2016 Aerospace

Investment Opportunities In Korea
Aerospace

Korea’s aerospace industry reached the level of advancement with which it can develop its own models to conduct independent tests and evaluation. Our aerospace-related industries including ICT are on a world-class level and has a strong potential for growth.

Technological level of aerospace industry

| Leading Countries in Aerospace Industry | USA, UK, France, Germany, Russia, Japan, Canada, Italy |
| Independent Development (Intermediate Model) | Korea, Brazil, Taiwan, China, India, Israel, Spain, Indonesia |
| Introduction of Technology Licensed Production | Australia, Turkey, Argentina |
| Maintenance / Subcontracts Licensed Assembly | The Philippines, Singapore, Greece, Saudi Arabia, Malaysia |

* Source: Korea Aerospace Industries Association

Industry Overview
Korea’s current aerospace industry
Production size of the Korean aerospace industry by sector
Korea’s aerospace export markets
Project roadmap

Competitiveness
Growth potential
Korea’s aerospace industrial clusters

Success Case
Boeing Korea

Where to Invest

Location descriptions
1. Sacheon Jongpo Industrial Complex
2. NAMMUM FIZ
3. MIEUM FIZ
4. JISA FIZ
5. Yeongjong FEZ
6. Cheongju Aeropolis
7. Yeongchun High-Tech Park
8. Daeduk Innopolis
Industry Overview

Korea’s current aerospace industry

The Korean aerospace industry amounted to USD 8.4 billion, up 13% YoY in 2013 in terms of total production and imports.

### Production size of the Korean aerospace industry by sector

<table>
<thead>
<tr>
<th>Segment</th>
<th>2013 (Unit: USD 1 million)</th>
<th>2014 (Unit: USD 1 million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>T-50</td>
<td>771</td>
<td>1,064</td>
</tr>
<tr>
<td>KT-1</td>
<td>78</td>
<td>142</td>
</tr>
<tr>
<td>F-16</td>
<td>36</td>
<td>44</td>
</tr>
<tr>
<td>F-15</td>
<td>11</td>
<td>8</td>
</tr>
<tr>
<td>KUH</td>
<td>612</td>
<td>526</td>
</tr>
<tr>
<td>Civil aircraft parts</td>
<td>1,166</td>
<td>1,389</td>
</tr>
<tr>
<td>Engine maintenance</td>
<td>81</td>
<td>74</td>
</tr>
<tr>
<td>Engine parts</td>
<td>238</td>
<td>261</td>
</tr>
<tr>
<td>Fuselage maintenance</td>
<td>281</td>
<td>267</td>
</tr>
<tr>
<td>Aerospace business</td>
<td>78</td>
<td>128</td>
</tr>
<tr>
<td>Unmanned aerial vehicle</td>
<td>91</td>
<td>94</td>
</tr>
<tr>
<td>Others</td>
<td>163</td>
<td>346</td>
</tr>
<tr>
<td>Total</td>
<td>3,606</td>
<td>4,343</td>
</tr>
</tbody>
</table>

In 2014, Korea’s aerospace exports are mostly headed for the USA (43.6%) and Europe (26.2%), followed by Japan (10.7%), Peru (5.9%) and the UAE (2.6%).

* Source: Korea Civil Aviation Development Association
Competitiveness

Growth potential

Considering the supply and demand factors, related industries and infrastructure and R&D capabilities, Korea’s aerospace industry has relatively strong growth potential.

Korea’s aerospace industrial clusters

MRO Cluster (planned for 2019)
- Incheon Int'l Airport, machinery industrial complex

Test center
- Maintenance depot, test flight

Daedeok Science Town
- Korea Aerospace Research Institute, Agency for Defense Development, major R&D centers, specialized area for aerospace electronics

Naro Space Center
- Project assembly, rocket launching facility
- Unmanned aerial vehicle test

Avionics MRO Cluster (planning)
- Boeing’s Asia/Pacific Aviation Service Center

Gimhae Industrial Complex
- Korean Air (Aerospace Division)
- More than 30 airline companies

Machinery Industrial Complex
- Machinery and mechatronics industrial complex
- More than 20 airline companies

Specialized complex for aviation industry
- Final aircraft assembly line
- Specialized area for aircraft bonding
- More than 40 airline companies
- Foreign investment zone

* Source: MOTIE, Basic Plan for Aviation Industry Development, 2010
* Source: Research center: KDB Daewoo Securities
Boeing Korea, established in 1988 as a subsidiary of the world’s largest aerospace company, Boeing (USA), operates primarily in the MRO and aircraft service support businesses. Boeing invested USD 27.2 million in avionics MRO center (BAMRO) in Yeongcheon, North Gyeongsang Province and will expand investment up to USD 100 million.
Where to Invest

Location Descriptions

1. **Sacheon Jongpo Industrial Complex**  
   It is the biggest aviation cluster in Korea, where 80% of the domestic aviation industry is concentrated, so it is an ideal location for production and maintenance of aviation parts and structures.

2. **NAMMUM FIZ**  
   Within one hour away from the aviation industry’s biggest demand base in the Sacheon region, it is an ideal location for the production, research and development of air machine parts/new composite materials.

3. **MIEUM FIZ**  
   Within one hour away from the aviation industry’s biggest demand base in the Sacheon region, it is an ideal location for the production, research and development of air machine parts/new composite materials.

4. **JISA FIZ**  
   Within one hour away from the aviation industry’s biggest demand base in the Sacheon region, it is an ideal location for the production, research and development of air machine parts/new composite materials.

5. **Yeongjong FEZ**  
   As the hinterland of Incheon International Airport, which comes in at no. 1 in terms of airport service and no. 2 in terms of international freight transportation, it has sufficient requirements for building the MRO Center, so it is proposed as an ideal location for aircraft parts/materials manufacturing.

6. **Cheongju Aeropolis**  
   As the only international airport’s hinterland in the central inland, it is proposed as appropriate for operating MRO industrial clusters related to aircraft.

7. **Yeongchun High-Tech Park**  
   Being selected by Boeing as the best location for MRO center, it has an ideal location for promoting avionics parts and MRO.

8. **Daeduk Innopolis**  
   With the cluster of aviation-related representative research institutes and a plenty of high quality human resources of master’s and doctoral level, it is an optimal location for R&D of aerospace innovative technological companies.
1. Sacheon Jongpo Industrial Complex

Investment Highlights

Location Description

It is the biggest aviation cluster in Korea, where 80% of the domestic aviation industry is concentrated, so it is an ideal location for production and maintenance of aviation parts and structures.

Key Rationale

- An industrial park that is adjacent to the largest domestic aerospace company KAI’s core workplace and R&D center, which accounts for 84.5% of domestic production, 61.7% of industries, 70% of workers (KAI and its 50 partners are clustered)
- Within one hour’s drive to Changwon, Busan, Gwangyang, it is convenient to procure key resources, such as parts for aircraft maintenance and production, material, communications and IT technology

Location Requirements

Recommended Business Sector

- Manufacture and maintenance of airline parts and structures

Type

- Sale in lots or long term lease (maximum 50 years)

Land Zoning

- General Industrial Complex

Investment Condition

- Limited to transport equipment, electrical machinery and transformers manufacturing, primary metals manufacturing, fabricated metal products manufacturing, non-metallic mineral manufacturing, other machinery and equipment manufacturing

Location Overview

Target Area

- Total Area: 376,000 m²
- Available Area: 376,000 m²
Case References

Samco Korea Co., Ltd.

- Production items: Flight Door Systems, Wing Structure Flight Control System, UAV (Drone)
- Investment and employment size: From earlier 11,980㎡ in size, expanded by 6,762㎡ (200 people employed)
- Revenues: 32 billion KRW, 2014
- Time of occupation: 2007.1, 2011.6.21

Kencoa Aerospace Corporation

- Parent Company: California Metal that supplies aviation raw materials (US-based)
- Production item details: Structure Assembly painting & Coating of B777, KC-100, KUH (Surion), B767
- Investment scale: 12 million USD (29,676㎡ in size), employment size 150 persons
- Time of occupation: 2013.4

Caphmicro

- Type of Industry: development of aircraft and satellites for more than 15 years, specialized in developing aircraft simulator’s parts and RF test equipment (domestically produced F-16 loaded equipment)
- Investment scale: 8,442㎡ in scale, 60 people employed
- Time of occupation: 2014.8

Business Considerations

Market Perspective

World aerospace industry is worth of 314.2 billion USD (2013), with annual average growth of 5.4%, and it is expected to grow to 700 billion USD by 2020.

The Korean government expects to attain 83.4 million USD in annual turnover in the aerospace industry by 2020, along with Korean fighters development projects, becoming the world’s 15th in size as a result.

Business Suggestion

R&D and production related to aircraft maintenance and military/civilian aircraft parts manufacturing, composite materials, structure sectors

Main Costs

Sale prices: 260 USD/㎡ (Constricted Industrial Complex standard)
Wages: 40,000 USD/year (10 years of service)

Business Cluster

Major Corporations in the region

- Aircraft Manufacturing: KAI
- Korean companies: Hanwha Techwin, Yulkok, S&K AEROSPACE, DACC CSP, AEROSPACE TECHNOLOGY OF KOREA, Haze Airline, Doowon Heavy Industrial, KOTEC, KAF MICRO, CANCORE AEROSPACE, AST Etc
- Foreign Investment Companies: EEW Korea, Caphmicro, Kencoa Aerospace, Etc

Potential Customers

- Korea’s largest Complete discharge machine manufacturing company, Korea Aerospace Industries, Ltd (KAI)

Related Organization

- Research institutions: Gyeongnam Technopark aerospace research center, Defense Agency for Technology and Quality Airlines Center, Korea Civil Aviation Development Association, Etc
Infrastructure

Utilities
  • Water: Intake source (connection of regional water supply system) / Supply Ability: 10,000 tons/day / usage: 1000 tons/day
  • Wastewater: As much as 346 m³ of sewage is generated per day, and the entire amount is processed by Sacheon General Provincial Industrial Complex’s wastewater treatment facilities
  • Power: Voltage 22.9 kV, Volume 120 kVA
  • Waste: Disposed in the waste disposal facility within Sacheon complex 2 connected to the complex
  • Communications: Supply 14,080 circuits
  • Energy Plan: LNG supply ducts are buried within the complex

Transportation
  • Airport: Sacheon Airport (5 km), (Seoul 3 times/day)
  • Railroad: Gyeongjeon line, Jinju Station
  • Road: Namhae Expressway Sacheon IC (4 km) (Seoul 437 km, Daejeon 73 km)
  • National highway: No. 2 (Mokpo ↔ Sacheon ↔ Busan), No. 3 (Namhae ↔ Sacheon ↔ Busan), No. 33 (Goseong ↔ Sacheon ↔ Gumi) Local roads: No. 58 (Naju ↔ Sacheon ↔ Busan)
  • Port: Samcheonpohang (20 km): Cargo handling capacity 5.984 million tons, cargo berthing capacity 7 berths

Labor & Material

Labor Condition
  • Regional population:

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<tr>
<th>Population of zone</th>
<th>Available labor force</th>
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<td>61.6%</td>
<td>7.9%</td>
<td>1.7%</td>
</tr>
<tr>
<td>Integrated zones</td>
<td>2,296,237</td>
<td>1,372,794</td>
<td>59.8%</td>
<td>8.2%</td>
<td>1.1%</td>
</tr>
<tr>
<td>Sacheon/Jinju/Hadong</td>
<td>505,949</td>
<td>291,305</td>
<td>57.6%</td>
<td>7.2%</td>
<td>1.3%</td>
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  • Average wage: 40,000 USD/year (US $ 44,254 per annum, 10 years of service (Average of 5 listed companies in the aerospace and defense sectors)

Core Resource Supply
  • Subject matter/parts procurement environment: Within one-hour drive to the main production base, Gwangyang (subject matter), Changwon (mechanical components), Busan (subject matter, mechanical components, control/electric apparatus, etc.), 84.5% of domestic production, 70% of workers are concentrated (KAI and its 50 partners' condensed area)
  • 21 engineering universities related to machinery components and materials in Busan/Kyungnam areas, 1,371 professors, 83,843 students

Environment

Living Conditions

  • Education: 11 middle schools (3,789 persons), 5 high schools (2,060 persons), 1 international school (49 persons), industrial manpower training agencies: 4 vocational high schools (1,467 persons), 1 college (411 persons)/kindergarten 24 units (1318 persons)
  • Medical Facilities: 5 hospitals, 49 medical centers, 2 special hospitals, 22 dental clinics, 17 oriental clinics, 1 public health center, 6 public health branch offices, 12 health care centers
  • Others: 15,658 households, 3 indoor stadiums, 2 sports stadiums, 6 golf driving ranges, 2 tourist hotels

Government Support

Eligibility for Subsidies
  • High-technology related-business or industry support services business: Investment of over 1 million USD & employment of at least 30 persons
  • Industries prescribed by the Do Provincial Governor to foster specialized industries such as machine, car, airline, shipbuilding, biotechnology, with investment of at least 5 million USD & employment of at least 50 persons
  • Other manufacturing business with investment of at least 10 million USD & 50 or more persons employed
  • Investment of at least 1 million USD in R&D facility
  • Support details: Support for sale price difference/employment subsidies/training grants/facilities grants
2. NAMMUM FIZ

Investment Highlights

Location Description
Within one hour away from the aviation industry's biggest demand base in the Sacheon area, it is an ideal location for production, research, and development of air machine parts/new composite materials

Key Rationale

- Within one hour drive from Sacheon, where 84.5% of domestic production including KAI, the largest domestic aerospace company, 61.7% of industries, and 70% of workers are concentrated
- Key area of industrial clusters in the Southeast Asia in the aviation, shipbuilding, mechanical components/materials sectors, which links Busan, Changwon, Geoje, Jinju, Sacehon (according to the domestic shipments ratio, it accounts for 91% of vessel, aircraft and other transport equipment, 33% of automobiles, 37% of machinery)

Location Requirements

Recommended Business Sector
- Aircraft parts/material manufacturing, MRO

Type
- Sale in lots or long-term lease (maximum 50 years)

Land Zoning
- FEZ, Foreign Investment Zone

Investment Condition
- Joint venture with at least 30% of foreign ownership and foreign-exclusive enterprise
- The minimum investment amount: $20 million (investment can be divided)

Target Area
- Total Area: 71,000 m²
- Available Area: 38,000 m²

Location Overview
Case References

**Germany Fortuna (HQ in Frankfurt)**
- German local government’s investment company
- Production item: plant, car, aerospace industrial pipe type steel pipe product (4 inch or larger caliber stainless steel seamless pipe, and tube module, etc)
- Investment size: 25 million USD, 60% of output will be exported
- Employment size: 320 persons (directly employed 70 persons, Indirectly employed 250 persons)
- Progress:
  - MOU concluded: 2015.9
  - Scheduled time of occupancy: it will move into BJFEZ Mieum district in Feb. 2016
  - It pursues JV with a Korean company (International Rare Earth Metals Corporation)

**Hizeaero (KOSDAQ listed)**
- Production item: airframe assembly, aircraft maintenance and renovation, aircraft parts, satellite manufacturing, etc.
- Investment scale: 20.9 million USD, scheduled to occupy 18,000 m² in the international industrial logistics city near to BJFEZ
- Scale of employment: In addition to the current 180 employees, 150 people will be additionally employed
- Reason for investment decisions: aircraft parts producer, KAL’s business division is located nearby, expected logistics savings via Busan New Port and high ratio of Busan aviation industry nationwide (top2: 6.1%) domestic major MRO (Maintenance, Repair, Overhaul) company, ‘Korean Air Tech Center’ and its 43 partners are concentrated
- Supply of abundant experts, by producing 180 talents each year through the Pusan National University, an excellent research manpower training center

Business Considerations

**Market Perspective**
World aerospace industry is worth of 314.2 billion USD (2013), with annual average growth of 5.4%, and it is expected to grow to 700 billion USD by 2020.
The Korean government expects to attain 83.4 million USD in annual turnover in aerospace industry by 2020, along with Korean fighters development projects, becoming the world’s 15th largest in size as a result.

**Business Suggestion**
R&D and production in aircraft maintenance and military/civilian aircraft parts manufacturing, new composite materials, structure sectors
Gimhae Airport-based military/civilian aircraft MRO business

**Main Costs**
- Land rent: yearly 4.5 USD/m² (1% of official price/year, Official land price is 450 USD/m²)
- Wages: 40,000 USD/year (based on 10 years of service)

**Business Cluster**

**Major Corporations in the region**
- Aircraft engines and components: Forexaero/Yulkok/Bu-kyung/Dacc21
- Subject matter(metal/non-metal/carbon fiber): Samwoo Metal Industries/Alcoa Korea/Hankuk Fiber Etc
- Communications/Electronic parts: Hanwha Techwin/Changwon Tech Etc
- Other mechanical parts for aircraft: Tes/Tapa Tech Etc

**Potential Customers**
- Korea’s largest complete discharge machine manufacturing company, Korea Aerospace Industries, Ltd (KAI) and aviation parts and materials companies

**Related Organization**
- Research institutions: Gyeongnam Technopark aerospace research center, Defense Agency for Technology and Quality Airlines Center, Korea Civil Aviation Development Association, etc.
Infrastructure

Utilities
• Waterworks: water supply 7,454㎥/day
• Sewer: volume 5,237㎥/day, Ungdong sewage treatment plant
• Power: 28,557kVA
• Communications: KT plans to install the fiber-optic cable
• Energy (gas): Kyungnam Energy will supply city gas
• Waste treatment facilities: planned to entrust treatment

Transportation
• Airport: Gimhae International Airport (9km)
• Railroad: New Port’s back railway, Busan New Port Station (4.8km)
• Road: Expressway: Busan-Changwon Garak IC (2.5km) (Seoul 450km)
  - National highway: no.2 (Jinhae ↔ Gangseo ↔ Hadan)
  - Local roads: no.58 (Sesan ↔ Noksan), no.69 (Noksan ↔ Gangseo ↔ Daedong)
• Port: Busan New Port (9.5km)

Labor & Material

Labor Condition
• Regional population:
  
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<tr>
<td>Busan/Gyeongnam’s Integrated zone</td>
<td>7,728,112</td>
<td>4,767,844</td>
<td>61.7%</td>
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<td>BJFZ</td>
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  • Average wage: 40,000 USD/year (US $ 44,254 per annum, 10 years of service (Average of 5 listed companies in the aerospace and defense sectors)

Core Resource Supply
• Material/Parts procurement: the core area of southeastern industrial clusters linking Busan, Changwon, Jinju, Sacheon, which facilitates procurement of component/materials and element technology
• 4.77 million labor force is available within one hour-distance (760,000 with bachelor’s or above)
• Easy to use human resources related to machine parts in Busan/South Gyeongsang zones and research and development resources
• (21 engineering universities related to machinery components and materials in Busan/Gyungnam areas, 1,371 professors, 83,843 students)

Environment

Living Conditions
• Education: 17 elementary schools (2,889 persons), 7 middle schools (1,523 persons), 6 high schools (3,045 persons), industrial manpower training agencies: 1 vocational school (394 persons), 12 kindergartens (684 persons)
• Medical Facilities: 11 clinics, 8 dental clinics, 4 oriental clinics, 1 public health center, 4 public health branch offices, 3 health care centers
• Others: Nearby, Myongji residential area, and Noksan residential area in Yongwon-dong, Jinhae-si, Gyeongnam are located, 16,839 houses are supplied (Housing supply rate 118.1%)

Government Support

Government benefits for foreign-invested enterprises (See more details in APPENDIX)
• Long-term lease of factory site
• Assistance with difference in plant site’s sale prices
• Support of various employment subsidies
• Facilities Grants
• Other cash support
• Various tax benefits
3. MIEUM FIZ

Investment Highlights

Location Description
Within one hour away from the aviation industry’s biggest demand base in Sacheon area, it is an ideal location for production and research and development of air machine parts/new composite materials.

Key Rationale

- Within one hour drive from Sacheon, where 84.5% of domestic production including KAI, the largest domestic aerospace company, 61.7% of industries, and 70% of workers are concentrated.
- Key area of industrial clusters in the Southeast Asia in the aviation, shipbuilding, mechanical components/materials sectors, which links Busan, Changwon, Geojë, Jinju, Sacheon (According to domestic shipments ratio, it accounts for 91% of vessel, aircraft and other transport equipment, 33% of car, 37% of machinery).

Location Requirements

Recommended Business Sector
Aircraft parts/material manufacturing, MRO

Type
Sale in lots or long-term lease (maximum 50 years)

Land Zoning
Slated for complex-type foreign investment zone

Investment Condition
High-tech industry, high-tech related business, machine, parts and materials industry

Location Overview

Target Area
- Total Area: 332,000m²
- Available Area: 226,000m²

Related Companies (36)
- Major companies: KAI, SBK/AEROSPACE, AEROSPACE TECHNOLOGY OF KOREA, KAI MICRO, etc.
- Aircraft Manufacturing: KAI
- Aircraft engines and parts manufacturing: Arik, NSK, Airin, etc.
- Other aircraft parts: Doosan-Heavy Industrial, Hyundai, etc.
- Aerospace
- Industrial clusters
- Aircraft engines and parts manufacturing
- Arik, NSK, Airin, etc.
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- Doosan-Heavy Industrial, Hyundai, etc.
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- Arik, NSK, Airin, etc.
- Other aircraft parts
- Doosan-Heavy Industrial, Hyundai, etc.
Case References

Germany Fortuna (HQ in Frankfurt)

- It established a plant producing large caliber stainless steel seamless pipe
  - Pipe type steel pipe product: plant, car, mainly used in the aerospace industry
- JV with the Korea International Rare Earth Metals
- FDI 25 million USD

- Busan City will sign a memorandum of understanding and investment with a German company FORTUNA.
- Busan City’s official said, “The Fortuna’s investment will create 320 new jobs (directly 70 persons, indirectly 250 persons), and what’s more, it will help strengthen the competitiveness of related industries such as local plant, car, aerospace components and materials.”
- Mieum Foreign Investment Zone is a high-tech parts and materials complex of 330,000 m² in size, which was created in 2012.
- Currently, five global companies including Geislinger(Austria), Höganiäs(Sweden), Wilo-pump(Germany), Bosch Rexroth(Germany), HaMa(Japan) have moved in and run their factories, and Burckhardt (Switzerland), a manufacturer of LNG Line cutting-edge components and materials is currently building a plant. (MK news 2015.09.23 Excerpt)

Business Considerations

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Main Costs

Land rent: yearly 5 USD/㎡ (1% of official price/year, Official land price is 480 USD/㎡)
Wages: 40,000 USD/year (based on 10 years of service)

Business Cluster

Major Corporations in the region

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Related Organization

- Research institutions: Gyeongnam Technopark aerospace research center, Defense Agency for Technology and Quality Airlines Center, Korea Civil Aviation Development Association, etc.
Infrastructure

Utilities
- Water: Industrial water 9500 ton/day, living water 1200 ton/day
- Wastewater: Processed in Noksan sewage treatment plant (maximum volume of wastewater 9,600 m³/day)
- Power: 631,326MWh/year
- Waste: Waste are separately collected for recycling, incineration, landfills
- Treatment of designated waste is entrusted to professional disposal service company
- Communications: Use the closest route from the business district
- Energy Plan: Busan City Gas supplies LNG

Transportation
- Airport: Gimhae International Airport (9km)
- Port: Busan New Port (9.5km)
- Railroad: Busan Newport Station (5km)
- Road: Busan-Changwon Expressway (2.5km), national highway linking Jinhae, Gangseo, Hadan, Noksan

Labor & Material

Labor Condition
- Regional population: (Unit: persons, %)

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<td></td>
<td></td>
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<td>88,754</td>
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- Other cash support
- Various tax benefits
4. JISA FIZ

Investment Highlights

Location Description
Within one hour away from the aviation industry’s biggest demand base in the Sacheon area, it is an ideal location for production of air machine parts/new composite materials and research and development

Key Rationale
- Within one hour drive from Sacheon, where 84.5% of domestic production, 61.7% of industries, including KAI, the largest domestic aerospace company, and 70% of workers are concentrated
- Key area of Industrial clusters in the Southeast Asia in the aviation, shipbuilding, mechanical components/materials sectors, which links Busan, Changwon, Geoj, Jinju, Sacheon (According to domestic shipments ratio, it accounts for 91% of vessel, aircraft and other transport equipment, 33% of car, 37% of machinery)

Location Requirements

Recommended Business Sector
- Aircraft parts/material manufacturing

Type
- Sale in lots or long-term lease (maximum 50 years)

Land Zoning
- Slated for complex-type foreign investment zone

Investment Condition
- Type of business that moved into the complex meet the requirements, investment amount not less than the leasing land’s acquisition cost (official land price) (Within 5 years)

Location Overview

Target Area
- Total Area: 298,000㎡
- Available Area: 20,000㎡

Related Companies (39)
- Major companies: KAI, Samsung Techin, Wia, Telecommunications, Aerospace, KAI Micro, etc.
- Aircraft engines and parts manufacturing: Actis, NSL Arkin, etc.
- Other aircraft parts: Doosan Heavy Industries, Hanwha Techin
Case References

NKCF Korea

- "As excellent technological companies in the field of compression container and others are gathered in one place, they will have huge synergy effects. Also, they are expected to have substantial ripple effects on related industries in the area."
- For the first time among investment companies invited to a complex exclusive for foreign companies within the Busan Science Industrial Park in Jisa-dong, Gangseo-gu, Busan, Tak In-ju, the CEO of NKCF Co.,Ltd embarked on building a factory after a groundbreaking ceremony held on 22nd.
- As the first CEO of the joint venture created by NK Inc. of Busan and MSC of the United States, he is filled with excitement in anticipation. It is based on his belief that the JV that is not just a combination of equity but is operated on the basis of mutual technological prowess, will create high added value and bring increased productivity.
- This reporter met CEO Tak in NK’s office located in Sinpyeong-dong, Saha-gu, Busan on the day before the groundbreaking ceremony day. He said, "To be honest, I feel a little bit of pressure because it is the first case to move into the first complex dedicated to foreign companies in Busan, but I also feel a lot of responsibility to be an exemplary (business) leader as the front-runner (in the complex)."
- The flagship product of the plant being built on a 20,000 m² site, in size of total floor area of 9800 square meter, is the fuel tank of ultra-high pressure vessels. In addition, he plans to make special gas containers for semiconductor, hydrogen fuel tanks, and pressure vessels for aircraft and scuba. These products are mostly for export. He said Korea’s share of the joint venture is 54%, and explained his future plan, saying "we will go into production from the end of next year, and we will newly employee 300 workers by the end of next year as the first round, and expand workers to 500 persons by 2007." Given the time taken for the production system to get on track, his ambition is to increase annual turnover to 0.2 billion USD by 2010.

Business Considerations

<table>
<thead>
<tr>
<th>Market Perspective</th>
<th>World aerospace industry is worth of 314.2 billion USD (2013), with annual average growth of 5.4%, and it is expected to grow to 700 billion USD by 2020. The Korean government expects to attain 83.4 million USD in annual turnover in the aerospace industry by 2020, along with Korean fighters development projects, becoming the world’s 15 largest in size as a result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business Suggestion</td>
<td>R&amp;D and production in aircraft maintenance and military/civilian aircraft parts manufacturing, new composite materials, structure sectors. Gimhae Airport-based military/civilian aircraft MRO business</td>
</tr>
<tr>
<td>Main Costs</td>
<td>Land rent: yearly 3.6 USD/m². Wages: 40,000 USD/year (based on 10 years of service)</td>
</tr>
</tbody>
</table>

Business Cluster

| Major Corporations in the region | • Major companies: Firstec, Hyundai-Wia, Hanwha Techwin Etc.  
• Aircraft engines and components: Forexaero/Yulkok/Bu-kyung/Dacc21  
• Subject matter(metal/non-metal/carbon fiber): Samwoo Metal Industries/Alcoa Korea / Hankuk Fiber Etc  
• Communications/Electronic parts: Hanwha Techwin/Changwon Tech Etc  
• Other mechanical parts for aircraft: Tes/Tapa Tech Etc |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential Customers</td>
<td>• Korea’s largest complete discharge machine manufacturing company, Korea Aerospace Industries, Ltd (KAI) and aviation parts and materials companies</td>
</tr>
<tr>
<td>Related Organization</td>
<td>• Research institutions: Gyeongnam Technopark aerospace research center, Defense Agency for Technology and Quality Airlines Center, Korea Civil Aviation Development Association, Etc</td>
</tr>
</tbody>
</table>
Infrastructure

Utilities
- Water: Industrial water 10,700 tons/day, living water 8,500 tons/day
- Wastewater: 160,000 tons/day
- Power: Voltage 154 kV, Volume 411 MVA
- Waste: Treated in waste disposal plant and entrusted treatment (designated waste)
- Communications: Exclusive telephone station within the complex supplies 6,680 circuits
- Energy Plan: Busan City Gas supplies LNG

Transportation
- Airport: Gimhae International Airport (5 km)
- Railroad: Gyeongbu·Donghae·Nambu Line Busan (15 km)
- Road: Take Namhae Expressway Garak IC (5 km), Busan Expressway Gupo IC (20 km) (Seoul 428 km)
  - National highway: no. 2 (Busan→Mokpo), no. 58 line (Ungdong ↔ Jangyu)
  - Local road: no. 31 (Busan Dongnae ↔ Busan Oijang), no.60 (Mokpo ↔ Busan ↔ Yangsan)
- Port: Busanhang, Gamcheonhang, Dadaepohang

Labor & Material

Labor Condition
- Regional population: (Unit: persons, %)

<table>
<thead>
<tr>
<th>Population of zone</th>
<th>Available labor force</th>
<th>Ratio</th>
<th>Bachelor’s</th>
<th>Master’s</th>
<th>Doctor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nationwide</td>
<td>51,327,916</td>
<td>31,600,268</td>
<td>61.6%</td>
<td>7.9%</td>
<td>1.7%</td>
</tr>
<tr>
<td>Busan/Gyeongnam’s integrated zone</td>
<td>7,728,112</td>
<td>4,767,844</td>
<td>61.7%</td>
<td>8.3%</td>
<td>1.1%</td>
</tr>
<tr>
<td>BJFEZ</td>
<td>4,594,569</td>
<td>2,849,195</td>
<td>62.0%</td>
<td>8.4%</td>
<td>1.3%</td>
</tr>
</tbody>
</table>

- Average wage: 40,000 USD/year (USD 44,254 per annum, 10 years of service (average of 5 listed companies in the aerospace and defense sectors))

Core Resource Supply
- Material/Parts procurement: the core area of southeastern industrial clusters linking Busan, Changwon, Jinju, Sacheon, which facilitates procurement of component/materials and element technology
- 4.77 million labor force is available within one hour-distance (760,000 people with bachelor’s or above)
- Easy to use human resources related to machine parts in Busan/South Gyeongsang zones and research and development resources
- (21 engineering universities related to machinery components and materials in Busan/Gyungnam areas, 1,371 professors, 83,843 students)

Living Conditions
- Education: 7 middle schools (1,523 persons), 6 high school 6 units (3,045 persons), industrial manpower training center: 1 vocational school (394 persons), 12 kindergartens (684 persons)
- Medical Facilities: 11 clinics, 8 dental clinics, 4 oriental clinics, 1 public health center, 4 public health branch offices, 3 health care centers
- Others: Nearby, Myongji residential area, and Noksang residential area in Yongwon-dong, Jinhae-si, Gyeongnam are located, 18,839 houses are supplied (housing supply rate of 118.1%)

Government Support

Tax reduction, rent reduction and incentives related to the relevant site are available
5. Yeongjong FEZ

Investment Highlights

Location Description
As the hinterland of Incheon International Airport that is world no. 1 in terms of airport service and world no. 2 in terms of international freight transportation, it has sufficient requirements for building the MRO Center, so it is proposed as an ideal location for aircraft parts/materials manufacturing.

Key Rationale
• The area is the nearest hinterland to the Incheon International Airport, with the concentration of the largest demand for direct MRW such as aviation maintenance.
• The location has strategic benefits for promoting MRO projects, such as prompt parts procurement and minimum level of parts inventory, using the air logistics base.

Location Requirements

Recommended Business Sector
Aircraft parts/material manufacturing, MRO

Type
Sale in lots

Land Zoning
FEZ, Foreign Investment Zone

Investment Condition
Aircraft parts, materials company and aviation MRO enterprise

Location Overview

Target Area
• Total Area: 494,000 m²
• Available Area: 393,000 m²
Infrastructure

Transportation
- **Airport**: Incheon International Airport (5 km), Gimpo International Airport (25 km)
- **Railroad**: Incheon Subway Line no.1, International Business District Station (600 m)
- **Road**:
  - Expressway: West Coast Highway Southeast Industrial Complex IC (6 km), Kyungin Expressway (8 km)
  - National highway: no.42 (Incheon ↔ Suwon), no.46 (Incheon ↔ Seoul)
  - Local roads: no.307 (Incheon ↔ Seoul), no.305 (Incheon ↔ Ganghwa)
- **Port**: Incheon Port (5 km) / Cargo berthing capacity (101 ships, 100,000 berthing) Cargo handling capacity 88,111 thousand tons

Labor & Material

Labor Condition
- **Regional population**: (Unit: persons, %)

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<th>Population of zone</th>
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<td>61.6%</td>
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<td>1.7%</td>
</tr>
<tr>
<td>Metropolitan’s Integrated zones</td>
<td>18,188,169</td>
<td>11,702,777</td>
<td>64.3%</td>
<td>8.0%</td>
<td>2.3%</td>
</tr>
<tr>
<td>Incheon ONLY</td>
<td>2,902,608</td>
<td>1,863,021</td>
<td>64.2%</td>
<td>8.1%</td>
<td>1.1%</td>
</tr>
</tbody>
</table>

- Average wage: 40,000 USD/year (US $44,254 per annum, 10 years of service (Average of 5 listed companies in the aerospace and defense sectors)

Core Resource Supply Environment
- Incheon International Airport's hinterland/adjacent to Incheon port, it has good procurement environment of parts materials
- It has advantages of promoting MRO projects, such as prompt parts procurement, and minimum level of parts inventory, using the air logistics base
- **Various fusion technology support environment**: Adjacent to Seoul, the hub city of education, culture, research and development. In connection with research institutes and schools in various sectors, it is easy to promote interdisciplinary research involving materials, IT, mechanisms.

Living Conditions
- **Education**: 16 middle schools, 15 high schools, 8 universities, 38 kindergartens
- **Medical Facilities**: 1 hospital, 36 clinics, 19 dental clinics, 13 oriental medical clinics
- **Others**: 112,015 households (Yeonsu-gu)
- **Others**: 6 hotels, 1 golf course, New Songdo City Convention Center

Government Support
- National tax (Corporate tax, etc.): 100% exemption for 3 years, and then 50% reduction for 2 years under the Foreign Investment Promotion Act
- Local tax: exemption of acquisition tax, 50% reduction of property tax for 5 years
- The New Growth Industry Promotion Division of Investment Head Office of Incheon Free Economic Zone Authority provides business support such as introducing financial institutions
- Incheon Metropolitan City SMEs Support Fund [Information: Incheon Metropolitan Government’s Enterprise Support Division 032 440-4253]
  - Structural improvement fund (Automation 833,000 USD, Small business development 333,000 USD): Interest rates 3.5% (variable)
  - Corporate facility fund (Factory securing 833,000 USD, Laboratory installation 833,000 USD): Interest rates 3.5% (variable)
  - Venture start-up fund (583,000 USD): Interest rates 3% (fixed)
  - Industrial foundation creation: Construction of Knowledge Industry Center 16.7 million USD, 3.0% (variable), Disaster-suffered company 166,000 USD, 0%
Case References

IAT Inc.

• As a joint venture between Korean Air and UTIC-Asia (United Technologies International Corporation-Asia Private Limited), a subsidiary of P&W (Pratt & Whitney) Inc., that is a global aircraft engine manufacturer, it is a project company for the establishment of the Yeongjong aircraft engine maintenance center.

• It is Korea’s first professional commercial aircraft engine MRO company (MRO: Maintenance, Repair and Overhaul) and an aircraft engine overhaul service provider.

Investment History: To build an aero engine maintenance center in Youngjong SkyCity

• The total project cost of 100 million USD, with industrial (logistics) site of 69,000 m²

• It builds the latest engine maintenance center that provides service of maximum 150,000 pound thrust engine performance test and decomposition/assembly/part repair (construction started in July 2014, to be completed in 2016)

• After 2018, it will be integrated for operation with a prime mover factory in Bucheon of Korean Air. It will independently carry out the engine maintenance of aircraft possessed by Korean Air, such as B777, A380, and B787 to be introduced in 2016.

• Employment: About 300 ppl. (directly 120 persons, 180 persons in related industries)

• With the repair service of aircraft’s large engine and domestic service of a new model engine’s maintenance, it is expected to attain more than 83.4 million USD in sales, through maintenance of yearly 200 units of large engines by 2020.

Business Considerations

Market Perspective

As of 2011, domestic MRO market is worth of 141.7 million USD (civilian industry is 941 million USD, military industry is 474.2 million USD)

Northeast MRO market is expected to grow 5.4% by annual average, to record 1183.4 million USD by 2022

Business Suggestion

Civil aircraft MRO promoting company

Main Costs

Land rent: yearly 12.5 USD/㎡ (1% of the official price/Official land price is 1,250 USD/㎡)

Wages: 40,000 USD/year(based on 10 years of service)

Business Cluster

Major Corporations in the region

• Aircraft Manufacturing: UI Helicopter, Times Aerospace Korea Etc

• Subject matter(metal/non-metal/composite material): Korea Lost-Wax/Daedong Metal Finishing Etc

• Satellite Communications/Electronic parts: Korea Telecom/GS Instruments/VITZRO Tech/Jeheum/Specore/Bit & Pulse/Hi-Plus Technologies/Asia Pacific Satellite/REX-L ENG

• Other Aircraft Parts: Hands Corporation/Dawin Friction/Aircraft brake discs/Sungeyong Hitech/Korea Tomy/Seo Jin Instech (Aircraft start generator)/Etc

• Airliner Catering Services: LSG Sky Chefs Korea Etc

Potential Customers

• Korean Air, Asiana Airlines and low-cost airline, and other domestic and foreign airlines and Boeing, Airbus, STA, LH Technik and other MRO demand companies

Related Organization

• Incheon International Airport/Gimpo International Airport, Incheon Free Economic Zone Agency, Incheon Techno Park Etc
6. Cheongju Aeropolis

Investment Highlights

Location Description
As the only international airport’s hinterland in the central inland, it is a place fit for operating MRO industrial clusters related to aircrafts.

Key Rationale
- It is a favorable location for promoting MRO business, including aircraft parts and assembly factories, aviation-related research institutes, engineer training centers, and various support centers, based on demand for aircraft maintenance business adjacent to the expanding Cheongju International Airport.
- Adjacent to Dajeon, it is a favorable location for convergence research and development in various fields, including advanced composite materials, communications, and IT technology.

Location Requirements

Recommended Business Sector
- Aircraft Parts/material MRO

Type
- Sale in lots or long-term lease (maximum 50 years)

Land Zoning
- FEZ, Foreign Investment Zone

Investment Condition
- Type of business in occupancy

Location Overview

Target Area
- Total Area: 474,000 m²
  - Available Area: under construction
Case References

Enterprises that confirmed participation in Cheongju Aeropolis MRO Business

Business Considerations

Market Perspective
As of 2011, domestic MRO market is worth of 141.7 million USD (civilian industry is 941 million USD, military industry is 474.2 million USD)
Northeast MRO market is expected to grow by an annual average of 5.4%, to record 1183.4 million USD by 2022

Business Suggestion
MRO enterprise (civil aircraft and low-cost airlines maintenance center)

Main Costs
Land rent: free rent
Wages: 40,000 USD/year (based on 10 years of service)

Business Cluster

Major Corporations in the region
• Major companies: Korea Aerospace Industries(Daedeok Research Institute), Neuros Ltd, Dodaam Systems Ltd, MK Technology Ltd
• Aerospace material: Komexcarbon Co.,Ltd, Dong Yang Special Metal Co.,Ltd,
• Aircraft parts: 9 companies including Dodaam Systems
• Communication systems and electronic components: East Photonics Co.,Ltd, KS System Co.,Ltd, Victec Co.,Ltd, Etc

Potential Customers
• Major domestic and foreign airlines including KAR, especially, low-cost airlines such as Jeju Air that operate old models

Related Organization
• Research Institutions: Korea Aerospace Research Institute, Korea Institute of Machinery & Materials, Agency for Defense Development, KAI R & D Center, Korean Air R&D Center, Aerospace IT convergence Center
Infrastructure

Utilities
- Industrial water: 1,353 m³/day, Household water: 87 m³/day
- Wastewater: 153 m³/day (Industrial wastewater 73 m³/day, living sewage 66 m³/day, Underground water 14 m³/day)
- Power: 6,866 kw
- Communications: 99 circuits

Transportation
- Expressway: Gyeongbu Expressway (Cheongju IC), Jungbu Expressway (Seocheonju IC, Ochang IC, Jeongpyeong IC)
- National Highway: Route no. 36 (Osong New Town-Cheongju-Jeongpyeong Solar Complex), pass through Route no. 17 (Cheongju-Aircraft Maintenance Industrial Complex), located on Cheongju 2nd ring roadside that connects national highway Routes 36 and 17, Local roads include route 508 connecting Osong complex-Ochang complex, and route 510 connecting Ochang complex-Jeongpyeong solar complex
- Railroad: KTX: near to Osong station, a junction of Gyeongbu-Honam high-speed railway, Gyeongbu-Honam high-speed railway
- National Railway: Chimbuk Line Osong station, Cheongju station, Goeunjang station, Naesu station, Jeongpyeong stations are adjacent to each base district
- Airport: Located in the central region's only international airport, Cheongju International Airport

Labor & Material

Labor Condition
- Regional population:

<table>
<thead>
<tr>
<th>Population of zone</th>
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<tr>
<td>Chungbuk's</td>
<td>5,648,190</td>
<td>3,414,477</td>
<td>60.5%</td>
</tr>
<tr>
<td>integrated zones</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cheongju ONLY</td>
<td>1,006,496</td>
<td>624,004</td>
<td>62.0%</td>
</tr>
</tbody>
</table>
- Average wage: 40,000 USD/year (USD 44,254 per annum, 10 years of service (Average of 5 listed companies in the aerospace and defense sectors)

Core Resource Supply
- Located in the center of the Republic of Korea, a metropolitan-alternative airport that is nearest to the metropolitan area
- Regular routes are expanded (4 lines → 8 lines), Chinese tourists are allowed visa-free entry for 120 hours
- Runway extension is promoted, an alternative airport for F-Class aircraft is promoted
- Within 2-hour accessibility to nationwide, center of transport and logistics
- Honeycombed with expressway network (7 units), X-shaped high-speed rail network, subway/railway network
- Best place for future aerospace industry based on convergence technology (Joint collaboration, R&D infrastructure)
- Possible collaboration with IT, Solar companies (Daedeok, Ochang, Osong, Solar Valley, Business Belts)
- 24-hour International Airport shortens air maintenance process time (TAT) *
- Turn Around Time: Maintenance time, shortening TAT is a key competitive factor in the MRO business
- The safest area from natural disasters in the Republic of Korea (Chungbuk)
- Chungbuk is rated as the safest region in climate change by the National Institute of Environmental Research (32 evaluation items including typhoons)
- Excellent airline maintenance personnel can be supplied
- 5 universities in the province and 1 high school train and 480 maintenance personnel each year
- (Korea National University of Transportation, Cheongju University, Far East University, Chungcheong University, Cheongju Technical High School)

Living Conditions
- Education: 11 middle schools (3,963 persons), 7 high schools (2,248 persons), 2 colleges (24,411 persons), 2 universities (3,309 persons), human resource development training institutions: 3 vocational schools (2,209 persons), 34 kindergartens (1,022 persons)
- Medical Facilities: 3 hospitals, 41 clinics, 16 dental clinics, 20 oriental medical clinics, 15 public health branches, 23 health care centers
- Others: 23,493 households, 2 golf courses, 1 stadium

Government Support
- Site (free rent), Tax breaks (corporate & income taxes for 5 years, acquisition and property taxes for 15 years, tariff for 5 years)
- North Chungcheong Province Government and the Ministry of Land, Infrastructure and Transportation have a strong policy commitment of fostering MRO industries, and now promote the establishment of joint enterprises
7. Yeongchun High-Tech Park

Investment Highlights

Location Description
Being selected by Boeing as the best location for MRO center, it has an ideal location for promoting avionics parts and MRO.

Key Rationale
- A strategic location for MRO military aircraft selected by Boeing.
- The central area of industrial ecology of Gumi-Youngcheon-Pohang-Gyeongju information technology parts belt. Good environment of convergence of IT, car, robot, and materials industries.
- Location of building ‘Avionics comprehensive test infrastructure’ being implemented as a national project.

Location Requirements

Recommended Business Sector
Aviation parts manufacturing, MRO

Type
Sale in lots or long-term lease (maximum 50 years)

Land Zoning
FEZ, Foreign Investment Zone

Investment Condition
Type of occupying business meet the requirements

Location Overview

Target Area
- Total Area: 2,300,000 m²

Related Companies (49)
- Major companies: Danho/Aero/Technic/Technic/Bell Precision Industrial/Yeong-Moo Aerospace Electronic Systems (KAPS), etc.
- Aircraft engines and components: Foamex/Vitek/Aero/Byung-Yong/Max/31 Etcs.
- Communication/Electronic parts: Honwola/TeaKorea/TeaKorea
- Other mechanical parts for aircraft: Tos/Teka Tech Etcs.
Case References

BOEING MRO Center – USD 25 million investment

Aircraft MRO Center is established in Gyeongbuk, Yeongcheon, Nokjeondong
- MRO Center is completed in December 2014 / test run in February 2015
- From April 2015, F-15K-related aviation electronic components testing and maintenance business started (Before, it was repaired in the United States, taking an average of 8 months, but Yeongcheon MRO center shortened it to 3 weeks)

Youngcheon MRO center’s size and function
- In step 1, 14,000m² in Nokjeon-dong, Yeongcheon-si (20 million USD investment), additional investment of a total of 50.6 million USD in three phases by 2019 is planned
- Air force main fleet, F-15K’s electronic components manufacturing, research facilities, avionics test systems and electronic components fault analysis is performed
- 4 units of BMATS are installed (BMATS: A state-of-the-art avionics components’ universal testing facilities revealed by Boeing in its headquarters in September 2014, 8.4 million USD for each unit)

Government support
- North Gyeongsang Province proactively accepted Boeing’s request, such as 5-year exemption of corporate-income-acquisition property tax, designation of sophisticated technologies-related business. Youngcheon was specified as a promising base region for avionics sector in 2010, and the Avionics System Technology Center affiliated with the Korea Institute of Industrial Technology will be established by June, 2017 (Operating expenses 30.9 million USD)

Boeing’s reason for investment decision in Youngcheon
- With 5 major aviation-related defense contractors, such as LIG Nex1, Samsung Thales and well-developed mechanical and auto parts industries, it was deemed as the best place for the aviation parts industry.

Business Considerations

Market Perspective
World aerospace industry is worth of 314.2 billion USD (2013), with annual average growth of 5.4%, and it is expected to grow to 700 billion USD by 2020
Based on the strong will of the government to stimulate the aviation industry, it aims to achieve production of 16.7 million USD by 2020

Business Suggestion
MRO Business
Aviation electronic components manufacturing and fusion research and development

Main Costs
100 USD/m² / down payment 10%, equal payment in sixth installments every six months
Wages: 40,000 USD/year (10 years of service)

Business Cluster

Major Corporations in the region
- Major companies: DaehoAL/Samshin Techwin/Jeil Precision Industrial/Kyongju Aerospace Electrical Systems (KAES), etc.
- Aircraft engines and components: Jeil Precision Industrial/SY TEC/Hyunwoo OMC/ KAES(Generators for aircraft) Etc
- Subject matter(metal/non-ferrous metal): DaehoAL (Aviation structural materials) etc
- Communication/Electronic parts: Sambo Motors/Saehan Electronics Etc
- Other mechanical parts for aircraft: Godo TEC/KD Seal Tech Etc

Potential Customers
- Major domestic and foreign airlines such as Korean Air, MRO management company with high demand for parts

Related Organization
- Research and Development Authority: ETRI Daegu Branch Office, Korea Institute of Machinery & Materials Daegu Branch Office, Korea Institute of Industrial Technology’s Daegu Branch Office/ DGIST
- Business support organizations: Daegu Innopolis, Daegu Technopolis

kotra
Korea Trade-Investment Promotion Agency

INVEST KOREA
Infrastructure

Utilities
- Access road: City/Do's 3 routes (L = 2.42km, B = 30.0m)
- District's road infrastructure: 30 routes L = 29.0km
- Wastewater Treatment: Q = 11,884 m³/day, processed in Youngcheon Sewage Treatment Plant
- Inside Free Zone (Sewage, rainwater, wastewater pipeline type 1, Sewage treatment plant is installed: Q = 11,000 m³/day)
- Outside Free Zones (sewage wastewater pipelines: L = 8.0km, D = 400mm)
- Water supply of waterworks, etc.: Q = 22,628 m³/day, Youngcheon integrated water treatment plant's supply
- Inside Free Zone (Water supply pipeline type 1, Installation of reservoir: Q = 23,000 m³/day)
- Outside Free Zones (A water supply pipe: L = 12.0km, D = 400mm)
- Waste treatment: 276.8ton/day (Flammable 22.8, non-flammable 55.4, designated 21.8, recycle 176.8)
- Comestible and landfill waste: Within the district's waste treatment facilities installed
- Hazardous waste: entrustment of treatment
- Wastewater Treatment: Q = 11,884 m³/day, processed in Youngcheon Sewage Treatment Plant
- Waste treatment: 276.8ton/day (Flammable 22.8, non-flammable 55.4, designated 21.8, recycle 176.8)
- Comestible and landfill waste: Within the district's waste treatment facilities installed
- Hazardous waste: entrustment of treatment
- Communication facilities: 76,160 circuits
- Energy and power supply: Q = 182,118 KVA/year

Transportation
- Two expressways and 3 IC, etc. provide good accessibility in a broad area
  - East-west Daegu-Pohang Expressway, Gyeongbuk Expressway, 3 ICs (Cheongtong wachon IC, North Youngcheon IC, Youngcheon IC) provide good accessibility through expressway
  - National highway: 3 national highways connecting Gyeongbuk's north/south and east (no.4, no.35, no.28)
  - Within 30 minute-access by KTX, and expressway from Dongdaegu, Singyeongju
  - Airport within one-hour access: 4 airports including Daegu, Gimhae, Pohang, Ulsan
  - Container ports within one hour access: Busan port and Pohang port

Labor & Material

Labor Condition
- Regional population:
  
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<td>31,600,268</td>
<td>61.6%</td>
<td>7.9%</td>
<td>1.7%</td>
</tr>
<tr>
<td>Youngcheon/Pohang</td>
<td>6,075,652</td>
<td>3,731,789</td>
<td>61.4%</td>
<td>9.2%</td>
<td>1.1%</td>
</tr>
</tbody>
</table>

- Average wage: 40,000 USD/year USD 44,254 per annum, 10 years of service (Average of 5 listed companies in the aerospace and defense sectors)

Core Resource Supply Environment
- Key personnel: Led by Korea's representative IT technological education and research base, Kyungpook National University and Kumoh National Institute of Technology, the existing activated automotive technologies can be applied to the aviation sector
- Support environment for various convergence technologies: An optimal environment for various convergence studies including materials, IT, mechanisms, in collaboration with research institutes and schools such as Daegu Innopolis

Living Conditions
- Education: 15 middle schools (3,234 persons), 5 high schools (2,082 persons), 1 college (1,523 persons), Industrial HRD training institutions: 4 vocational high schools (995 persons), 1 vocational training institute (60 persons), 28 kindergarten (872 persons)
- Medical Facilities: 1 general hospital, 4 hospitals, 57 clinics, 16 dental clinics, 33 oriental medical clinics, 1 public health center, 11 health center branches, 15 health care centers
- Others: 10,686 households, 1 hotel, 2 golf courses, 1 sports complex, 1 youth center

Government Support

Tax benefits
- Full exemption of acquisition tax
- 5 year exemption for property tax (At the time of the first acquisition)

Finance
- Gyeongsangbuk-do provides SME start-up fund and business competitiveness improvement fund
- Support business: manufacturing, manufacturing-related service, knowledge-based businesses, video business, etc. - Terms and Conditions: facility fund of 667,000 USD, operating fund of 250,000 USD, annual interest rate of 4.3% - Term of Loan: facility fund payable in 5 years with a 3-year grace period, operating fund payable in 2 years with a 1-year grace period
8. Daeduk Innopolis

Investment Highlights

Location Description
With the cluster of aviation-related representative research institutes and a plenty of high quality human resources of master's and doctoral level, it is an optimal location for R&D of companies with innovative aerospace technologies.

Key Rationale
- The research hub with cluster of key research institutions such as the Korea Aerospace Research Institute, KAIST, Korea Institute of Machinery & Materials, Defense Research Institute (research community in various fields such as mechanisms, structure, subject matter, communications and IT technology required for the development of advanced aircraft)
- An area with higher proportion of excellent research human resources with a master’s degree or higher compared to other areas (Daejeon’s average 4.3%, the national average 2.3%)

Location Requirements

Recommended Business Sector
Aviation parts manufacturing, MRO

Type
Sale in lots or long-term lease (maximum 50 years)

Land Zoning
Research and Development Special Zone

Investment Condition
Foreign investment of not less 1.5 million USD per 3,000㎡ leased area is required (Grace period: within 5 years)

Location Overview

Related Major Companies (35)
- Major companies: Dong Yang Special Metal Co., Ltd., Atlas Engineering Co., Ltd., AR Korea Co., Ltd.,
- Aerospace materials: 7 companies including Nanoexarbor Co., Ltd., Dong Yang Special Metal Co., Ltd.,
- Electronics parts: 12 companies, including AVX KOREA
- Communications systems, observation and control system: 14 companies including SA System Co., Ltd., Itronix Co., Ltd.

Related Major Companies (25)
- Major companies: Korea Aerospace Industries, Neuson Ltd., Doleahm Systems Ltd., AM Technology Ltd.
- Aircraft Parts: 9 companies including Doleahm Systems
- Communication systems and electronic components: 14 companies including AOS Technologies
- Others (Materials and embedding) 12 companies including 9 parts
Case References

IDS (Ingegneria Dei Sistemi S.p.A)

IDS Overview

• Founded in 1980, it is a global defense company headquartered in Pisa, Italy. It is recognized for its world-class expertise in software development such as ship and aircraft electromagnetic analysis, airway design, Geo radar, and key technology in stealth field and electromagnetic engineering services field, and operates subsidiaries in England, Brazil, Australia, and Canada.

Investment Overview

• With about 3 million USD investment, it established Korea corporation and research and development center in the Global R&D Center of Megan Techno World in Yongsan-dong, Yuseong-gu, located in Daedeok INNOPOLIS.
• By 2017, it plans to establish an electromagnetic characteristics test field where testing components can be developed and performance test can be conducted, in a plot of land as large as 3300㎡, and will recruit 22 master’s/Ph.D. researchers.
• It has been selected as no.1 case of ‘Service-type foreign investment area’ designation program, which was introduced in 2011 to promote invitation of knowledge services industry with high economic contribution such as job creation compared to investment scale, and selected as the beneficiary of a variety of government support programs such as rent support.

Main reason for decision of site selection

• It has understanding and interest in Korea’s aviation industry, installing airport radio wave environment analysis S/W in Korea’s Airports Corporation, and supplying domestic companies the airway design S/W being used in project of airway design of the Ministry of Land, Infrastructure and Transport.
• With the increasing demand for aviation new technology in stealth-related fields and others, such as in the case where Korea’s leading defense contractors request it to provide stealth design consulting, support for RCS features measuring and optimizing technologies relating to development model, it decided to establish a Korean entity.

Business Considerations

Market Perspective

World aerospace industry is worth of 314.2 billion USD (2013), with annual average growth of 5.4%, and it is expected to grow to 700 billion USD by 2020.
Based on the commitment of the government to stimulate the aviation industry, it aims to achieve production of 16.7 million USD by 2020.

Business Suggestion

Development of high-strength lightweight composite materials and engine parts, observations/communications technology such as radar, and innovative materials technology such as stealth.
Advanced human resource areas, aerospace fusion technology research through the development of industry-university collaboration.

Main Costs

Land rent: yearly 2 USD/㎡ (1% of the official price/year, official land price is 220 USD/㎡)
Wages: 40,000 USD/year (10 years of service)

Business Cluster

Major Corporations in the region

• Aircraft Parts: 9 enterprises such as Dodam Systems
• Communications and electronic systems: 14 companies including East Photonics Co., Ltd Etc
• Materials and interiors: Special materials companies related to structures such as carbon materials, including DACC Carbon, and aircraft interiors companies such as S-Polis are clustered.

Potential Customers

• Aircraft manufacturers including Korea Aerospace Industries (KAI), MRO demand companies such as Korean Air

Related Organization

• Research Institutions: Korea Aerospace Research Institute, Korea Institute of Machinery & Materials, Agency for Defense Development, KAI R&D Center, Korean Air R&D Center, Aerospace IT convergence Center
Infrastructure

Utilities

- Water: 2,280 thousand tons/day
- Wastewater: Sewage treatment facilities within the complex (capacity: 993,000 tons/day)
- Power: Supply channel (Complex substation 5 places, cogeneration power plant 1 unit) Supply capacity (voltage 154kV, Volume 981MVA)
- Waste: Specified waste (each resident institution entrusts treatment to specialized institutions), General waste (use Daejeon Metropolitan City landfill)
- Communications: Copper wire 904,542m, cable 697,559m
- Energy plan: Substations 5 places (Daejeon-dong, Deokjin-dong, Gwamyeong-dong, Sinil-dong, Jijok-dong) and cogeneration plant 1 place (Sinil-dong)

Transportation

- Airport: Cheongiu Airport (30km)/Busan twice/day, Jeju 5 times/day
- Railroad: Gyeongbu Daejeon Station (4km), Honam Seodaeyeon Station (4km)
- Road: Expressway (Gyeongbu Jungbu Expressway Sintanjn IC (2km), Honam Expressway Northern Daejeon IC (1km)), national highway (no.1, 30km), Expressway Northern Daejeon IC (1km), national highway (no.1, 30km), Expressway Northern Daejeon IC (1km), Expressway Southern Daejeon IC (1km), local road (Geumbyeongro (Sintanjn≈Yuseong))
- Port: Gunsan port (90km) (2~5 ten thousand ton ships berthing, cargo handling capacity 2,183,000 tons/day, Cargo berthing capacity 6 berths)

Labor & Material

Labor Condition

<table>
<thead>
<tr>
<th>Population of zone</th>
<th>Available labor force</th>
<th>Ratio</th>
<th>Bachelor’s</th>
<th>Master’s</th>
<th>Ph.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nationwide</td>
<td>51,327,916</td>
<td>31,600,268</td>
<td>61.6%</td>
<td>7.9%</td>
<td>1.7%</td>
</tr>
<tr>
<td>Daejeon’s Integrated zone</td>
<td>4,501,403</td>
<td>2,695,480</td>
<td>59.9%</td>
<td>6.9%</td>
<td>1.8%</td>
</tr>
<tr>
<td>Daejeon only</td>
<td>1,531,809</td>
<td>956,975</td>
<td>62.5%</td>
<td>7.7%</td>
<td>2.7%</td>
</tr>
</tbody>
</table>

- Average wage: 40,000 USD/year (USD 44,254 per annum, 10 years of service (average of 5 listed companies in the aerospace and defense sectors)

Core Resource Supply

Environment

- Key personnel: As an area where Korea’s leading research institutes and engineering educational institutions are concentrated, it provides excellent technical personnel
- Support environment for various convergence technologies: In conjunction with research institutions and schools in various fields within Daejeon Innoopolis, it provides the best environment for promoting a variety of convergence research, including materials, IT, mechanisms
- Especially, it is easy to connect with the production base of carbon nanotubes material in Jeonbuk zone and production base of various electronic parts in Cheonan and Southern Gyeonggi region

Living Conditions

- Education: 30 middle schools (22,424 persons), 17 high schools (16,112 persons), Industrial manpower training agencies: 5 vocational schools (4,091persons), 87 kindergartens (7,395 persons)
- Medical Facilities: 3 general hospitals, 5 hospitals, 241 clinics, 112 dental hospitals, 1 oriental hospital, 109 oriental clinics, 5 public health branch offices
- Others: 89,550 households, 3 concert halls, 2 swimming pools, golf course, sports complex, welfare center

Government Support

- Purchase tax’s full exemption, Property tax’s 5-year full exemption, in the case of a high-tech enterprise, property tax’s 7-year 100% exemption, after that 3-years 50% reduction
- Start-up funding: to the extent of 833,000 USD, interest rate of financial institutions under agreements is applicable
- Management stability fund: Interest of mortgage is supported for 2 years
- Factory facilities’ relocation grants: 3% of expenses of relocating factory facilities is support (up to 166,000 USD)
- Headquarters’ relocation subsidy: If headquarters’ working personnel exceeds 30 persons, each exceeded person is given not more than 400 USD support (up to 416,000 USD)
- Facilities Grants: When investment amount exceeds 1.7 million USD, the amount in excess is supported by within 5% (up to 416,000 USD)
- Employment subsidies: When regular employment exceeds 10 people, not more than 400 USD is supported for each person in excess (up to 416,000 USD)
- Training grants: When hiring at least 30 new people, not more than 400 USD is supported for each person for up to six months. (up to 416,000 USD)