Airframer Vision of the Korea Aerospace Industries

Sep. 26, 2016
Company - General

- Site
  - Seoul Office
    - Domestic Marketing, PR, IR
  - Daejeon R&D Center
    - UAV/Space
  - Sancheong plant
    - A320 WBP plant
  - Sacheon, HQ

- KAI as Primary Source for National Programs
  - Fixed-Wing Aircraft
    - KF-X, T-50, TA-50, FA-50, KT-1, UAV, KT-100
  - Rotary-Wing Aircraft
    - KUH, Derivatives
    - LAH/LCH
  - MRO
    - P-3C/C-130 Maintenance
    - Indigenous & Modification
  - Space
    - KOMPSAT, CAS, KSLV-2

- Emerging Aviation Power in Aerospace Industry

- KAI

- Delivery

- RoKG

- '16. JUNE

- Public 50.9%
- KDB 19%
- KEB 7.7%
- Hanwha Techwin 6%
- Hyundai Motors 5%
- NPS 9.5%
- Employees 1.9%

*RoKG (Republic of Korea Government)
Revenue and Outlook

Major Products Export
T-50, KT-1 Export, KUH, Aerostructures

Expand Newly Growth Biz.
T-X, KF-X, LAH/LCH, MRO

Strengthen the Future Biz.
Commercial A/C, Space, UAV, Program Diversification

World 6th (System Integrator)*

World 15th
L-3 Com

Powerful Growth to be Global Top 15 by 2020

World 40th
$ 3.5B

2016

2020
$10B

2030
$20B

*Source: Flight International

Boeing
Airbus
Lockheed Martin
Northrop Grumman
Finmeccanica
BAE Systems

1위
2위
3위
4위
5위
6위
Human Resources

Approximately 3,620 Employees

“1,448 Engineers in House”

By Function
- Engineering (40%)
- Manufacturing (38%)
- Administration & Marketing (22%)

Education
- MS/PHD (35%)
- BS (57%)
- Others (8%)

Experience
- 10+ Years (62%)
- 5~10 Years (19%)
- Less than 5 yrs (19%)

Technology-Oriented Aircraft System Integrator
$\textbf{KF-X (Korean Indigenous Fighter) Development}$

- Developing the 4.5 Generation plus Fighter
- Replace Retired F-4, F-5 and F-16s
- Full Scale Development : 2016~2026
- KFX EMD Program has been started officially upon EMD Contract between ROKG and KAI on Dec. 28, 2015
- KF-X is a multirole fighter aircraft satisfying the common requirement adopted by the ROKG and RIG through KF-X Technology Development(TD) Phase

\*EMD : Engineering and Manufacturing Development
\*ROKG : Republic Of Korea Government
\*RIG : Republic of Indonesia Government

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<td>Major Activities</td>
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<td>SRR(3)</td>
<td>SFR(12)</td>
<td>PDR (6)</td>
<td>CDR (9)</td>
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<td>Preliminary Design</td>
<td>Detail Design</td>
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<td>Initial F/T</td>
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• Develop to Train 4th/5th Generation Pilots
  - Min. Cost & Max. Training Effectiveness
  - Fill Gap between Trainer and Next Gen. Fighter
• Replace aging F-4, F-5 Fleet as LCA
• Total Training System
  - T-50(FA-50) Aircraft, GBTS and ILS
• In Production & Full Operations with RoKAF
  - Over 000 T-50/TA-50/T-50B/FA-50
• International Customer
  - Delivery for Indonesia from Sep. 2013 till Jan. 2014
  - Iraq Contract Award Dec. 2013
  - Philippines Contract Award Mar. 2014
  - Thailand Contract Award Sep. 2015

T-50 Series Road Map

T-50 (Advanced Jet Trainer)
TA-50 (Lead-in Fighter Trainer)
T-50B (Aerobatic)
FA-50 (Light Combat Aircraft)
Fixed Wing – APT(T-X) Program

T-X Trainer
T-38 Replacement for Advanced Jet Training (AJT) & Introduction to Fighter Fundamentals (IFF)
- 350 (Specialized UPT) to 500+ (UPT)
- Ground Based Training System Is Included

USAF T-X
- 350-500+ Aircraft
- Deliveries Starting 2019

FMS
- 300-400 Aircraft
- Deliveries Starting ~ 2020

USAF Red Air / Direct Support
- 100-150 Aircraft
- Deliveries Starting ~ 2025

USN Red Air
- 50+ Aircraft
- Deliveries Starting ~ 2026

USN T-X
- 150-200 Aircraft
- Deliveries Starting ~ 2029

Total Opportunity Potential = 500 to 1,000 Aircraft
Fixed Wing - KT-1 Program

- **Multi-Role**: Basic Training & Light Attack
- **Most Effective Training Solution**
  - Aircraft and GBTS (Ground Based Training System)
  - Smooth Transition (Primary to Advanced)
- **Over 000 KT-1, KA-1 Delivered to RoKAF**
  - Republic of Korea Air Force
- **International Customer**
  - 00 KT-1B : Indonesian Air Force
  - 00 KT-1T : Turkish Air Force
  - 00 KT-1P : Peruvian Air Force (In production)

KT-1 Series Road Map

**KT-1** (Basic Trainer)

- **KA-1** (Forward Airborne Controller)
- **XKT-1**
- **KT-1B** (For Indonesia)
- **Export Version KT-1T KT-1P**

Successful History for RoKAF and International Customers
Rotary Wing – KUH-1 (Surion)

- **Class**: 8.7 ton (19,200 lbs) Multirole Capable of 2 pilots and 16 Passengers
- **Adaptation State of the Art Technologies**
  - Military & Para Public
- **Inherently Designed to Cope Various Missions**
  - Air Assault, Tactical Transportation, SAR, etc.
- **Entered Service from 2012**: RoKA and KNPA
  - In Production: over 300 helicopters
  - In Development: Amphibious/ Medical Evacuation

**Derivatives**

KUH: Korea Utility Helicopter, SAR: Search and Rescue
RoKA: Republic of Korea Army, KNPA: Korea National Police Agency

- Medievac
- Naval Version
- National Forest Dept
- Police Dept

**Superior Performance for the Demanding Multi-Missions**
Rotary Wing – LAH (Light Armed Helicopter)

- Wt Class similar to LCH
- Development: 2016~2022
- Market Potential 450 units (Domestic, International)

**LAH Development Program**

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<td>CDR</td>
<td>FFRR</td>
<td>FF</td>
<td>Initial Production Contract Award</td>
<td>Type Certification</td>
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<td>Pre-Design</td>
<td>Detail Design</td>
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Korea Aerospace Industries, Ltd. Proprietary Information
Aerostructures – Commercial/Military

**Commercial (Boeing Programs)**
- B737 Empennage

**Commercial (Airbus Programs)**
- A318/319/320 WTP/WBP

**Military (Boeing, LM)**
- AH-64D Fuselage

**International Co-development**
- A350 Wing Rib (Risk Sharing Partner)
- B787 Wing Box
- B787 FTE

**Global Top Class Supplier with Risk Sharing Partnership (to Boeing/Airbus)**

- B767 Upper Skin Panel
- A320 Upper Shell
- F-15 Main Wing & FWD Fuselage
- B757/767 FTE
- A330/340 Wing Rib
- F-16 Fuselage

WTP Wing Top Panel, WBP Wing Bottom Panel, FTE Fixed Trailing Edge

Korea Aerospace Industries, Ltd. Proprietary Information
Modification & Maintenance

P-3C Upgrade
- Upgrade & Modification of P-3 Maritime Patrol Aircraft

AEW&C Modification
- E-737 AEW&C modification

F-16 Upgrade & H-53 Depot Maint.
- F-16 Block 30 Upgrade for Service Life Extension
- USN/USMC H-53 Depot Maintenance

A-10 Wing Replacement
- A-10 wings production for replacement

World Class Proven Partner in MRO & Upgrade/Mod.

AEW&C Airborne Early Warning and Control, USN United States Navy, USMC United States Marine Corps.
Road Map for Future Business

KAI’s vision to become a World Top Class Aerospace Company
Who we are...

- **Total Solution Provider in Aerospace and Defence Field**
  - Design to Logistics Support
  - Fixed/Rotary Wing Biz to Space Biz

- **New Emerging Aviation Power in Aerospace Industry**
  - 40th ranked out of top 100 World Aerospace and Defence Companies
  
  *(Source: Flight International)*

- **Fast and Continuous Growing Technical-Oriented System Integrator**

- **Trustworthy Long-Term Partner**
KAI Total Solution Provider

Thank You!

Korea Aerospace Industries, Ltd. Proprietary Information