



CENJOWS

AEROSPACE TECHNOLOGY IN CHINA

Avionics Development in China: C919 Aircraft and Other Programmes. China is projected to overtake the United States as the world's largest commercial air passenger travel market by the mid-2020s¹. To meet this rapidly growing demand for air travel, Boeing's latest 20-year forecast projects 7,000 new commercial passenger jets will need to be delivered to Chinese operators over the next two decades. That type of demand – combined with new investment in manufacturing facilities and joint ventures from the likes of Airbus, Boeing, Honeywell and Collins Aerospace – is fueling the growth and future potential for expansion of China's avionics industry. The majority of avionics manufactured in the country are produced through joint ventures and partnerships with the aforementioned manufacturers and others. One of the biggest aircraft development programmes that will continue to fuel investment and provide demand for avionics systems is Commercial Aircraft Corporation of China (COMAC's) ongoing development of the C919 programme, which the state-run company wants to use to compete with the Airbus A320 and Boeing 737 on a global scale².

C919 aircraft made its maiden flight in 2017 at Shanghai's Pudong International Airport and is scheduled to achieve its first delivery to airlines in 2021. COMAC has received more than 1,000 orders for the C919 from Chinese airlines and others³. The majority of the C919 programme's avionics systems are supplied by western companies such as Collins Aerospace, GE Aviation and Honeywell Aerospace – which all have joint ventures and partnerships with Chinese companies supplying COMAC. The corporation requires foreign suppliers to manufacture parts made for the C919 in China. The programme includes the next generation of avionics systems architecture in multi-functionality, display-driven setup, taking on important tasks such as core data processing, signal transmission and signal function logic conversion. Honeywell Aerospace is supplying the aircraft's fly-by-wire system with HonFei Flight Controls and the supply of the braking system. Collins Aerospace also supplies avionics technologies to the C919, including its

¹<http://interactive.aviationtoday.com/avionicsmagazine/february-2019/avionics-in-china-c919-development-and-future-growth/>

² **ibid**

³ **ibid**

communication, navigation and integrated surveillance systems under joint ventures established with China Electronics Technology Avionics Company and the Aviation Industry Corporation of China (AVIC). The Chinese government released its “Made in China 2025” strategic plan, through which it seeks to become a major manufacturer of high-end technology, including avionics and aerospace equipment. In pursuit of this goal, Chinese state-owned companies leverage the country’s highly-desirable market to persuade foreign companies seeking market access to share technology. China continues to lag behind in avionics for advanced fighter jets and until Chinese companies develop capabilities on a par with leading competitors from the US and Russia. China has reportedly developed techniques to target U.S. defence contractors and hack defence industry computers. According to publicly available data about the J-20, its avionics include electronic surveillance measures, infrared search-and-track and electro-optical targeting systems, and third-party sensor data fed to it via data-link to help locate its targets. Experts believe the J-20’s avionics is most likely comparable to that installed on the F-22 and F-35 fighters, but of lower quality⁴. The China Southern Airlines carrier selected Thales to provide the avionics for a fleet of 80 combined Boeing 737 MAX and Airbus A320neo aircraft in November. Under that contract, Thales will equip those aircraft with flight management systems and satellite communications systems featuring access to Inmarsat satellite-based connectivity. The fleet will also be equipped with head up display systems from Thales to meet the Civil Aviation Administration of China’s (CAAC) 2025 mandate for Chinese carriers to have 100 percent of their domestic fleet equipped with head up displays. VIC is currently in talks with Concern Radio-Electronic Technologies (CRET), a leading Russian designer and manufacturer of military spec radio-electronic, for the design and further supplies of avionics for a new heavy helicopter currently being jointly developed by Russia and China. Thus even if US succeeds in holding back their major avionics collaborators, the European majors are likely to continue their business dealings with Chinese avionics industry.

⁴ *ibid*