

COUNTRY OVERVIEW

UAS Development in South Korea

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Since 1982, there has been continued interest at the national level to support the development of Unmanned Aircraft Systems (UAS) in the Republic of (South) Korea. The Republic of Korea Army (ROKA), for one, became an early believer of surveillance UAS after its successful experimentation with target drones.

In 1991, Korea Aerospace Industries Ltd. (KAI) began the design and production of a strategic reconnaissance and surveillance UAS for ROKA with the Agency for Defense Development (ADD). The resultant vehicle, named Night Intruder 300, entered into service in 2002 at corps level with ROKA. In preparation for the Night Intruder, ROKA began



deploying a small number of Searcher reconnaissance UAS – purchased from Israel Aerospace Industries Ltd. (IAI) – in the late 1990's to accumulate the technological capability necessary to independently operate UAS.

It was not until the 2000's that UAS technology was recognized as one of the key strategic industries worthy of receiving national sponsorship. As part of this effort, Korea Aerospace Research Institute (KARI) has been leading the SmartUAV



program since 2002 to develop a high-speed, tilt-rotor UAS that is capable of vertical take-off and landing (VTOL) by 2012. Later in 2004, Korean Air Lines Co., Ltd. (KAL) became the lead institution of a 5-year program to develop a close-range reconnaissance UAS as a new platform for wildfire monitoring and maritime border patrol.

Both government-sponsored projects are currently on target

to achieve their respective milestones and timelines. Korea Institute of Aerospace Technology (KIAT), the main research and development (R&D) arm of KAL's Aerospace Division,



test-flew a close-range reconnaissance prototype named KUS-7 in August of 2007. Building upon this success, KIAT is ramping up its UAS design effort to make the follow-on model (KUS-9) available for civilian use, as well as capable of performing reconnaissance and surveillance missions for



divisions of ROKA. Both KUS designs utilize a catapult-assisted takeoff and net-captured recovery system to maximize automated operations in spatially challenging terrain or battleground.

Most recently, ADD has laid the ground work for the development of a new medium altitude long endurance (MALE) UAS, capable of flying up to 24 hours at 45,000 ft. KAL's selection - and not KAI's – as the principal Systems Integration (SI) entity for the MALE project signifies how KAL is now poised to rapidly become the lead institution to represent South Korea's UAS industry. The MALE project is expected to serve as a technological stepping stone in South Korea's eventual ascent into the high-end, more advanced UAS market.

Other noteworthy South Korean UAS developers include Uconsystem Co. and Microaerobot Co., which showcase product lines of micro to small aerial vehicles. Currently, both companies are experimenting with ways to make their products more flight-worthy for South Korean military

South Korean Short & Medium Range UAS

	Night Intruder 300	SMART UAV	KUS-7	KUS-9	MALEUAS
Producer	KAI	KARI	KAL	KAL	ADD
Length	4.7 m	5 m	3.1 m	3.4 m	12 m
Wingspan	6.4 m	6.8 m	3.4 m	4.2 m	25 m
T/O Weight	290 kg	995kg	70 kg	150 kg	4 ton
Payload	45 kg	90kg	7 kg	20 kg	500 kg
Speed					
- Max	185 km/h	500 km/h	150 km/h	180 km/h	N/A
- Cruise	120 km/h	400 km/h	100 km/h	140 km/h	N/A
Altitude	4 km	5 km	3 km	4 km	14 km
Endurance	6 h	5 h	2.5 h	8 h	24 h
Range	80 km	200 km	45 km	80 km	500 km

South Korean Micro & Mini UAS

	RemoEye 002	RemoEye 006	RemoEye 015	RemoEye H-120	FM-07	X-Copter
Producer	UconSystems	Uconsystems	Uconsystems	Uconsystems	MicroAirRobot	Oneseen Skytech
Length	1.3 m	1.55 m	1.5 m	3.5 m	0.3 m	3.7 m
Wingspan	1.5 m	2.7 m	3.2 m	3.2 m	0.6 m	3.1 m
T/O Weight	2.4 kg	6.5 kg	15 kg	100 kg	0.5 kg	120 kg
Speed:						
- Max	80 km/h	75 km/h	170 km/h	130 km/h	70 km/h	N/AN/A
- Cruise	N/A	40 km/h	N/A	120 km/h	40 km/h	
Endurance	1 h	1.5 h	4 h	2 h	40 min	2 h
Range	10 km	15 km	50 km	50 km	5 km	10 km

applications, and it is anticipated that such efforts will eventually result in the brigade's adaptation of micro and/or small UAS.



On the civilian side, considerable interest in developing a market for non-military UAS was jump started by the arrival of 17 Yamaha R-MAX unmanned rotorcraft in 2005. Due to a number of institutional challenges that are also present in other nations, such as restriction of airspace and difficulty in securing sufficient radio frequencies, the South Korean civil UAS market has, thus far, mostly been focused on missions that can be implemented within visual range; e.g. agricultural survey, aerial photography, etc. Various companies (e.g., Uconsystem Co., Oneseen Skytech Co. Ltd., and MicroAirRobot Co.), as well as several university laboratories, are in competition to capture the largest share of this growing market through further R&D, whereas others are already making business by retailing their own civil UAS products, albeit in very small quantities.

Several infrastructural factors, which are native to South Korea,



are likely to benefit its emergent UAS industry in a synergistic manner. For example, guidance & navigation technology, high-precision scanning & image processing technology, and high-speed digital communication, happen to be the strong suites



of the South Korean Information Technology (IT) industry. The fact that there is now a confluence of R&D activity to develop South Korean UAS using home-grown knowledge at the academic, industrial, and governmental levels is another encouraging sign that the South Korean UAS industry will become a step closer to becoming a leading UAS technology powerhouse by the middle of the 2010's.

A wide range of UAS are already in development or production in South Korea. Some of the representative examples include ADD and KAL's MALE UAS, whose joint-development programme was officially launched in 2008, as well as a number of short-range aircraft: e.g., KAI's Night-Intruder-300, KARI's SmartUAV, and KAL's KUS-7 and KUS-9. Aircraft that fall under the category of micro UAS are Uconsystem Co.'s RemoEye models (-002, -006, and -015) and H120, MicroAirRobot Co.'s FM-07, and Oneseen Skytech Co. Ltd.'s



X-Copter. The general and performance characteristics of each of these aircraft can be found in the table on the previous page.

