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The Development of Precision in China's Machinery Industry from the Development of China's Railways

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Abstract: As the level of China's machinery manufacturing industry soars, and the demand for high-precision domestic equipment increases year by year, the precision system of China's machining is subject to a serious challenge. This paper will take the development history of the Republic's railroad as an example to explain the development of China's machining accuracy system. And combined with the current development of China's machining industry overview of the future precision system outlook.

Keywords: Machinery Industry, Railroad Construction, Precision, Production Tolerance, Outlook.

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1. Introduction

Accuracy is a big concept, it represents the complete dimensional tolerance system, the fundamental meaning is to ensure the interchangeability of parts. That is to say, the same specification of a batch of parts, do not need any repair or selection, any take a that can be installed in the machine, to meet the expected design requirements, which is called the interchangeability of parts. The following is based on the development of China's railroad construction to explain the overview of China's machining accuracy system.

2. A Hundred Waste to Seek Progress

At the beginning of the founding of new China, China's railroad development is full of ups and downs and hardships.The development of railroads has two main core content, one is the development of track roadbed, one is the development of traction head, for today we want to discuss the accuracy of the system, and the development of traction head has an inextricable link.

At the end of the 1950s, in 1958, China began to develop internal combustion locomotives, and successively had the Dongfeng type and other models put into production. However, until the 1990s, China's locomotive and rolling stock factories were the only ones in the world that allowed production tolerances in locomotive and rolling stock manufacturing. What's more, the domestic Dongfeng locomotive for maintenance, a lot of locomotive fastening screws are different lengths, in the national railroad before the third speed increase, the Ministry of Railways has expressly stipulated that the two adjacent rails, as long as the height difference of less than six millimeters even if qualified.

The existence of these manufacturing tolerances, as well as in the size of the excessive relaxation of standards, resulting in China's railroad industry in the 1990s before the long-term in a very embarrassing stage, many of the wheels of the undercarriage of the wheels in the factory are not round, this inherited from the Soviet Union's industrial rough, leathery, unkempt characteristics of the Republic of this period of time of the industry played a far-reaching impact, this disregard for the accuracy of the production This mode of production without regard for precision helped the Republic to quickly establish its own basic industrial system in the early days, but hindered the Republic's industrial development to a higher level of footsteps. This was especially evident in the case of railroads. Flavor

China had introduced a variety of advanced locomotive manufacturing technology, their own integration of locomotive locomotive called 8K, but helpless days fold, with this same period, China also had the intention of introducing advanced German locomotive, but for various reasons, China's introduction of whether the locomotive manufacturing technology or their own assembly of production of locomotives without exception there are serious I quality problems, and the fundamental reason for the existence of these problems Is that our country did not have a strict and reasonable precision production system, the locomotive factory and vehicle factory at that time, the idea still stays in a kind of 50's "can be used on the line" in the backward thought pattern. And after decades of continuous practice, this "can be used on the line" production ideas have become the primary contradiction that hindered the Republic's industrial progress, the same socialist camp of the GDR and the former Soviet Union had sent technical

experts to help China to produce their own locomotives and locomotives, but in China is no achievement, and not It was not that these technical experts were not interested in their own locomotives, but that the production workers and production managers under the Chinese system at that time did not have the concept of advanced precision production, and lacked scientific, effective, efficient and reasonable production methods and production standards.

All this has led to our locomotives experience every 300 kilometers to stop for maintenance, machine breakage rate of up to 15%, the actual operating speed of locomotives on the railroad for a long time are 70-80 km / h, while we use the head is with a 120KMH speed or higher speed of the advanced head, but the expected rated speed and operating speed gap is so large, it is precisely because of this! A period of time, China's railroad industry generally lack of precision production awareness and precision production system is vacant.

3. Rising to Catch Up with the Clouds

The 21st century, some say is China's century, is the era of the Chinese people, this is true, at least, in the railroad industry is so.

Once upon a time, a green car with childhood memories faded in the vast Chinese land on a railroad artery, an orange, red, blue wagon in the square "Harmony" under the traction of the head, ran through the north and south of the Yangtze River, ran all over the motherland's great rivers and mountains, ran into the eternal memories of people. Nowadays, on the railroad tracks all over China, the Harmony train sets are running, and the "new green" car - 25T undercarriage.

In just fifteen years, China Railway has undergone such a radical change, which is not lacking in the objective reasons for the development of science and technology, but mainly in the production of railroad vehicles in the establishment of precision system and relative perfection, this precision system for the entire vehicle production technology has had a decisive impact, it provides a republican railroad industry forward up the ladder, it is to strictly follow the production process tolerance control, accuracy control, precision control, and the production process is not only to ensure the safety of the vehicle, but also to ensure the safety of the vehicle, the production process is not only to ensure the safety of the vehicle, but also to ensure the safety of the vehicle. It is by strictly following the tolerance control and precision control in the production process that it is possible to create wheel pairs, axles, rails and so on and so forth to meet the demand in high-speed movement, and only then can we produce these trains that fly on the motherland's land.

China's rolling stock, high-speed rolling stock production technology, non-disturbing track technology, which are introduced from foreign countries, and localization in the local and then realized the practical technology, and in the practice of these technologies, if the Republic of the railroad industry production ideas are still as in the 1950s, "can be used on the line", that these technologies are also not in the Chinese soil, the same is not possible. In the process of practicing these technologies, if the Republic's idea of railroad industrial production is still as "workable" as it was in the 1950s, then these technologies will not be able to blossom in China. The fundamental reason why these new high-tech technologies have met with a different situation in China from that in which they were imported before is the change in China's conception of the precision system of industrial production and the establishment of the precision system in the past ten to twenty years.

4. Conclusion

With the last century is very different, now the Chinese people, can be very proud to say, our railroad vehicle manufacturing technology, in the world, are leading, are outstanding, we have the longest mileage of rolling stock operation, with gradually perfected the quasi high-speed conventional railroad operation network.

In the train sets, high-speed train sets into our lives in a few years after the present, with the brand-new green painted 25T fast underfloor of the installation, we find that, Mercedes-Benz in the motherland on the north-south artery of the train set, has quietly brought up the speed of the speed of 140KMH to 16OKMH speed Mercedes-Benz in the motherland on the ground, 25T underfloor of the highest speed of operation of 200KMH, and the current speed can fully prove that China's railway industry running mileage, has gradually perfected the quasi high-speed conventional railway network. Speed can be fully proved in China's railroad industry in the precision system has made great progress.

The development of China's machinery industry precision system, such as the railroad industry precision system development process, full of ups and downs and twists and turns, in the constant failure to understand the importance of the precision system, so as to learn from the bitter experience, catch up, to create a brilliant achievements.

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