

# KOREA AEROSPACE INDUSTRY 2018-2019





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# Activities of KAIA



KAIA places the main focus of its activities on the expansion and evolution of the Korea aerospace industry. A brief outline of these activities is as follows.

#### Aerospace Industrial Policies Promotion

- Request and recommend to the government on aerospace budget
- Propose the promotion action plan of aerospace industry to the government

#### Aerospace Industrial Foundation Build-up and Maintenance

- Investigation of domestic and overseas aerospace industries movement
- Research and Development (R&D) of future aerospace technologies
  - Deliver R&D through public subsidies
  - Commission research contracts to related industries



#### Relationship with Overseas Aerospace Industries and Associations

- Interact with overseas aerospace industries and associations
  - Major associations: AIA(USA), SJAC (Japan), ADS(UK), GIFAS(France) and BDLI(Germany)
- Support arrangements for KAIA members to participate in international events



#### Organizer of Seoul ADEX (Seoul Int'l Aerospace & Defense Exhibition)

- Hold the Seoul ADEX(previous named 'Seoul Airshow') which is held every two years in Korea to promote of Korea aerospace and defense industries and offer the aerospace business opportunities in Asia-Pacific region.
- Seoul ADEX is the only and largest exhibition covering aerospace & defense industries in Korea.



#### Overseas Promotion

- In order to promote the Korea aerospace industries and its membership companies, KAIA has participated in oversea's airshows such as Paris Airshow, Farnborough Airshow, Singapore Airshow, ILA Berlin Airshow and Airshow China.
- KAIA, in cooperation with KOTRA(or Korean government), organize the Korea Pavilion in major exhibitions.



#### Survey of Aerospace Statistics, Facts and Figures

- Survey domestic and overseas aerospace industry production and export information
- Publish sales, production and export data for KAIA members

#### Liaise with Related Organizations

- Liaise and coordinate with related government authorities
- Contact and cooperate with universities, research institutes and other organizations

#### KAIA Gyeongnam(Sacheon-si) Branch

- Aerospace Industry Specialized Complex support project
  - construction of aircraft parts surface treatment facility
  - common tests and evaluate equipment set up project
  - build an aviation distribution center & system
  - Aerospace specialized workforce education
  - Aircraft parts R&D project for small and midium-sized enterprises

#### **▼** LCH Program Office

- Manage of LCH(Light Civil Helicopter) program performance
- Program coordination between involved companies and government
- Helicopter parts R&D program supporting



#### KAQG(Korea Aerospace Quality Group) secretariate

- Improvement global competitiveness for productivity and quality in domestic aerospace industry
- KS9100, 9101, 9104-1/2/3 standards publication
- Provision related-services for KAQG membership companies

#### Public Relations and Publication

- Disclose media interviews and presentation data
- Publication of the magazine "Korea Aerospace Industry" and "Statistical Yearbook"
- Release a fortnightly "News Letter" and "KAIA Weekly" for the latest issues



#### HRD Centetr in aerospace

- Operate free education and training programs for incumbent employees
- Provide training programs for AS9100 Internal Auditor and NADCAP
- Identify education needs and develop programs

For further information, please visit the KAIA webpage (www.aerospace.or.kr)

## Current Status of Korea Aerospace Industry



roduction value in 2017 was 4.0 billion USD, a 22.4% decrease compared to the previous year. By program, the production of commercial aircraft parts including the export to Boeing and Airbus took up approximately 43%, KUH(Korean Utility Helicopter, Surion) related production 14%, aircraft maintenance 9%, engine parts 8%, KF-X project 6%, T-50 related production 5%.

In the military field this year, it is expected that KUH related production increases by 13% as the production of 3rd Surion, Marineon (Marine Corps Helicopter) and police utility helicopter proceeds. As the KF-X and LAH/LCH projects are actively proceeded, the production of both projects will increase by 66% and 46% each.

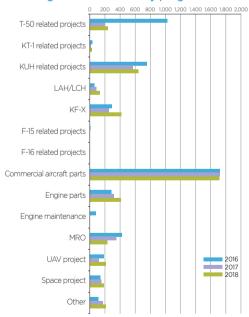
In the civilian field this year, the production is forecasted to stay similar level with last year since the aerospace industry market is oligopolistic and competition is becoming severer.

Space industry increased by 6% in 2017 compared to the previous year, but this year it is expected to increase 24% as space projects such as KOMPSAT-7, lunar exploration program, military satellites and KSLV proceed. (Table 1, Figure 1)

**▼** Table 1. Production by Programs

Unit : million U						
Program	2016	2017	2018(forecast)			
T-50 related projects	1,024	200	241			
KT-1 related projects	35	14	27			
KUH related projects	752	571	643			
LAH/LCH	59	89	130			
KF-X	290	250	415			
F-15 related projects	7	3	-			
F-16 related projects	1	-	-			
Commercial aircraft parts	1,720	1,722	1,715			
Engine parts	287	321	408			
Engine maintenance	78	-	-			
MRO	421	354	234			
UAV project	186	121	210			
Space project	142	151	187			
Other	115	173	215			
Total	5,117	3,969	4,425			

#### **▼** Figure 1. Production by programs



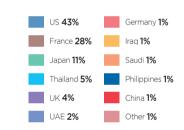
In the export by country, US (Boeing) took up 43%, while France, UK, Germany (Airbus) took up 33%. Thus, 76% of exports were to the US and Europe. Actually the export to Japan (11%) is mostly for Boeing, so the export rate to Boeing and Airbus raises up to 87%.

This is a natural result stemming from the fact that commercial area takes up the majority of Korea's export, and that Boeing and Airbus dominate the world aircraft market. The export to Iraq and Philippines sharply dropped as FA-50 contract finished. The export rate to Thailand was enlarged up to 5%, as the additional T-50 export contract signed. (Table 2, Figure 2)

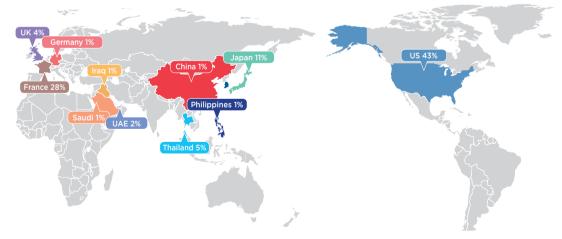
#### **▼** Table 2. Export by Country

Unit: million					
Country	2016	2017	2018 (forecast)		
US	906	891	1,022		
France	194	585	562		
Japan	188	238	212		
Thailand	36	100	109		
UK	505	89	97		
UAE	27	34	47		
Germany	21	27	25		
Iraq	378	23	131		
Saudi	0	23	5		
Philippines	227	20	12		
China	6	18	18		
Other	54	39	64		
Total	2,542	2,087	2,304		
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N.B.) Based on export contracts, not customs clearance



#### ▼ Figure 2. Export by Country



In domestic production by demand, military portion was 44% and civilian was 66%. This was the result of decrease in military field and increase in commercial field last year, but the ratio is still far from world average, which is military 20% and commercial 80%. Korea's excessive dependence on military demand must be overcome to lead continuous production increase and industry growth.

To obtain large market share in commercial aircraft, which is estimated to generate 6.1 trillion USD over next 20 years, Korea needs to secure new growth engine. (Table 3, Figure 3)

#### ▼ Table 3. Production by Demand

Unit: million USD

Demand	2016				<b>2017</b> 20			18 (forecas	st)
Demand	Domestic	Export	Total	Domestic	Export	Total	Domestic	Export	Total
Military	2,137	853	2,990	1,461	296	1,757	1,765	461	2,226
Commercial	438	1,689	2,127	422	1,790	2,212	356	1,843	2,199
Total	2,575	2,542	5,117	1,883	2,086	3,969	2,121	2,304	4,425

#### ▼ Figure 3. Military/Commercial and Domestic/Export Ratio



In 2017, the amount of orders was 4.3 billion USD, a decrease 22% from the previous year, while backlogs was 23 billion USD, which is about same with the previous year's. The key contributing factors were slump of complete aircraft export and order decrease in commercial airframe and parts. This year 5.8 billion order is expected to be made, a increase 34% from 2017, with the order of KUH variants (medical transport version and police utility version) and reconnaissance satellite projects and with the export of T-50, commercial aircraft airframe/engine, landing gear. (Table 4)

▼ Table 4. Order/ Delivery/ Backlog Status

Unit: million USD

Category	2016	2017	2018 (forecast)
Order	5,482	4,304	5,765
Delivery	5,117	3,969	4,425
Backlog	22,666	23,001	24,341

Trade deficit in 2017 was 0.4 billion. It was the first time for 8 years to record below 1.0 billion trade deficit since 2009. This is the result of 44% decrease in civil transportation aircraft import, which is 100% depended on import, and decrease in parts import which is resulted from the production decrease of domestic complete aircraft.

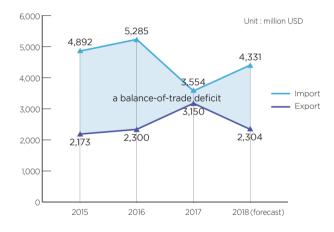
This year it is expected the trade deficit is to become 2.4 billion as the parts import of complete aircraft manufacturer increases and new civil transportation aircraft are imported by Korean Air, ASIANA AIRLINES and low-cost-carriers. About 40 new civil transportation aircraft are expected to be imported by major airlines and low-cost-carriers such as CS300, B787-9, B777-300ER, A350 XWB and B737 MAX. (Table 5)

#### **▼** Table 5. Export and Import

Unit: million USD

			2016			<b>2017</b> 2018 (forecast)			st)	
Pro	ogram	Export	Import	Trade Balance	Export	Import	Trade Balance	Export	Import	Trade Balance
Aircraft	Finished	258	2,302	-2,044	814	1,295	-481	294	1,812	-1,918
AirCrait	Parts	2,023	2,854	-831	2,305	2,079	226	1,963	2,318	-355
Space	ce parts	19	129	-110	31	180	-149	47	201	-154
Т	Total .	2,300	5,285	-2,985	3,150	3,554	-404	2,304	4,331	-2,427

In 2017, the number of people working in the aerospace industry was 14,097, a 2.2% decrease compared to previous year. The 10,000 person level has been maintained since 2010. In 2018, it is expected the large number of new recruit is to be made in R&D and technician field as the big scale projects such as KF-X and LCH/LAH are actively proceeded. It is forecasted the number of workers in the aerospace industry becomes 15,041 in 2018. (Table 6)



#### ▼ Table 6. Employment

Unit : No. of people

	Field	2016	2017	2018 (forecast)
	General management	2,758	2,571	2,730
Aircraft	R&D	3,332	3,046	3,594
AirCrait	Technician	2,571	1,897	1,849
	Other (production)	5,102	5,790	6,032
	Subtotal	13,763	13,304	14,205
	General management	125	123	136
Space	R&D	444	575	585
Space	Technician	49	50	58
Other (production)		33	45	57
	Subtotal		793	836
Total		14,414	14,097	15,041

N.B. 1) Commercial aircraft maintenance (flight maintenance for Korean Air, Asiana) workforce excluded N.B. 2) State-run research institutes researchers excluded

## Aircraft Programs

he emergence of the Korea aircraft industry is highlighted by the start of overhaul maintenance of the L-19 reconnaissance aircraft in 1955 and maintenance of the C-130 transport/military aircraft until the early 1970s.

However, since the mid 1970s, Korea began production of compact helicopters under license from Hughes Aircraft. In 1978, the government enacted the Aircraft Industry Promotion Act to promote and support the development of the aircraft industry, and established the institutional basis such as systems for providing subsidies to attract investment from foreign aircraft companies. In the 1980s, Korea sought joint production of Northrop's F-5 E/F fighter aircraft and since the mid 1980s produced parts for commercial aircraft manufacturers such as Boeing, Since 1990, Korean Air produced UH-60P(Blackhawk) helicopters under license from Sikorsky Aircraft and supplied them to the Korea military forces. Since 1995, Samsung Aerospace(merged with KAI) produced KF-16 fighters under license from Lockheed Martin and delivered them to the ROKAF.

Aircraft production in Korea continued to grow until 1988 and then production fell due to the end of Korean Air's 500MD helicopter program in 1989 and delays in the KFP(Korea Fighter Program) and H-X programs as well as temporary gaps in domestic demand. The aircraft industry sought to offset the increase in domestic demand through exports and thus actively engaged in export activities and sales of aircraft to the commercial sector. As a result, exports increased by an annual average of 33.4% from the period of 1988 to



1992. During this period, order value, a leading indicator of exports, also recorded an average annual increase of 26.5%. Later, Korea began development of indigenous aircraft with the ADD's development of the KT-1 trainer and acquired jet plane technology through KAI's development of the T-50 advanced trainer.

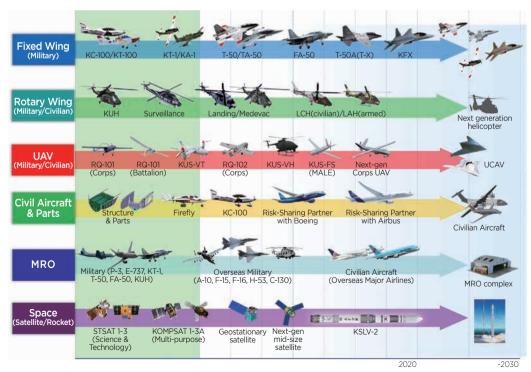
Recently, Korea's aircraft industry has made significant achievements despite the global economic recession combined with hopes for recovery and uncertainty. The Korean helicopter 'Surion'(KUH), making Korea into the 11th country to develop a helicopter in 2013. T-50, the Korean supersonic jet trainer, was exported to Indonesia in 2011. This 16 T-50 export was first export order making Korea the world's sixth country to export a supersonic aircraft.

In 2013, Korea signed the largest export deal in history with Iraq, exporting 24(1.1 billion USD worth) T-50. In addition, Thailand ordered T-50 trainers to replace aging trainer aircraft for its Air Force in 2015. FA-50 is a light combat version of the T-50 and Korea exported 12(420 million USD worth) FA-50s to Philippines in 2014

Korea's domestic aerospace industry is expected to continue to grow this year. Based on the "Basic Plan for the Development of Aircraft Industry," the blueprint which aims to place Korea among the top 7 global position by 2020, existing projects will follow the growth pattern and new projects will be launched smoothly. In particular, in 2015, the KF-X and LAH/LCH(Light Armed Helicopter,

Light Civil Helicopter) projects and other major programs were started its development. In addition, other important national aerospace industry developments such as the T-50A for the purpose of exporting to the U.S. (T-X project), KUH(Surion) based helicopter variant, commercial aircraft parts R&D, next generation middle-class satellite, KOMPSAT-6(multi purpose satellite), KSLV- (Korea Space Launch Vehicle), Lunar Exploration, UAV etc put vital power into Korea aerospace industries. If these projects are successful, Korea's goal of "producing 20 billion dollars and exporting 10 billion dollars to enter the Global 7 tier in aerospace industry by 2020" will soon be reached.

#### ▲ Mid-to-Long Term Roadmap



## Aircraft Programs Fixed Wing



#### Changgong-91 Aircraft Program

Korean air set out to manufacture lightweight aircraft and acquire system integration technology since the 1980's. Korean Air developed Changgong-91, a five-seat lightweight aircraft in 1992 and became the first Korean company to develop an aircraft in its entirety.

Through the achievement, Korean air has acquired design, analysis, certification, flight test and other abilities. Through the project, Korean air acquired type certification from the Ministry of Construction & Transportation (currently the Ministry of Land Infrastructure & Transport).



This program was performed from 1980 to 1986 under license from Northrop, Korean air successfully delivered F-5E/F fighters to the ROKAF and contributed to independent national defense.

Korean air also succeeded in localizing 15% of spare and other parts.





#### Canard Aircraft(The Firefly) Program

The canard configuration is known for its superb stall characteristics and maneuverability, so it is applied to many high performance aircraft. The development of the Firefly is expected to introduce a new design concept and extend the design's capability. The Firefly being developed is a pusher-type four-seat aircraft, whose structure is mainly

> comprised of composite materials. This aircraft will be cost-effective to manufacture, and easy and safe to fly for training, leisure and sport. The first prototype demonstrator made its maiden flight in 2001 and has successfully flown 43,000km. The Firefly has been exhibited at many airshows including the Oshkosh Air Convention. As a result of upgrades to the Firefly development program, the Firefly became Korea's first exported civilian aircraft in 2006.

#### KFP-I, KFP-II Program(KF-16)

The Korea Fighter Program(KFP) conducted with the aim of domestic aviation industry growth is a representative war potential strengthening program to acquire main stream air force fighter planes by implementing domestic licensed production through technology adoption instead of importing completed aircraft. The 1st KFP program progressed by instituting 2 sets of KF-16 fighter planes through FMS(Foreign Military Sales) as the first stage for gradually constructing the program management and production system and assembled fighter planes as stage 2 and localized components for aircraft in stage 3. In addition to the 1st KFP program, the 2nd program for additional production was also successfully completed. The 2nd program led to the establishment of the infrastructure for domestic aircraft production and affiliated infrastructures and provided the basic framework of the domestic aviation industry. Through the KFP program, over 4,000 advanced aviation technology personnel were trained, and compared to direct purchasing, 730 million dollars were saved and over 1.5 billion dollars created in



gross domestic product in addition to other tangible achievements. As the main contract party for the KFP, KAI, based on its superior technical expertise and complete program management capability completed delivery of the final aircraft for the 1st program to the ROKAF in Apr. 2000 and the 2nd program in Aug. 2004, and through acquisition of high-tech aviation technology and specialists for the T-50 supersonic advanced trainer development/production project, formed the basis for further advancing the domestic aviation industry.



# Aircraft Programs Fixed Wing



#### **KT-1 Basic Trainer Program**

KAI builds total training systems for basic and advanced jet trainers. The KT-1, the basic training aircraft, was the result of a joint development project between KAI and the Korea's Agency for Defense Development(ADD). The partnership has served the needs of the Korea Air Force and international customers, and has been a cornerstone and motivation to make KAI a leader in military training aircraft and solution provider among aerospace companies.

It has created an all-new training concept to bring smooth transition from primary and intermediate to advance training for today's front-line fighters. The KT-1 is a high performance turbo-prop aircraft enhanced with features that distinguish it from other conventional basic training aircraft. The KT-1 delivers the most effective training solution for multi-mission requirement through the Ground Based Training System(GBTS) which provides a comprehensive training program to provide military student pilots with primary to intermediate and advance pilot training capability, all in one package. By employing the KT-1 straight-through training system, the cost

of training a student pilot can be significantly reduced and substantial savings can be realized from the shortening of training time as well as the reduction of training failure rates of student pilots. The KT-1 is a multi-role aircraft designed to gain and maintain superiority in basic training and light attack mission, employing the latest technology to meet the diverse requirements. The KT-1's superiority is achieved through a mixture of excellent aerodynamic characteristics, state-of-theart avionics suite and subsystem along with weapon delivery capability. KT-1 also exported to Turkey(40 KT-1T) in 2007, Indonesia(17 KT-1B) in 2001, and Peru(20 KT/A-1P) in 2012.

The KA-1, which is light-armed version of KT-1, was jointly developed by ADD and KAI by adding an improved radar and hard points for armaments. An agreement to mass manufacture the KA-1 was made with Korea's DAPA(Defense Acquisition Program Administration), with the first aircraft being deployed to the Korean Air Force in 2005. The KA-1 currently performs forward air control, surveillance and reconnaissance, and light combat roles.







#### **KC-100 Aircraft Program**

KC-100 is the first Korean civil aircraft developed by KAI. This small-sized aircraft boasts a 315 horse-power engine and seats four passengers. Its maximum speed is 363 km/hr, and it can travel up to 2,020km. This distance covers a single flight from Seoul to any region in Japan, or some major cities in China, or parts of Southeast Asia, Built with new material carbon composite, the aircraft is light, and it has been mounted with stateof-the-art engine power control mechanism which improves fuel-efficiency. Also, its LCD integrated glass cockpit provides excellent efficiency in piloting, and the ergonomic interior provides a comfortable ride for both pilot and passenger. The KC-100 is expected to be used for various purposes including transportation, pilot training, forest fire surveillance, and seacoast patrol.

In 2014, Korean government and the U.S. Federal Aviation Administration (FAA) signed to expand the range of Bilateral Aviation Safety Agreement (BASA) for part 23 class,



which make Korean-made small airplane can be exported to the US market. This amended BASA will serve as the foundation for exporting Korean-made small airplane to the overseas market and for safety certification.

The KT-100, which is a remodeled version of KC-100, was delivered to Korean Air Force for a new training aircraft in 2016. By putting into service of KT-100, All levels of ROK Air Force pilots - from beginner to skilled - can train in a indigenously developed aircraft such as KT-100, KT/KA-1, T/TA-50, FA-50.

# Aircraft Programs Fixed Wing



#### T-50 Supersonic Advanced Trainer Program

The T-50 is a next-generation fight pilot trainer that incorporates state-of-the-art advanced technologies and avionics. The program was launched in 1997 and the T-50 made its maiden flight in August 2002 and a successful supersonic flight in February 2003. T-50 development was finished after 1.400 flight tests and the 1st production aircraft was delivered to the ROKAF in 2005 after a production contract was signed in 2003. The T-50 is currently in operated by the ROKAF for advanced pilot training and is part of the Total Training System along with Ground Based Training System(GBTS). ROKAF's training analysis revealed that the T-50 to reduce 20% training time, 30% cost, and vield a 40% increase in pilot skill level.

KAI is partnering with Lockheed Martin Aeronautics Company for joint marketing of the T-50 and the two companies are marketing the aircraft together to potential international customers. The T-50 is considered as the most advanced supersonic trainer: With its fighter-like system and performance and the latest GBTS, T-50 is an optimum platform for next generation fighter pilot training. With the first export of 16 T-50 to Indonesia, Korea has become the sixth country in the world to export supersonic aircraft. In 2013, Korea signed the largest export deal in history with Iraq, exporting 24(1.1 billion USD worth) T-50. In addition, Thailand ordered T-50 trainers to replace aging trainer aircraft for its Air Force in 2015. The TA-50 is the Lead-in Fighter Trainer(LIFT) version of the T-50 with a multimode radar, swing role capability of intercept and Close Air Support(CAS) and key A/



A and A/G weapons. The aircraft also can meet tactical mission requirement as a Light Combat Aircraft(LCA).

Currently, KAI and Lockheed Martin are jointly developing the advanced T-50A, a variant of the T-50 trainer in order to win the U.S. government's 'T-X Project', a project driven by U.S. Air Force for replacement its aging trainer fleets including its air force, fakers and the navy's requirements. In Jun. 2016, Both partnership companies, KAI & Lockheed Martin, succeeded in T-50A's maiden flight which is the first of its kind especially among the T-X candidate aircraft fleet.



#### FA-50 Supersonic Light Combat Aircraft **Program**

The FA-50 is the LCA version of the TA-50. which made its maiden flight in 2011. The FA-50 has a radar that has been increased in range from the TA-50's over 100km, and has the capability to deliver precision guided bombs, engage in defensive maneuvers, and perform night time missions. In 2014, 420 million dollars worth of 12 FA-50s were exported to the Philippines.

#### **KF-X Program**

KF-X aims to replace ROK Air Force's aging F-4, F-5 fleets by developing suitable fighters for the future battlefield operation concepts. This project will take 10.5 years-development period and 16 billion USD for budget to develop medium-sized fighters indigenously for the ROK Air Force. The Defense Acquisition Program Administration(DAPA) launched the KF-X project in earnest by signing the main agreement with Korea Aerospace Industries(KAI) in 2015. The system development will be completed by the first half of 2026, and the deployment will be started on the second half of 2026. To prevent any vacuum in the air force, the initial mass production will be completed by 2028, and the follow-up mass production will be carried out as planned. This project has been conducted as an international joint research project and developed under the leadership of KAI. In Jan. 2016, KAI signed an agreement on the joint development of KF-X with the Indonesian Department of Defense and PT Dirgantara Indonesia (PTDI), the Indonesian state-run aviation company. Indonesia's investment will amount to 20% of the Korean fighter system development funds, and it will receive a prototype and various technical data.



FA-50

Furthermore, the Agency for Defense Development(ADD) plans to possess independent performance improvement abilities for major equipment, such as the development of the Active Electronically Scanned Array(AESA) radar and system integration. Hanwha Thales signed with ADD for AESA radar development In April 2016. Hanwha Thales plans to produce a model of the AESA and that this will be used in operational tests with the ADD. Recently. General Electric(GE) was selected as the preferred bidder to supply engines for KF-X fighter jets in May 2016. GE's F414-GE-400 engine will be amounted on KF-X fighters.

The KF-X Project's system development has twofold goals. One is to independently fill the demand for the air fighting power of the Korean Air Force starting in 2020 by developing a Korean fighter with a medium level performance. The other goal is to advance to the international market for fighters of the same class.



# Aircraft Programs Rotary Wing



#### 500MD Helicopter License Production Program

Korean Air manufactured the 500MD from 1976 to 1988 by license. It has significance as the first aircraft production project in Korea. Through the project, Korean air acquired the manufacturing technologies for helicopters including the main rotor blade and localized 42% of the parts. Also, Korean air produced 80 items of stock parts to support military supplies, and exported 502 body assemblies to the USA. Korean Air and Huges also jointly performed a project to upgrade 500MD helicopters in 1987. This program greatly enhanced the 500MD's performance by increasing engine power, upgrading the main rotor, mounting the latest navigator, communicator, radar warning system and adopting all-weather armament system. Korean air acquired the technologies for systems integration and functional test abilities through this program.



#### UH-60 Helicopter License Production Program

The UH-60 manufacturing program was carried out from 1990 for 10 years to achieve independent national defense according to the government's plan to reinforce combat strength. Through this program, airframe and engine parts were manufactured and various components were successfully localized by means of organizing subcontractors. The program



also contributed greatly to the foundation of the domestic aviation industry and acquisition of aircraft developing technologies. Korean air secured manufacturing technologies for sheet metal, machining, bonding, plumbing by localizing manufacturing technologies and acquired engine production/test technologies. In addition, Korean air achieved a localization ratio up to 52% and successfully performed the AIP(Avionics Improvement Program) for Army, Navy, Air Force special mission support.

#### **SB427 Helicopter Program**

The SB427 is a small multi-purpose helicopter launched for joint development in 1996 by KAI and Bell Helicopter of U.S. and FAA certified in 1999. This utility helicopter is the first aircraft to be issued the type certification by the Korean Ministry of Land, Transport and Maritime Affairs(currently the Ministry of Land Infrastructure & Transport). Its development marks the advance of the Korea's aviation industry. KAI acquired sales rights for not only the Korean market but also the Chinese market as well as Asian OEM rights in 2000. It exported the first SB427 to a Chinese client thereby achieving Korea's aspiration to join the ranks of helicopter exporting nations.



#### **BO-105 License Production Program**

BO-105 License Production Program is to develop and produce small reconnaissance helicopters that can execute missions such as patrol, search, route exploitation and combat in both day and night under unfavorable weather conditions by mounting armament and electronic equipment suitable for Korean battlefields. In 1997, KAI signed with Korean government for small reconnaissance helicopter development and production based on technical importation from Eurocopter. After two years, KAI completed development and delivered its prototype to the Korean Army in 2000.



#### **KHP Program**

The KHP(Korean Helicopter Program) is a program to develop a utility helicopter suited for Korea's operational environment and to replace the ROK Army's aging fleet of 500MD and UH-1H helicopters. This indigenous development program began in June 2006 and aims for the completion by 2012. The KUH was state-sponsored by the Defense Acquisition Program Administration(DAPA) and Ministry of Knowledge Economy(currently the Ministry of Trade, Industry and Energy) costing around 1.1 billion USD. It was the biggest helicopter development project and the program lead by KAI, ADD(Agency for Defense Development), and KARI(Korea Aerospace Research Institute) and participated by 98 Korean vendors, 49 overseas companies, and 28 academic/research institutes.



Through dedicated development and strict test flights. The KUH(Surion) officially completed its development in 2013, making South Korea the 11th country in the world to develop helicopters. KAI developed variant series from KUH for police, marine landing, medevac purposes. Police helicopter acquired the Safety Of Flight Certificate and was delivered in 2013. The landing helicopter for marines was completed its development in Jan. 2016 and ROK Marine will introduce 20 landing helicopters by 2023. Meanwhile, Medevac version was succeeded its maiden flight and will to be completed its development by the end of 2016. In addition, KAI is going to develop the maritime operations, forest observation & multirole cargo, fire fighter helicopter to expand its aircraft industry infrastructure. In June 2016, KAI and Airbus Helicopter decided to jointly develop the Surion(KUH) maritime operations version aiming to export 60~90 maritime operations.



KUH for marine landing



#### LCH/LAH Program

LCH/LAH is a joint project with the Ministry of Trade, Industry and Energy (MOTIE) and Defense Acquisition Program Administration (DAPA) to develop a 10.000 lb light armed helicopter(LAH) and light civil helicopter(LCH) with a 3.6 billion USD budget by 2020. LCH is expected to be used for various missions. including emergency medical services, coastal surveillance, and passenger transportation.



LAH is intended to replace the ROK force's aging attack helicopter fleets. The Korean Government selected KAI as the LAH/LCH project developer in 2014. Whereafter, KAI and Airbus Helicopters signed an agreement to jointly develop the LCH/LAH in 2015.

Both companies have maintained a strategic partnership over the last 10 years as the European firm has joined KAI's projects from the KUH development.



LAH

## Aircraft Programs UA∨

The UAV(Unmanned Aerial Vehicle) is an unmaned aircraft remotely controlled on the ground which performs the missions autonomously or via pre-programmed flight plan. Generally, the UAV has been utilized for tactical surveillance/reconnaissance, special purposes such as target search and tracking. command & control relay, and electronic warfare and combat in the military area. The UAV is also expanding its application in the commercial area, performing duties such as remote observation, homeland security. communication relay, weather data acquisition and cartography. The Night Intruder 300(RQ-101) manufactured by KAI is Korea's first domestic UAV for reconnaissance use. The development program was completed in 2000 with KAI as the main contractor for Korea government. KAI secured the core technologies for design, manufacturing and flight test control through developing and producing RQ-101, and operating support and performance improvement projects. Also, through its preliminary research and development, KAI is accumulating development technology for various UAVs development such as next generation corps level/division level UAV, smart UAV, fuel cell

powered UAV, low-cost smart UAV, Bandi OPV,



UCAV(Unmanned Combat Aerial Vehicle) and S/W solution & test bed for UAV.

Korean Air also has been developing close-range UAVs. In 2007, KUS-7 development program had been successfully completed. And now, based on the experience, Korean Air leads UAV industry with a full line-up of various UAVs from high-tech stealthy UCAV, MALE(Medium Altitude Long Endurance) UAV and to unmanned rotorcraft.

RQ-102(KUS-FT) is the multi purpose tactical UAV assuring optimal operability in rough & mountainous terrain. RQ-102(KUS-FT) can take-off from a launcher or runway making it possible to use it in narrow regions. The landing components can be replaced with either wheel type or skid type, and during emergency, a parachute can be launched for landing. After landing, it can be retrieved through nets. Korean Air and the Defense



Acquisition Program Administration signed an agreement on the mass production of the RQ-102, which will be deployed for division reconnaissance missions. The RQ-102 was developed in November 2014 after four years of research, received the determination of its battle eligibility after an operation test in 2015, and obtained the 1st UAV Airworthiness Type Certificate in Korea(Oct. 2014). RQ-102(KUS-FS) is going to be delivered to ROK Army as divisional-level UAV from 2016 to 2020.



In 2011, Korean Air developed the world's second tilt-rotor KUS-TR(currently KUS-VT), began to co-develop with KARI. The KUS-VT takes off like a rotary aircraft and flies like a fixed wing aircraft with VTOL(vertical takeoff and landing) capability. Korean Air is preparing to venture into the global market for both civilian and military customers.

Korean Air is also developing the KUS-FS which is high-performance Strategic MALE UAV and the KUS-VH. unmaned 500MD helicopter project, in cooperation with the Boeing. With these expertise in development of UAVs, Korean Air is expanding its business field to next generation stealthy UCAV, KUS-FC, for various future customers.

In addition to this, Korea has many UAV companies such as Firstec, Hankuk Carbon, Hanwha Techwin, Uconsystem, Sungwoo Engineering etc. Especially, Uconsystem has focused on the UAV business since establishment. For integrated surveillance reconnaissance system, Uconsystem have



developed and produced various UAVs such as RemoEve series, Remocopter, T-Roter, RemoH, Aerostat and GCS, FCC, RTVTS and Simulator. Uconsystem exported ground control stations for UAE in 2004 for the first time in Korea and was selected the battalion class UVA(RemoEye-002B) supplier for Korean Army in 2013.

Currently, Korean UAV suppliers have also focused on the civilian purpose. Remo-Farm, Remo-H (Uconsystem), HAD-10(Hanwha Techwin) are specifically designed for agricultural purpose with auto-flight system.

Korean government has decided to induce the initial market formation by carrying out public pilot projects in monitoring, delivery, and relief areas starting in 2016, including the inspection of energy facilities (such as power and gas) and drone-based post office doorto-door delivery. Furthermore, to institutionally support the creation of demand, the Korean government plans to prepare standards for specifications and stability and to implement the priority procurement of good products. To build the foundation for the UAV industry. the government will also encourage the establishment of special-purpose corporations to operate UAVs and hold forums to invite investments in these products.

Additionally, the Korean government has designated UAVs test-flight area around Goheung aviation and flight test center(in Goheung, Jeollanam-do province), which will be built in 2017 to support its industry.



# Aircraft Programs Engine and Maintenance Program

Hanwha Techwin(formerly known as Samsung Techwin) is one of the world' premier gas turbine engine and components repair and overhaul companies. Based upon its successful track record, it provides comprehensive repair, overhaul and test services for various types of engines. Hanwha has the technical capability, equipment and expanded manpower to fulfill all of its customers'needs. Hanwha Techwin manufactures major parts for various gas turbine engines, and assembles them into engines under OEM licenses. Hanwha's experience includes manufacturing and production assembly of the F100, F110, F404, T700, T700-701K, LM500, LM2500, PPU, K-77 APU and HUH APU gas turbines. Engines for the ROK government and other customers. In 2004. Hanwha began manufacturing and assembly production of the F404 and F110 engine for the ROK Air Force as well. As a sole source of engines for GE. Hanwha manufactures the LM2500 LMT(Low Pressure Turbine) modules and supplies them to GE. Since 1984. Hanwha has successfully supplied engine components to other OEM manufacturers. Hanwha has knowledge of the entire engine as well as its components. The combination of its manufacturing technology and MRO technology enables it to provide in-depth repair services, as well as one-stop services to customers.

It has been selected as the best supplier by its customers for its excellent performance in terms of delivery and quality. Furthermore, its parts manufacturing sales volume has enjoyed an annual average increase of over 10%. Hanwha started out in parts manufacturing but is now moving toward becoming an engine module supplier and engineering provider for new aircraft engines.

Its accumulated engineering and manufacturing experience will transform the company into a main engine partnership company.

Since beginning the J85, T53 aircraft engine overhaul business in 1980, Hanwha has carried out maintenance, repair and overhaul of over 5,000 domestic and foreign military engines with outstanding results. Building on business experience, the company has expanded its business scope over the years to licensed production of engines for government projects such as the UH-60 helicopter(T-700 engine), the KF-16 fighter aircraft(F100-229 engine), the F-15K aircraft(F110-129 engine) and the KDX-II/KDX-III battleship(LM2500 engine). Hanwha Techwin is currently participating in the GEnx(GE Next Generation) project. GE' project to develop a next-generation aircraft engine. Development of the GEnx engine, which will power the B787 and B747-8, Boeing' nextgeneration commercial aircraft, is currently being jointly carried under GE' initiative and participation of numerous global companies. Hanwha Techwin has provided to KAI the F404 aircraft jet engines which is mounted on T-50 jet trainer and FA-50 light combat aircraft.

In Dec. 2015, Hanwha Techwin won 3.8 billion USD RSP(Risk, Revenue and Sharing program) contract to supply aircraft engine parts to P&W(Platter and Whitney) until 2061.

Hanwha Techwin also signed with Korea Aerospace Research Institute (KARI) to supply 75 ton-class liquid fuel rocket engines for the state-led Korea Space Launch Vehicle II (KSLV-II).



# Aircraft Programs Aerostructure Manufacturing a Joint Development Program

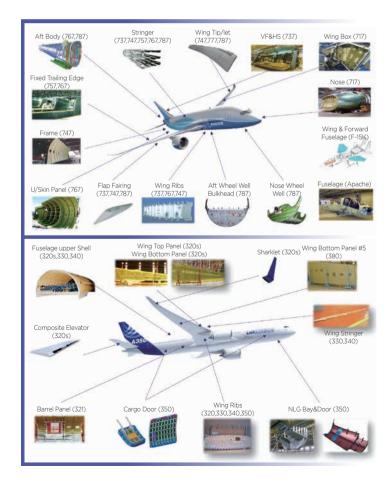
In the beginning of aerospace industry in Korea, many korean companies were started as parts subcontractors for overseas companies. By accumulating technologies through licensed production program and R&D, Korea developed its indigenous aircraft such as T-50 jet trainer, FA-50 light fighter, KT(A)-1, KC-100 and has supply various civil aircraft parts. Now. Korea has participated RSP program and conducted subassemblies of wings, fuselage with global leading companies.

KAI has been manufacturing aerostructures packages for the world's leading aerospace companies such as Boeing, Airbus, Bell, Lockheed Martin and Bombardier by capitalizing on its advanced technology, facilities and human resources. KAI has been producing various fuselage and wing components for commercial airliners including the iumbo ietliners B747 and A380, as well as aerostructures for military aircraft such as A-10(outer wing panel), AH-64(fuselage), C-130(nacelle), F-15(fuselage & wing), F-16(fuselage) and P-8(racked wing tip). KAI has been also supplying the fuselage of Bell helicopter.

In addition, KAI, as a Tier 1 partner of Airbus and Boeing, designs, produces and delivers major aerostructures. In recognition of its quality, punctuality, and customer

satisfaction activities, KAI has been selected by Airbus as one of its Top 20 Suppliers, and by Boeing as the Supplier of the Year in 2010 and 2012

KAI now possesses the infrastructure to produce the main wings of medium and large sized aircraft. In addition to winning the orders for A350 wing structures, A320 wing top panels, and B787 wing and fuselage connection parts, the company won the order for A320 wing bottom panels(WBPs).



Also, KAI signed a major export contract with Boeing, agreeing to supply B737 empennage, B777 FLE(Fixed Leading Edge), B787 PBH(Pivot Bulkhead) and other major structures until 2024. KAI has expanded its aerostructure business based on cooperation with the world's leading aerospace companies and seeks to grow into an aircraft manufacturer of its own right.

Korean Air has designed and manufactured wing and fuselage structures for the Boeing 737/747/767/777/787, Airbus 320/330/340/350/380 since 1980s. It is now the partner of global aircraft manufacturers such as Boeing and Airbus, participating in the development of next generation aircraft such as the B787(Aft Body, After Wheel Well Bulkhead, Flap Support Fairing, Nose Wheel Well, Raked Wing Tip, Stringers) and A350XWB cargo door(AFT Cargo Door, Bulk Cargo Door, FWD Cargo Door), Especially it has modernized and automated the manufacturing process for composite material through introduction of high-end equipment and facilities. Also, using its indigenous technology, Korean Air developed the Airbus A320 Sharklet/A330 NEO Sharklet, the Boeing 737 MAX Winglet and Embraer ERJ 170/190 Fuselage. Korean Air has been recognized for its excellence in aerospace technology



from its overseas partners including Airbus, Boeing, Spirit, Triumph, Latecoere, Fuji Heavy Industries, Kawasaki Heavy Industries.

Moreover, with specialized know-how and optimized facilities. Korean Air is recognized as internationally specialized hub for the Avionics & Components maintenance for both commercial and military aircraft. Korean Air is securing its global customers like Boeing, GE Aviation, P&W, Lufthansa Technik, United Airlines, China Airlines/China Cargo Airlines/China Eastern Airlines. Thai Airways. Uzbekistan Airways.

Recently, Korean small and medium-sized businesses such as ASTK, Hize Aero, SAMCO have rapidly exported aerostructure to overseas aerospace leading companies. Thanks to the accumulated technology, timely delivery and quality management, Korean SMEs are expected to secure more orders and cooperations from global market.











# **Aircraft Programs** MRO, Upgrade & Modification Program

Korea has a complete range of MRO capabilities for both military and civilian aircraft

In terms of military aircraft, Korean Air performs depot maintenance for A-10, C-130, CN-235, F-4, F-15, F-16, F-406, KC-130, P-3C, P-3C, RC-12 etc and upgrade/ service life extension program for F-15, F-16, A-10, Lynx, UH-60, P-3C etc. It also preforms depot maintenance for helicopters such as Lynx, ALT-III, CH-47/53, UH-60, UH-1, 500MD and others. Their major customers are ROK Air Force/ Army/Nany and U.S. Air Force/Amy/Navy.

In 2012. Korean Air became the first airline company to perform depot maintenance for the KC-130J U.S. Marine Corps aerial refueling contract with the Defense Acquisition Program Administration(DAPA) to upgrade the performance of the P-3C maritime patrol aircraft.

Korean Air also built a cooperative system with Boeing to support depot level maintenance of the F-15K, the Korean Air Force's main force fiahter.

Korean Air will provide better MRO services for military aircraft with know-how acquired in commercial aircraft support and the introduction of the 'Performance Based Logistics' maintenance system.

Korean Air also performs heavy maintenance for over 120 commercial aircraft per year with a thousand experts in all areas of aircraft maintenance and facilities including a 3-bay hangar, an environment friendly paint hangar and engine run-up facility. It performs In-Fight Entertainment System modification and cabin upgrades for Boeing the 747-400 and 777s, and passenger-to-freighter conversion of Boeing 747-400s. The paint hangar, an advanced technology facility equipped with automatic ventilation systems and paint sludge and swage filtering systems, performs full painting of over 40 aircraft a year.







For United Airlines, it has been providing heavy maintenance services, IFE modification and full painting services. It also supplies high-quality maintenance service to many other international airline customers such as Grand Star, GECAS, Korean Air, Southern Air, Uzbekistan Airways, World Air etc. Korean Air is now growing into an international MRO service provider in the global marketplace.

The E-737 Airborne Early Warning and Control (AEW&C) was delivered to the Republic of ROK Air Force to improve the Air Force's airborne surveillance and communications system, and battle management capability. ROK Air Force mounted the Boeing B737 commercial aircraft with MESA Antenna, and communications/navigation mission systems to augment ROKAF airborne control capabilities. In addition, KAI is focusing its full capacity in its long

term core business strategies which are upgrade and modification programs for fixed-wing and rotary-wing aircraft such as the LYNX upgrade modification project and the FLIR mounting renovation project. KAI is a comprehensive aircraft manufacturing company that develops and produces aircraft and performs MRO projects which call for high-technology and quality management capabilities. In particular, the advanced maintenance program Performance Based Logistics(PBL) system will ensure the safe operational maintenance of the KAI-produced aircraft during its life-cycle.



Korea has two major airlines(Korean Air, Asian Airlines) and five Low-cost carriers(LCC). Despite the rapid growth of air lines, MRO facilities in Korea can not meet their demands. For that reason, domestic LCCs depend on overseas foreign MRO shops by spending more money and times. To meet the growing domestic and overseas MRO demands, the Korean government is pushing ahead with the plan to build a MRO complex. The government expects, after the MRO complex build up in Korea, it would reduce not only cost and lots of time but enhance safety of aircraft operation.

### Aircraft Programs Domestic Airline Fleets

According to the Ministry of Land, Infrastructure and Transport (MOLIT), the number of registered domestic airlines' aircraft had been steadily growing in Korea and reached 369 in 2017. The total number of registered civil aircraft in Korea is 792 and domestic airlines account for 46.6% (369) among them last year.

Korean airline companies, including low-cost carriers (LCCs) and large airlines, such as Korean Air and Asiana Airlines, are purchasing aircraft. The LCCs intend to expand their size and profitability through new routes, while the large airlines intend to increase their profitability by converting their fleet to state-

of-the-art aircraft. The Korean LCCs brought in a total of 30 aircraft in 2016 and 2017. Jeiu Air introduced six new aircraft in 2017 and plans to operate 40 aircraft by 2020. Jin Air, the first domestic LCC to operate a long-distance route (Incheon-Hawaii), introduced six aircraft. Eastar Jet and Tway Air introduced three new aircraft. respectively. The Busan-based LCC. Air Busan, purchased two aircraft.

The major airlines, Korean Air and Asiana Airlines, are also actively purchasing new aircraft Korean Air obtained 8 new aircraft in 2017, increasing its fleet to 164, based on the strategy to reduce both transportation costs and pollutants through the introduction of cutting edge aircraft. In April 2015, Korean Air announced that it would introduce a total of 100 next-generation aircraft between 2019 and 2025, including Boeing B737 MAX-8 and Airbus A321neo, Asiana Airlines also introduced four aircraft, increasing its fleet to 84 in 2015.

The increase ratio of civil aircraft has hold 10.5% for these five years and the number of aircraft is expected to exceed 1.000 in 2020.



Category	2016	2017	note
Domestic/Overseas Airlines	348 (+45.7%)	369 (46.6%)	+21
Small Transportation Business	33 (+4.3%)	30 (3.8%)	-3
Aircraft Use Business	172 (+22.6%)	172 (21.7%)	0
Non-business purpose(incl. Government)	208 (27.3%)	221 (27.9%)	+13
Total	761 (100%)	792 (100%)	+31

### **Space Programs**



orea's space program began with its development of the 'KITSAT-1', a small scientific research satellite, in the early 1990s, 30~40 years later than the leading countries considering that the US and Russia began their space programs in the 1950s and Japan and China in the 1960s. Although the Korean space industry's history is not long but Korea invests to the space programs in accordance with its mid-long term development plan. The government is establishing and implementing plans to activate the industry under the goal of cultivating the aerospace industry into the nation's driver of growth in the 21st century.

Since developing the 'KITSAT-1' satellite in 1992. Korea has launched 11 satellites into space, through which it acquired a high level of satellite technology. Despite the short history of its space program, Korea's space technology has displayed unprecedented growth, developing the 'KOMPSAT-2' (Korean Muti-Purpose Satellite) to become the world's 7th country to develop a 1m-resolution satellite. In 2009, Korea completed construction of the Naro Space Center and acquired all 3 requirements - satellite, space center, and rocket - for satellite launching through the successful launch of the Naro rocket in 2013. The Korean government plans to develop a rocket built entirely with Korean technology by 2021. To achieve this goal, it is currently seeking to attract participation of various industries, which in turn will greatly facilitate the development of the Korean space industry. The Ministry of Science and ICT has the long term space development plan. According to space plan, Korea will have indigenous 75t



rocket engine and will be launching that rocket until 2012. Also, will launch capable of 3 ton class satellite by clustering type rocket after 2030.

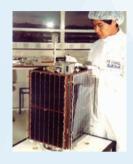
For the satellite program, reorganize and add some more satellite. Existing program, GEO sat program, KOMPSAT (Multi-Purpose Sat.) program and KOREASAT (Broadcasting Sat.) will ongoing and add more satellite. GEO sat will add 13 or more satellite, KOMPSAT will add 12 more sat. Also established new satellite program. called Next-Gen middle class satellite program and covering in various area such as surveillance of forest and water. It will be launching from 2019 and 19 satellite until 2030 and more 41 satellite will be launching until 2040.

Next-Gen small satellite sat will be launching from 2018 and 8 more satellite until 2040. For the space exploration, moon orbit satellite will launch 2020 and lunar orbiter in 2025. Also Korean government will research indigenous satellite navigation system called KPS and preparing disaster by satellite system.

## **Space Programs** Science and Technology Satellite Program

#### **KITSAT**

Korea's development of satellites began with the launch of the KAIST Satellite Research Center's KITSAT-1 satellite by an Ariane rocket from the Kourou Space Center in French Guiana on



August 11, 1992. The launch of KITSAT-1 enabled Korea to become a satellite-operating country. KITSAT-2 was equipped with an Earth Imaging System that used domestically produced CCDs, a Low Energy Electron Detector, an Infared Sensor Experiment System, a Digital Store and Forward Communication Experiment System, and a next-generation satellite computer.

KITSAT-3 weighed 100kg, more than double the KITSAT-1 and KITSAT-2, and had one solar panel on each side, and employed a 3-axis stabilization system for attitude control.



#### STSAT

STSAT-1(Science and Technology Satellite-1) was developed for the purpose of astronomical and space environment observation. STSAT-1 was successfully



launched in 2003 and ended its operation in 2009.

STSAT-2 is a 100kg class low earth orbit satellite developed from 2002 to 2005. Unlike the geostationary satellites that rotate above the equator on the geostationary orbit(36,000km) one to two times per day and

are used for commercial and military purposes, the low-orbit satellite STSAT-2 rotates around 300~1500km above earth almost hourly and is appropriated for weather forecast and



geological exploration purposes.

STSAT-2 was to be launched into space on the indigenously developed Naro(KSLV-1) rocket. But it was lost due to the two Naro rocket's explosions, each in 2009 and 2010. Therefore, the earth's atmosphere Observation plans to use STSAT-2 failed, and on January 30, 2013, on the third and last launch of Naro(KSLV-1) rocket, the STSAT-2C was launched instead of the STSAT-2

STSAT-3 is the 6th satellite to be developed at the KAIST Satellite Research Center, STSAT-3 is Korea's first infrared space observation satellite.



STSAT-2C launched in 2013, it circles Earth every 103 minutes to check if the satellite has entered orbit and to explore space environment.

# Space Programs -Korean Multi-purpose Satellite Program

#### **KOMPSAT** (Arirang)

The mission of Korea's first multipurpose satellite KOMPSAT-1(Arirang-1) was terminated in January 2008 eight years after its launch on Dec. 21, 1999. The KOMPSAT-1 circled the earth 43.000 times at an altitude of 685 km during

its mission and photographed and transmitted around 47,000 satellite images to Korea.



The KOMPSAT-2(Arirang-2) is an earth observation satellite equipped with an MSC(Multi-Spectral Camera) able to acquire 1 m resolution panchromatic images and 4 m resolution color images.

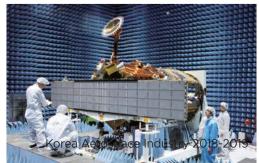


The KOMPSAT-2 was converted to a research satellite in October 2015 after successfully carrying out its mission for nine years and will be used in the research and development of next-generation satellite technologies such as orbit change and image quality testing until its life expires due to loss of communication, etc. The KOMPSAT-3(Arirang-3), launched in May 2012, is equipped with a sub-meter class EOC for high-resolution earth observation. The satellite body and parts of KOMPSAT-3 were not only developed in Korea but also designed, assembled and tested in Korea.



The KOMPSAT-5(Arirang-5) observes the Korean Peninsula four times a day. The transmitted image data are used for public safety, natural disaster forecasts, land/resource management and environmental monitoring. The KOMPSAT-3A(Arirang-3A) was made by domestic companies, KAI, KAL, Hanwha, AP Aerospace, Doowon Heavy Industry, and Satrec Initiative in cooperation with the KARI. KOMPSAT-3A operates in the sun's synchronous orbit at an altitude of 528km and passes over Korea twice (day and night), photographing the Korean Peninsula for up to 50 minutes each day.

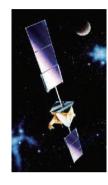
The KOMPSAT-6(Arirang-6) is scheduled for launch in 2019, the Korea Multi-Purpose Satellite KOMPSAT-6 will be equipped with the SAR developed and manufactured in cooperation with the domestic industry. KOMPSAT-6 will be mounted with an SAR with 0.5m-class resolution, a fourfold improvement compared to the 1m resolution of the first SAR mounted in KOMPSAT-5(Arirang-5).



### **Space Programs KOREASAT Program**



KOREASAT-1 missed its original orbit by 6,000km when one of the nine support rockets failed to properly detach. It successfully entered full orbit by ejecting fuel, but its service life was reduced from the original 10 years to 4 years and 4 months.



KOREASAT-2 was led by KARI and conducted from 1993 to 1998 and was successfully launched in 1997, but failed to conduct observations. Later, in 1998, a second launch was successfully carried out, with successful observation of ozone layer distribution and X-rays over the Korea Peninsula.

KOREASAT-3, unlike KOREASAT-1 and 2, had 4 motion antennas that allowed it to switch service areas from the ground. This enabled



it to provide relav services to as far as Southeast Asia. In order to maintain the orbit due to selling KOREASAT-3, KT is scheduled to launch KOREASAT-5A and KOREASAT-7 at the end of the 2016.

KOREASAT-5 was the first satellite to be developed jointly by the military and commercial sectors, and was developed through Alcatel of France and launched in 2006 from international waters near the equator by Sea Launch of the U.S. KOREASAT-5 replaced KOREASAT-3 and was the result of knowhow in satellite operation accumulated over the years. It strengthened the status of Korean commercial satellites by providing a multitude of services including high-speed data communication and video services.

KOREASAT-6 to provide direct broadcasting and to enable internet services in mountainous and remote regions. KOREASAT-6 is placed in geostationary orbit at an altitude of 36,000km. It is used for SkyLife satellite broadcasting service.

KORFASAT-8 was launched aboard an Ariane 5 launch vehicle by Arianespace in February, 2014 and will be operated its service for 15 vears. Koreasat-8 provides multiple services including direct-to-home and cable television distribution, VSAT services, data networks, and telecommunications services across Southeast Asia and the Sub Saharan Africa region.

Koreasat-7 is designed to provide improved throughput and wider coverage over Korea, Philippines, Indochina, India, and Indonesia. Koreasat-7 enables a full range of video and data applications, government communications and VSAT networks.



# Space Programs Communication, Ocean and Meteorological Satellite Program

#### COMS (Cheollian)

Communication, Ocean and Meteorological Satellite, COMS(Cheollian-1), is Korea's first geostationary orbit satellite jointly developed by KARI and French aerospace company Astrium with support from the Ministry of Education, Science and Technology; Ministry of Land, Transport and Maritime Affairs; Korea Meteorological Administration; and the Korea Communications Commission. Development began in 2003, with KARI playing the major role. COMS, which is Korea's first and the world's seventh geostationary orbit satellite, was successfully launched in 2010.



After completing tests, it began providing weather observation services to the public in 2011.

COMS circles the earth at with a velocity equal to the earth's rotational velocity at the altitude of 36,000km above the equator providing satellite communication and performing ocean and weather observation missions.

With the successful launch of COMS, Korea has become the seventh country in the world to operate a weather satellite. COMS is expected to contribute to strengthening Korea's weather observation system by providing weather information once every 15 minutes at normal times and once every 8 minutes during emergency periods.

#### GEO-KOMPSAT-2 (Cheollian-2)

The GEO-KOMPSAT-2(GK-2) satellites will inherit the mission of COMS-1(Cheollian-1) to observe the weather and ocean environment and strengthen the national capability to monitor the environment around the Korean Peninsula. Two satellites will be developed: a weather and space weather observation satellite (GK2A) and ocean and environmental observation satellite (GK2B).

The weather observation capability of GK2A will be more than four times greater than that of COMS, while the observation interval and observation channels will both be improved more than threefold. The satellite is expected to greatly improve the accuracy of precision weather observation and weather forecasting, as well as enhance the capability to monitor and forecast unusual weather conditions in the Korean Peninsula and the Asian region.





# **Space Programs** Launch Vehicle Program

#### Korea Space Launch Vehicle(KSLV)-I

The Korean National Science and Technology Council issued a plan for a National Space Program which could be an important milestone in the history of science in Korea. The plan addressed the development of new space launch vehicles named Korea Space Launch Vehicle(KSLV). The KSLV program consists of two consecutive low-earth orbit(LEO) launch vehicle developments: the KSLV-I and KSLV-II. The payloads are a 100kg-class satellite for KSLV-I and a 1.5 ton-class satellite for KSLV-II. The KARI has taken responsibility for the KSLV development process, and the KSLV program office in KARI was newly re-organized to include many experienced rocket engineers. KARI already successfully carried out the development of single-staged sounding rockets(Korea Sounding Rocket-I: KSR-I), twostaged sounding rockets(Korea Sounding Rocket-II: KSR-II) and KSR-III. While both KSR-I and KSR-II had a solid propellant rocket engine, KSR-III had a liquid propellant rocket engine, which was Korea's first step in liquid propellant rocket engine development.

KARI built KSLV-I as a space development project of the Ministry of Education and Science Technology(Currently, the Ministry of Science, ICT and Future Planing). KSLV-I project aims to build a space launch vehicle to launch a 100kgclass STSAT into the low-earth orbit with a perigee of 300km and an apogee of 1500km. Through this development project KARI designed, manufactured, tested and launched the launch vehicle and secured orbit insertion technology and launched operation technology. On January 30, 2013 during the third trial, the STSAT-2C was successfully launched on KSLV-I from Naro Space Center in Goheung, and was placed on the lowearth orbit. With this success, South Korea became the world's 11th country to launch a launch vehicle with its own indigenous technology.



#### Korea Space Launch Vehicle(KSLV)-II

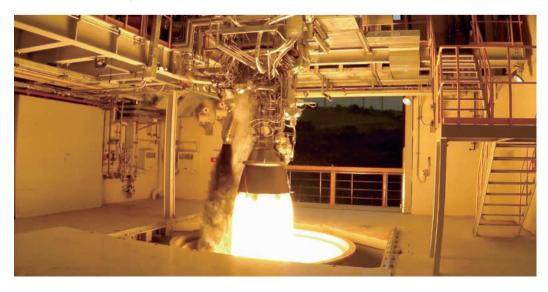
The Korea Space Launch Vehicle (KSLV-II) program is a national space development project with the budget of 1.7 billion USD over ten years. Its goal is to develop an independent space launch vehicle capable of putting a 1.5 ton multi-purpose satellite into low earth orbit at 600~800km altitude by 2020.

KSLV-II is a 3-stage launch vehicle consisting of 1st stage with 4 clustered 75-ton liquid rocket engines, 2nd stage with a 75-ton liquid rocket engine and 3rd stage with a 7-ton liquid rocket engine under parallel development. The KSLV-II program consists of 3 continuous phases. Phase 1 (Mar. 2010~Jul. 2015) activities include reviews of preliminary and system designs, construction of propulsion test facilities and ground test of 7-ton liquid rocket engine, which are successfully accomplished. During the Phase 2 (Aug. 2015-Mar. 2018), currently underway, the detailed design of engine and the launch vehicle, ground test of 75-ton liquid rocket engine and launch of Test Launch Vehicle (for the verification 75ton LRE performance) will be completed. The final Phase 3 (Apr. 2018-Mar. 2021) aims



the completion of the 3-stage launch vehicle system development effort, which will be followed by two trial launches to confirm the successful program accomplishment.

Hanhwa Techwin have provided the 75ton & 7 ton liquid rocket engines, which is a core technology for the of KSLV-II. Recently, KARI succeeded in a ground thrust test for the 1st and 2nd stage rocket engines, 75-ton class, for 75 seconds duration in Jun 2016 and will extend the combustion time up to 140 seconds.



# Space Programs Naro Space Center Program

The NARO space center is Korea's first space vehicle launch base built on Oenaro island, South Jeolla Province to launch satellites into space using Korean technology.

Construction began in 2000 and completed its facility build up in 2009. With completion of the NARO space center, Korea joined the ranks of the space development leaders by becoming the world's 13th nation to possess a space center. As a facility to launch indigenously developed satellites and launch vehicles from Korean territory, the space center has a 2km safety zone and meets all other conditions required to launch rockets into space.

The Naro Space Center features state-of-theart facilities including a launch complex, a satellite integration and test center, a launch vehicle assembly building, a solid rocket motor building, a launch control building, an optical equipment building, and the Space Education/ PR Center.

Key missions and functions of the Naro space center include final assembly and inspection of launch vehicles and satellites, launch preparation and execution, flight safety management and control, remote measurement of fight status data,

development of launch technology-related measuring technology, rocket engine development tests and launch-related

performance tests. Since the successful launch of KSLV-I in 2013, propulsion test facilities built for the development of the KSLV-II within the Naro Space Center. These facilities are equipped with facilities for ground combustion tests and real-propellant tests. As the first facility of its kind in Korea, the propulsion test facilities are used to test the engines for the KSLV-II on a continuous basis.

The Naro Space Center has been continuously upgraded as the advance base for Korea's space exploration, including expansion of the launch pad to be able to launch the Korea KSLV-II in 2020.



### Seoul ADEX 2019

(Seoul International Aerospace & **Defense Exhibition)** 



▲ Abbreviation : Seoul ADEX 2019

▲ Exhibition Period: 15~20 October, 2019 (6days)

Business Day: 15~18 October, 2019 (4days)

Public Day: 19~20 October, 2019 (2days)

▲ Venue: Seoul Airport (Located at Seongnam City, Gyeonggi Province, Korea)

#### ▲ Organized by Seoul ADEX Office

- Korea Aerospace Industries Association(KAIA)
- Korea Defense Industry Association(KDIA)
- Korea Trade-Investment Promotion Agency(KOTRA)

#### ▲ Contents

- Official Events
  - Opening Reception & Ceremony
  - Press Day
- Seminar & Conference
  - The ideal platform for gathering aerospace and industry professionals to share insights, exchange knowledge and discuss future development
- Student Day
  - For not only students but also future employees
- VIP Delegation Programme
  - A key factor in the event's growing prestige and established position among the leading aerospace and defense exhibition of the world

#### ▲ Figures in 2017

- 405 Exhibitors from 33 Countries
- 282,373 Visitors / Trade 85,229 & Public 197,144
- 77 VIP Delegations from 51 Countries
- 1,340 B2B Meetings during 2 days (Matching 73%)
- · US\$18.8 billion worth of onsite contract and contract-consultations







- 71 Outdoor Static Display (42 aircraft and 29 ground equipment exhibited)
- 12 Seminars & Conferences held with 2.652 Attendees
- Media Exposure 2,310
- Press 703

#### Exhibition Categories

#### ▲ Aerospace

- Air Defense Systems
- Air Traffic Control
- Aircraft
- Aircraft Interior
- Aircraft Maintenance
- Aircraft part & Accessory
- · Airline Service
- Charter & Leasing
- Communication Systems
- Electronics
- Engine
- Flight Control Systems

- Helicopter
- Maintenance & Service
- Navigation Systems
- Radar Systems
- Safety & Survival Equipment
- Satellite
- Security Systems
- Simulators
- Test Equipment
- Training
- Weapon Systems
- UAV





#### Defense

- Amphibious Equipment
- Armored & Unarmored Vehicles-Mobility
- Assisting & Impending Mobility
- Command & Liaison Systems
- Industrial & Logistic Support
- Management Operation
- Missile Systems
- Naval Ship & Equipment
- Peacekeeping & Crisis
- Personnel Support & Protection

- Train Clearance
- Training Simulators
- Weapons & Ammunition

#### ▲ Other

- Association
- Exhibition
- Media
- UVS

#### Contact Information

#### ▲ Seoul ADEX Office

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- E-mail: promotion@seouladex.com
- URL: www.seouladex.com

# Membership Company Introduction

No.	Company	Product	URL
1	Ace Antenna	Antenna, Avionics	www.acetech.co.kr
2	Aero Master Corporation	Avionics	www.amc21.co.kr
3	AP Aerospace(Asia Pacific Aerospace Inc.)	Satellite System	www.apspace.co.kr
4	APPIA Engineering, Ltd.	Aircraft Structure & Sub System Design, Flight Control OFP S/W Development	www.appiaeng.com
5	ASTK(AeroSpace Technology of Korea Inc.)	Aircraft Parts(Fuselage Assembly, Door, Stringer)	www.astk.co.kr
6	Busung Co., Ltd.	Aircraft parts, Jig & Fixture	www.gusungltd.com
7	C & Lee Inc.	Aircraft parts	www.candlee.com
8	COTS Technology Co., Ltd.	Avionics	www.cotstech.com
9	DACC Carbon	Carbon/Ceramic Brake Disc, Carbon fiber	www.dacc21.co.kr/ carbon
10	DAEHWA Aerospace Industries Co., Ltd.	Aircraft Parts, Jig & Fixture and Parts	www.daicoaero.com
11	DAESUNG TMC Co., Ltd.	Logistics machine, Transport machinery, Steel products, Loading facilities	http://blog.yeogie.com/ dstmc
12	DANAM Systems Inc.	Avionics	www.danam.co.kr
13	DAWIN FRICTION Co.	Aircraft & Rotorcraft Brake	www.dawinf.co.kr
14	DnM(Distribution and Manufacturing for Aerospace)	Aircraft parts	
15	DoDAAM SYSTEMS	Sumulator, Avionics, Support Equipment	www.dodaam.com
16	DONG YANG AK KOREA	Aluminum products	www.dyakk.co.kr
17	Donghwa ACM Co., Ltd	Jig & Fixture, Aircraft parts	www.dhacm.com
18	Dongjin Electric & Machinery Co., Ltd.	Alternator, Motor, Actuator, Blower, Controller & Regulator	www.djelec.co.kr
19	Dongsung TCS Co., Ltd.	Aviation Component	www.dongsungtcs.com
20	DONGYOUNG M&T	Aircraft parts, Jig & Fixture	
21	eNED Co., Ltd.	Nondestructive test	www.e-NDE.co.kr
22	Fine Precision Ind, Ltd,.	total engineering solution provider	fineind.koreasme.com
23	Firstec Co., Ltd.	Avionics, Control System, Fuel system etc.	www.firsteccom.co.kr

No.	Company	Product	URL
24	FLEX System	System performance test	www.flexsystem.co.kr
25	FOREX Co., Ltd.	Aerspace Parts, Jig & Fixture	www.forexaero.com
26	GENOHCO Incorporation	Satellite communications system	www.genohco.com
27	GigaLane Co., Ltd.	RF cable Assembly	www.gigalane.co.kr
28	GV ENGINEERING Corp.	MRO(precision machining/CNC machining)	www.gv-engineering. com
29	Hankuk Carbon Co., Ltd.	Carbon fiber, UAV	www.hcarbon.com
30	Hankuk Fiber Group	Radar dome. Canopy	www.fiber-x.com
31	Hansung ILS Co., Ltd.	ILS, Helicopter(4seats)	www.hsils.co.kr
32	Hanwha Aerospace	Engine, Component	www.hanwhaaerospace.
33	Hanwha Corporation	Hydraulic parts, Flight control actuators, Fuel systems	www.hanwhacorpmach.
34	Hanwha Systems	Avopnics	www.hanwhasystems. com
35	HIZE AERO Co., Ltd	Aerostructure Assembly, MRO, Part, Fabrication, Tooling	www.hizeaero.com
36	Huneed Technologies	airborne systems, avionics, tactical communication systems	www.huneed.com
37	HWASEUNG Material	Feul tank, Rubber meterial, Fluid system	www.hscmb.co.kr
38	Hyun Aero-Specialty Inc.	Aerostructure Assembly, Aircraft Parts etc.	www.hyune.co.kr
39	HYUNDAI-WIA Co., Ltd.	Landing Gear, Main rotor control, Pilot seat, Landing gear parts	www.hyundai-wia.com
40	Intellics Inc.	Embedded system, Avionics	www.intellics.co.kr
41	IONES Co., Ltd.	Aerspace Parts	www.iones.co.kr
42	Jail HTC	Vaccum Hardening	www.jeilheat.co.kr
43	JCA Autonomous Co., Ltd.	Aircraft Sensors	www.jca-autonomous.kr
44	JNS Co., Ltd.	Electronic system	www.jns.co.kr
45	Joil Co., Ltd.	Aircraft parts	www.joilaero.com
46	KAI(Korea Aerospace Industries, Ltd.)	Full Aircraft System, Airframe, Upgrade & Modification	www.koreaaero.com

# Membership Company Introduction

No.	Company	Product	URL
47	KCI(Korea Composites Inc.)	Aircraft parts and Assembly	www.kci.so
48	KENCOA AEROSPACE Co.	Aircraft parts and Assembly, MRO	www.kencoa.com
49	KOLON DACC Composite Co., Ltd.	Caeborn/Ceramic Brake Disc, Carbon fiber	www.kolondacc.com
50	KOMACO Co., Ltd.	Aircraft cockpot's lighting panels	www.komaconvis.com
51	Korea aerospace Assembly & Machining Ltd.	Sub Assembly, Machined Parts	www.kampm.com
52	KOREA JIG & FIXTURE	Aircraft parts, Jig & Fixture	www.kjfaero.com
53	KOREA LOST-WAX Co., Ltd	Aerospace engine parts, Fuselage parts	www.lostwax.co.kr
54	Korea Precision Machining Co., Ltd.	Aircraft parts, Jig & Fixture	www.airkpc.com
55	KOREA TESTING	Customized test equipment and sumulator	www.koreatesting.co.kr
56	Korean Air Lines Co., Ltd.	Airframe, MRO & Modification	www.kal-asd.co.kr
57	KST(Korea Surface Treatment Co., Ltd.)	Surface treatment	www.koreatesting.co.kr
58	KYUNGNAM METAL Co., Ltd.	Aluminum Extrusion and Parts	www.almac.co.kr
59	LACO(Leading Aero Company)	Airframe Parts	www.leadingaero.com
60	LAKWOO Co., Ltd.	Jig & Fixture and Parts	www.lakwoo.co.kr
61	LIG Nex1 Co., Ltd.	Avionics System	www.lignex1.com
62	MIRAE AEROSPACE	Aircraft parts	www.miraeaero.com
63	NAMYANF PRECISION, LTD	Aircraft parts	
64	Navcours Co., Ltd.	Air navigation system, Antenna	www.navcours.com
65	NDT ENGINEERING & AEROSPACE Co., Ltd.	Aircraft parts	www.ndteng.co.kr
66	NES&TEC Co.,Ltd.	UAV systems(navigation and control system, image stabilization system)	www.nesnt.com
67	Neuros Co., Ltd.	Aerospace turbo machinery	www.neuros.co.kr
68	Nexcoms Co., Ltd.	UAV	www.nexcoms.com
69	PSION DSP	Avionics	www.psiondsp.com

No.	Company	Product	URL
70	Qnion Co., Ltd.	Navigation Computer, DDS based Frq.Synthesizer, Digital Receiver, Output Filter for GEO-KOMPSAT2	www.qnion.com
71	Russian Helicopter Focus (RH Focus)	Logistic supply services	www.rhfocus.com
72	S&K Aerospace Co., Ltd.	Aircraft parts	www.snkaero.co.kr
73	SAMCO(SACHEON AEROSPACE MANUFACTURING)	Aircraft Door Systems, Wing Component Sub- Assmblies	www.samcokorea.com
74	Samyang Comtech Co., Ltd.	Aircraft Parts	www.samyangct.com
75	Satrec Initiative Co., Ltd.	Satellite System	www.satrex.com
76	SEOUL STANDARD Co., Ltd.	Rugged Notebook Computer, Minimized Computer	www.sstandard.co.kr
77	SEWOO AEROSPACE Co., Ltd.	Aerospace TUBE/PIPE Assembly	www.sewooaero.com
78	SHINBO Co., Ltd.	Embedded H/W, S/W, SUB System	www.shinbo.kr
79	SK CHEMICALS Co., Ltd.	Carbon composite	www.skchemicals.com
80	Songwol Technologies Co., Ltd.	Aerospace Wind Turbine	www.ygcorps.com
81	Soosung Airframe Ind., Ltd	Sheet Metal, Machining, Assembly, Roll Formed Section	www.soosungair.com
82	TAAS Co., Ltd.	DAU/IVI	www.taas.re.kr
83	Tops co.,ltd	Waterjet Machining, Waterjet Stripping for MRO	www.TopsWaterjet.com
84	Turbo CAM Technology	Engine parts	www.tct.co.kr
85	Uconsystem Co., Ltd.	UAV, GCS, Simulator	www.uconsystem,com
86	UI Helicopter Co., Ltd.	MOR(Helicopter)	www.uihelicopter.com
87	Unimax.co., Ltd	Avionics	www.unimax.co.kr
88	U-Tel Co., Ltd.	RF&Microwave, subsystem	www.utel.co.kr
89	YEONHAB PRECISION Co., Ltd	Aircraft cable	www.yeonhab.com
90	YoungPoong Electronics Co., Ltd.	Avionics	www.ypelec.co.kr
91	YULKOK Ltd.	Aircraft Parts	www.yulkok.co.kr
92	ZHT Co., Ltd.	Frequency sythesizer, Receiver, TWTA	www.zht.co.kr

### Ace Antenna

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▲ Company Intro:

Ace Antenna has specialized in manufacturing military communication products such as integrated radar system. based on outstanding RF technology. The firm is located at Incheon in South Korea, It's near from the Incheon International Airport, So easier to access, visit and have a meeting.

Our flagship products are Aviation antenna, Radar system, Data link system and Aerospace equipment, Apart from Defense section we also have wireless communication products such as base-station antenna and RF products in Commercial section.



Datalink System



Parabolic, Sector, Omni Antenna



ace antenna A

RF-Module & Antenna

Aerospace & Defense Systems

### **Aero Master Corporation**

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▲ Company Intro:

Aero Master Corporation is the company taking a key role in avionics and related software development in Korea. We concentrated on developing avionics, ASIP programs, ground stations, and 3D simulation systems. Since founded in 2001, we have devoted only to the aerospace industry for 15 years.

Also, We are growing into a recognized technology company in the aerospace industry through incessant technology development.





RIU



Simulator



**UAV-Pilot Box** 

#### Asia Pacific Satellite Inc.

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▲ Company Intro:

APSI(Asia Pacific Satellite Inc.) is a leading company in the aerospace industry that develops satellite bus and payload systems and satellite mobile phones.

Starting the localization of KOMPSAT-3A(KOrea Multi-Purpose SATellite-3A) bus systems, APSI has participated in national satellite development projects related to KOMPSAT-6, KOMPSAT-7, KPLO(Korea Pathfinder Lunar Orbiter), CAS500-1/2(Compact Advanced Satellite 500-1/2). In addition, we are well known as a manufacturer of high quality satellite communication terminals around the world.

With this core technology and experience, APSI will strive to become a global company in aerospace industry.



Standard OBC (On-Board Computer)



(Image Data Handling Unit)



(Satellite communication terminals)

### **APPIA Engineering, Ltd.**

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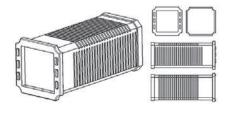
▲ Address: 80, Bangjiro, Sanammyun, Sachon City, Gyeongnam-do, Korea

▲ Company Intro:

APPIA Engineering is an engineering services firm specializing in meeting the outsourcing needs of aerospace and manufacturing companies. Our highly trained expert engineers are available to meet your staffing requirements and can solve your most difficult design and analysis issues.

- Products:
  - Aircraft Structure & Sub System Design
    - · AL & Composite Parts · Engine, ECS, Fuel System, L/G, Installation · Wire Harness Installation
  - Flight Control OFP S/W Development





### ASTK (AeroSpace Technology of Korea Inc.)

▲ Contact Person : Jacob Lee

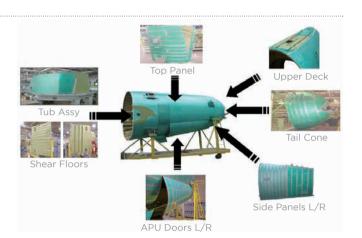
▲ Tel: +82-2-2071-2304 ▲ Fax: +82-2-3775-0100

▲ E-mail: jacob.lee@astk.co.kr ▲ Homepage: www.astk.co.kr

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▲ Company Intro:

ASTK is an ONE STOP SUPPLIER Capability from tooling and detail parts to large assemblies - Starting with detail parts (roll formed stringers) - ASTK added aerostructure components (panel, bulkhead, door) and eventually complete fuselage section assembly(B737 Sec. 48 Module, B747-8 Sec. 48 Assemblies). On Time Delivery, Quality and Price targets. Recognized as a PLATINUM supplier by SPIRIT (in Y2012, Y2014)



ASTK

### Busung Co., Ltd.

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▲ E-mail: ihkang01@busungltd.com ▲ Homepage: www.busungltd.com



▲ Company Intro:

Early '90s, From its inception with small tasks for making simple tools, Busung Co., Ltd has grown to comprehensive aerospace company, specializing in producing parts, tools, design for aircraft through the history of aerospace industry of Korea. We will support aerospace industry continually and produce reliable products to live up to your expectation in the era of limitless competition with our accumulated technology, know-how and quality pride of our products.







Sheet metal part



BUSUNG

Master tool

#### C & Lee Inc.

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▲ Address: 263, Naechuk-ro, Chukdong-myeon, Sacheon-si, Gyeongsangnam-do, Korea (52509)

▲ Company Intro:

Since 2004, C&Lee Inc. has produced composites for aircraft and we have performed aluminum heat treatment process. Our skilful staffs will always endeavor to make high-quality composite parts in competitive price, we promise to deliver the composite parts to the customer on schedule.









B777 Fixed Leading Edge

KUH(Korean Utility Helicopter)

## COTS Technology Co., Ltd.

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#### ▲ Company Intro:

Since 1999, COTS Technology Co., Ltd. is a advanced company through consistent Research and Development and specialized in products, for example, SBC, DSP, I/O boards and rugged LCD display etc. units for commercial as well as military which require severe environment conditions. Also we are capable of doing system level product design and integration services.

COTS Technology Co., Ltd. provides the best value to our customers through standardized architecture and continuous technology development to become the world's leading embedded solution company.







VPX6 C4

#### DACC Carbon

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▲ Company Intro:

DACC Carbon was established in 1988 as Daewoo Heavy Industries Advanced Composite Centre. It has since spun off to become DACC Carbon in 2001. The company was well known for production of extreme heatresistant carbon composite materials for the defense industry of the ROK. Our team of specialized experts have focused exclusively on the design, innovation, and production of carbon-carbon and carbon-ceramic brake discs and heat-resistant composites for over two decades. Our core product lines range from carbon-ceramic brake discs for automobiles, carbon-carbon brake discs for both civilian and military aircraft, and extreme temperature resistant carbon-related composites for use in the defense sector.







CAPBONI

## DAEHWA Aerospace Industries Co., Ltd.

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▲ Company Intro:

DAEHWA Aerospace Industries Co LTD(DAICO) is not only the leading company of sheet metal, but also largest sheet metal manufacturer of aerospace industry in Korea. We are enjoying an excellent reputation through twenty years business experience with 100% of industrial proportion in aerospace. We have qualifications for both AS9100D and NADCAP(heat treating). We are highly proud of our technology, especially the quality of our products in sheet metal of aerospace even machining parts, tooling and assembly as well. Our major customers are Boeing, Airbus, KAI, KAL, TRIUMPH, SPIRIT Aerosystems, ST Engineering and etc. And we have constantly agonizing cost reduction and delivery on time for customer satisfaction.







# DANAM Systems Inc.

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\*\* DANAM systems Inc.

▲ E-mail: hs kim@danam.co.kr ▲ Homepage: www.danam.co.kr

▲ Address: Megavalley #701, 268, Hagui-ro, Dongan-gu, Anyang, Gyeonggi-do, Korea

▲ Company Intro:

DANAM systems Inc. has strived on communications of defense industry since its establishment in 1985. Our company, in response to rapid changes in the munitions industry, is infusing its core competencies into various areas like the aerospace sector and infra management, which require high degrees of specialty and safety knowledge. We have been proven to be ultra-competitive over the past twenty years based on our technologies in military and space launch vehicle measure\-ment systems. Since the beginning of the 21 century, we have been expanding our business to aerospace communication and have become one of the leading global companies in the digital era.







### **Dawin Friction Corporation**

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▲ Company Intro:

Dawin Friction Corporation is a diversified manufacturer of sintered brake discs, pads, wheels and brake assemblies for various fixed and rotary wings; providing efficient solutions that help our customers effectively and providing precision-engineered solutions for a wide variety of mobile, industrial and aerospace markets, expands its presence in the aviation industry through market experience and continued R&D.



Main Wheel











#### **DnM**(Distribution and Manufacturing for Aerospace)

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Gyeongnam, Korea

#### ▲ Company Intro:

- Warehousing service of raw materials, composits and semi finished goods.
- · Value adding service of cutting of raw materials, machining, assembly and distribution
- Designing and manufacturing of ground support equipments, jigs and tools.









Tools

Raw material cutting

Support equipment

A350/B777X W/R assembly

#### **DoDAAM SYSTEMS**

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▲ Address: #99, 1628 Beon-Gil, Yoosungdae-Ro, Yoosung-Gu, Daejeon-City, Korea

▲ Company Intro:

DoDAAM SYSTEMS is one of the major leading companies in defense industries of Korea not only developing weapon systems but also continuously researching the cutting edge technology in electronics and training systems.DoSAAM SYSTEMS, started as a subsidiary of Korea Aerospace Industries and after independent, successfully developing flight simulator including fighter aircraft such as F4/5 CPT, T-50 FMT / OFT / MTD etc. Further, Dodaam is expanding its business territory to software and electronic equipment etc. Your critical care and continuous attention to the growth of DoDAAM SYSTEMS will be valuable assets and foundation for moving forward to a global leader in world defense industries.







ARGOS III

# DONG YANG AK KOREA

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▲ Company Intro:

Excellence and innovation built into every product is the term that best describes AK Corporation, Our Aluminum products are a good example of how a manufacturing company can reflect the excellent consistency of technology and development in order to increase quality of production. Since the foundation year of 2003, AK is pursuing a global innovation with multi-material solutions that has qualified performance and highest customer satisfaction. Our aluminum alloy casting and extrusion technology is certified and patent protected in several countries including the United States. Our priority is to consistently produce a high-quality product based on next generation technology. AK Corporation is following the international standard of AS9100 and ISO/ TS16949. We have best crew trained and experienced in each factory locations to ensure the quality meeting the requirements of our prime aerospace customers.







A.C.M

**∌**AK

### DongHwa A.C.M. Co., Ltd.

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▲ E-mail: hkkim@dhacm.com ▲ Homepage: www.dhacm.com

▲ Address: 275-21, Seobu-ro, Jinyeong-eup, Gimhae-si, Gyeongsangnam-do, Korea

▲ Company Intro:

Donghwa A.C.M. Co. Ltd. is a specialized Manufacturer in Aircraft's Composite Tool and Sheet Metal Forming tool since established in 1998.

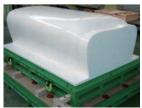
• Composite tools: LM, PLMO, BAJ, NCMF, HRF, CLT, TOFM, etc.

• Sheet Metal Forming Tools: STFM, STDW, DHDI, TOFM, RTSH, CKFM, PM, etc.

DPD management system, AS9100 Rev, D quality management system and our extensive experience with Korean customer, KAI and KAL, enable us to meet sophisticated requirement of clients.

Recently we are selling our products to overseas customers in Japan, China, Vietanm and Malaysia.









# Dongjin Electric & Machinery Co., Ltd.

▲ Tel: +82-52-254-5533 ▲ Fax: +82-52-254-5115

▲ Homepage: www.djelec.co.kr

▲ Address: 422. Sanchun-ri. Sanam-mvun. Uliu-gun. Ulsan.

Korea

#### ▲ Company Intro:

- Category: Alternator, Starter Motor, DC Motor, Actuator, Blower, Controller&Regulator
- Products:
- Alternator
- Starter Motor
- Bilge Pump, DCS/T Generator, Serco Motor
- Linear Actuator, Landing Light
- Fanairclear
- AC Regulator, DC Regulator





# Dongsung TCS Co., Ltd.

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▲ Homepage: www.dongsungtcs.com/eng

▲ Address: 81, Gomo-ro 134beon-gil, Jillye-myeon, Gimhae-si, Gyeongsangnamdo, Korea

#### ▲ Company Intro:

- Category: Manufacturing(Composite)
- · Certification:
- AS9100 (Rev. D), NADCAP (Composite), DPD BAC5317/ -2/-3/-4/-5, AIPS 03-02-018/-019
- Boeing: 737FSF, 777FSF/WBE/RWT, 787FSF/RWT
- Airbus: A320 SL Panel, A350 Cargo Door
- · Strength:

Specialized in Aerostructural Composites Parts utilizing advanced facility & equipment

- Autoclave, Clean Room, NC Ply Cutter, C-Scan, Paint Booth, CMM, 5 Axis Composite Trim Router

Produce and supply advanced composite material products applying on various areas

-Business sector: Aerospace, Heavy construction equipment





## **DONGYOUNG M&T**

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▲ E-mail: dyjangsh@hanmail.net

▲ Address: 365, Haeansaneop-ro, Sanam-myeon, Sacheon-si, Gyeongsangman-do, Korea

#### ▲ Company Intro:

- Special metal (Ti, Inconel, Composite etc.) precision configuration cutting (water jet)
- Composite part 5 Axis precision machining
- Hard metal (Ti, Cres) 5 Axis, 3 Axis machining
- · Aircraft Assy jig, Sub Assy jig, and MLFX design and manufacturing
- We hold design capabilities











#### eNDE Co., Ltd.

▲ Contact Person : Samkyo Kim

▲ E-mail : skim03@e-nde.co.kr ▲ Homepage : www.e-nde.co.kr

▲ Address: Mecha-zone 909, SK Technopark, 50, Wanam-ro,

Seongsan-gu, Changwon-si, Gyeongnam, Korea

#### ▲ Company Intro:

e-NDE will always be there to support our customer.

e-NDE our NDT service company, will continue to march on to reach the goal of attaining superior position in the field of NDE by making everlasting effort in achieving super efficient management.

e-NDE will not settle down at what we have today but always challenge the impossible so as to satisfy our customer with every effort we have.









### Fine Precision Ind, Ltd,..

▲ Contact Person : Hee voung. Choi

▲ Tel: +82-51-301-1213 ▲ Fax: +82-51-301-1215

▲ E-mail: fineind@korea.com

▲ Homepage: fineind.koreasme.com

▲ Address: 1260 Nakdong-Daero, SaSang-Gu, Busan City, Korea

▲ Company Intro:

 Respond to any needs that you can design, analysis, manufacture, total engineering solution provider.

· Aircraft parts production and development in government financial support, has been developed under the control and supervision of DTaQ (Defense Agency for Technology and Quality) KAI, and production is still under their supervision.



#### Firstec Co., Ltd.

▲ Contact Person : Jin Park

▲ Tel: +82-31-627-4555 ▲ Fax: +82-31-627-4599

▲ E-mail: iin522@foosung.com ▲ Homepage: www.firsteccom.co.kr

▲ Address: 485, Nammyeon-ro, Seongsan-gu, Changwon-si, Gyeongsangnam-do, Korea

▲ Company Intro:

Since established in 1975, we, as a manufacturer of state-of-the-art defense systems and products, have been a leading company in the defense industry of Republic of Korea. With strong technical knowhow stemming from long experience, we are firmly positioned as a competitive specialist in electric/electronic parts of weapon systems, guided weapons, fire control systems, guidance & control systems, actuation systems, environment control devices of aircraft electronic systems, ADS, and others. We have made remarkable achievements such as succeeding in aircraft structural test firstly in Korea, developing own technology to manufacture NVIS panels of rotary wing/fixed wing aircraft, attitude control system of space rockets, etc. Now, with our efforts to develop new growth engines, we are accelerating to leap up to be a global defense business leader with our

face recognition system, and the unmanned system of our subsidiary

Uconsystem Co., Ltd.





FOOSUNG

FIRSTEC CO., LTD.





# **FLEX System**

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▲ E-mail: sipark@flexsystem.co.kr ▲ Homepage: www.flexsvstem.co.kr

▲ Address: 126, Beolmal-ro, Dongan-gu, Anyang-si, Gyeonggi-do, Korea

▲ Company Intro:

Flexsystem founded in 2001, has aerospace / space / defense business sector. The main products are control and measurement systems, performance testing equipment, various inspection equipment.

An example are [the performance, fatigue, endurance test equipment of MRA(main rotor actuator) and TRA(tail rotor actuator)], [the circuit board performance test equipment of aircraft and guided weapons], [the control and signal processing of the combustion test equipment.

And we a system integrator and supporting services to software implementation and hardware configuration according to the customer's requirements.









FLEX System

Blasting agents test equipment

FOREX

#### FOREX Co., Ltd.

▲ Contact Person : B.J Kim

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▲ E-mail: forex2@forexaero.com ▲ Homepage: www.forexaero.com

▲ Address: 201-3 Yangkog-dong, Changwon-si Gyeongnam, Korea

▲ Company Intro:

FOREX specializes in the machining complex machined parts used in both the domestic and in\-ternational aerospace industry. We excel in 5 axis machining work utilizing the latest in computer aided design and manufacturing (CAD/CAM). All customer products are thoroughly inspected using a coordinate measurement machine (CMM). FOREX produces parts for such names as Korea Aero\-space Industries, the Boeing Company, and Airbus Industries.Method





# **GENOHCO** Incorporation

▲ Contact Person : S.J Kim.

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▲ E-mail: stwartkim@genohco.com ▲ Homepage: www.genohco.com

▲ Address: 6F Neontech Bldg. 146, Burim-ro, Dongan-gu, Anyang-si Gyeonggi-do, Korea

▲ Company Intro:

GENOHCO has a capability to design and produce the electronic equipments such as Communication, Computer, Sensor equipments and Test equipments for Avionic system including Communication System with full engineering capabilities under AS-9100 and ISO-9001 Quality System.

GENOHCO is one of partner to supply the products which are D/A (Distribution Amplifier), SIL System, ICS (Intercommunication System), IMC (Integrated Mission Computer) for T-50 / FA-50, KUH, LAH and UAV from KAI / KAL.

Also GENOHCO has a strong point to design/produce EGSE system and X-Band Transmitter for high resolution / speed with 720 Mbps modulator for Commercial and Military Satellite with FM grade.







**GigaLane** 

GENOHCO

## GigaLane Co., Ltd.

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▲ E-mail: cloe@gigalane.com ▲ Homepage: www.gigalane.com

▲ Address: 46, Samsung 1-ro 5-gil, Hwaseong-si, Gyeonggi-do, Korea

▲ Company Intro:

GigaLane is a company specialized in high-frequency & low-loss RF connector, cable, assembly and RF module for military, aerospace, network infra and mobile communications. GigaLane performs all activities from original design to production based on its R&D skills and 3 major technologies which are semiconductor equipment, MEMs and RF processes. The RF component of GigaLane complies with all military standards in design, production, and quality assurance. GigaLane looks forward to growing together with its customers by enhancing customer satisfaction through com\-petitive performance at better price than global RF component companies.









# GV ENGINEERING Corp.

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▲ E-mail: dj.kim@gv-engineering.com ▲ Homepage: www.gv-engineering.com

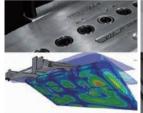
▲ Address: 59, Duryang-ro, Chukdong-myeon, Sacheon-si, Gyeongsangnam-do, South Korea

▲ Company Intro:

GV Engineering is the material supplier about Aerospace & Defense field in South Korea. Our company supply materials to KOREAN AIRLINE, ASIANA AIRLINE, GE OWS KOREA, etc in domestic MRO.

GV Engineering is specialized in precision machining and it operates high speed CNC machining centers that are designed specifically for the efficient machining of aluminum, plastics and composite materials often used in aerospace part production.

GV Engineering operates its Quality Management System in accordance to EN9120/AS9100 standard









Aerospace Specialist

# Hankuk Carbon Co., Ltd.

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▲ E-mail: miniunkim@hcarbon.com ▲ Homepage: www.hcarbon.com

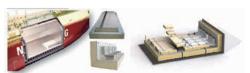
▲ Address: 6Floor, 310, Tojeong-ro, Mapo-gu, Seoul

▲ Company Intro:

Hankuk Carbon has been in the field of Composite Material for 30 years, the first composite manufacturer in Korea. Hankuk Carbon is specialized in manufacutring composite materials and components. Company Business began from carbon fiber prepreg for sports and leisure equipment and has diversified into LNG insulation, dry-film and exterior aluminum panel while strengthening the roots in carbon fiber prepreg business into aerospace and automotive industries. Company meets the international standards with certification such as ISO14001, OHSAS18001, AS9100, ISO29001, etc.

Hankuk Carbon also manufacture interior for commercial aircraft such as Airbus A350XWB and KAI's KT-100. Hankuk Carbon is exploring for more opportunities thanever before to become the world leading company in the composite field.











# **Hankuk Fiber Group**

▲ Tel: +82-55-359-2500 ▲ Fax: +82-55-359-2519

▲ Homepage: www.hfiber.com

▲ Address: 719-33. Sangnam-Ro Sangnam-Myun Mirvang-Si.

Gyeongnam, Korea

#### ▲ Company Intro:

• Category: Aircraft Secondary Part, 8 Passenger Seats all Composite Airplane, UAV Structural Body & Part, Trainer & Helicopter Structural Part, Rocket Structural Part, Aircraft Fairing Assembly, Radar Protection Cover

#### Products:

- Airbus A-320 Elevator
- -UAV (Unmanned Arial Vehicle) Aircraft Structural Body & Part
- KT-1 Windshield (KT-1 Canopy Transparency)
- -UH-60 Black Hawk Crew Seat
- -B747/757/767/777 Nose Cone. Air Inlet Duct. Engine Cowling, Fuel Vent Duct
- -Radome CW396





HFG 韓國화이바

Canopy

Transparent Window









**UAV** composite Part

### Hansung ILS Co., Ltd.

▲ Tel: +82-55-286-1061 ▲ Fax: +82-55-286-1063 ▲ Homepage: www.hsils.co.kr

▲ Address: 41-9. Bongam-dong, MasanHoewon-gu.



#### ▲ Company Intro:

• Category: ILS(Integrated Logistics Support) Development, Air Transportation business

#### • Products:

- ILS(Integrated Logistics Support)
- Technical Translation
- Modeling and Simulation
- -Helicopter(4 Seats)







# Hanwha Aerospace

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Hanwha Aerospace

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▲ Address: 1204, Changwon-daero, Seongsan-gu, Changwon-si, Gyeongsangnam-do, KOREA

▲ Company Intro:

Established in 1977, Hanwha Aerospace began by duilding businesses in the aircraft engine and film camera industry. As South Korea's only producer of gas turbine engines, we have an unmatched competitive edge in the engine business. For the last 40 years, we have provided a range of gas turbine engine solutions around the

world. In 2016, we surpassed a milestone of completing 8,000 gas turbine units and signed a contract to provide large-scale aircraft engine parts to GE and Rolls-Royce. becoming a trusted partner in the global aircraft industry. In addition, we entered into a contract with the united States Pratt & Whitney to operate a joint venture in Singapore's manufacturing company. Our Ppartnership with Pratt & Whitney is a Risk and Revenue Sharing Partnership (RSP) to co build the next generation aircraft engine. This partnership represents our joining the ranks of other leading aircraft engine manufacturers of from world. In 2017, we enhanced our productive capacity and price competitiveness by building a new production facility in Vietnam.



We will continue to leap forward as a global leader in aviation engine parts and modules by preemptively responding to rapidly changing market conditions, continuously developing technology, and sharpening our quality competitiveness. World-Class quality and continuous R&D have propelled Hanwha Aerospace to become a global supplier of engines for aircrafts including fighter jets and UAVs.



K9

Hanwha

### **Hanwha Corporation**

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▲ Homepage: www.hanwhacorp.co.kr/machinery/index.jsp

▲ Address: R&D center 5<sup>nd</sup> fl 305 Pangyoro, Bundanggu, Seongnamsi, Gyeonggido, Korea

▲ Company Intro:

HANWHA Aerospace Division leads the Korea aerospace industry in the field of design, development, manufacturing, and repair & overhaul of flight control actuators, hydraulic, fuel and landing gear system of aircraft, guided weapon and launch vehicle. Hanwha has established ability and technology as aerospace engineering company by participating in Korean military aircraft programs and commercial aircraft programs in both domestic and export market. Based on these capability, Hanwha Aerospace division has vision of becoming major supplier in global aerospace industry by manufacturing and performing assembly operation.



Landing Gear System



T-50 Flight Control Integrated Servo Actuator



Electro-Mechanical Actuation System



**KUH Fuel Tanks** 

## Hanwha Systems

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▲ Address: Hanwha Bldg 14F 86, Cheonggyecheon-ro, Jung-gu, Korea

▲ Company Intro:

Hanwha Systems is well positioned to successfully execute sophisticated defense programs while satisfying our customer's requirements for program performance and quality assurance. For more than 37 years, Hanwha Systems has enjoyed sustained growth from its intimate involvement in the design, development, integration and support of sophisticated high technology electronics for applications such as tactical communication systems, radar systems, naval combat systems, electro-optics, fire control systems and avionic solutions in military forces in Korea and beyond. Hanwha Systems is now taking the lead in guiding into a new future for the defense industries.











Hanwha Systems



**AESA Radar** 

Mission Computer

**TADS** 

**SMFD** 

Data Link

#### HIZE AERO Co., Ltd.

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▲ E-mail: hize@hizeaero.com ▲ Homepage: www.hizeaero.com

▲ Address: 24, Gongdan5-ro, Sanam-myeon, Sacheon-si, Gyeongsangnam-do, Korea

▲ Company Intro:

HIZEAERO, which is a Tier 1 supplier to Boeing, will be a one-stop supplier by participating in assembly, tooling, machining, sheet metal, and composite (2015) businesses. We are ready to meet customers' needs in Quality, Cost. and Delivery.

#### · Main Businesses:

- Assembly
  - ·B787 Center Wing Box(Sec.11), Fixed Trailing Edge(Sec.15)
  - · B787 Pivot Bulk Head(Sec.48)
  - · B767 AB Tailcone
- Tooling
  - · Commercial: B787 FAJ, B747-8 IC AJ, A350 AJ, A320 WBP MF, etc.
- · Military: T-50 AJ, KT-1 AJ, F-15 AJ, AH-64D AJ, etc.
- -Machining: 20 Programs 1,930 L/Is
  - · Commercial: B787 Splice(5Axis), B737 Stiffener(4Axis), B747 Tee(3Axis), etc.
  - · Military: AH-64D Bracket and Fitting, FA-50 Engine Mount and Windshield, etc.



#### Others:

- -Quality
- · AS9100(Rev.C), NADCAP, IAQG, BQMS D6-82479. D1-4426, Airbus QSPL, KPQMS9100
- Measuring Equipments
  - · Laser Tracker (10sets), CMM (6m×2.5m, 1.6m×1m) etc.







# **Huneed Technologies**

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▲ E-mail: jackieholm@huneed.com ▲ Homepage: www.huneed.com

▲ Address: 87 Venture-ro, Yeonsu-gu, Incheon, Korea

▲ Company Intro:

Founded in 1968, Huneed Technologies is a leading South Korean defense aerospace company, specializing in airborne systems and avionics, as well as tactical communication systems. As a supplier for defense aerospace OEMs for the past decade, Huneed has a proven track record for providing products on quality and on time. Now, Huneed, is firmly positioned to provide commercial aerospace OEMs with the same reliability at highly competitive costs. Huneed has achieved several aerospace milestones including winning 2015 boeing Performance Excellence Award, being nominated as a 2016 Boeing Supplier of the Year, being chosen as a global supplier of electrical panel systems for the CH-47 Chinook Helicopter and V-22 Osprey amongst a competitive field of global aerospace firms. Huneed's advancements lead to breaking a records by becoming Safran Special Processes certified in less than a year and is now the only company in Korea that is manufacturing flight control computers. Huneed's reputation in tactical communication speaks for itself as their military communications systems, Huneed's High Capacity Trunk Radio System (HCTRS) is the wireless communication backbone of the ROK Armed Forces latest next generation military communication system. And unlike incumbent suppliers, Huneed is committed to providing continued cost savings with the intent of partnering for long-term success and mutual growth.











# **HWASEUNG Material**

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▲ E-mail: iimi@hsrna.com ▲ Homepage: www.hscmb.co.kr

▲ Address: 11, Yusangongdan 2-gil, Yangsan, Gyeongnam, 626-210, Korea

▲ Company Intro:

FUEL TANK

- Crashworthy/Self Sealing

RUBBER MATERIAL

-Variety CMB/FMB/TPE

• FLUID SYSTEM (Hose)

-High pressure: brake hose / air conditioning hose/power steering hose

-Low pressure: fuel system / water system / oil system

SEALING SYSTEM (Weather Strip)

-Glass run / door side / body side / fixed glass molding

OTHER RUBBER PART







# Hyun Aero-Specialty Inc.

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▲ Tel: +82-51-974-6500 ▲ Fax: +82-51-832-0268

▲ E-mail: hangong@hyune.co.kr ▲ Homepage: www.hvune.co.kr

▲ Address: 91 Noksansandan-46-Ro, Gangseo-Gu, Busan, Korea

▲ Company Intro:

Hvune Aero Specialty Inc. is an Aircraft Assembly and Part Manufacturing Company located in Busan, Korea.

- Products: Assemblies and Detail Parts for the Boeing, Airbus, EMB, Gulfstream V, and other aircraft manufacturer
- Mid-Size Assembly
  - · 737Max Winglet, 787 APU Door, 787 Raked Wing Tip MIC, 787 Wing Box, 787 Firewall
- Sub Assembly
  - · 737 Bulkhead Frame Assembly, 737Max Shroud Assembly, 737 Aileron Balance Panel, 737 Nose Assembly, 737 Rod Assembly
- Machined Parts
  - · Aluminum, CRES, Titanium Machining
- Sheet Metal Parts
- · Aluminum, CRES sheet Metal Forming
- Extrusion Parts
- · Extrusion Machining and Forming
- · 777 Birdstrike Kits. C-17 Ext Kit. Gulfstream V Kit
- Casting & Forging
- · Aluminum Casting, Titanium Forging machining







HYUNDAI.

### HYUNDAI-WIA Co., Ltd.

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▲ E-mail: zeroth@hvundai-wia.com ▲ Homepage: www.hvundai-wia.co.kr

▲ Address: 153 Jungdong-ro, Seongsan-gu, Changwon, Gyeongnam, Korea

▲ Company Intro:

HYUNDAI WIA as the landing gear manufacturing company in Korea is receiving a good fame from internationally renowned aircraft manufacturing company and keep enlarging the business realms. We have developed and produced the landing gear that is mounted on training aircraft, combat aircraft and multirole helicopter. HYUNDAI WIA is challenging to expand commercial airliner landing gear area based on the accumulated technology.



T-50 NLG 2



Surion Landing Gear



Pilot Seat

### Intellics Inc.

▲ Contact Person : Brad Lee

▲ Tel: +82-70-7602-7700 ▲ Fax: +82-31-702-6700

▲ E-mail : brad@intellics.co.kr ▲ Homepage : www.intellics.co.kr

▲ Address: A-603, Technopark, Bungdang, Seongnam,

Kyunggido, Korea

▲ Company Intro:

Intellics offers embedded system and subsystem hardware products, hardware design services for embedded and high performance computing. We are experts in defense industry applications including avionics, guidance, command and control, fire control, navy applications and more. We also provide custom hardware design engineering services for real time computing that include mission computer, flight control, command & control, fire control, 2d/3d map computer, embedded training computing.



# IONES Co., Ltd.

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▲ Company Intro:

DIGITAL IT LEADING COMPANY, IONES

Since IONES was established as one of semiconductor and display super-precision parts maker in 1993, we have rapid business growth by focusing on customer satisfaction and continuous research and development in order to provide customized service to satisfy our customer's needs. Furthermore, we supply airplane fuselage parts and have a technology for the secondary power generation parts such as Power Take Off shaft in the aerospace business. Recently, we are developing the Bomb Rack Unit for the light weight military attack helicopter LAH issued from KAI. IONES will persist its growth and challenge to be innovative to develop best technology and skills of the highest quality and maintain global competitiveness.







### JCA Autonomous Co., Ltd.

▲ Contact Person : Jason Lee

▲ Tel: +82-42-825-6820 ▲ Fax: +82-42-825-6839

▲ E-mail: sales@ica-autonomous.kr ▲ Homepage: www.ica-autonomous.kr

▲ Address: Suite 904 Newtown Plaza, 303 Bugyuseong-daero, Yuseong-gu Daejeon, Korea

▲ Company Intro:

JCA Autonomous is the propeller distributor as well as the supplier of the sensors in the aerospace industry. JCA Autonomous is planning on developing the capability of propeller MRO (Maintenance, Repair and Overhaul) now. Also, JCA Autonomous concentrates on the R&D projects recently with UAS Srl, our Italian R&D partner.

Our main output regarding R&D projects includes Electrical Brake System assembly, Valve anti-ice and especially, WSS (Wheel Speed Sensor) which is the part of the Electrical brake assembly. JCA Autonomous is about to enter the Korea Government's funded R&D project relevant to WSS of UAV's Electrical Brake

System. And we will do our best to participate in the R&D project which includes the Smart Electro-Mechanical Trim Actuators.





Autonomous Co..Ltd.



### JNS Co., Ltd.

▲ Contact Person : Sang ho, Park

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▲ E-mail: ins@ins.co.kr ▲ Homepage: www.ins.co.kr

▲ Address: #1006, U-TOWER,120 Heungdeokjungang-ro, Giheung-gu, Yongin-si, Gyeonggi-do, Korea

▲ Company Intro:

Our JNS is a company that specializes in developing power converter, power system, DSP board, generator controller which applies to the defense industry, Aerospace and civitian industry and was established in 2003. A young company, JNS is diversifying its business sphere by developing power convertering and electronic equipments based on consistent research and development as well as fostering of human resources.



MUAV Datalink Power Supply Unit



MUAV FLCC Power Supply Unit





KGGB(Korea Gps Guide Boom) Power Supply Unit





T-50 Electrical Test Set

# Joil Co., Ltd.

▲ Contact Person: Sung W. Hwang

▲ Tel: +82-55-853-8840 ▲ Fax: +82-55-852-2130

▲ E-mail: ioilaero@ioilaero.com ▲ Homepage: www.ioilaero.com

▲ Address: 39 Gongdan 5ro, Sanamyeon, Sacheon, Gyeongnam, Korea

▲ Company Intro:

Joil Co., Ltd. is a manufacturer of aerospace engine and structural components. Established in 1985, having over 30 years of experience in the aviation industry. Joil constantly reaches out for innovation on manufacturing methods. Cutting cost and time to meet the business characteristics of the aviation business. Joil Co., Ltd. have over 100 employees, approximately 70 employees working in the direct manufacturing, 6 R&D, and others in management. From 2007 through 2017 Joil has been rated "Outstanding Supplier" from Korea Aerospace Industries for 11 consecutive years, defining Joil's capabilities in the manufacturing of aircraft parts. Joil especially masters the fabrication of hard to cut metals such as Inconel, titanium, tungsten, and high heat treated metals. Joil is always open to working with new and long term partners. Manufacturing commercial and military aircrafts is our specialty and hope that we can work with new partners in the growing business of aerospace. Joil is

always training employees to achieve advance information and communication systems. to adapt to the fast growing and changing of 21stcentury aviation business.







Joil Co., LTD.

## KAI(Korea Aerospace Industries, Ltd.)

▲ Contact Person : Jungeun Han

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▲ E-mail: flv@koreaaero.com

▲ Homepage: www.koreaaero.com/english

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▲ Company Intro:

Korea Aerospace Industries LTD.(KAI) has been orienting towards the world's first-class aerospace company and leading the development of Korean aerospace industry with a challenging spirit, laying a groundwork for leaping to the global aerospace company. KAI has developed the basic trainer, KT-1, the supersonic advanced trainer, T-50, and the Korean utility helicopter, Surion. Along with aircraft development, production and testing, KAI performs maintenance, repair and overhaul (MRO) to fulfill its responsibility. In the civil

aircraft field, KAI deeply participates in the international joint development for A350s and B787s and solidifies further a strategic partnership with Boeing and Airbus. KAI prepares a new challenge to take a striking position as a central company in the world's aerospace industry via balanced development in the military and civilian industry.

KAI is successfully conducting next-generation corp. level UAV, KF-X, multi-purpose satellite programs through ensuring R&D and advanced technology. KAI aims to be ranked a top 15 in the global aviation industries by 2020.









# KCI(Korea Composites Inc.)

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▲ Company Intro:

Korea Composites Inc. (KCI) is a CFRP specialist based in South Korea. We currently manufacture various CFRP components for various clients in the Aerospace industry, including Airbus, Boeing and Korea Aerospace Industries (KAI).

The main products include: B787 PBH, A350 NLGB, A-10, UAV.

KCI Vision: Market leader in production and supply of high-performance composite material.









#### KENCOA AEROSPACE Co.

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▲ E-mail: export@kencoa.com ▲ Homepage: www.kencoa.com

▲ Address: 152-44 Oegukgieop-Ro, Sacheon City, Korea

▲ Company Intro:

Be the most valued and trusted source for our aerospace OEM and Top-Tier customers — from the smallest details to the most complex assemblies.

Kencoa Aerospace is an advanced aerospace manufacturer of precision machined components. sheetmetal fabrications, and complex assemblies for commercial, military, and business jets world wide. Our facility located in Sa-cheon, Korea. Kencoa Aerospace is Tier 1 supplier for Lockheed Martin, Spirit, and more. Kencoa prides itself on hiring highly motivated and skilled individuals who have a wide range of experience within the Aerospace industry.







# KOLON DACC Composite Co., Ltd.

▲ Contact Person: Kil hoon, Jung

▲ Tel: +82-55-800-2238 ▲ Fax: +82-55-713-2487

**W** KOLON DACC COMPOSITE

▲ E-mail: khjung@kolon.com

▲ Homepage: www.kolondacc.com

▲ Address: 26-23, hamansandan 1-gil, Haman-gun, Gyeongsangnam-do, Korea

▲ Company Intro:

KOLON DACC Composite began as DACC Composite has been spun-off from Korea Aerospace Industries in November 2001 as a designated aerospace industry enterprise with an solid array of international patents and intellectual property rights under its list of assets. Through participating in numerous weapon system projects, uses its expertise in designing, analysis and testing to maintain a competitive edge in advanced composite materials, ensuring only the best quality. At the end of 2015, the company was incorporated into the KOLON Group and changed its name to KOLON DACC Composite.







KGGB

### KOMACO Co., Ltd.

▲ Contact Person : Jongkuk Kim

▲ Tel: +82-32-932-0341 ▲ Fax: +82-32-932-0345

▲ E-mail: kik10671@komaconvis.com ▲ Homepage: www.komaconvis.com

▲ Address: #1011,1013,1014, Unitech Venture Town, 142, Ilsan-ro, Ilsandong-gu,

Goyang-si, Gyeonggi-do, Korea

#### ▲ Company Intro:

KOMACO is specialized for development and mass production of aircraft cockpit's lighting panel like FA-50, KUH-1.

NVIS(Night Vision Imaging System) Lighting System is unique for flight on the night duty to define objects and topography out side aircraft during flight by NVG(Night Vision Goggle) which checks object detail with extension reflection of light in the dark.

The design, Arcrylic process painting, Assembly, test and etc, All prepared for development and mass production of lighting panels which meet military standards(MIL-STD-3009, MIL-DTL-7788F, MIL-STD-464, etc..).

All of our products are quality guaranteed on certification of AS9100C.

We are going to participate in LCH/LAH and KFX development Program with respect to development of cockpit lighting panels.

We'd like to participate in Aircraft manufacturing general parts or Avionics equipment and ancillaris.





NVISCockpit vs non type

### Korea aerospace Assembly & Machining Ltd.

▲ Contact Person: Jae-heon Jeona

▲ Tel: +82-51-832-0384 ▲ Fax: +82-51-832-0386

▲ E-mail: ihieona@kampm.com ▲ Homepage: www.kampm.com

▲ Address: 30, Noksansandan 382-ro 50beon-gil, Gangseo-gu, Busan, Korea

▲ Company Intro:

• Category: Sub Assembly, Machined Parts

Products: - Sub Assembly

747-8 RWT/WTE Sub Assembly



RWT WTE Sub Assembly

- Machined Parts **B737 FSF Machined Parts B747 FTF Machined Parts** 

B777 FSF. RWT Machined Parts B787 AWWB, NWW, RWT, FSF, AFT Body Machined Parts A320 Sharklet Machined Parts A350 Cargo Door Machined Parts





KOREA AEROSPACE

ASSEMBLY & MACHINING Ltd.

### KOREA JIG & FIXTURE IND Co., Ltd.

▲ Contact Person: Jason Park

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▲ E-mail: iason@kifaero.com ▲ Homepage: www.kifaero.com

▲ Address: 14, Noksansandan 261-ro 59beon-gil, Gangseo-gu, Busan, Korea

▲ Company Intro:

"Create production"

KOREA JIG & FIXTURE(KJF) has increased its reputation in aerospace and defense industry with its cuttingedge technologies since KJF was established in 1984. As a leading manufacturer in aerospace tooling as well as aerostructures, KJF has been developing state-of-theart products and makes a great effort to jump into a leading position in the world. In addition, KJF plays key role in Korean defense industry by supplying mechanical components and structures.

We also have supplied products to our overseas customer; Northrop Grumman, Triumph Aerostructures, Elbit systems, IAI, FACC, L-3 communications, Dedienne Aerospace and Spirit Aerosystems since 2012.









# KOREA LOST-WAX Co,. Ltd.

▲ Contact Person: Jang Soo. Hwang

▲ Tel: +82-31-499-8485 ▲ Fax: +82-31-431-6091

▲ E-mail: capman@lostwax.co.kr ▲ Homepage: www.lostwax.co.kr

▲ Address: #220, Sihwa-Ro, Danwon-Gu, Ansan-City, Gyeonggi-Do, Korea

▲ Company Intro:

KOREA LOST-WAX "Leading Company for Investment Casting Industry"

KLW(KOREA LOST-WAX Co., Ltd), as a investment casting specialized company, continue to achieve sustainable growth with R&D Development and Production Innovation since its establishment in 1979.

We, KLW have acquired global certifications for AEROSPACE such as AS9100, NADCAP certificate for Heat Treating, NonDestructive Testing(NDT) and Chemical Processing. Also equipped with the most updated Vacuum Casting furnaces, Inspection facilities & technologies for EQX, D/S, S/X castings and Ceramic Core manufacturing, etc. Hence, we will do our best effort to deliver high level of customer satisfaction and compete in global industry with state of the art technologies and quality assurances now and in future.









KOREA LOST-WAX

17-4Ph Fuselage Casting

Turbine Blade

Air Seal. Sleeve Deflector

Turbine Wheel Impeller

### Korea Precision Machining Co., Ltd.

▲ Contact Person : Gi Hwan Kim

▲ Tel: +82-55-342-5746 ▲ Fax: +82-55-342-5743

▲ E-mail: ahkim@airkpc.com ▲ Homepage: www.airkpc.com

▲ Address: #52-32, Seobu-ro, 378beon-gil, Jinyeong-eup, Gimhae-si, Gyungnam, Korea

▲ Company Intro:

Our company was established in June,1990, is a company specializing in airframe fields with a history of 25 years so far. Producing fields are large divided into aircraft tool design and manufac\-tuing, part manufacturing, airframe assembly in three field, tooling career of 25years, detail parts fabrication of 20years, is a company with 15 years of experience in Assembly.







### **KOREA TESTING**

▲ Contact Person : Hyoung Eui KIM

▲ Tel: +82-42-939-3200 ▲ Fax: +82-42-936-2052

▲ E-mail: hek525@hanmai.net

▲ Homepage: www.koreatesting.co.kr

▲ Address: 119, Techno 2-ro, Yuseong-gu, Daejeon, Korea (34024)

▲ Company Intro:

KOREA TESTING CO. designs and builds customized test equipment and simulator according to enduser needs. We specialize in R&D test equipment, compliance test equipment and quality control test equipment for mass production.

Test equipment are generally classified as general performance test equipment, durability test equipment, accelerated test equipment, and environmental test equipment, etc.

We are now especially developing a Car Crash Simulator and hydrostatic servo actuator, hydraulic piston pump, Aerospace Pulser, CVT(continuously variable transmission) etc.







KORFAN AIR

KOREA

### Korean Air Lines Co., Ltd.

▲ Contact Person : Jinwoo Lee

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▲ E-mail: iinwlee@koreanair.com ▲ Homepage: www.koreanair.com

▲ Address: 260, Haneul-gil, Gangseo-gu, Seoul, Korea

▲ Company Intro:

Korean Air is taking a giant step to solidify our position as a manufacturer of complete unmanned aerial vehicles and so become an integrated aerospace company that is worthy of the name. We can do so based on the experience and technical knowledge gained during our 39 years of design, manufacture, license production, performance improvement, restoration, modification, and main\-tenance of foreign and domestic manned aircraft and during our development and manufacture of aircraft structures.







# KST(Korea Surface Treatment Co., Ltd.)

▲ Contact Person : Soojin An

▲ E-mail: jin7369@nate.com ▲ Homepage: www.kstco.kr

▲ Address: 309, Aerospace Center, 80 Bangi-Ro, Sanam-myun, Sacheon-city Gyeongnam, Korea

▲ Company Intro:

KST(Korea Surface Treatment Co.,Ltd.) has been established in Aug.2014 under joining as shareholders with 23 aerospace industry relevant companies to increase the capability & capacity of chemical process for aerospace fabrication part to improve competitiveness in exports.

KST will provide a professional technology and quality system to meet customer's requirements with the newest eco-friendly facility & equipment in aerospace surface treatment industry.





# KYUNGNAM METAL Co., Ltd.

▲ Tel: +82-55-260-0400 ▲ Fax: +82-55-286-1255

▲ Homepage: www.almac.co.kr

▲ Address: 74, Shinchon-Dong, Changwon-City,

Gyongsangnam-Do, Korea

#### ▲ Company Intro:

• Category: Industrial Materials, Profile/Accessories, Automobile parts

· Products:

- Heat Sink, Vehicle, Marine, Boiler/Air conditioning, Mould, High Strength, Architectural Material

-Engine&Transmission, Safety, External, Bus Window&Moulding Parts



( KYUNG NAM METAL

# LACO(Leading Aero Company)

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▲ E-mail: sspark@leadingaero.net ▲ Homepage: www.leadingaero.com

▲ Address: 371, Haeansaneop-ro, Sanam-myeon, Sacheon-si, Gyeongsangnam-do, Korea

▲ Company Intro:

We invite you to work with LACO toward a Leader of Aerospace!

I appreciate your visiting Leading Aero Company, LACO is now making a remarkable growth year by year as s star-up young company building 5 Axis Machining Parts, Sheet Metal Forming Parts and Sub-assembly Parts in aerospace.

Based on qualifications of AS9100 and NADCAP Heat Treat Process, LACO is being highly acclaimed at home and abroad through providing products with excellent quality and competitive price to Boeing and Airbus.

I have confidence that LACO family's united passion for a Leader in Aerospace will make LACO to be the best company who keeps the first-rate performance and always explores new challenge.



A320 Rib27 Assv



B737 Seal Rib Assv



Leading Aero Company

T-50 AFT Fuselage Assy

### LAKWOO INDUSTRY Co., Ltd.

▲ Contact Person: Kwang heon, Hong

▲ Tel: +82-55-972-9922 ▲ Fax: +82-55-972-9925

▲ E-mail: cera33@lakwoo.co.kr ▲ Homepage: www.lakwoo.co.kr

▲ Address: 116-54, Sansu-ro, Sancheong-eup, Sancheong-gun, Gyeongsangnam-do, Korea

▲ Company Intro:

Based on the top quality and client satisfaction, Lakwoo Industry Co., Ltd. has been running its own business over 50 years.

The company specializes in precise processing (equipped advanced and various processing system: Processing M/C & Measuring M/C and Assembly lines) parts and tools (jig and fixture) for aircraft, especially Titanium Chemical Milling Process (Products: T-50 Nozzle Fairing and etc).

In terms of aircraft manufacturing, we have plenty of experience throughout the whole process from initial design to processing and assembling for components.

In addition to that, we devote to production and R&D for part of aircraft.









### LIG Nex1 Co., Ltd.

▲ Contact Person: Yeo, Dong-Uk

▲ Tel: +82-31-8026-7665 ▲ Fax: +82-31-8026-7100

▲ E-mail: donguk.yeo@lignex1.com ▲ Homepage: www.lignex1.com

Address: 333, Pangyo-ro, Bundang-gu, Seougnam-City, Gyeonggi-do, Korea (13488)

▲ Company Intro:

Having assisted the self-defence of South Korea over the last 38 years, LIG Nex1 now boasts a world-class workforce, technological prowess, and an extensive global network. These assets allow the company to develop and provide a comprehensive range of weapon-related solutions including Precision Strike Munitions, ISR, C4I, Electronic Warfare, and Avionic Components. With the accumulated experiences and technologies, LIG Nex1 has successfully demonstrated its capacity in terms of research and development, testing, production, and provides logistics support for the most advanced and sophisticated system.









LIG Nex1 Co., Ltd

FLCC

HUD

#### MIRAE AEROSPACE

▲ Contact Person: In su. Park

▲ E-mail : ispark517@hanmail.net ▲ Homepage : www.miraeaero.com

▲ Address: 33, Gongdan 5-ro, Sanam-myeon, Sacheon-si, Gyeongsangnam-do, Korea

▲ Company Intro:

Products

-Assembly Segments

- · A320 Wing Bottom Panel Assembly
- · B747 Machined Frame Assembly
- · B737 Sub Assembly & Etc.
- $\cdot$  KUH [Cockpit / Cabin Door, Engine Cowling Etc.] Assembly
- $\cdot$  KA-1S fuselage Assembly
- Machining Segments
- · KUH [Beam Aircraft]
- · Sukhoi [Edge Frame, Fitting End]
- · T-50 [Bracket, Frame, Fitting]
- · B777 [Closer Rib] & Etc.







A320 WBP

B747 Machined Frame





KUH-Cockpit Door

### NAMYANG PRECISION, LTD

▲ Tel: +82-55-853-6996 ▲ Fax: +82-55-853-6999

▲ Address · 86, Bangii-ro, Sanam-myeon, Sacheon-si,

Gveongsangnam-do. Korea

#### ▲ Company Intro:

• Category : Airframe Parts

- · Products:
- -B787-8 Wing Box/B787
- Pivot Bulkhead Assv/Aircraft
- Precision Machining Parts/Tooling





NAMYANG

#### Navcours Co., Ltd.

▲ Contact Person: Heungkwon Lim

▲ Tel: +82-42-363-9000 ▲ Fax: +82-42-363-9001

▲ E-mail: sales@navcours.com ▲ Homepage: www.navcours.com

▲ Address: 66-6 Techno 2-ro, Yuseong-gu, Daejeon, Korea

▲ Company Intro:

Navcours is a defense company specializing in location and timing technologies with development and manufacturing capabilities. Our management comprised of national defense specialists put pride of contributing towards national security of Korea.

Major products include Multi-mode GNSS Chipsets, Custom-made High-performance GNSS/INS Integrated Navigation Systems, Special-purpose Multi-GNSS Antennas, Smart Anti-jamming Solutions(nulling antenna, CRPA based anti-jamming system, jammer locator, pseudolite, anti-jamming testing equipment, etc.) for ground weapon systems, precision guided weapons, air weapon systems, and electronic warfare and space launch vehicles.

- GNSS Sensing & Integrated Navigation(GPS/GLONASS/Galileo, GNSS/INS, GNSS/DR)
- Anti-jamming GNSS(Antenna Array, Jammer Tracking, Pseudolite)
- Aerospace & PNT Infra Solutions (GNSS/INS for Aviation, Radar Altimeter, DGPS)
- Others (Navigation M&S/HILS, GNSS Antenna/Splitter/Line-Amp, Timing)





#### NDT ENGINEERING & AEROSPACE Co., Ltd.

▲ Tel: +82-55-264-9200 ▲ Fax: +82-55-264-9203



▲ Homepage: www.ndteng.co.kr

▲ Address: 654-3. Bongam-dong, Masanhoewon-gu, Chanwon-si, Gyeongnam, Korea

#### ▲ Company Intro:

- · Category: Precision manufacturing for airplane parts, Advanced CAD/CAM technique
- · Products:
  - -B787 BODY FR13-SIDE FRAME
- -B787 RWT CLOSURERIB
- -747-8 WTE UPPER FITTING
- -747-8 RWT SUPPORTRIB
- -747-8 FTF AFT BULKHEAD
- -EMB 170/190 RIB1MACHINED/FLE
- EMB 170/190 SKIN-BOTTOM
- -747-8 FTF PART etc.



B787 Body FR13 Side Frame



B787 RWT Closure Rib



B787-8 WTE Upper Fitting



B787-8 RWT Support Rib



B787-8 FTF AFT Bulkhead



EMB 170, 190 Rib Machined ELE

#### NES&TEC Co., Ltd.

▲ Contact Person : Youngeun Park

▲ Tel: +82-42-932-8086 ▲ Fax: +82-303-3441-8086

▲ E-mail: nes@nesnt.com ▲ Homepage: www.nesnt.com



▲ Company Intro:

NES&TEC Co., Ltd. develops and supplies comprehensive UAV systems, such as unmanned navigation and control system, image stabilization system based on our unique technology and algorithm.

Equipped with technology accumulated for years, we supply products that meet the various needs of our customers through customization.

Through continuous research and development, we are conducting projects in defense industries and social security.



STINGRAY







SWID-EX

SWID-TETHER

#### Neuros Co., Ltd.

▲ Contact Person: Sung-Min. Ahn

▲ Tel: +82-42-865-7300 ▲ Fax: +82-42-865-7340

▲ E-mail: asmin@neuros.co.kr ▲ Homepage: www.neuros.co.kr

▲ Address: Daedeok Techno-Valley, Tamnip-dong 825, Yuseong-gu, Daejeon, Korea

▲ Company Intro:

Since the foundation in 2000, Neuros have been developing high value-added, high-tech products based on the technologies of aero turbine engine. Turbo blower and turbo compressor, which were released in 2004 and 2008, respectively, are environment-friendly and monumental energy-saving products. In 2009, ACM was developed which is one of the core components of the ECS for POD in the jet fighter. Moreover, we are preparing our second leap by applying our core technologies in the fields of energy and aviation defense industry such as UAV engine, ECS and ACM for aircraft







#### **PSIONdsp Corporation**

▲ Contact Person : Chanmi Kim.

▲ Tel: +82-42-863-1171 ▲ Fax: +82-42-863-1178

▲ E-mail: kcm@psiondsp.com ▲ Homepage: www.psiondsp.com

▲ Address: (415, Migun Techno-World B/D, Yongsan-Dong) 199, Techno 2-ro, Yuseong-gu, Daeieon, Korea

▲ Company Intro:

PSIONdsp has been striving to provide customer with most reliable ruggedized displays, computers and other components especially for harsh environmental application. Our knowledge & experienc\-es has been based upon in-depth knowledge of displays, optics and signal interface. We design and develop the ruggedized products and solution 100% in house. PSIONdsp would keep trying to lead the trend of technology as total solution provider.





25i0NDSP

#### **Qnion Co., Ltd.**

▲ Contact Person: Martin(Jong-hee) Park

▲ Tel: +82-42-719-2140 ▲ Fax: +82-42-719-2340

▲ E-mail: martin.park@gnion.com ▲ Homepage: www.anion.com

▲ Address: 165, Jukdong-ro, Yuseong-gu, Daejeon, Korea

▲ Company Intro:

As a specialized company in the Defense and Space industry with 18 years of experience. Qnion is doing in the field of Defense System, Embedded Solution, RF Simulators and Satellite Business compliant with AS9100D process.

And also, Qnion is participating in Defense projects in various forms such as Delivery to Military, Cooperation development with system companies and etc.

In Aerospace Business, we are currently participating in the ELINT/COMINT of EW System for Reconnaissance Aircrafts and KF-X, developing and delivering Digital Frequency Synthesizer and Digital Receivers for KF-X program.

In the future, we plan to expand the business are of Aerospace such as Unmanned Aerial Vehicle business and expect to make a leap to the world.









DDS based Frg.Synthesizer



Digital Receiver



Output Filter for GEO-KOMPSAT2

### Russian Helicopter Focus (RH Focus)

▲ Contact Person : S.H. Lee

▲ Tel: +82-43-712-5037 ▲ Fax: +82-43-211-9622~3

▲ E-mail: shlee@rhfocus.com ▲ Homepage: www.rhfocus.com

▲ Address: 980, Ochang-daero, Naesu-eup, Cheongwon-gu, Cheongju-si, Chungcheongbuk-do, Korea

▲ Company Intro:

RH Focus Corp. consists of experts in aerospace. Our best property is the professionalism accumulated from the logistic supply services for the 68 fleets that we have supplied to Korea government agencies and civil operators for last 24 years.

Our business domain ranges from helicopter & its parts supply, M.R.O., modification & optional equipment development to the consulting & solution providing for the overall aviation business.

We are improving modernization & optional equipment such as fire fighting, air condition, engine retrofit program, and ballonet system to adopt modern and technical services.

Newly born in the name of RH Focus, we will strive our utmost for the customer's satisfaction.







#### S&K Aerospace Co., Ltd.

▲ Contact Person: Jaehveong Kang

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▲ E-mail: snkaero069@snkaero.co.kr ▲ Homepage: www.snkaero.co.kr

▲ Address: 107, Gongdan1-ro, Sanam-myeon, Sacheon-si, Korea

▲ Company Intro:

S&K Aerospace has acquired fame as a specialist in aerostructure manufacturing, especially in wing, fuselage parts, and assemblies of commercial aircrafts, since it was founded in 2005. With perfect deliveries and the

best quality in the market, S&K has successfully supplied more than 3,000 cumulative ship-sets of the flagship products, A319/A320 Wing Top Panel Assembly, for the last 11 years and also has struggled to enhance the value for all the customers with a Collective In-house Production System from Material Acquisition and Machining to Chemical Processing and Assembling. As a part of space, S&K has been instrumental in Planning & Production of parts and assemblies of satellite launching vehicles.



SSK 에스앤케이항공I쥐





### SAMCO

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▲ Address: Haeansaneop-ro, sanammyeon, sacheon-si, 381, Korea

▲ Company Intro:

Specialized in Aircraft fuselage Assembly such as Door systems, Wing component and helicopter program. Machining and Sheet Metal capability.

• Category: Aircraft Door Systems, Wing Component Sub-Assemblies

- · Products:
- Aircraft Door Systems
- · Sukhoi Super Jet 100 Door Systems
- · Boeing 757 APU Door
- · Boeing 737 EE Door
- · Boeing 777 EEA / FA Door
- Wing Structural Components
- · Boeing 737 Leading Edge & Spar
- · Boeing 767 Fixed Trailing Edge
- · Gulfstream IV Stang Beam
- · Gulfstream V Leading Edge
- Flight Control Systems
- · KUH Flight Control System Sub-assemblies
- Part Fabrication











Quadrant(FWD, AFT)

### Samyang Comtech Co., Ltd.

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▲ E-mail: richlim@samyangct.com ▲ Homepage: www.samvangct.com

▲ Address: 8F, Park B/D., 16 Banpodaero 27-qil, Seocho-qu, Seoul, Korea (06655)

▲ Company Intro:

For 50 years since founded in 1962, we, Samyang Comtech, have strived for performance upgrade of defense products. We put our concentration on manufacturing the products to enhance protective power and survival rate at battlefields. Especially, we provide PPE(Personal Protective Equipment) of using state-of-the-art material and manufacturing technologies to defend the enemy's threat, and the world-top equipment bulletproof

solution to improve the protective power of main maneuver equipment. With such technical power, we have joined a tank development project. In the composite material part of aircraft, we manufacture and supply components of fixed wing and rotary wing which satisfy the quality requirement of Korean and overseas system integration companies. On the basis of accumulated experience and performance, we will continue our constant R&D efforts to achieve top quality for customer satisfaction.





LE Splice and Access Panel

Testing & Evaluation

#### Satrec Initiative Co., Ltd.

▲ Contact Person : Kim Fe Ful

▲ Tel: +82-42-330-6878 ▲ Fax: +82-42-365-7559

▲ E-mail: eek@satreci.com ▲ Homepage: www.satreci.com

▲ Address: 441 Expo-ro, Yuseong-gu, Daejeon, Korea

▲ Company Intro:

Satrec Initiative (SI) is the leading solution provider for Earth observation missions, offering customers worldwide high performance, cost-effective turnkey satellite platforms, electro-optical instrument, ground systems and components as well as training and consultancy services. Focusing sincerely on the customers' needs with innovative technologies, SI has delivered optimized high quality solutions to over 20 customers in the Middle East, Asia and Europe. SI has been working on various national and international space programs since its establishment. Through continuous technology innovation, productivity improvement, and cost reduction, SI is capable of providing the most efficient and integrated solution not only for Earth observation missions and applications, but also for defense systems. SI's main business area includes satellite systems and their applications. SI has been particularly focusing on integrated solutions for Earth observation missions using high-performance and cost-effective small satellite buses, Earth observation payloads, and ground stations.



For Technology of Composite

Samyang Comtech



### SEOUL STANDARD Co., Ltd.

▲ Tel: +82-70-4648-5500 ▲ Fax: +82-2-6116-6133

▲ Homepage: www.sstandard.co.kr

▲ Address: 3.4 FL. Ace High-end Tower 9 Cha. 233.

Gasan digital 1-ro, Geumcheon-gu, Seoul, Korea

#### ▲ Company Intro:

• Category: Rugged Notebook Computer, Minimized Computer, Rugged Panel Computer, SI/NI Business, PC Sales and Maintenance

- · Products:
  - -Rugges Notebook
  - · STD-50K Military Grade
  - · STD-40K Industral Grade
  - · Minimized Computer
  - · Rugged Panel Computer -SI/NI Business





STD |주|서울스탠디드

#### SEWOO AEROSPACE Co., Ltd.

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▲ Tel: +82-55-850-0706 ▲ Fax: +82-55-834-8493

▲ E-mail: bvungdae@sewoo.biz ▲ Homepage: www.sewoo.biz

▲ Address: H23-17, Gongdan 1ro, Sanam-myeon, Sacheon-si, Kyeongsangnam-do, Korea

▲ Company Intro:

Advanced tube bending technology proven by KAI as 1st tier supplier

- Equipped advanced tube bending system: CNC bender & Measuring M/C- Various Swaging & end forming M/C's

-Delivered 100% tube assemblies to KAI for KF-16, T-50, KT-1, KUH, etc, Specialized tube & duct welding for aerospace purpose

- GTAW for Aluminum, Stainless Steel and Nickel Alloy
- Braiding for hot air duct assembly









SEWOO











Welded Assembly











#### SHINBO Co., Ltd.

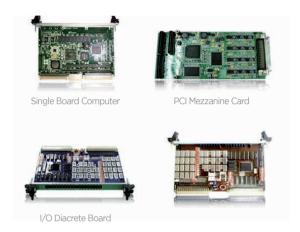
▲ Tel: +82-31-468-2448 ▲ Fax: +82-31-469-2446 ▲ Homepage: www.shinbo.kr



▲ Address: 203-14, Anyang 7-dong, Manan-gu, Anyang-si, Gyeonggi-do, Korea

#### ▲ Company Intro:

- Category: Embedded H/W·S/W, SUB System, Analog/Digital Video Recorder-GUI
- Products:
  - -Single board computer, PCI Mezzanine Card, I/O Discrete Board
  - -Video Splitter, Video Distributor, Video Storage Card
  - -EOTS, MST, FLIR, APS, LWR, ICS, NIFF, DLTV -UPS
- -LWR Simulator, Fan Tray, Indicator



#### SK CHEMICALS Co., Ltd.

▲ Tel: +82-2-2008-2008 ▲ Fax: +82-2-2008-2009

▲ Homepage: www.skchemicals.com

▲ Address: 310 Pangyo-ro, Bundang-gu, Seongnamsi,

Gyeonggi-do, Korea

#### ▲ Company Intro:

· Category: Green Chemicals, Life Sciencel

• Products:

-High Performance PETG, Polyester Binders, PET Resins, Carbon Fiber Composite, ECOZEN

- Musculoskeletal, Gastrointestinal, Cadiovascular, Urology, Antibiotics, Blood Preparations, Vaccines, Parenteral Nutritions





#### Songwol Technologies Co.,Ltd.

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▲ Address: 40-14, Yeonkkot-Ro, 145beon-Gil, Jinju-Si, Gyeongsangnam-Do, Korea (52845)

▲ Company Intro:

Songwol Technologies specializes in manufacturing aircraft composite parts. We also contributing to a variety of industries including automotive and railway with specialized technologies such as VARTM. Filament winding, etc. The main products include: T-50 Engine Inlet Cover Screen, AH-64 Body Structures, B787 and B777 FTE Panels, Horse structure for screen riding, Songwol Technologies is fulfilling the strict quality system with AS9100, NADCAP certification. We'll set up our new manufacturing plant and advanced equipment for composite by Oct, 2016. We dream of becoming 'Global Top Maker' with an attitude of innovation and challenge in development of technologies.







Helicopter Body Structures



Engine Inlet Cover Screen



#### Soosung Airframe Ind., Ltd.

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▲ Address: 99, Changwon-daero 1144beon-gil, Seongsan-gu Changwon-si,

Gyeongsangnam-do, Korea

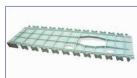
▲ Company Intro:

Since its foundation on 1985, Soosung Airframe has been a reliable supplier of aerostructures for commercial, military and business jet aircraft. The company's customer base consists of the world's leading aerospace companies, such as Triumph, Spirit, Primus, NIPPI, KHI, L3-Commu\-nication. KAL and KAI. Headquartered in South Korea, the company has about 250 experience employees on 2 facilities.

- -E500 Aileron, Flap, MLGD Detail Parts & Assembly
- A318/319/320/321 Upper-shell Section #15 Detail Parts & Assembly
- A319/A320/A340-600 Wing Top Stringers
- A330/A340 Wing Bottom Stringers
- A330/340 EIS Machined Ribs
- -B777-200/300 ER Machined Ribs
- A320 Upper Shell Frame & Detail Parts
- -B747-400 Inter spar Wing Rib Detail Parts
- -B747 SUD & AFA Frame detail Parts
- -B767 Wing Center Section D&A Parts
- -ERJ-170/190 Fuselage Detail Parts











# TAAS Co., Ltd.

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▲ Tel: +82-70-4863-8905, +82-10-2221-3574 ▲ Fax: +82-31-701-3014

▲ Address: (Yatap-dong, B-903), 723, Pangyo-ro, Bundang-gu, Seongnam-si, Gyeonggi-do, Korea

▲ Company Intro:

TAAS is one of the leading companies in design, development and manufacture of high technology Avionics and Military equipment for Aerospace and Defense industries in Korea. We have been dedicated to provide highly reliable and innovative electronic products for the Aviation/Military Agencies and industries since 2013, including participation in Korea Utility Helicopter (KUH) program.

▲ Homepage: www.taas.re.kr

- Business Area and Technology:
  - Health & Usage Monitoring System
  - Vehicle Information System: Data Acquisition and Caution
  - Automatic Flight Control System
  - Engineering Capability
  - · Systems Engineering
  - · Analog, Digital, FPGA, Firmware, Application Software, Mechanical Design & Development
  - · Configuration Management, Reliability & Maintainability, Logistics Support
  - Manufacturing Capability
  - · Electronic Assembly(Certified to J-STD-001/IPC 610)Products
  - · Electronic Testing(CCA Testing, Testing Equipment, Top Assembly Full Functional Testing, ESS Testing)

#### • Products:

- Products are specialized in Aerospace and Military applications including Health and Usage Monitoring System, Warning Panels, Automatic Flight Control System, Data Acquisition Unit, Integrated Vehicle Indicator under MIL-STD specification, and customized Integrated Test Sets.



#### Tops Co., Ltd

▲ Contact Person: Eunyoung, Shin

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▲ E-mail: evshin@tops21.com

▲ Homepage: www.TopsWaterjet.com

▲ Address: 19, Golden root-ro 129beon-gil, Juchon-myeon, Gimhae-si, Gyeongsangnam-do, Korea

▲ Company Intro:

Specialized in wateriet system solution in Aerospace.

- Products:
  - Wateriet Machining
  - · Cutting: Spacers, ribs, blades
  - · Roughing: Blisks, blades, leading edges
  - · Drilling : Plugs, nacelle parts
  - · Degating: Lost-wax foundries
  - · Deflashing: Forges, blades, landing gear
  - · Materials : Composites CFRP, superalloys, titanium, aluminum, stainless steel
  - Wateriet Stripping for MRO
  - · Parts : Boosters, combustors, HPC blades, LPT roating seals, HPT blades
  - · Coatings: Abradable, anti-fretting, wear resistance, thermal barrier (TBC)
  - · Substrate : Titanium, superalloys, aluminum, stainless steel





#### Uconsystem Co., Ltd.

▲ Contact Person: Young-taek. Han

▲ Tel: +82-42-936-2251 ▲ Fax: +82-42-936-2250

▲ E-mail: vthan@ucn.foosung.com ▲ Homepage: www.uconsvstem.com

▲ Address: 40-9, Techno 2-ro, Yuseong-gu, Daejeon, Korea

▲ Company Intro:

Uconsystem was established in the year 2001 by the leading research engineers who developed the first Korean tactical UAV system. Uconsystem has led localization of UAV subassemblies and started to supply the small UAV system which is the second localized UAV system for Korean Military from the year 2009. Also Uconsystem has been trying to explore the overseas markets after exporting ground control stations to UAE for the first time in Korea and joined the Korean MUAV military project which is led by DAPA & ADD by developing ground control stations. Nowadays Uconsystem is making incessant efforts not only military UAV but also commercial UAV such as cadastral surveying and agricultural UAV.





RemoEye - 002B

Remofarm - 20

Multi-Purpose Commercial Drone

**X UI** Helicopter

#### UI Helicopter Co., Ltd.

▲ Contact Person: Youngsoo Lee

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▲ E-mail: vslee@uihelicopter.com ▲ Homepage: www.uihelicopter.com

▲ Address: 275, Hyorim song seok-gil, Sapgyo-eup, Yesan-gun, Chungnam-do, Korea

▲ Company Intro:

UI Helicopter Co., Ltd.(UIH), established in 1986 and approved by the ROK Government in 1987, is the premier helicopter MRO (Maintenance, Repair & Overhaul) company; Bell's authorized Customer Service Facility, Leonardo's authorized Service Center and Sikorsky's appointed Customer Support Center.

UIH has performed PDM (Periodic Depot Maintenance) which enables helicopters in fact to become as new aircraft in performance and appearance, and has delivered 331 UH-1H's with PDM completed to the ROK Army. UIH has also performed MRO works on over 500 civil helicopters.

With the professional experience and technologies accumulated over the past 32 years on helicopter MRO/PDM and component repair & overhaul, UIH has full capabilities for helicopter MRO/Upgrade/Customizing & System Integration.









**UCONSYSTEM CO., LTD.** 

#### Unimax.co., Ltd

▲ Contact Person: Taehui, Kang

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▲ Homepage: www.hancomunimax.co.kr

▲ Address: Megavelly 410, 268, Hagui-ro, Dongan-gu, Anyang-si, Gyeonggi-do, Korea

▲ Company Intro:

Hancom UNIMAX is a company specializing in defense system which was established in 1999 and has 20 vears experience in embedded engineering design field with core technical personnel. Based on this, we have developed and manufactured customized computer and boards specialized in guidance control, aviation electronics, communication system, power supply, industrial automation and etc

With technology analysis and understanding of advanced foreign companies, we will keep developing standard products in the defense and electronic field. Through this, we will become a future leader that can be recognized both in korea and abroad



**Guidance Control Computer** 



Aviation Electronics



Tactical Communication System



Power

U-Tel Co., Ltd.

Microwave Sensor Network

### U-Tel Co., Ltd.

▲ Contact Person: Aaron Suh

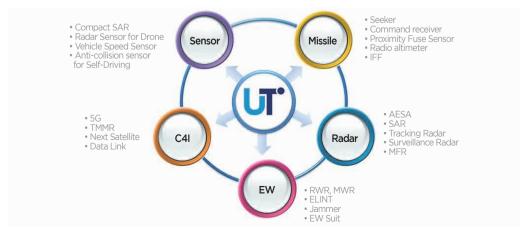
▲ Tel: +82-31-412-4426 ▲ Fax: +82-31-427-1030

▲ E-mail: dhseo@u-tel.co.kr ▲ Homepage: www.utel.co.kr

▲ Address: 82, Gunpocheomdansaneop 2-ro, Gunpo-si, Gyeonggi-do, Korea

▲ Company Intro :

Developing state-of-the art defense / civil products through RF/Microwave & DSP technologies.



#### YEONHAB PRECISION Co., Ltd.

▲ Contact Person : TAC JUNG

▲ Tel: +82-41-620-3234 ▲ Fax: +82-41-620-1320



▲ E-mail: tsjung@yeonhab.co.kr ▲ Homepage: www.veonhab.com

▲ Address: 219-27 Haksusosa-qil. Mokcheon-eup, Dongnam-gu, Cheonan, Chungnam, Korea

▲ Company Intro:

• Yeonhab has been in defense industries over 36 years and manufacturing credible products

- Manufacturing build-to-print components (connectors, cables, and cable assemblies) and telecommunication equipment for the Army. Air Force, and Navy.
- Number 1 manufacturer in connectors, cables, and cable assemblies
- De-icing harness for KUH (helicopter)
- -Designing entire harness and manufacturing most of parts for UAV (ground control panel, transformer rectifier, battery charger control, power management, matrix box)
- Manufacturing Capability
  - Traceability and manufacturing process monitoring by Manufacture Management Team
  - Error proof and inspection process, quick after service by Quality Management Team

















Harness for UAV

RCCLI

Matrix Box

Coaxial Cable

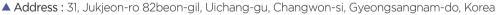
Teflon Wire YHSPD Cable Micro Coaxial Cale Fiber Optic Cable

#### YoungPoong Electronics Co., Ltd.

▲ Contact Person : Yunjung Ryu

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▲ E-mail: silee@vulkok.co.kr ▲ Homepage: www.vpelec.co.kr



▲ Company Intro:

YPE is specialized in developing and manufacturing defense products, the electrical and electronic control/ calibration/calculation equipment for ground, aviation(fixed-wing, rotary-wing, simulator, UAV, KF-X), naval, and guided weapon systems, which are compliance with MIL-SPEC & ISO for over 30 years.

- High efficiency military hybrid power control technology
- Core technology application for avionics
- Land / Marine / Airborne fire control system development
   Multi-sensor navigation system development
- Navigation & ground control technology for unmanned vehicles
- Actuator system development for guidance & control

We won a presidential prize for Defense Quality Management, earned DAPA award for ISI localization development, and R&D in aircraft mounted controller and/or UAV navigation & control system is on the way.

Product



Electrical Master Box



Instrument(ISI)



(LGCU)

Solid State Power

영풍전자주식회사

YOUNG POONG ELECTRONICS CO., LTD.

Controller(SSPC)

# YULKOK Ltd.

▲ Contact Person : CB Lee

▲ Tel: +82-55-275-2911 ▲ Fax: +82-55-275-2921

▲ E-mail: silee@yulkok.co.kr ▲ Homepage: www.vulkok.co.kr

▲ Address: 38, Banwol-ro, Sungsan-gu, Changwon-si, Gyeongsangnam-do, Korea

▲ Company Intro:

Yulkok Ltd. has 20years of experience in machining aircraft high-precision parts & assembly. (T50 Center Fuselage, B737&P-8A Vertical Fin. Horizontal Stabilizer, B777FLE Ribs etc..)

Provides Turn Key Base Service with minimizing indirect efforts & cost of Customer Continuous investment, based on a strong financial capability.

Yulkok will continue to invest to become a major "Integrated Airframe Company".









YULKOK

A350 Wing Rib

B787 Flap Support 3

T50 Center Section Assv

B737 Spar & Chord

ZHT

#### ZHT Co., Ltd.

▲ Contact Person : JiMi Lee

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▲ E-mail: iimi.lee@zht.co.kr ▲ Homepage: www.zht.co.kr

▲ Address: 23, Nonhyeon-ro 111-gil, Gangnam-gu, Seoul, Korea

▲ Company Intro:

ZHT is a specialized company established in 2004 that develops and produces advanced core modules of military systems in the field of parts and materials.

ZHT has the ability of research and development of Military Systems such as Microwave modules, HVPS and Power system by leading technologies in RF, power, and Digital systems.

ZHT is specialized in producing and servicing core components and modules of Military systems by high level of facilities in PCB, testing and system assembling.



Frequency synthesizer



Receiver



SASM TWTA



MUSAR HVPS



# Seoul ADEX 2019

Seoul International Aerospace & Defense Exhibition 2019

2019. 10. 15~20 (Tue~Sun) **Seoul Airport** 



#### Korea Aerospace Industries Association

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