

Current Status and Trends of Commercial Aircraft Navigation

Control Systems

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Abstract

As a core technology product in the civil aviation market, jet airliners are not only the key to open the global aircraft market, but also an important business card that reflects the economic and technological strength of a major country. This report reviews the development history of domestic jet airliners. Taking ARJ21 as an example, it elaborates on the navigation control system of jet airliners and introduces the development and derivative types of ARJ21 from the perspective of the entire life cycle. Then, combined with the future development requirements of commercial aircraft, the future technical development direction of jet airliners is discussed, including supersonic passenger aircraft, electric flight, single-pilot, unmanned driving, prediction and health management, visual navigation technology, etc., laying the foundation for the occupation of the future competitive track of jet airliners.



Yong Chen, graduated from Northwestern Polytechnical University in 1988 with a major in aircraft design. He worked in Xi'an Aircraft Design Institute and Shanghai Aircraft Design Institute (later Shanghai Aircraft Design Research Institute) and has been engaged in the general aerodynamic design and avionics system design of aircraft. He has been engaged in the development of major national equipment such as JH-7 series, Y-7-200A, KJ-xxxx, and xx projects.

Since 2004, he has been engaged in the design of China's first jet airliner ARJ21 aircraft. He has led the team to work hard for 20 years, and for the first time conquered the design verification of international airworthiness regulations for jet airliners, and for the first time realized the industrialization and serialization of domestic jet airliners, and realized the first step of the three-step development of large aircraft in China. He is one of the pioneers of China's large aircraft industry.

Chen Yong established the technical and airworthiness foundations for the successful development and certification of C919, as well as for the smooth development of C929, and cultivated a team of talents in scientific research, production, and service of large aircraft. He led the team to overcome the difficulties of industrialization and large-scale safe operation of domestic jet airliners, and achieved the annual production capacity of 50 ARJ21 aircraft/each production line, delivered 139 aircraft, operated more than 110 cities and 566 routes. 430,000 hours of safe flight, cumulatively

carrying 14.44 million passengers. In particular, it was the first time in China to achieve full coverage operation of Xinjiang, and the world's first jet regional airliner opened up the high-difficulty route of the Taxkorgan Plateau, where is a Higher Plateau Airport. It was the first time that domestic jet airliners were exported overseas, and exported to Indonesia to open the Jakarta-Kuala Lumpur route. It was also the first time that domestic jet airliners were operated overseas, and the China-Russia route and China-Central Asia passenger and cargo routes were opened. At the same time, Chen Yong led the team to overcome the difficulties of serialization and multi-purpose of domestic jet airliners, and successfully developed and certified domestic jet cargo aircraft, jet command aircraft, jet medical aircraft, and jet business aircraft for the first time in China, and is developing the first jet firefighting aircraft. He explored the way forward for the high-quality development of domestic civil aircraft.

Chen Yong won one first prize in the National Science and Technology Progress Award, ranking first. He has won three provincial and ministerial first prizes, all of which ranked first. He has been awarded the title of the first batch of the National Ten Thousand Talents Program, the National May 1st Labor Medal, the Third National Award for Excellence in Innovation Medal, and the First National Engineer Awards.