

Protecting animal health with smart vaccination

[siemens.com.cn/stories](https://www.siemens.com.cn/stories)

Siemens entered into a strategic cooperation agreement with Jinyu Bio-technology to build the first digital factory in China's animal vaccine industry, marching toward the digital future of "Industrie 4.0".

In modern large-scale livestock farms, scientific vaccination of animals is not just about economic benefits. It also protects animal and human lives.

Jinyu Bio-technology Co., Ltd. (Jinyu Bio) is a leading Chinese biopharmaceutical company with a comprehensive portfolio of animal vaccines. As an industry leader, Jinyu Bio set benchmarks for FMD vaccines, and was the first in China to apply cell suspension culture and antigen concentration & purification process in veterinary vaccine production.



Jinyu Bio is a digital transformation pioneer in biopharmaceutical manufacturing.

But the company is not resting on its past accomplishments. Jinyu Bio has now entered into a strategic cooperation agreement with Siemens to build the first digital factory toward "Industrie 4.0" in China's animal vaccine industry.

Time for digital transformation

The manufacturing of vaccines is a complex process. Relying only on manual operations is inefficient, unstable and even dangerous.

First, manual operations cannot fully guarantee the reliability of vaccines. In a production environment with low-level automation, even a subtle difference in the behavior of operators may eventually lead to unstable quality among different batches of vaccines.

Meanwhile, production data that are manually documented lack traceability. When a product defect occurs, for example, it usually costs a team much time and effort to track down what went wrong. This must be carefully handled because pharmaceutical products affect thousands of lives.

In addition, a vaccine is often made from weakened or inanimate forms of a microbe or its toxins. Therefore, more

human interventions also mean higher physical risks for operators.

To overcome these daunting challenges, Jinyu Bio has embarked on the journey of digital transformation toward “Industrie 4.0” through partnership with Siemens. The experienced team from Siemens has customized a 10-year digitalization solution for Jinyu Bio throughout its entire lifecycle, which consists of three integrated systems.



Jinyu Bio partners with Siemens to establish a digital factory of the future.

End-to-end integration: from integrated engineering to integrated operations

In the past, how to increase teamwork efficiency was a major headache for design engineers because real-time information sharing and coordination were almost impossible. Modification of blueprints involved high error risks.

Today, Siemens COMOS has helped Jinyu Bio avoid such concerns. The digital platform provides Jinyu Bio with a perfect solution for comprehensive and integrated asset management. With COMOS, engineers can now access and modify design data anytime and anywhere, thereby reducing design costs and increasing teamwork efficiency. Meanwhile, COMOS constructs “Digital Twins” of physical equipment in the virtual world to substantially improve design accuracy.



Siemens creates “Digital Twins” of equipment, production lines and production processes for Jinyu Bio.

The results of engineering design are presented as a complete database in COMOS. Siemens design engineers have delivered the database to Jinyu Bio, and such a “digital delivery” marks the first step of integrated operations.

Since the factory came into operation under Siemens’ secure industrial networks, Jinyu Bio has been using unified digital platforms to manage all processing equipment and manufacturing facilities. During production, the seamless integration of COMOS and Simatic PCS 7 allows engineers to track the data of any equipment in time. When needed, maintenance orders can be triggered automatically and sent to frontline workers, which guarantees reliable production of vaccines.



Digital solutions from Siemens ensure a safe and stable production environment for Jinyu Bio.

Vertical integration: quick response to complex market demands

In the old factory of Jinyu Bio, IT and OT were separated, creating internal

information silos that prevented the factory from responding quickly to emergent market demands.

The adoption of vertical integration has changed the situation by assembling a highly disciplined “army force” of internal information systems ready for tough demands. The XHQ Operations Intelligence software is just like a “command center”, mastering all the key data of factory operations to assist the management team in decision making.



Digital transformation allows Jinyu Bio to break information silos.

Orders are automatically pulled down through the Enterprise Resource Planning (ERP) software to the Manufacturing Execution System (MES) that Siemens has developed for pharmaceutical industry, namely Simatic IT eBR. Production tasks are further distributed to individual workshops, which triggers automation systems and guides frontline workers to conduct compliant operations. Electronic batch records are created along the manufacturing process to reflect production status in real time.

Simatic IT eBR in association with Simatic Batch controls the automated productions, combining advanced technologies with necessary manual operations. Eventually, the records of each batch are stored in MES, helping Jinyu Bio track and trace the entire production flow.



Siemens Simatic IT eBR enables complete paperless manufacturing and full electronic batch recording.

Horizontal integration: unleashing the value of big data

The real value of the Internet of Things (IoT) lies in the data it collects and the insights that generate. In the future, Jinyu Bio will continue to cooperate with Siemens to build IoT-based big data platforms. With comprehensive digital offerings, such as Teamcenter, Simatic IT Unilab and SIPAT, Siemens will help Jinyu Bio shape the horizontal integration of data from material suppliers to vaccine customers.



Jinyu Bio continues to cooperate with Siemens to build IoT-based big data platforms.

The management team of Jinyu Bio believes that the only way to ensure intelligent manufacturing and smart vaccination is to unleash the value of big data. With the digital horizontal integration, the development of Jinyu will advance at an unprecedented pace, and the whole industry will benefit from its pioneering initiative.

Zhang Chongyu, Chairman of Jinyu Bio, said, “Intelligent manufacturing technologies are boosting the

development of high quality biopharmaceuticals. To Jinyu Bio, Siemens has always been a professional, dedicated and trustworthy partner in our digital transformation. Together, we will march toward 'Industrie 4.0'."

Contact:

Zhu Chengshi
Digital Industries, Siemens Ltd., China
Tel:+86 18019023165
E-mail : chengshi.zhu@siemens.com

Yan Xiaoyu
Communications, Siemens Ltd., China
Tel: +86-10-6476 6823
E-mail: xiaoyu.yan@siemens.com