Research on the Development Trend of Industrial Automation Control Technology

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Abstract: Industrial production automation is a general term for the information processing and process control of measuring and manipulation of machinery and equipment or production process according to the expected goal without direct human intervention. In the context of the gradual disappearance of population dividend in China, supply side structural reform has become an important focus of policy intention in the future. Manufacturing enterprises in China gradually apply advanced technologies such as human-computer interaction and intelligent machines to the whole industrial production process, realize the automation of production and improve the total factor productivity of industrial enterprises under the organization of automatic control system.

1. Sketch

Industrial automation is a kind of comprehensive technology. Through the application of computer, electronic equipment, control theory and related technology, it produces the management function of optimization, detection, control and adjustment of the whole industrial production process, so as to achieve the established goal, achieve industrial production, energy saving and consumption reduction and safety production. Specifically, the production process of light industry, oil refining, chemical industry and food industry is the abbreviation of industrial automation. Some instruments with automatic devices are equipped on machines and equipment to replace people's direct work, realize different degrees of automatic production and achieve goals. This whole process is controlled by automatic devices, which we call automatic production process.

2. Automation Significance

The production scale of oil refining, chemical industry, biology, electric power and other industries tends to be larger and more complex. Therefore, with the vigorous development of modern science and technology, the important guarantee of efficient, safe and high-quality production of modern industry depends entirely on the guarantee function of various automatic control technologies. The state political commissar has also issued a document proposing: if we compare our country with developed countries only from the management level and product quality, we will find a big gap, especially the equipment technology and level of our country, and will continue to expand the gap with developed countries in the future. Where is the national way out in this severe situation? First of all, due to the national strength, we can't bear the large-scale renewal of equipment. Second, if we maintain the status quo of equipment and compare it with the production of developed countries, we can imagine the consequences. Only by transforming the traditional industry to a certain extent, making full use of electronic technology, fully integrating the two, upgrading the quality of enterprises, and improving the overall income are the best solutions today At present, the main means to improve China's national strength is to use computer application technology and automatic control technology to carry out technological transformation of traditional industries, so that they can improve economic efficiency and achieve the established goals. Therefore, this also leads to the fierce market competition, the country and the country, enterprises and enterprises are inevitably involved in this competition. The advantage we can see is the economic take-off competition between Japan and West Germany: while the United States has

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begun to devote itself to the research of intensive technology industry, it has also developed automation industry technology. They have made great achievements and economic benefits in using computer application and modern control technology to transform traditional industry.

Figure 1: Industrial Globalization

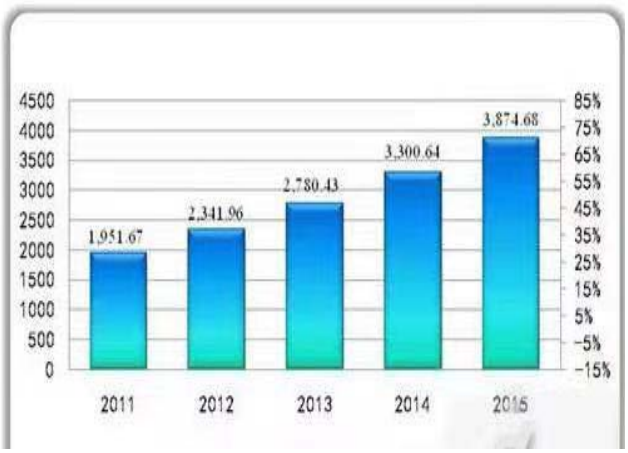

Figure 2: A market size of China's Industrial Control Industry($1 billion)

3. Development Direction of Industrial Automation

3.1 From analog to digital

The software module system of field equipment network support system includes data remote acquisition software, database software, web publishing software and communication interface software. The data acquisition system can establish an interface with the existing database of the enterprise, and the data structure is open. Users can easily share data and develop secondary functions on the basis of the database, such as reports, statistics, queries, filtering, printing, etc., to meet the use requirements of the enterprise production. At the same time, the pre diagnosis function and pre-processing function are set in the hardware settings. When the equipment accident occurs or has not occurred, the main terminal will give an alarm and suggest the processing method. At the same time, the data and results will be uploaded directly to the server computer. The central network is constructed in client server mode. The central server collects the data of the lower devices and stores the data in the database. The central server can appear in any node (control center, computer center or other locations) of the enterprise LAN; the client software is installed in the company's dispatching room, and can manage, modify, set data collection or print reports to the central server with the authorization of the information department. The central server can appear in any node (control center, computer center or other locations) of the enterprise LAN; the client software is installed in the company's dispatching room, and can manage, modify, set data collection or print reports to the central server with the authorization of the information department. The center server transmits data through external Internet + and transmits data to the mobile client platform, monitors the mobile phone at any time, authorizes part of the personnel to operate, avoids the production failure due to the failure of the labor to arrive at the scene in time, and avoids the phenomenon of false positives and reports, which caters to the development of the industry 4.

3.2 Modular development

Contactors and relays have always been the multiple occurrence points of electrical automation faults. In the future, integrated modules can be used to replace contactors and relays, and point-to-point direct module control can be used. The latest wireless receiving system is used for

modules.
1. Wireless intelligent digital module directly replaces the use of relay.
2 wireless intelligent inverter module replaces the old inverter and contactor.
3. Use the named frequency to distinguish the same module to better solve the point-to-point control.
④ wireless intelligent module is equipped with pre diagnosis function.

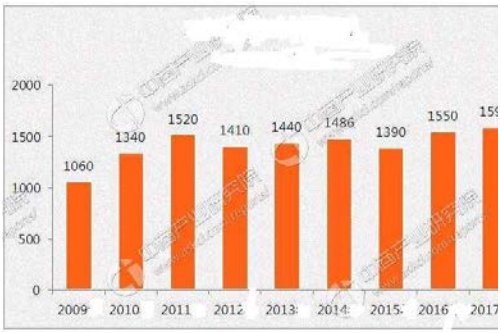

Figure 3: Market scale of industrial automation industry

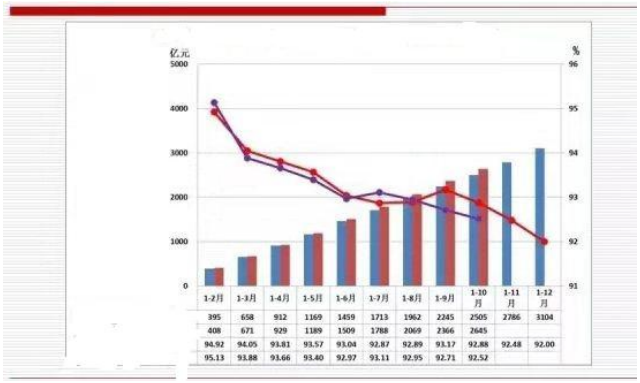

Figure 4: Total cost in recent two years,cost expensive rate

Conclusions

The typical feature of industrial automation technology is high technology, which is the most widely and rapidly developing technology with remarkable benefits in the world. It has a key role in promoting the new industry and technological revolution. It is also a comprehensive integration of information and electronic technology. It shows a huge advantage of intelligence and technology intensive in technology. It is no exaggeration to say that the new industry The construction of industrialization road is inseparable from the foundation of industrial automation technology, the latter is the key technology to ensure the success of the former.

References

[1] Xue shuaibin, Gu Jin. Application of automation technology in power system [J]. Theoretical research on urban construction (Electronic Edition), 2012 (03).

[2] Liu Zhongfei. Current situation and Prospect of automation development [J]. Journal of Beijing Electric Power College: Natural Science Edition, 2016 (12)

[3] Jiang Haitao. Discussion on the development of automation technology [J]. Silicon Valley, 2016 (21).