

Achievements and Significance of the KF-21 Boramae Program

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On April 9, the prototype of Korea's first homegrown fight jet KF-21 Boramae unveiled itself through the roll-out ceremony held at Korea Aerospace Industries, Ltd. (KAI) in Sacheon, Republic of Korea. This is the first time in 6 years that the prototype finally came onstage since the initiation of the development in 2015. Now several tests and challenges lie ahead to verify whether its performance suits ROKAF's requirements. The roll-out ceremony was attended by various distinguished guests home and abroad and many defense industry professionals, to include President Moon, Jae-in, Defense Minister Suh, Wook, Indonesian Defense Minister Prabowo Subianto and his delegates, and numerous foreign ambassadors in Korea. The roll-out ceremony implies great significance as it represents a continuous evolution of the Korean aerospace technologies, beginning from its licensed production of F-5 in the 1980s and KF-16 in the 1990s, and the technical coordination with Lockheed Martin to develop T-50 supersonic trainer.

Korea started developing the home-grown fighter jet since 2001 when President Kim, Daejung announced the vision of indigenous fighter jet at the Air Force Academy graduation. In 2002, the Joint Chiefs of Staff (JCS) concluded the requirements of the next-generation fighter jet program. Since then, the KF-21 program has undergone seven rounds of feasibility studies and analyses conducted by specialized organizations. After

14 years of preparation, the Defense Acquisition Program Administration (DAPA) finally came to select the prime contractor in March 2015. However, this plan was frustrated due to the U.S. Government's disapproval of Korea's acquisition of four major avionics integration technology. Accordingly, DAPA decided to develop its own and selected KAI as the prime contractor to initiate the program. Therefore, the KF-21 roll-out ceremony represents valuable fruition earned through 20 years of struggle and hope that Korea had to go through.

KF-21 multirole fighter jet, invented for the purpose of satisfying the future battlefield concept, will replace F-4/5 aircrafts that the ROKAF has been operating over 30 years. At the examination stage, the JCS came to a conclusion that KF-21 should be capable of conducting a joint operation with F-15K and F-X (currently F-35A). Hence, instead of full-fledged 5th generation capability to include stealth function, the KF-21 is equipped with the 4.5th generation capability comparable to or exceeds (K)F-16 performance to perform multifarious operations with diverse weapon systems. Furthermore, as ROKAF operations are based on the ROK-US combined operations, acquisition of interoperability was a critical consideration. Therefore, the integration of communications security systems (COMSEC) and combined tactical data communications systems was necessary. Another important consideration was that that ROKAF would need to use existing air ammunitions along with the US Air Forces Korea ammunitions in time of emergency.¹

KF-21, with such background, is a joint development project with Indonesia which is sharing 20% of the R&D cost. Indonesia is one of Korea's closest partners in defense industry; it has purchased and is operating Korean-made weapon systems of all fields of land, sea, and air, such as T-50 supersonic trainer, submarines, armored vehicles, etc. Some express their apprehension over the possibility of ill-considered export of KF-21 and related technology after completion of the development, but the ROK Government fully understands and recognizes such concerns of close partners including the U.S. and European countries. The ROK Government has devised and is implementing various measures to prevent technology proliferation; it is executing strict security policies

¹ DAPA has been closely coordinating with the U.S. government to obtain Korea's operational capability of U.S. air ammunitions.

centering around the Defense Technology Policy and Security Bureau within DAPA, based upon the Defense Technology Security Act established in 2015. Furthermore, the ROK Government is protecting technical data of the participating countries to the level identical to ones applied to Korea's secret information. In relation to technical data and intellectual property rights, the ROK Government explicitly states the user of the technology when applying for an export license (E/L) to the source countries, and prohibits unapproved countries' usage of such data. Therefore, export of KF-21 will certainly follow relevant source countries' authorization of all E/L items, including the U.S., European countries, etc.

The KF-21 development program is a large-scale national project. Engineering & Manufacturing Development (EMD) alone costs above KRW 8 Trillion. Taking into account future production and export, this program will surely have stimulating economic effects on domestic industries and economy. Approximately 800 Korean companies are already taking part in this development program, creating roughly 120,000 jobs in the 1st and 2nd vendors. Taking the 3rd and 4th vendors into consideration, the KF-21 program is estimated to have a far-reaching effect on employment rate. Korea targets to localize 65% of the aircraft production and this will facilitate advancement of domestic aerospace industry and drive economic growth at least for a decade.

Furthermore, the development and production of KF-21 is expected to contribute to strengthening bilateral cooperation in the fields of defense and defense industry between Korea and the U.S. For example, F414-GE-400K has been selected as an engine for KF-21; this suggests that that the U.S. not only can make a profit on its export, but also can reduce operating costs of its own F414-GE-400 engine for the US Navy F-18 aircraft. In addition, the engine upgrade may become feasible. Considering that the engine cost takes 15% of the KF-21 unit price, Korea and the U.S. may find this program as a chance to seek mutual advantages.

Meanwhile, leading countries in the aircraft manufacture may become watchful of KF-21, considering it as their possible rival. However, seen from a different perspective, Korea's KF-21 may bring profit for the global aerospace industry. For instance, new demand for Meteor missiles and ejection seats was relatively sparse as no new fighter jet

appeared on the market recently, but the manufacturers of such systems can find the KF-21 program as their welcome customer to share fruition with Korea.

The KF-21 program has now entered the phase of ground tests and flight tests. While the pre-roll-out stage focused on the evaluation of the aircraft only with its drawings and blueprint, the next phase, with the actual prototype, requires an elaborated process to verify whether its performance fits ROKAF's requirements. For the next five years, over 2,000 ground and flight tests are scheduled; since it is the first time for Korea to design, test, evaluate, and produce a fighter jet on its own initiative, this will definitely be a long and rough ride. However, the KF-21 program could never have come this far without valuable commitment of Korean technicians and particularly the trust-based cooperation by the U.S. and other friendly countries. Therefore, their unwavering support is by-all-odds a prerequisite to ensure the success of the KF-21 program to the end. Devoting itself to make fruition, Korea plans to deploy 120 KF-21 aircrafts by 2032.