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## Leading the Hi-Tech Revolution

### Six Korean Tech Standards Adopted by IEC



On November 10, KATS announced that Korea had suggested six technology standards for 'Terrestrial DMB Receiver,' 'Semiconductor Humidity Sensor,' etc. at the plenary meetings of IEC/TC held in Germany in September and in the U.K. in October, and that IEC has adopted them as official projects.

With IEC's adoption of the six technology standards, Korea became a leader in the enactment of international technology standards by suggesting 10 of the 12 standards in the semiconductor field.

Those given project leader posts for the six IEC-adopted technology standards are Prof. Lee Jae-Young of Korea Polytechnic University for 'Terrestrial DMB Receiver'; Prof. Park Se-Kwang of Kyungpook National University for 'Semiconductor Humidity Sensor'; Prof. Park Sang-Sik of Sejong University for 'Image Sensor'; Prof. Park Jae-Young of Kwangwoon University for 'RF MEMS'; Team Leader Lee Hak-Joo of Korea Institute of Machinery & Materials (KIMM) for 'Mechanical Property Testing Method of MEMS Thin Films'; and Prof. Park Se-Kwang of Kyungpook National University for 'Testing Method of MEMS Package Bonding Strength.' Among those technologies, the technological power of T-DMB Receiver was verified in the world's first commercial service launched in December 2005.



If standardization is completed, Korea can expect strong exports of terminals with pre-occupation of the global market and additional revenue following MPEG patent royalties.



Also, 'Semiconductor Humidity Sensor' is likely to be widely utilized in electric and electronic home appliances, industrial equipment, automobiles, etc. as it is being appraised as an excellent technology capable of replacing existing ceramic sensors.

'Image Sensor' is a technology utilized in cell phones, surveillance cameras and scanners. Its global market is expanding with Samsung Electronics, MagnaChip, and others competing in the field.



3 Items Advance to Finals for '06 World Technology Award

# 'Top 10 New Korean Techs' Steal Global Spotlight

Among Korea's 10 best new technologies chosen last year, NAND Flash, Time Machine D-TV and Protein Medicine prepared momentum to publicize the excellence of the nation's IT and BT by advancing as finalists for the '2006 World Technology Awards (WTA)' of the World Technology Network (WTN) held in San Francisco on November 3.

WTN is a science and technology think tank founded in 2000 with a membership of about 1,000 scientists, businessmen, bankers, politicians and journalists and about 100 enterprises and organizations from 60 countries. It holds the World Technology Summit annually and selects and presents WTA to the most excellent individuals and organizations in 20 fields. WTA is often called the technology Nobel Prize.

To resolve a situation where, although Korea has the world's highest-level technologies in IT, shipbuilding, etc., the nation's overall global technological position is still quite low, KATS plans to exhibit Korean technologies at leading world technology contests like WTA in order to highlight Korea's image as a strong technology nation, while enhancing its technological position at the same time.



## Summary of Top 10 New Technologies for 2005

| Company                            | Developed Tech Name                                 | Gist of Technology   |
|------------------------------------|---|--|
| Daewoo Shipbuilding & Marine Eng'g | LNG carrier with LNG reception terminal function    | <ul style="list-style-type: none"> <li>- World's first mounting of LNG reception terminal function on an LNG carrier</li> <li>- Built-in semi-submerging-type turret mooring and gas supply systems</li> <li>- Equipped with LNG re-gasification mock/simulation testing devices</li> </ul>                            |
| Samsung Electronics                | 50nm-class 16 Gbit NAND flash memory                | <ul style="list-style-type: none"> <li>- World's first 50nm-class-technology-applied product</li> <li>- Realized world's largest single-chip capacity (16 Gbit)</li> <li>- Technology one-year more advanced than firms of competitor nations</li> </ul>   |
| Optomagic Co.                      | Zero-water optical fiber for optical communication  | <ul style="list-style-type: none"> <li>- Expanded usable wave range by 200% with elimination of OH radical in optical fiber</li> <li>- A world-class high-quality product</li> <li>- Market expected to increase sharply due to rising demand for sub-networks of optical communications</li> </ul>                    |
| LG Electronics                     | High-definition DVR flat panel DTV                  | <ul style="list-style-type: none"> <li>- World's first developed and commercialized DVR flat panel DTV with built-in HDD</li> <li>- Developed world's highest level DVR-use chip and software</li> <li>- A strategic product to take world's No.1 market share</li> </ul>  |
| Qualiflo Nara Tech Co.             | 12" silicon single-crystal grower                   | <ul style="list-style-type: none"> <li>- A 12" silicon wafer production device for world's largest-size semiconductors</li> <li>- Realizes world's highest productivity compared with foreign-made equipment</li> <li>- A unique technology that distributes semiconductor materials evenly within crystals</li> </ul> |
| Inus Technology Co.                | Quality control software utilizing 3D scanning data | <ul style="list-style-type: none"> <li>- World's first process-centered quality control software</li> <li>- World's top-level calculation precision</li> <li>- Uniquely supports ANSI/ASME Y14.5 measurement standards</li> </ul>  |
| LS Industrial Systems              | Open network-based 28nsec PLC                       | <ul style="list-style-type: none"> <li>- World's smallest, highest-speed PLC (1/2 the size and several 10s times the speed of existing products)</li> <li>- A strategic export product as industrial PLC</li> <li>- A new driver for automation of equipment industries, PDP, LCD, automobiles, etc.</li> </ul>        |
| Adaptive Plasma Technologies Co.   | ACP source for etching semiconductor wafers         | <ul style="list-style-type: none"> <li>- World's first ACP source for use in etching semiconductor wafers</li> <li>- Applied to mass production of semiconductor wafer etching chambers for the first time in Korea</li> <li>- Raises productivity of semiconductor processes and enhances yield rates</li> </ul>      |
| NexGen Biotech Co.                 | Human protein drug produced from plants             | <ul style="list-style-type: none"> <li>- World's first developed and commercialized human TSH protein from plants</li> <li>- Opens huge market by securing base technology for protein drugs</li> </ul>  |
| Ucon System Co.                    | Ground control system for unmanned airplanes        | <ul style="list-style-type: none"> <li>- Remotely controls unmanned airplanes from the ground</li> <li>- Tactical control system utilizing collected information</li> <li>- Converted into an export product to advance into the ranks of industrialized nations in the field</li> </ul>                               |

## Robot-Specific Safety Rules Adopted as Nat'l Standards

Korea adopted the three robot-specific safety principles insisted on by SF novelist Issac Asimov in his 1950s book 'iRobot' as national standards for the first time in the world.

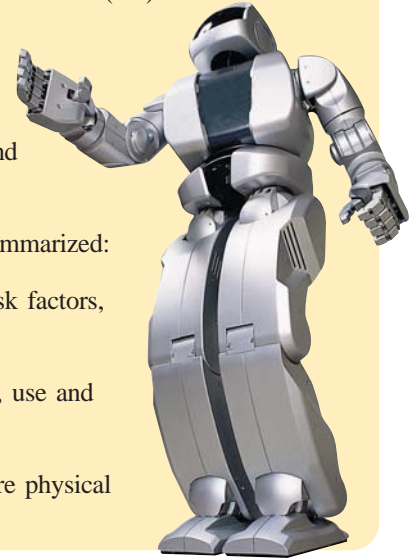
Asimov's three 'Laws of Robotics' are first, a robot may not injure a human being; second, a robot must obey the orders given to it by a human being; and third, a robot must protect its own existence.

After development of the safety rules for service robots and guidelines for their design and production to secure the safety of future human-robot coexistence in society, KATS enacted them as Korean Industrial Standards (KS) and made the standards effective as of December 1 this year.

The safety standards for service robots specify mechanical safety (collision, getting entangled, etc.); electrical safety (electric shock, overheating, etc.); and environmental safety (electromagnetic conformity, etc.) and include safety guidelines at the design and production stages to increase the utilization level by robot manufacturers.

The KS standards recently enacted according to Asimov's three laws of robotics are summarized:

- 1st Principle (Human Protection): collision prevention, elimination of electrical risk factors, including electric shock, in the control system.
- 2nd Principle (Obedience to Orders): ergonomic design that is easy to manipulate, use and repair, realization of convenient user interface, etc.
- 3rd Principle (Self-Protection): Maintenance of mechanical strength that can endure physical shock, falls, etc. and securing system and safety functions.



## 7th 'Standards Day' Ceremony Held



On November 3, KATS held the seventh 'Standards Day' ceremony at its grand auditorium. This annual event is designed to publicize Korean technology standards extended to the international level and to create a standardization atmosphere that approaches closer to the public through experience with living standards, etc.

An awards ceremony also was held for enterprises and individuals that have contributed remarkably to the development of the nation's standardization.

In the corporate and organization category, a total of 10 enterprises and organizations were awarded, including Hankook Chinaware (national standardization grand prix) and Eugene Corp. (KS certification grand prix).

In the individual contributor category, 29 persons, including Executive Director Kim Cheol-Jin of Samsung Electronics, who has led global standardization of MPEG, etc. after establishing an exclusive standardization department, were presented bronze tower order of industrial service merit awards.

In the excellent standardization thesis category, 12 persons, including six students, received National Assembly Chairman and Prime Minister prizes, etc.

Capitalizing on the momentum of Standards Day, KATS also plans to prepare a harmonious foundation to make Korea a strong standards nation in the 21st century by holding diverse 'Standards Week' events throughout the year. The projected events include 'Metrology Standards - 100 Years of Cultural Assets Exhibition,' 'Children's Experience World of Metrology Measurement Standards' and 'Size Korea Experience.'

## 24th ISO/TC176 Plenary Meeting Held in Busan



KATS held the '24th Plenary Meeting of ISO/TC176 Quality Management and Quality Assurance' November 10~18 in Busan, with about 300 ISO quality experts from 50 countries participating. ISO/TC176 is ISO's technical committee (TC) on quality management (QM) systems joined by 97 countries as members.

The participants in the nine-day meeting, which was held at Busan Convention & Exhibition Center (BEXCO) and Paradise Hotel in Korea's largest port city, discussed and studied ways to introduce the ISO 9001 QM system into new fields, such as 'Education' and 'Customer Satisfaction.'

The effects expected from introduction of ISO's QM system into the education field are enhancement of education quality and securing of more high-quality manpower. In the mid-1980s, super-first-class universities in the United States introduced TQM (Total Quality Management) to strengthen the competitiveness of education, and these universities are now playing the role of birthplace to the world's brains.

## KATS' CHOI Speaks Out on New Vision & Initiatives



KATS Administrator Kaphong CHOI delivered a speech entitled "Korea's Standardization System and Vision" at the European Union Chamber of Commerce in Korea (EUCCCK) on Nov. 29.

The nation's top standards administrator touched on three topics in his presentation: Korea's national standardization system, domestic technical regulations related to construction machinery and KATS' vision for technology & standards.

Pointing to the expanding role of standards with the acceleration of globalization as well as with rapid advances in the IT field, CHOI said that KATS has established a new vision with five policy initiatives tailored to meet the changing requirements of its customers.

"We established the new vision to enhance our national competitiveness through technology innovation and to ensure a higher quality of life for our people. In this process, we classified our customers for technology and standards into consumers, businesses and governmental agencies," CHOI explained.

"In the new blueprint, our five policy initiatives are to firmly establish the national standards system, innovate the standards and certification process, strengthen our international standards activities, support technological innovation and upgrade the product safety control system," the administrator said.

## Korea Assumes 2 Chairmanships of ISO Shipbuilding SCs



In October this year, Korea assumed chairmanships of two shipbuilding subcommittees (SCs) of ISO/TC, the Korean Agency for Technology and Standards (KATS) said.

Prof. Kim Jeong-Jae of Ulsan University and Prof. Lee Jae-Woo of Inha University were elected chairmen of SC8 (Ship Structures) and chairman of SC11 (Intermodal and Short-Sea Shipping), respectively, at the General Assembly of ISO/TC 8 (Ships and Marine Technology) held in Hamburg, Germany, October 15~20, according to KATS.

By assuming the two SC chairmanships, Korea became the second largest chair-nation after Japan (three SC chairmen), and the world's three biggest shipbuilders, Korea, Japan and China, hold chairmanships of six subcommittees, or half of the total 12 SCs.

Recently, ISO has also been adopting various regulations of the International Maritime Organization as international standards in close cooperation with the organization. In the shipbuilding field (ISO/TC8), 200 international standards have been enacted to date

## 'Modern Measuring Instruments' as Cultural Assets

The Cultural Heritage Administration (CHA) announced that it would register 331 national standards measuring instruments of Korea's modern age (1905~1945) owned by KATS as cultural assets. CHA's advance notice came about from KATS' intention to publicize the importance and the history of Korean standards widely among the public and also to preserve the instruments perpetually.



'Do-Ryang-Hyung-Gi' represents measuring instruments. 'Do' means a 'ruler' for length; 'Ryang' means a 'cup' for volume; and 'Hyung' means a 'scale' for weight. These measuring tools have become standards in daily life and commercial transactions. If society did not have such standards, there would be widespread confusion.

The measuring instruments to be registered as cultural assets show the changes in Korea's modern measuring system history at a glance. The value of the instruments is appraised as being quite high, since they were used as 'national standard measuring instruments' or as standard devices to check other instruments used in the society of Korea's modern age and also in terms of their scarcity.

Considering that as much as one-third of GDP today is transacted utilizing measurement, KATS plans to install a measuring instruments museum in its building and utilize it as a venue to publicize the importance and to enhance awareness of measurement and standards to second-generation youth as well as the general public.

## Safety Standards for 17 New Electrical Appliances

KATS enacted safety standards for 17 new electrical appliances, including well-being products such as bathtubs for bathing half of the body and feet, so that only products conforming to the standards can be manufactured and sold starting in March next year.

Korea applies IEC standards as safety criteria for electrical appliances. Therefore, if existing international standards were applied to products like half-body bathtubs, foot bathtubs, etc., which are mainly marketed only in Korea, without supplementation, there was concern that a 'dead angle zone for safety,' lack of safety accident prevention, etc. might occur.

KATS reflected people's habits in using electrical appliances, ondol (warming stone) culture, etc. in the newly enacted safety standards. Therefore, it expects the safety of electrical appliances being distributed in the market to be enhanced further.



In the future, KATS plans to monitor the distribution of new electrical products introduced to the market according to market demand changes on a real-time basis. And, for any products that have the potential for causing safety injury accidents, the agency will designate them for safety management and supplement their safety criteria to suit the domestic environment in order to minimize the occurrence of safety accidents.

## Korean 'Detergent-Free Washing M/C' to Become IEC Standard



At the plenary meeting of IEC/TC 61 (General Safety Standards for Household Electrical Equipment), held in October on Jeju Island, 23 countries supported the Korea-suggested agenda on 'Detergent-Free Washing Machine' as a 'FDIS (Final Draft International Standard)' document. Therefore, only the final approval procedure to confirm it as an international standard remains, according to KATS.

Unlike existing washing machines that use synthetic detergents, the new technology, which will be adopted as IEC standard 60335-2-108 (Specific Requirements for 'Detergent-Free' Washing Machines), attaches an electrolyser to the washing machine, achieves electrolysis by using sodium carbonate (electrolyte) in the device and produces alkaline ion water that can clean clothes thoroughly. In 2002, Kyungwon Enterprise self-developed this new technology and commercialized the detergent-free washing machine.

If the Korea-developed technology is officially adopted as an IEC standard in the second half of 2007, the detergent-free washing machine is projected to emerge as one of the nation's promising export items to Europe, etc. where environmental restrictions are tightening, together with refrigerators, air-conditioners, and traditional washing machines

## KATS Revamps ES into Private-Led Cert System



As part of its efforts to raise the efficiency of the ES (Excellent Software) certification system, KATS announced that it has designated Korea Testing Laboratory (KTL) as a specialized software testing and assessment body for the certification system.

The KATS' decision came after consideration that the functions and performance of software is being upgraded at a rapid pace, shortening lifecycles, and industrial software is becoming more diversified into automation packages, embedded software, etc., necessitating more precise and sophisticated tests and assessments.

By assigning the previously government-led software test and assessment work to a private body, KATS expects the software quality test and assessment foundation in the private sector to expand in the future. Under the changed system, KATS also believes that the test and assessment period for ES certification will be shortened to result in activation of the certification system.

## 2006 NT Commercialization Promotion Rally



On November 14, KATS held '2006 New Tech (NT) Commercialization Promotion Rally,' a huge festival to boost the purchase of NT-certified products, at the Grand Ballroom of JW Marriott Hotel Seoul.

About 300 related officials participated in the event, including Vice Minister Kim Jong-Gap of the Ministry of Commerce, Industry and Energy (MOCIE) and Chairman Lee Yun-Sung of the Commerce, Industry and Energy Committee, National Assembly.

At the rally, which marks its 10th anniversary this year, MOCIE signed agreements with major public purchasing organizations and large private enterprises to accelerate the purchase of NT-certified and environment-friendly products.

## Body Measurement Survey of Handicapped Persons

KATS, under MOCIE (Ministry of Commerce, Industry & Energy), held “Announcement Meeting and Exhibition of the Result of Size Korea 2006” on Nov. 29, announcing research findings on measurement of handicapped persons, categorization of obese body shapes and Korean body shapes by sex and age, as well as various applications of body measurement for industrial use.

The Size Korea project conducted measurement research of about 20,000 Koreans in 2003 and 2004 to provide data on body measurement and shapes needed in the design of industrial commodities and living space, and in 2005, it conducted measurement of movement behavioral characteristics and head shape of the elderly population.

This year, it announced measurements of 257 items including basic body sizes, muscular strength, scope of physical movement, wheelchair-related sizes, etc. of about 700 wheelchair users and handicapped persons nationwide to secure basic information needed in product manufacture and facility design for handicapped persons.

### ▶ Percentage of male body shapes by age and obesity and analysis of characteristics



| Obesity shape                  | Characteristics   | 10s   | 20s~30s | 40s~50s | 60s   |
|--------------------------------|---|-------|---------|---------|-------|
| Super-size obesity             | Extreme obesity in all areas including upper and lower body | 13.25 | 10.66   | 9.09    | 3.90  |
| Triangle-type obesity          | Lower body obesity, such as thick thighs                    | 68.07 | 15.90   | 8.82    | 15.58 |
| Inverted triangle-type obesity | Obese abdomen with short legs and broad shoulders           | 2.41  | 22.54   | 36.36   | 38.31 |
| Log-type obesity               | Evenly obese areas with thick arms and underarms            | 16.27 | 50.91   | 45.72   | 42.21 |

### ▶ Percentage of female body shapes by age and obesity and analysis of characteristics



| Obesity shape                  | Characteristics   | 10s   | 20s~30s | 40s~50s | 60s   |
|--------------------------------|---|-------|---------|---------|-------|
| Beer bottle-type obesity       | Narrow shoulders with obese lower body                                      | 7.35  | 7.60    | 29.16   | 49.40 |
| Inverted triangle-type obesity | Obesity with large abdomen and broad shoulders                              | 5.71  | 23.20   | 23.86   | 16.87 |
| Triangle-type obesity          | Lower body obesity, such as thick thighs                                    | 70.61 | 56.40   | 23.61   | 8.43  |
| Pot-type obesity               | Large upper body (belly/chest) compared to lower body with narrow shoulders | 16.33 | 12.80   | 23.37   | 25.30 |

## Top Enterprises and Technicians in Basic Production Tech '06



A government-sponsored awards ceremony was held to honor 33 enterprises and 63 technicians who achieved high scores in the “Basic Production Technology Competition 2006,” which was designed to promote technological competitiveness in the basic production technology field and to raise the morale of production workers in such areas as heat-treatment, casting, welding, plating, etc.

The Presidential Award, the top prize, was presented to Daechang Heat Treatment Co., which participated in the heat treatment enterprise category. The government awards were given to the entries with excellent scores, 33 enterprises and 57 individuals as well as six contributors. Of the 76 awards presented, there were one Presidential Award, four Prime Minister Awards, seven Minister of Education and Human Resources Development Awards, 15 Minister of Commerce, Industry & Energy Awards, six Minister of Labor Awards, 18 Small and Medium Business Administrator Awards and 25 KATS Administrator Awards.

This year’s Basic Production Technology Competition focused on inducing a quality labor force ranging from science and engineering fields to the basic production line, and, therefore, was expanded into a general event by including local areas and schools with emphasis on student participation to generate a booster effect on technology in science and engineering areas and to enhance the pride of students in related fields.

## Standards for Micro Dust-Free Vacuum Cleaners

A Korean Standards (KS) specification revision is being drafted that would require labeling to identify the standard emission volume of micro dust (maximum 0.2mg/m<sup>3</sup>). This is the result of an indication that conventional vacuum cleaners are incapable of filtering micro dust, although it is known that micro dust causes various diseases including respiratory diseases (asthma, rhinitis, etc.) and allergies.

KATS (Korean Agency for Technology and Standards), under MOCIE (Ministry of Commerce, Industry & Energy), at the request of consumer groups including the Consumers Union of Korea in February 2005, announced that a revision of KS specifications is underway with the collection of opinions from producers, consumer groups, test and certification authorities, technical standards experts, etc.

Considering various conditions such as the development of new products by producers and securing of adequate test and evaluation facilities, implementation of the revision will not occur before January 2008 to allow for a preparatory period of one year.

Korea's major home appliance manufacturers (Samsung, LG, Daewoo, etc.) dominate the world's vacuum cleaner market. With accurate product information including micro dust emission volume specified on the product, producers will be able to gain more confidence from consumers.

In 2005, the total global market for vacuum cleaners was US\$8.5 billion and the domestic market was 500 billion won.

KATS plans to encourage vacuum cleaner producers to produce environment-friendly products meeting the micro dust emission requirements specified by KS and strongly encourages consumers to purchase only KS approved products beginning in January 2008.



## Nat'l Standards for Call Centers to Be Introduced

With the planned introduction of national standards (KS) for call centers for the first time, customers are expected to have access to higher-quality services in the future. The move also is expected to increase the efficiency of call center operation.



On November 23, KATS revealed that it has enacted two related KS to strengthen the competitiveness of call center service, which has been failing to respond to diverse and complex customer requirements due to a lack of specialized manpower, despite the sector's rapid growth in the new economy era.

The call center market, which was 3.8 trillion won in 2001, 5.2 trillion won in 2002 and 6.7 trillion won in 2003, is projected to reach 10 trillion won in 2007.

In the new call center standards concerning service quality of inbound-type call centers equipped with more than 20 counselors and call systems and education & training of employees, KATS stipulates operational standards for customer-oriented call centers and manpower, equipment & facilities and quality management systems to achieve efficient call center services.

KATS' education & training standards specify composition of manpower (more than one quality manager per 60 counselors), education & training courses, content, time, qualification of lecturers, etc. for maintenance of call center service quality.