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PROLOGUE

MESSAGE FROM CEO

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EPILOGUE

Korea Minting, Security Printing &
ID Card Operating Corp.
People say that the world is changing rapidly, and that value can disappear easily. People say that the world needs more technology and more trust.

We believe that our company has earned the public’s trust, and that we can make the world more beautiful. Our company will, through its values and its products, create a more human future. Our technology will make the world more comfortable.

Real value in the world will not change. A company that innovates, and helps to realize human dreams and the human future, will progress constantly.

Global Top Class, KOMSCO
Founded in 1951, KOMSCO is not just a security printer, a trusted partner of central banks, governments, issuing authorities and commercial organizations around the world. It supplies these institutions with not only currencies, the blood of national economies, but also with a wide range of security documents including passports, NIDs, checks, gift certificates, postage stamps, and tax stamps.

KOMSCO has 40 years experience in exporting national banknotes, circulation coins, security paper, NIDs, security pigments, and inks. The company is also consistently researching and developing sophisticated security features, ID solutions, and design methodology. In addition, the company is planning to increase its investment in R&D and facilities.

Businesses know that KOMSCO is not devoted simply to manufacturing. Rather, through its reliable products, KOMSCO pursues win-win cooperation while making use of the invaluable history, culture and spirit that it shares with its customers.

KOMSCO is still one of the strongest players and is growing into a Global Top Class Company in fields as diverse as manufacturing banknotes and providing integrated ID solutions. All of this is done by constant innovation in areas of technical development and managerial improvement. We dare to innovate and continue to build on the confidence of our customers in our business sectors.

I hope that your confidence in and support for us will continue far into the future.

Thank you very much.

Create the future with innovation

Young - Dae Yoon
CEO, KOMSCO
At KOMSCO, our top priority is always customer satisfaction. To achieve our mission, we have invested heavily in research and development (R&D), innovation, and production for many years. Compared to other government printers, KOMSCO can manage all the processes required in banknote printing - from creating a sophisticated banknote design to paper production to highly complex security features, making it impossible for anyone to counterfeit the currency in question.

KOMSCO has consolidated its technical knowledge and processed understanding of the field of producing banknotes, so we can guarantee that our proven knowledge and craftsmanship are incorporated into every single banknote. Finally, the banknotes KOMSCO produces meet international standards. Our R&D, production, and quality control have achieved and maintained certification to the international quality standard ISO9001:2008 and the international environmental standard ISO14001:2004.

Close association with leading industrial players

At KOMSCO, close association with leading industrial players in multiple aspects of banknote printing has been a priority. We have worked with many companies with a great deal of experience and have actively sought collaboration and joint R&D projects. KOMSCO has been busy attempting to learn and master the necessary knowledge and technical expertise from the beginning. To overcome any prospective difficulties, KOMSCO has started to undertake joint R&D projects and has accomplished a great deal in certain projects so that today our competence is highly acknowledged by other companies.

KOMSCO steadily pursues a win-win strategy and maintains strong relationships with other companies in order to achieve a common objective.
A banknote is just not a means of payment. It is “Convergence of Art and Technology”

- Guaranteed security solution from KOMSCO -

Security printers are facing challenges and threats as digital technology and the many ways of countering are constantly evolving. KOMSCO, as a security printer, always strives to be at least one step ahead of counterfeiters by having a strong portfolio of sophisticated security elements that allow the general public to distinguish what is fake from what is genuine. To demonstrate our performance in the field of banknote printing, we have produced a sample note equipped with particular new technologies.

What is the Message?

The theme of the sample note is "KOMSCO’s paradigm shift." It represents a vision of the future for KOMSCO, in which we aim to take off into the status of "Global Leading Company for security solutions" with a foundation of future-oriented systems and the development of core technology rather than the traditional way of manufacturing banknotes, coins, checks, stamps, securities, etc., mainly in the domestic market, which has been the driving force of our growth in the past 60 years.

What are the Core Technologies?

1. Embossed Latent Image
2. Intaglio Latent Image
3. Multi-tonal Watermark
4. Special Press and Soldering
5. Registered Holographic Stripe
6. Active IR Ink
7. LuminoFlu IR Ink
8. White IR Ink

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- White IR Ink + LuminoFlu IR Ink
- Active IR Ink
- Under Infra Red

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More than meets the eye. “Convergence of Art and Technology”

Design elements:

Section Themes Note
Main “Yeopjeon” (Korean Brass coin) This is a basic coin with a square hole in the middle used in the Joseon Dynasty. The square hole connotes that the coins honestly in circulation. This shows that KOMSCO has expanded its business domain to the ID field in such areas as e-Passports, NID, and ID cards, all produced on the basis of banknote manufacturing techniques.

Reverse sub theme “Nongak” (Traditional Korean Music) Nongak, means “farmers’ music” performed by a percussion band. It consists of large and small gongs, a barrel-shaped drum, and an hourglass-shaped drum. In addition, a hand drum and a conical oboe are added to the band.

Themes

- Up Conversion Ink
- Fluorescent Security Fiber, Fluorescent Security Ink
- Color-Shifting Ink
- Windowed security thread
- RGB IR Ink
- LUNAMAG®
- Up Conversion Ink

Advanced technologies for cash processing systems

Based on our in-house development of machine-readable features, banknote recognition systems, and counterfeit detection technology, KOMSCO has worked in conjunction with hardware manufacturers to develop sophisticated cash processing systems. A broad range of high-quality cash processing systems from the company is able to meet the highest demands of every type of bulk handling organization. All of its systems for processing, sorting, and assessing the authenticity and condition of banknotes are designed to enhance the productivity, performance and security requirements of our customers’ cash processing environment. KOMSCO continually puts the highest level of effort into offering its customers the best solutions for a better future.

- ATM (Automated Teller Machine)
- Automated currency exchanger
- Banknote sorter
- Banknote counter
- Sheets of paper counter

This is a versatile, efficient and cost-effective solution with high-performance standard features and a multitude of application types, all of which are compliant with global standards.

This is a multi-functional and purpose-designed for commercial and central banks to relieve their staff of the task of exchanging bundles of coins for notes and vice versa.

This is a multi-functional, high-performance system with the dimensions of a desktop machine. The system is used in cash centers and casinos, at bank counters, and in back offices.

This is a dual or single headed counting system with a high degree of accuracy for both banknote printers and security paper makers; for high compatibility, it is based on an open architecture.
A responsible Mint that plays a pivotal role in the coinage industry

KOMSCO has been a rule-follower and has followed the path that other developed organizations have taken in the mintage industry. By bringing about innovations in our technology development and production system, we have gradually strengthened our competitiveness.

KOMSCO had an opportunity to host the 25th Mint Directors’ Conference (MDC), which conference is well known as the most prestigious international conference among mints and related organizations. Not only did we successfully accomplish the hosting of the event, but we also earned a reputation as a world leading Mint. Today, we still strive hard to play a key role in world minting activities and to fully collaborate with developed and developing countries in exchanging technological and managerial information for the mintage industry.

To encourage collectors and to inspire related business, KOMSCO has geared up to host the Korea Money Fair (KMF) in the Republic of Korea every year since 2009. Each year, about 15,000~20,000 visitors, including exhibitors, collection dealers from the domestic and overseas markets, have enjoyed this extraordinary event. All our great efforts have been highly appreciated and eventually the fair will blossom into an international event.

In conclusion, we are committed to being the best provider of circulation and non-circulation coins, collectible products and services. We are a company that connects people and inspires celebration.
From an Arguably world class production system to a World best coin blank supplier, and Global collection distributor

What Do We Have?

KOMSCO undertook a project to modernize its mintage plant and finished building two fully integrated production systems, which encompass all of the processes from inserting coin blanks to minting, inspecting, and packaging; all parts of these processes are automated and sequent.

We are confident that our production system is incredibly advanced, innovative and highly esteemed by other Mints, related central banks and government officials who knock at our door to benchmark the successful case of our project. We are well-prepared to provide our customers with the details of our production system on the basis of professional engineering consulting.

In addition, the manufacturing site meets and is committed to maintaining the International Organization for Standardization external quality-assurance and environmental standards for production, installation and servicing.

Who Do We Work with?

As a Mint, two of the key points that we have to keep in mind in order to keep up with other companies and expand our business are “How to secure coin blanks in a timely manner” and “How to successfully distribute products”. KOMSCO has been in close collaboration with domestic companies that are global players in their fields.

POONGSAN Corporation is the world’s largest coin blank manufacturer, accounting for more than half of the world’s coin blank trade volume. Our relationship with POONGSAN makes it possible for us to manufacture a wide range of products for the circulation coins, commemorative coins and medallions.

HWADONG Corporation is an internationally professional collection seller. It has earned an exclusive right to sell commemorative coins in the Republic of Korea from the other major Mints. It makes limited-mintage numismatic coins that our customers order and we produce them for possible spread all over the world.
Volatile base metal prices and rising production costs have created global demand for an alternative to the conventional coin. KOMSCO has put great effort into identifying cost-effective new materials with higher producibility and durability through its joint R&D with the Industry-University-Institute. For instance, since 2006, the Bank of Korea has saved millions of dollars per year thanks to the new 10-won copper-clad aluminum coin. In addition, KOMSCO strives hard to improve its technology development, in order to obtain superior quality and better long-term performance.

KOMSCO, a newly modernized Mint, has the capacity to produce about 1.7 billion circulation coins per year and has experience with the export of circulation coins and master punches. Based on our confidence, we have achieved continuous contracts with many countries, one of which has been our faithful customer for more than 10 years.

Confidence, Excellence and Creativity
- A wide range of products and open innovation R&D -

KOMSCO has garnered a reputation for technological innovation and exquisite design. Our coins won prizes at the Coin Award Program in the Mint Directors’ Conference. These coins aren’t just money. Beyond the face value, they are more than meets the eye. Furthermore, we have crafted a variety of medallions and pieces of cultural jewelry and have issued them for artistic, commemorative or souvenir purposes.

Award-winning coins

**Category: Most Beautiful Coin**

<table>
<thead>
<tr>
<th>Coin</th>
<th>Theme</th>
</tr>
</thead>
<tbody>
<tr>
<td>30,000-won gold coin</td>
<td>2002 FIFA World Cup – Korea/Japan</td>
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</table>

**Category: Most Technically Advanced Coin**

<table>
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We always provide the best security paper, using all possible combinations and simulations in our systems. KOMSCO, a banknote paper with a cotton-based base substance, not only perfectly meets the typical design requirements for security banknotes but also offers unlimited opportunities for attractive banknote designs incorporating all established security features. Our high security paper is used in a wide variety of applications by customers throughout the world. KOMSCO is the only supplier of its kind, and we are trusted all over the world.

Guaranteed expertise in Security Papermaking
- Delivering confidence to our customers with our long experience -

Security paper
- Paper mill, with the highest level of security
- Trusted raw material from its affiliate

Caring for Environment
We at KOMSCO take our commitment to environmental standards very seriously. Our paper mill has been operated and maintained to meet the requirements of international environment standards. The paper mill is continuously accredited to the ISO 14001:2004 environmental standard.

Caring for Security
The paper that KOMSCO has dedicated itself to providing is more than just a commercial product: it is a platform for printing advanced security features. Therefore, the paper mill operates at the highest possible level of security. In other words, every single process—from raw material processing and watermark design to production and finishing—is conducted under the most rigorous security measures. So, all the products—finished sheets, work in progress, and destroyed paper—can be accounted for.

Caring for raw material
The price of raw materials for cotton banknote paper is highly influenced by the rise of the price of oil and many experts expect that the price will consistently fluctuate with the market. To cope with this difficult situation, KOMSCO has established an affiliate company as a joint venture. The company (GKD, GLOBAL KOMSCO DAEWOO) is located in central Asia, in Uzbekistan, which is known as one of the largest cotton exporting countries. With our engineering assistance and expertise, this company produces high quality cotton pulp so that KOMSCO can maintain a secure source for its products regardless of price changes.
An ideal platform for a prestigious design
- Incorporating effective security features against counterfeiting -

KOMSCO’s top priority role as a government company is to develop deterrents and countermeasures to stay ahead of the increasing sophistication of the technologies used to counterfeit and fraudulently alter documents. Our expertise in security features for paper, like security printing techniques, has grown, and today we have a comprehensive understanding of effective document protection. However, KOMSCO still works closely with related Industry-University-Institutes to lead the development of innovative and advanced security features.

What are the security features?

**Cylinder Mould Watermark**
The watermark produced by a cylinder mould paper making process is full of detail, extraordinarily clear, and demonstrates the full range of shading from light to dark in a three-dimensional impression. It is perceptible to the touch as well as visually and is highly recommended by Interpol as the most effective overt security feature.

KOMSCO creates tailor-made watermark designs for each customer from a certain figure, portrait or symbol of their choice. The more complex the original, the more effective the cylinder mould mark will be. Combined with other security features, this feature provides a very high level of protection indeed.

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<table>
<thead>
<tr>
<th>Watermark Type</th>
<th>Description</th>
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<tr>
<td>Multi-tonal Watermark</td>
<td>Demonstrates a full range of shading from light to dark.</td>
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<tr>
<td>Highlight Watermark</td>
<td>Enhances the visual perception of the watermark.</td>
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Korea Minting, Security Printing & ID Card Operating Corp
Embedded Security Fibers

Synthetic fibers are dispersed throughout the paper during manufacture. They are available in a range of colors that are visible in normal light and that fluoresce under UV light. KOMSCO has developed a few different types of fibers:

- Monochrome Fibers
- Twisted Fibers
- Rainbow Fibers
- MF Fibers™ (Under UV) (Under IR) (Under VIS)

Security Threads

Security threads are inserted into the paper at the cylinder mould during the paper production process - either fully covered by the paper or as a window thread that is visible on the surface of the paper at regular intervals. We don’t have security threads to sell. However, KOMSCO does have extensive technical knowledge that allows us to apply them to papermaking; these are technologies ranging from a holographic and color-shift thread to a windowed Motion thread.

Chemical Sensitizing

Hidden or encapsulated dyestuffs that produce vivid voiding stains on the application of a broad range of chemicals commonly used to tamper with documents.

X-ray and electromagnetic responding

This is a feature to prevent leakage of confidential information. One type of product that employs this technology has a particular image or text embedded in a document so that it can be easily detected by an X-ray scanner. Another product that employs this technology is an electromagnetic tag that is laminated into the paper so that it can be sensed by an electronic article surveillance system at the gate of a company.
International travel has increased dramatically for the past two decades. The clear determination of a passenger’s identity must therefore meet the increasing demands for a maximum level of security and has to happen in a faster and more automated manner at the same time.

KOMSCO, as a government-designated passport manufacturer and issuer in The Republic of Korea has always strived hard to respond to the world’s trends and to achieve long-term protection against forgery. Since late autumn 2008, the company has been introducing centralized personalization for stronger security measures and improvements in the quality and consistency of the personalization process.

The company is well prepared to provide our customers with tailored passports along with secure solutions regardless of whether an electronic or standard passport is required, and whether it is personalized on an inkjet printer or retransfer printer or by laser engraving. In short, all the individual components for travel documents, including security printing, chip operating systems and system solutions, can come from KOMSCO.

An international full service provider of Travel Documents

In the beginning, KOMSCO focused on manufacturing blank passport booklets and ensuring that all the physical characteristics complied with all the relevant ISO specifications. Since that project started, the company, as an exclusive role player, began producing and issuing Korean e-Passports, and the company has been closely in co-operation with trusted partners to establish the infrastructure required for such personalization systems and personal data management systems.

The alliance between KOMSCO and its partners has created a synergy effect for the field of secure e-Passports. With the successful experience of Korea’s e-Passport, today the company can offer integrated system solutions that allow for data-protected travel documents throughout the entire process chart. In addition, the systems are tailored to the specific requirements and needs of our customers. As a result, KOMSCO guarantees that it can fulfill all ICAO requirements.
Always one step ahead of counterfeiters

Incorporating physical security features and a high level of security mechanisms for personal data...

Passport and visa forgery has been growing around the world. Sophisticated hardware and software tools for image reproduction have been readily available for use everywhere, providing full opportunities to alter travel documents. Therefore, travel document security features always have to stay one step ahead of counterfeiters, and so it is necessary that the documents cannot be emulated using widely available technology. In accordance with this requirement, KOMSCO has developed both an ideal combination of techniques used in security papermaking, security printing, and book production and the latest microprocessor knowledge for data protection and access.

Physical security features for perfect document protection

Paper security

The first step for passport security always rests with the paper. Paper designed for use in passports provides the first level of security. The security paper KOMSCO produces consists of cotton-only or both cotton and cellulose with no optical brighteners.

- Multi-tonal Watermark
  - A custom-made mould made watermark creates a multi-tonal effect that can be used to prevent counterfeiting with a scanner or a photo paper.

- Highlight Watermark
  - This watermark consists of a very bright, conspicuous watermark, strategically integrated into a three-dimensional multi-tone watermark.

- Security Thread
  - This thread embedded in the paper or canvas at the back of the page is readable from both sides of the page and colors become visible after being exposed to a UV light source.

- Chemical Sensitizer
  - Chemical reagents are mixed into the paper to prevent any attempt at manipulation using bleaching agents or solvents.

- Security
  - A wide variety of fibers such as monochrome or rainbow-colored fibers, available in visible or invisible forms, are used in security paper. Fibers are visible in visible light.
Passports and Systems

**Printing techniques**

**Intaglio Printing**

This method is used to create a visible profile, making the design identifiable by touch.

**Microprint Text**

Very small text is integrated into the design. The size of this text makes it almost unrecognizable to the naked eye. It is printed in both intaglio and offset.

**Guilloche Patterns**

These patterns create continuous very fine line patterns; the patterns are custom designed and integrated into the overall design. They are very difficult to replicate.

**Rainbow Printing**

One of the guilloches can be rainbow printed which means colors smoothly change and blend into each other.

**Relief (3-D) Design**

A security background design incorporating an image generated in such a way as to create the illusion that it is embossed on the substrate surface.

**Passport Numbering**

The page number is integrated into the design of each page. Page numbers are printed so they become visible after being exposed to UV light.

** Reactive Inks**

These also contain security reagents so that a detectable reaction occurs when bleaches and solvents come in contact with the passport.

**Bedouin Design**

A random background design incorporating an image generated in such a way as to create the illusion that it is embossed on the substrate surface.

**Fluorescent Security Ink**

Ink visible only after being exposed to UV light and will glow for the first 30 seconds. The ink is exposed to a UV light and will glow for the first 30 seconds.

**Korean Design**

The design elements are visible while the pages are under UV light.

**RGB IR ™ Ink**

This is a covert feature with non-monotone or an unusual specific infrared absorption quality that is impossible to reproduce with original material. It can be used as a machine-readable feature and can be applied as a cut-out or in intaglio printing.

**Passport Numbering**

The page number is integrated into the design. The use of this text makes it important to be legible and it is printed in both intaglio and offset.

**Laser-perforated Numbering**

The passport numbers are perforated by laser from page 3 through to the last page and through the endpaper in the cover. The conical-shaped holes ensure the pages cannot be easily replaced by those of another passport.

**Color Shifting Ink**

This is printed on the endpaper in the form of a customized design or emblem. The color turns from one color to another when the note is tilted.

**InkJet Latent Image**

The front and back endpapers contain a small area containing colored inkjet latent images that can be seen under UV light.

**Deliberate errors**

This feature consists of an interrogator (data) in the designated area. The interrogator can be in the form of reverse spacing or missing letters.

**Hidden Image**

The hidden image IPI (Invisible Personal Information, e.g. name of the holder, date of birth or any other personal information) is encoded or concealed within the primary image of the holder.

**Stitching thread**

A natural cotton fiber thread stitches the pages together with twisted stitching. The thread is colored and fluoresces after being exposed to a UV light source.

**Additional technological security features**

**Laser-perforated holographic protection foil**

The passport numbers are perforated by laser from page 3 through to the last page and through the endpaper in the cover. The conical-shaped holes ensure the pages cannot be easily replaced by those of another passport.

**Infrared hologram protection foil**

This protection foil is a dual-scaled transparent laminate with an off-set security feature. It is attached on the data page during the personalization process.

**Stitching thread**

A natural cotton fiber thread stitches the pages together with twisted stitching. The thread is colored and fluoresces after being exposed to a UV light source.
Features
- Software application for reading ICAO-compliant e-MRTDs such as e-Passports
- Simple and secure design associated with validating e-Passports
- Optical reading of the data page in the passport and extraction of machine readable zone (MRZ)
- Fingerprint identification solution built-in

Security Mechanisms
- ICAO Doc9303
  - Basic Access Control (BAC)
  - Passive Authentication (PA)
  - Active Authentication (AA)
- BSI TR-03110, EAC
  - Extended Access Control (EAC)

Applications
- e-Passports
- Corporate ID cards
- ID/Access cards

One-Stop Card Issuance System
- Excellent photo quality
  - Automatic quality inspection engine built-in
  - 5 lamp flash system matching white balance with camera guarantees top-quality photographs
- Easy-to-use
  - Voice and on-screen instructions with touch screen operations
- One-Stop Card Issuance (Printing & Encoding)
  - Photo, Signature, Name and ID Numbers can be printed on the card
  - User information (with biometrics) can be encoded on the IC chip card

Security Mechanisms
- BAC (Basic Access Control)
- PA (Passive Authentication)
- AA (Active Authentication)
- EAC (Extended Access Control)
- PAC (Personalization Access Control)

Standards
- ICAO Doc9303
- BSI TR-03110, EAC
- ISO 14443-1/-2/-3/-4

Crypto features
- TDES
- RSA 2048
- ECDSA-224
- ECDH
- SHA-1, 224, 256
- Retail-MAC

Internationaly specified measures for data protection and access

KCOS® e-Passport solution

This is an e-Passport operating system designed with the "3S" concept of high Security, extreme Speed and best Stability. It is a trusted solution in compliance with ICAO and European Union specifications. It supports all necessary security mechanisms, Basic Access Control (BAC), Passive Authentication (PA), Active Authentication (AA) and Extended Access Control (EAC) for strongly secure communication and unique protection of biometric fingerprint data. Moreover, KCOS® e-Passport solution supports all commands specified for supporting Logical Data Structure (LDS) and PID infrastructure security requirements and offers a Personalization Access Control (PAC) mechanism that assures Integrity, Security, Confidentiality, and Availability during high-speed personalization.

KCOS® Passport 1.0
- Security Mechanisms
  - ICAO Doc9303
  - Basic Access Control (BAC)
  - Passive Authentication (PA)
  - Active Authentication (AA)

KCOS® Passport 1.1
- Security Mechanisms
  - ICAO Doc9303
  - Basic Access Control (BAC)
  - Passive Authentication (PA)
  - Active Authentication (AA)

KCOS® Passport 2.0
- Security Mechanisms
  - ICAO Doc9303
  - Basic Access Control (BAC)
  - Passive Authentication (PA)
  - Active Authentication (AA)

Chip
- SLE 66CLX800PE (Infineon)
- S3CC9GC/GW/LC (Samsung)
- S3CT9KW/KC/KA (Samsung)

EEPROM
- 80 Kbytes
- S3CC9GC : 72 Kbytes
- S3CC9GW : 144 Kbytes
- S3CC9LC : 72 Kbytes
- S3CT9KW : 144 Kbytes
- S3CT9KC : 80 Kbytes
- S3CT9KA : 40 Kbytes

Interfaces
- Contactless Type B
  - Up to 848 Kbit/sec
- Contactless Type A/B
  - Up to 848 Kbit/sec

Standards
- ISO 14443-1/-2/-3/-4
- ICAO Doc9303
- BSI TR-03110, EAC

Security
- TDES
- RSA 2048
- ECDSA-224
- ECDH
- SHA-1, 224, 256
- Retail-MAC

Retail-MAC
- TDES
- RSA 1024, 2048
- ECDSA-160, 224, 256, 384, 512
- ECDH
- DH
- SHA-1, 224, 256, 384, 512

Certification
- Chip : CC EAL 5+
- COS : CC EAL 4+
- BSI Test Certification
  - Layer 1 ~ Layer 7
- Chip : CC EAL 5+
- COS : CC EAL 4+
- FIME Test Certification
  - Layer 1~Layer 7
- KTC Test Certification
  - Layer 1 ~ Layer 7
An extensive portfolio of proven security elements

- Incorporating physical security features and a high level of security mechanisms for personal data -

ID cards should be counterfeit-proof and security features have to stay one step ahead of even tech-savvy counterfeiters. The protection comes from implementing advanced security technologies on the card material. These technologies range from laser engraving to the secure integration of biometric features and encrypted digital codes to tactile information.

KOMSCO has not only developed robust substrate materials, security features, and an open JavaCard-based operating system, but can also provide solutions for data acquisition, personalization and verification.

Networking with global firms for innovative products and solutions

Today, ID cards are not just plastic cards that establish people’s identities. They grow ever more imperative for e-government and e-business processes that should be transacted securely. Thus, visual and electronic security features thoroughly protect the card from fraudulent use.

For this purpose, KOMSCO has closely cooperated with trusted companies in the fields of raw materials, security features and secure systems. With its profound expertise and high-profile partners, the company can offer solutions that range from data capture to production and personalization of various ID cards, allowing for outstanding efficiency and ultimate identity protection.

Smart ID cards and Systems

A one-stop solution provider for ID cards and Systems

Enabled by information and communication technologies, the world has become a global village and there are no boundaries. At the same time, however, people are under more threat from document fraud and identity theft than ever before.

KOMSCO, as a government-designated National ID card manufacturer and issuer in The Republic of Korea, helps to provide solutions with counterfeit-proof ID cards made with cutting-edge technologies. It has considerable expertise in high security printing combined with digital technology.

The company covers the entire process chain of ID cards both traditional and electronic and ID systems and provides solutions for governments around the world. KOMSCO can offer a proven range of solutions that not only conform to all the international standards but also can be adapted to the customers' particular needs.

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Korea Minting, Security Printing & ID Card Operating Corp

<Partners for production and personalization>  
<Partners for integrated system solutions>

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Physical security features for perfect document protection

Authentication Level Ⅰ (Features recognizable using human senses)

- Multi-colored guilloche patterns
  Guilloches are security patterns that are made up of continuous fine lines. The patterns prevent accurate reproduction by copier or standard document scanners. The lines can change in color across the card area, generating rainbow effects.

- Rainbow printing
  In areas shared by two different colors, color gradients are changing continuously from one color to another. The color edges, bleeding together, cannot be copied with conventional copy techniques.

- Color-shifting ink
  This ink shows different colors as the angle of view changes, e.g. from gold to green, magenta to green, and green to blue.

- Embedded transparent hologram
  This is a feature that changes its color and its image when viewed from different angles. It also includes two or three-dimensional shapes or kinematic effects or two-color permutation.

- Embedded surface structures
  Particularly designed embossed elements in the forms of positive or negative surface structures are applied to the outer surfaces of the card. This feature can be combined with micro-lettering.

- Tactile feature
  Laser-engraved information such as numbering is added to the card; this information is raised and tactile.
Internationally specified measures for data protection and access

**JK® JavaCard solution**

JK® is a JavaCard-based operating system, designed with the ‘3S’ concept of the highest security, speed and stability as well as high performance. JK® is also a standardized architecture that is secure and flexible enough to support customisation using state-of-the-art technology. In addition, JK® is known to be applied in diverse fields ranging from NDIs, e-Passports, and e-Driver licenses to Banking Cards and Transportation cards. JK® serves your business needs around the globe.

### Chip Certification

**S3CC9GC/GW (Samsung)**
- Chip: CC EAL 5+
- Dual Interface VISA Approval
- S3CC9GC: 72Kbytes
- S3CC9GW: 144Kbytes
- Contactless Type B
- Up to 424 Kbit/sec
- JavaCard v2.2.1
- Visa GlobalPlatform v2.2.1
- VGP Configuration 3
- DAP, DM Authentication
- EMV 4.1 Integrated Circuit Card Specification that is Payment Systems compliant
- Visa Smart Debit/Credit 2.5.1 PSE version 2.2
- AES
- SEED
- SHA-1
- MD5
- RIPEMD-160
- RSA 2048 based on Tornado
- Dual/Triple key DES-3 via co-process

**S3CC9LC (Samsung)**
- Chip: CC EAL 5+
- COS: CC EAL 4+
- S3CC9GC: 72Kbytes
- Contactless Type A
- Up to 848 Kbit/sec
- JavaCard v2.2.2
- Visa GlobalPlatform v2.2.1
- VGP Configuration 3
- DAP, DM Authentication
- EMV 4.1 Integrated Circuit Card Specification that is Payment Systems compliant
- SEED
- ARIA
- SHA-1, 256
- RSA 2048 based on Tornado
- ECC 256 based on Tornado
- Dual/Triple key DES-3 via co-process

**S3CT9KW/KC (Samsung)**
- Chip: CC EAL 5+
- COS: CC EAL 5+ (Expected 2012)
- S3CT9KW: 144Kbytes
- S3CT9KC: 80Kbytes
- Contactless Type A/B
- Up to 848 Kbit/sec
- JavaCard v2.2.1
- Visa GlobalPlatform v2.2.1
- VGP Configuration 3
- DAP, DM Authentication
- EMV 4.1 Integrated Circuit Card Specification that is Payment Systems compliant
- Visa Smart Debit/Credit, PSE version 2.7.1
- SEED
- ARIA
- KCECDSA
- SHA-1, 256
- RSA 2048 based on Tornado
- ECC 512 based on Tornado
- AES via co-process
- Dual/Triple key DES-3 via co-process

### Trusted JK® JavaCard solution

**JK10® JavaCard solution**

**JK21® JavaCard solution**
Laser and electronic personalization for ID documents

In technical co-operation with EO TECHNICS, a domestic company but a global player in its field, the laser personalization machine has been developed. This is a comprehensive system solution tailored to the requirements of our customers. In addition, the machine is equipped with fully automatic inline modules that can perform high quality laser engraving and perforation.

▶ Applications
- Central personalization of ID documents, also for large production quantities
- Regional personalization for medium and large sized production quantities

▶ Features
- Double-sided laser personalization (including chip personalization)
- 350 cards per hour
- Personalization time: 10 seconds per card
- High-quality laser engraving and image perforation
- Optical variable components (OMI)
- Tactile laser engraving
- High precision for tables thanks to automated laser positioning
- Ultra-fine reproducibility of gray scales from white to jet black
- Identification of the finished personalized card

▶ Advantages
- Efficient one-pass production line proper for every ID document
- Easy to edit image data
- Fast and accurate laser processes in a compact footprint
- Module type design
- High vacuum to prevent dust and particles
- Applies various encoder technologies
- User friendly GUI interface
- Low cost of ownership

Data capturing system for ID documents

KOMSCO has completed developing a data capturing system by collaborating with one of its partners. The system transmits data such as facial images, fingerprints, and electronic signatures to the central server of the administration in real-time. The facial image captured by the system is high quality and conforms to the requirements set by ICAO and ISO/IEC 19794-5. Transmission of biometric data such as fingerprints can be carried out with digital encoding and the data is encrypted in order to protect it against misuse and manipulation.

▶ Applications
- Data capture for ID documents by passport and ID card offices
- Decentralized data capture at embassies and consular offices

▶ Features
- Capture live facial photo and store the data in compressed form
- Transmit the data to the administration server in real-time
- Measures to enhance quality during image data capture
- Photographic printing (Optional)
- Components supported
- High-resolution digital camera for image capture
- Touch screen input
- Fingerprint sensors (Optional)
- Signature pad (Optional)
- Scanner to capture signature (Optional)

▶ Advantages
- User friendly GUI interface (voice information system)
- Easy to install
- Capture high-quality facial photo for personalization
We at KOMSCO aspire to be a global top class company for anti-counterfeiting.

In order to create a better future, we will always strive to acquire new skills whenever we need them. When we need to create an unshakeable trust, we will use our products to do so. Our technology is our greatest strength.

KOMSCO has created a sense of trust among the public at large with its 60 year tradition and technology. We will lead the way against future challenges and changes and will always go forward in a spirit of innovation.

Global Top Class, KOMSCO