

## Fighting Bingtian and Fighting Snow——Remember "Dongfeng Any Drive Technology Cold Zone Test"

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In early March, Yakeshi was covered with snow and thousands of miles of ice, and the average temperature was below  $-26^{\circ}\text{C}$ . The extremely cold weather environment provides car companies that pay attention to quality with test conditions under extreme working conditions to carry out car performance tests. On March 2nd, Dongfeng Any-Drive R&D team members Zhang Zeyang, Wang Nian, Fei Liying and the others, with almost paranoid dedication to technology, had the courage to challenge the extreme cold environment, and were burdened with the demanding pursuit of quality. Keshi Extreme Cold Test Base carried out the verification of the reliability of Any-Drive technology.



Dongfeng Any-Drive (distributed drive technology brand) R&D team was established in 2018, focusing on researching distributed drive control technology and building Dongfeng's distributed drive technology brand power. This technology can realize the functions of any wheel drive and any proportional torque control, and can realize any drive form, which fits well with the concept of distributed drive. The system can be applied to the vertical, horizontal and vertical control of the chassis driven by multiple motors such as wheel hub, wheel rim, front and rear dual motors, and can effectively improve the safety, economy and driving performance of the whole vehicle. The prototype vehicle tested in the cold region is a distributed four-wheel drive pure electric vehicle. The power part is the highlight of the prototype. It is equipped with 4 hub motors, and each wheel can be independently controlled to achieve precise control of the entire vehicle. According to the test project, the vehicle maneuverability and stability will be verified, the control algorithm will be continuously optimized, and the technological breakthrough will be finally achieved.



### **Safety first, to ensure zero accidents**

On the first day of entering the test site, the Dongfeng Any-Drive R&D team participated in the site safety training organized by the quality verification center Li Zhuogong. At the test site, it is necessary to comply with the regulations on the management of test prototypes, the regulations on office commuting, the regulations on clothing management, and the regulations on registration of test resources. The test personnel must meet the specified requirements when driving the test vehicle, and it is especially emphasized that they must keep a safe distance from the vehicle in front during the test. Confidentiality requirements, during the test, do a good job of confidentiality management, organize unrelated personnel to watch or take pictures of the vehicle, and park the test sample vehicle in a confidential area after the test. Travel requirements. If you need to go out during the test period, you must travel with your partner and prepare the itinerary. Only by being in awe of security can the security risks be minimized. Preventing the epidemic is even more of the most important, we must abide by the epidemic prevention management regulations, wear masks, wash hands frequently, and get more ventilation.



### Fear the cold, race against the winter

Every day when you enter the office building of the test site, you will see a notice board that reads "It's a long and severe winter". However, this is the test environment that the Dongfeng Any-Drive R&D team most wants. In the face of extreme cold weather, the test is not only the test vehicle but also the test team. It is necessary to race against the weather and complete the prototype test in the extreme cold weather before the end of the cold winter.



During the test, the engineers took every part of the test project very seriously. One of the objectives of the cold zone test is to verify the influence of Any-Drive control

technology on the handling stability of distributed four-wheel drive pure electric vehicles. Snake shape and double line shifting are typical operating conditions for vehicle handling stability evaluation in the industry. The R&D team must brace the biting cold wind on the snow square to complete the double-shifting and serpentine working conditions in accordance with ISO3888-2-20 02-BS and GB/T 6323-2014



Snaking piles



Double shift line pendulum pile

The test site in the cold area is not like in the company. Anything that is not foreseen in advance or appears temporarily will seriously affect the test progress. Engineers can only find a solution on site to solve the difficulties that arise. Lie down on the snow to repair the car and troubleshoot in the cold wind have become part of the test work.



Troubleshoot in cold air



Lie down on the snow to fix the car

After the test is completed on the same day, the test vehicle will be inspected for safety to ensure test safety.



Check the sample car on the lift

After overcoming many difficulties and completing the test work during the day, the test team will summarize the work of the day in the office area of the test site, meet to discuss the completion of today's work and formulate tomorrow's work plan in order to smoothly advance the test progress.



Summary of work of the day



Night debugging

### **The cold day pays off**

The Dongfeng Any-Drive R&D team verified the TVC control algorithm and the TCS control algorithm in this cold area test. Through the concerted efforts of the Dongfeng Any-Drive R&D team, the test was successfully completed.

In the handling and stability test, the distributed four-wheel drive pure electric vehicle ensures that the TVC algorithm is turned on and off under the premise of ensuring that the test conditions are completely consistent. The maximum passing speed of the vehicle when the TVC algorithm is turned on is 10% higher than that of the TVC algorithm turned off.



Speed 77km/h through double shift line

In the full-throttle start on icy surface, the distributed four-wheel drive pure electric vehicle ensures that the TCS algorithm is turned on and off under the premise of ensuring that the test conditions are completely consistent. The TCS algorithm is turned on and the TCS algorithm is turned off. The start is much more stable.



Full throttle start on ice



During the entire test process, Dongfeng Any-Drive control technology performed well in vehicle handling stability and the original full throttle start test on ice, which fully verified the reliability of Dongfeng Any-Drive control technology in extreme environments.



After some chills, how can I know that Dongfeng Any-Drive has strong control technology. Dongfeng Any-Drive control technology puts quality first, continuously polishes the technical highlights, and accumulates experience in testing and testing. In the future, the Dongfeng Any-Drive R&D team will continue to focus on the brand mission of independent research and development, continuously improve the brand power of Dongfeng's distributed drive technology, and contribute to the independent research and development cause.

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