

CREATING HISTORY IN AEROSPACE

KAI's Path Has Become the History of the Aerospace Industry in Korea

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OVERVIEW

As a system integrator in Aerospace, KAI has been taking the leading role in the aerospace industry in Korea. KAI has successfully developed of the T-50 (Advanced Jet Trainer), KT-1 (Basic Trainer), KUH-1 SURION (Utility Helicopter), and the RQ-101 UAV SONGGOLMAE.

The KF-21 (Next-Generation Fighter), LAH (Light Armed Helicopter), and LCH (Light Civil Helicopter) are the growth engines at KAI, currently under development.

As a total solution provider in aerospace, KAI is further exhibiting technical excellence in the development of the Korea Multi-Purpose Satellites (KOMPSAT, ARIRANG), Compact Advanced Satellite 500 (CAS-500), SAR Satellites, and the Korea Space Launch Vehicle (KSLV-II).

+ KAI way

Compliance

Core Capabilities

+

Corporate Social Responsibility

History







ISO 37001



Ethics & Compliance

Becoming a Trusted Global Company by Establishing a World-class **Ethical Management System**

KAI strives to make ethical decisions the highest priority. To ensure that all employees make transparent and ethical decisions, KAI established an ethical management system that meets international standards. In 2018, KAI established a global Anti Bribery System by acquiring ISO 37001 certification, the Anti Bribery Management System of international standards. Through such continuous efforts, the Company will establish a transparent corporate culture and grow into a trusted global aerospace company.



Proclamation on Ethical Management for all Members CEO Ethics Management Practice Training





Operation of Cyber Reporting System



Fulfilling Our Social Responsibilities to Spread the Joy of Giving & Sharing

In order to realize a sustainable future for common growth, KAI has been implementing customized social contribution activities. KAI is taking the lead in social contribution activities in the aerospace industry while fulfilling corporate responsibilities. Such activities include volunteer activities and donations, in which members participate directly.



Aviation Camp for Teenagers





An invitation event for ambassadors from 16 countries Sponsorship of the "Sky Love Choir" singing dreams and hopes with local children.

OVERVIEW





KAI has World-class Development Capabilities in All Types of Aircraft, including Fixed Wing, Rotary Wing, UAV and Space Programs













NI-600VT(Vertical Take Off and Landing UAV) Ground Test



Geostationary Korea Multi-Purpose Satellite (GEO-KOMPSAT, CHEOLLIAN) Test

T-50 Ground Test

KF-21 PVI(Pilot Vehicle Interface) Design



KAI has the Technology and Infrastructure including Composite processing, Structure Manufacturing, Final Assembly, and Painting to **Produce Cutting-edge Aircraft**

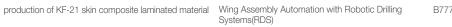












B777X Wing Rib 3D Measurement







A350 Wing Rib Automated Process

T-50 Exterior Painting

KSLV- II Propellant Tank Assembly



As an Aircraft Exporter, KAI provide the best quality and the best service by Offering On-time Follow-on Support and Management Tools to Maximize the Customer's Operational Efficiency



Customer Support Center



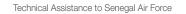




Logistics Information System

Training Center Providing Education and Training to the Customer (Training for MUH-1 Operator)







Technical Assistance to the Royal Thai Air Force



Competence in Figures

The Capability of KAI is Proven by Objective Figures. KAI will be a Reliable Partner of Domestic and Overseas Customers Based on Advanced Technology and Know-how Accumulated over Decades.

Global Partners

KAI Serves Customers Worldwide, Emerging as a Key Player in the Global Aerospace Industry

The Number of Aircraft Produced by KAI



Fixed wing



KT-1 Derivatives T-50 Derivatives KC-100 Derivatives



Rotary wing



SURION

SURION Military

- · Amphibious Assault
- · Medevac

SURION Parapublic

- Police
- · Emergency Medical
- · Forest Service
- · Coast Guard

LAH/LCH

200

Upgrade & Modification

F-16D (Jet Fighter)



FLIR (Thermal Imaging Camera)

Lynx (Maritime Operation Helicopter)

P-3CK (Maritime Patrol Aircraft)

C-130H (Transport Aircraft)

E-737 (Airborne Early Warning & Control Aircraft)





Korea Aerospace Industry History

The Birth and Early Years (the 1950s to 1999)

KAI opened up the dawn of Korean aircraft development, starting with the domestic implementation of Depot Maintenance (DM) and carrying the dream of indigenous aircraft development.

'Buhwal-ho', the First Aircraft We Built with Our Own Hands

In 1953, ROKAF deeply realized the need for inhouse-built aircraft, and thus the first Korea-made aircraft, Buhwal-ho, was born.



Commencement of **Aviation Maintenance** Activities

After the Korean War, ROKAF introduced the F-86, F-5 and F-4 jet fighters. They carried out depot maintenance (DM) without relying on foreign countries.



Time of New Leaps and **Development** (1999 - 2010)

As a final aircraft system integrator, KAI developed aircraft for domestic and export markets, expanding its

From Introduction

to Introduction of

As a result of the offset

Assembly Production,

Technology Acquisition

in the production of simple parts for Boeing and Airbus. Gradually accumulating technology, KAI developed into a large aerostructure producer.

program, KAI became involved

of Component



Dream of Developing

KAI commenced KTX-1 Basic

Trainer development program

in 1988 and KTX-2 Supersonic

Trainer development program

Early KT-1 production line

Domestic Aircraft

Established Korea

Co., Ltd.

Aerospace Industries

On October 1, 1999 the leaders

who sought to guide the history

of the future aerospace industry

KAI Opening Ceremony

The Dawn of Korean-**Made Aircraft Export**

KAI succeeded in mass production of KT-1 Basic Trainer in 2000 and export to Indonesia in 2001 and Turkey



Indonesian Pilots who boarded KT-1B

Korean-made Aircraft to **Defend Korean Airspace**

After the KT-1 Basic Trainer was incorporated into the Air Force strategy, the Corpslevel UAV 'SONGGOLMAE' was incorporated in 2002, and the T-50 Advanced Jet Trainer was incorporated in 2005.



Growing as an **International Joint Development Partner**

Commenced civil aircraft structure design while participating in A350 Wing Rib International Joint Development Project and B787 Development Project.

From Satellites to Korea

Time of Growth and

attracting attention as a future growth engine for Korea and KAI is laying the foundation for growth as a world-class aerospace company.

Leading Development of KF-21-LAH-LCH

KAI is taking another leap forward development of multipurpose by developing the LAH (Light Armed Helicopter), LCH (Light Civil Helicopter) and the KF-21 (Next-Generation Fighter).



Space Launch Vehicle Growth Target as MRO

in participating in the practical satellites in the past, KAI is making a new leap to become a private initiative company in the space



Based on our experience

HUB in the Asia-Pacific

Selected as an aviation maintenance company in 2017, KAI aims to become a MRO-specialized company in the Asia-Pacific.

Leadership (2011 to Present)

The Aerospace industry is



Securing Diverse

Market

Helicopter Platforms,

Parapublic Helicopter

The KUH-1 SURION, a utility

helicopter KAI developed in

2012, has both military and

helicopters by continuously

Expanding to Military and



TOTAL SOLUTION PROVIDER IN AEROSPACE

Our Journey Begins with Historical Moments in the

Aerospace Industry. Our Passion for the Development of

Aircraft will Lead the Future of the Aerospace Industry.

TOTAL SOLUTION PROVIDER IN AEROSPACE

MAJOR PROGRAMS

Fixed Wing Programs
KT-1

T-50

KC-100

KF-21

Rotary Wing Programs

KUH-1 SURION Military
KUH-1 SURION Parapublic

LAH LCH Aerostructure (Commercial & Military)

Upgrade & Modification

MRO

cture Training System

. UAV

ation +

Space Programs







KT-1 Basic Trainer

- Dimensions : $10.6m \times 10.3m \times 4.2m$

- Power Plant : 950 shp - Max. Speed : 350 kt

- 2 passengers

Basic Trainer

Basic Trainer with Excellent Spin Recovery Ability and Fuel Efficiency

The KT-1 export is launched by Indonesia and is expanding to Turkey, Peru, and Senegal. KT-1 is complimented by customers of allied country with its excellent performance, reliability, and operational efficiency.

KT-1 : Basic Trainer for Air Force pilot training

 KA-1 : Armed Airborne Controller, guides Close Air Support (CAS) Aircraft



KA-1S Senegal





T-50i Indonesia



T-50IQ Ira



FA-50PH the Philippines



T-50TH Thailand

- 1 T-50: Advanced Jet Trainer for air combat training
- 2 TA-50: Lead-In Fighter Trainer (LIFT) Aircraft for radar tactical and combat mission training
- § FA-50: Light Combat Aircraft (LCA) with tactical data link, precision guided munitions, selfprotection and night mission capabilities
- **∢ T-50B**: Aerobatics Demonstrator for ROKAF's aerobatics team, the Black Eagles



The Best Candidate for Next Generation Fighter Training

T-50 is a supersonic trainer for air combat training. With maneuver and flight speed similar to real-combat fighter jets, the T-50 is a trainer that is best-suited to the characteristics of next-generation fighter control. The T-50 was first introduced in the overseas market in 2011. KAI is continuously expanding its market share by boasting the T-50's multirole capabilities.









KC-100 4-seat General Aviation Aircraft

- KC-100 : 4-seat General Aviation Aircraft (NARAON) acquired international certification
- 2 KT-100 : Primary Trainer in the flight introductory training course for ROKAF Academy cadets

The First Internationally Certified General Aviation Aircraft, Utilized for Various Purposes

4-seat general aviation aircraft KC-100 (NARAON) meets the international certification requirements of the US Federal Aviation Administration (FAA) and the Korean Ministry of Land, Infrastructure and Transport. Equipped with complex new material and high-tech electronic integrated equipment, the KC-100 can be used for various business purposes such as air transportation, and leisure sports, as well as forest fire and coastal surveillance, patrol, education, and training. The KC-100 is now being modified for flight introductory training course for the ROKAF.

KC-100 NARAON

- Dimensions : $11.3\text{m} \times 8.0\text{m} \times 2.7\text{m}$
- Power Plant : 315 shp
- Max. Speed: 210 kt
- 4 passengers





KF—21 Next-Generation Fighter





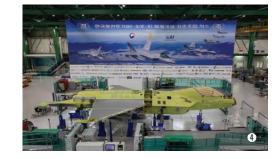




Developing the Next Generation Korean Fighter for Future Battlefield

34

The KF-21 (Next-Generation Fighter) program is a full scale fighter development program, set to introduce an outstanding aircraft for future battlefields. The development program is set to last for a total of 10 years and 6 months, and is designed as an international joint development with Indonesia.



- Dimensions : $11.2m \times 16.9m \times 4.7m$
- Engine : 20,000 lbs class
- 1 passenger
- **1 KF-21**: Roll-Out of the First Prototype (2021. 4)
- KF-21: KF-21 equipped with AESA radar as well as Air-to-Air and Air-to-Ground weapons
- 3 International Joint Development Program with Indonesia
- 4 Started the final assembly of the first KF-21 prototype (2020. 9)

KUH-1 SURION Military Helicopter

KUH-1 Utility Helicopter SURION

- Dimensions : $3.0m \times 19.0m \times 5.0m$ - Power Plant : 1,855 shp \times 2

- Max. Speed : 145 kt

- 18 passengers

- **1 KUH-1**: Utility Helicopter SURION in field exercise
- 2 MUH-1 (Marine Utility Helicopter): Amphibious Assault Helicopter landing at a deck of a ship
- KUH-1M (MEDEVAC): Medical evacuation helicopter for evacuation of emergency patients(At war/normally)
- **4 KUH-1M (MEDEVAC)**: in medical evacuation training









Equipped with State-of-the-art Equipment, SURION Carries out the Mission with Various Terrains, Day and Night, and any Adverse Weather Conditions

SURION has excellent performance and hovering abilities, comparable to the world's best helicopters. With state of the art equipment like the AFCS (Automatic Flight Control System), Navigation System and 3D Map, the SURION allows for stable performance in various terrains (mountain/urban) and harsh conditions both day and night. SURION is currently operated as ROK Army Utility Helicopter and expanding its mission into Amphibious Assault Helicopter for Marine Corps or Medevac Helicopter.

KUH-1

SURION Parapublic Helicopter

KUH-1P Police Helicopter CHAMSURI

- Dimensions : $3.0m \times 19.0m \times 5.0m$ - Power Plant : 1,855 shp \times 2 - Max. Speed : 145 kt

- 16 passengers

- 1 KUH-1P (Police): Police Helicopter (CHAMSURI) in Dokdo
- WUH-1EM (Emergency Medical): Fire-fighting Helicopter with various missions of search and rescue (SAR), emergency patient transportation, fire-fighting
- KUH-1FS (Forest Service): Forestry Helicopter for prevention of forest fire, evacuation, search and rescue (SAR) and transportation of emergency patients
- (Studential Coast Guard): Coast Guard Helicopter for marine surveillance and search & rescue









SURION Derivatives Expanding Domestic and International Civil and Parapublic Helicopter Market

KAI has been expanding its inroads into the public market which used to heavily rely on imports by developing SURION derivatives - based on its excellent performance. The CHAMSURI(a Police Helicopter) and White Eagle(Coast Guard Helicopter) are undergoing its multi-missions such as integrated defense, counter-terrorism, search and rescue (SAR), surveillance and traffic management. In addition, Fire-fighting Helicopter of Jeju Fire Service Headquarters and Forestry Service Helicopter of Korea Forest Service are carrying out their duties for the safety of the people through various missions like search and rescue, patient transportation and fire-fighting.

Light Armed Helicopter

LAH

- Dimensions : 3.9m × 14.3m × 4.3m - Power Plant : 1,032 shp × 2

- 2 passengers



Rollout ceremony celebrating the 1st LAH prototype (Dec 2018)

3 LAH in engine ground test







Contributing to the Enhancement of the Armed Forces by Continuous Technology Development and Thorough Verification

The LAH (Lighted Armed Helicopter) program aims to develop an advanced armed helicopter suitable for modern battlefields. The simultaneous development of the LAH and LCH (Light Civil Helicopter) programs allow for an optimized development cost and stable follow-on support. The LAH prototype was rolled out in December of 2018, equipped with modern avionics, weapons, fire-control systems.

Light Civil Helicopter

LCH

- Dimensions : $3.5m \times 14.3m \times 4.4m$

- Power Plant : 943 shp × 2

- 15 passengers





1 2 LCH: Successful first flight of the LCH (July 2018)

KAI Aims to Expand the Civil and Parapublic Market with a Lightweight Platform after Successful Introduction of SURION, Medium/Heavy Helicopter

The LCH (Light Civil Helicopter) program aims to develop a civil helicopter with a gross weight of 10,000 pounds. Development is performed in conjunction with the LAH program for efficient development management and operation. The LCH successfully carried out its first flight in July of 2018. The LCH is an efficient and versatile rotary-wing aircraft providing a wide range of missions including police, fire-fighting, VIP, passenger transportation and EMS (Emergency Medical Service).

Aerostructure commercial

Based on the Commercial Aerostructure Technology and Know-how, KAI will Lay the Foundation for the Development of Commercial Aircraft

KAI is participating in the international co-development project of the Airbus A350XWB as a Tier 1 partner and has been acknowledged in the world by our technological capabilities. KAI is also participating in Boeing's next generation commercial aircraft projects such as B787 and B777X, as well as Embraer and Bombardier, Bell Helicopter, IAI structure programs. KAI will lay the foundation for the development of commercial aircraft based on the aircraft aerostructure technology and know-how.



B767: HS FWD/AFT Torque Box







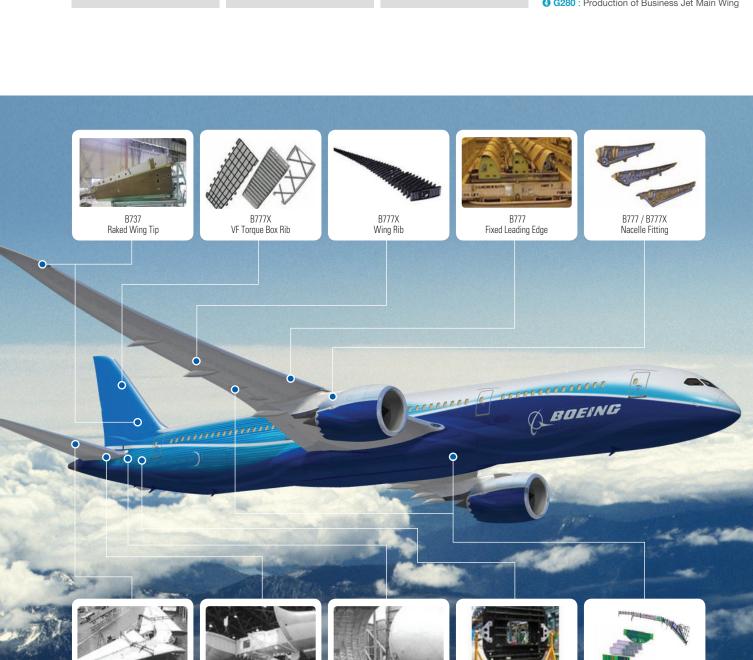
1 E-jet 2: Production of Wing Lower Stringer

2 M412: Production of Cabin and Tailboom

3 Q400 : Production of Regional Aircraft Tail Wing

4 G280 : Production of Business Jet Main Wing





B767 : Sec.48 Upper/Lower Panel, Pivot Bulk Head, Pressure Dome

B767

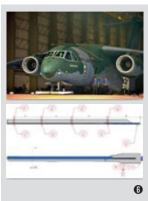
B787 Wing Center Box, Fixed Trailing Edge

Aerostructure Military

Maintaining Customer Confidence with World Class Quality Control

Recognized for world class production technology and quality, KAI produces and delivers the main fuselages for Boeing's AH-64 Apache, and forward fuselages/main wings of the F-15. Furthermore, KAI manufactures the outer wing of the A-10 and the racked wing tip/empennage of the P-8. KAI - based on experience and expertise - continues to strengthen business capabilities by participating in the design and production of various military aircraft structures.







- 1 AH-64: Production of Apache large Attack Helicopter Main Fuselage
- 2 A-10 : Production of Attack Aircraft Outer Wing Panel
- **3 F-15**: Production of Multi-purpose Fighter Main Wing and Forward Fuselage
- **4** P-8 : Production of Maritime Patrol Aircraft Racked Wing Tip and Empennage
- 3 F-16: Production of Forward/ Center/ Backward Fuselages
- **6** KC-390 : Production of Military Transport Aircraft Wing Upper/Lower Stringer
- **0** C-130J: Production of Transport Aircraft Nacelle



Upgrade & Modification

Realizing the Dream of Flying Longer and Further

Upgrade and Modification programs have the goal of upgrading and improving aircraft currently in operation to better suit their new missions and purposes. KAI has purchased the pre-owned P-3s from the US Navy and implemented lifecycle extension and equipment modernization program to reform it into the P-3CK, a modernized Maritime Patrol Aircraft, for the ROK Navy. Based on the B737 commercial aircraft, we modified the E-737 Airborne Early Warning & Control Aircraft equipped with radar and advanced avionics equipment and delivered it to the ROKAF. Currently, KAI is carrying out the performance improvement program for the C-130H Transport Aircraft of the ROKAF. In the future, the Company will expand Upgrade & Modification Program to incorporate various domestic and international aircraft



- 1 C-130H: Improved performance of Transport Aircraft operated by ROKAF
- **2 P-3CK**: Improved performance of US Navy aging aircraft with the ROK Navy latest Maritime Patrol Aircraft through extension of fuselage life and modernization of mission equipment
- **3** LYNX: Installation of FLIR thermal imaging cameras to improve nighttime operational capability of ROK Navy Maritime Operation Helicopter
- 4 HH-47: Installation of FLIR thermal imaging cameras to improve nighttime operational capability of ROKAF Search and Rescue Helicopter
- **⊙** UH-60 : Installation of FLIR thermal imaging cameras to improve nighttime operational capability of ROK Army / Air Force / Navy Utility Helicopter
- 6 E-737 : Renewed / improved aerial surveillance capability by B737 commercial aircraft to ROKAF Airborne Early Warning & Control Aircraft
- **7** F-16D: Improved performance for longer life of ROKAF Jet Fighter

Maintenance, Repair & Overhaul

MRO

Taking Responsibility for Safety Based on the Experience of Military MRO

As a final aircraft system integrator, KAI carries out Maintenance, Repair and Overhaul (MRO) programs for aircraft development, production test evaluation and life management. KAI has participated in the US Navy's H-53 Heavy Transport Helicopter maintenance program and currently maintains the US Air Force's F-16 Jet Fighter and ROK Navy's P-3CK Maritime Patrol Aircraft. In particular, KAI has established KAEMS (Korea Aviation Engineering & Maintenance Service) as the first aviation MRO specialized company, and has been supporting the stable operation of domestic and foreign alrlines by expanding maintenance services to large commercial aircraft.





- 1 P-3CK: Inspection and repair of Maritime Patrol Aircraft operated by ROK Navy
- ${\bf 2\ H-53}: Inspection \ and \ repair \ of \ Heavy \ Transport \ Helicopter \ operated \ by \ US \ Navy$
- **3 T-50 Derivatives**: T-50, T-50B, TA-50 and FA-50 follow-on logistics support
- **4 KT-1 Derivatives**: KT-1 and KA-1 follow-on logistics support
- 6 RQ-101 : Corps-level UAV follow-on logistics support
- **(3) KAEMS**: First maintenance of Civil Aircraft (Feb 2019)

Training System

- MUH-1 (Amphibious Assault Helicopter) Simulator
- **Ø** KT-1 (Basic Trainer) Simulator
- **3** T-50 (Advanced Jet Trainer) Simulator
- **④** FA-50 (Light Combat Aircraft) Simulator
- **⑤** KUH-1 (Utility Helicopter) Simulator
- **6** P-3 (Maritime Patrol Aircraft) Simulator
- **KF-16 (Jet Fighter) Simulator**

Providing Systematic Training to Maximize Training Efficiency

KAI is developing a training system that allows for systematic training and education throughout the lifecycle of the aircraft system. The training system developed by KAI has been evaluated as an optimized solution due to its high effectiveness; shortened training periods for pilots and maintainers, reduced training costs. KAI will build a comprehensive training center to provide systematic and efficient training services to the customers who operate aircraft supplied by KAI. It will also take the lead in the establishment of a Live-Virtual-Constructive model, which is coming into the spotlight nowadays, for sustainable future growth.



Unmanned Aerial Vehicle



- 1 UAV- II : Next Generation Corps-level UAV
- 2 3 RQ-101 : Corps-level UAV SONGGOLMAE
- **9 UCAV**: Unmanned Combat Aerial Vehicle developed through advance research

6 NI-600VT: First flight of the NI-600VT vertical take-off and landing drone under its own prior research(2019.9)

Continuous R&D in Preparation for the Future UAV Era

KAI participated in the development and production of the RQ-101 (SONGGOLMAE) Corps-level Unmanned Aerial Vehicle(UAV), which is being deployed in the ROK Army. KAI is currently participating in the development of the Next Generation Corps-level UAV. KAI is preparing for the future UAV era by securing diverse UAV technologies such as Unmanned Combat Aerial Vehicle (UCAV) and Vertical Take Off and Landing (VTOL) UAV through continuous research.



Space Programs







- KSLV-II: Assembly of Korea Space Launch Vehicle-II (NURIHO)
- 2 Diversified Space Programs of KAI
- Geostationary-KOMPSAT(KOrea Multi-Purpose SATellite)
- 4 KAI Space Center (2020. 8)

Leading the Civil Space Industry from Satellites to Launch Vehicle

KAI has been actively participating in the entire fields of satellite development programs and accumulating technical know-how through experiences from KOMPSAT-1 (Korea Multi-Purpose Satellites, ARIRANG) to KOMPSAT-7, CAS-500 (Compact Advanced Satellite) and GEO-KOMPSAT (Geostationary Korea Multi-Purpose Satellite, CHEOLLIAN) series. In addition, KAI is expanding its boundaries of space programs by engaging in various practical satellites and surveillance satellites such as CAS-500 and SAR Satellite development program. In the space launch vehicle sector, KAI is participating in the system integration of KSLV-II (Korea Space Launch Vehicle-II) program and the first stage development of propellant tanks. KAI is taking a step forward into a specialized space company that will lead the industry from satellites to space launch vehicle production and space launching services.





KAI, Creating the Future of the Aerospace Industry

Q South Korea business sites

Headquarters78 Gongdan 1-ro, Sanam-myeon, Sacheon, Gyeongsangnam-doSeoul Office6th floor, Samsung Cheil Building, 309, Teheran-ro, Gangnam-gu, Seoul

Sancheong Plant2436, Chinhwangyeong-ro, Geumseo-myeon, Sancheong-gun, Gyeongsangnam-doJongpo Plant194 Jongposandan-ro, Yonghyeon-myeon, Sacheon-si, Gyeongsangnam-doGoseong Plant185, Sadong-gil, Goseong-eup, Goseong-gun, Gyeongsangnam-do

Overseas business sites

Indonesia Office SKADRON 15 PANGKALAN TNI AU ISWAHJUDI, MAOSPATI MAGETAN JAWA TIMUR,

INDONESIA 63392

Turkey Office FETHIYE MAH. HAVACLIK BUL. NO: 17 06980 KAZAN-ANKARA

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