public transportation between Huairou Science City and the main roadways of Beijing, particularly downtown, will also soon witness improvements, making it much easier to get to and from the remotely located science park.

Sci-tech transforming Chint into smart energy provider

SHANGHAI — In Chint Group's Shanghai transformer factory, robots are engaged in stacking silicon steel sheets as thin as 0.23 millimeter layer upon layer according to design specifications, with a single robot capable of stacking over 1,680 layers in 24 hours, equivalent to the workload of six experienced workers in a day.

Another remarkable achievement is the use of oil in transformers.

While transformers typically use mineral oil, Chint's continuous development efforts have led to the adoption of vegetable oil, a renewable and degradable alternative. This transition has resulted in a significant reduction of carbon emissions by 98 percent.

The company has achieved a groundbreaking milestone with the development of a 750-kilovolt natural ester insulating oil transformer, the highest voltage level in the

world to date, astonishing global industry players. Offering a comprehensive product range from 10 kV to 750 kV, Chint is now the world's leading manufacturer in terms of sales volume for natural ester transformers.

Chint Group began its journey as a switch producer in 1984 and has gradually evolved into a major global smart energy solutions provider. Today, the company integrates the entire industry chain of power generation, storage, transmission, transformation, distribution and use.

From frigid Finland to the deserts of Saudi Arabia and the tropical rainforests of Ecuador, Chint has expanded its footprint to over 100 countries and regions. According to Chen Chengjian, deputy chairman of Chint Group's electric company, the company's international business accounts for

about 30 percent of total revenue.

Since 2006, Chint has ventured into the photovoltaic new energy field, quickly establishing international competitiveness in the development, design, investment, construction, operation and maintenance of photovoltaic power plants.

To date, Chint has constructed photovoltaic power plants with a combined capacity of more than 30 gigawatts around the world, which can provide more than 34 billion kilowatt-hours of green electricity and reduce carbon dioxide emissions by more than 30 million metric tons every year.

Notably, Chint's rooftop photovoltaic power station project has benefited over 1.3 million households in China, bringing an extra income of 1,000 yuan (\$138) to 3,000 yuan for a family every year, while creating over 200,000 jobs in rural areas.

Innovation has always been a cornerstone in the growth of Chint Group's electric company, according to Chen.

As of the end of 2022, the company had developed over 900 products, obtained 404 patents, led or participated in revising 215 national industry standards, and engaged in over 30 industry-university-research collaboration projects.

In 2023, the electric company generated revenue exceeding 20 billion yuan, a significant increase from 4 billion yuan in 2016.

Another important factor contributing to the rapid development of Chint Group's electric company is its strategic location at the heart of the national expressway G60, which serves as a "science and innovation corridor" in the Yangtze River Delta, which connects Shanghai and eight cities in Zhejiang, Jiangsu and Anhui provinces.



Staff members work at a factory of Chint Group in Shanghai in May. WANG XIANG / XINHUA

Each of the nine cities has its own industrial base and advantages, and they can complement each other, said Guo Shuqing, deputy director of the G60 sci-tech innovation corridor joint conference office.

Guo added that innovation in business development is fostering further innovation among enterprises.

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