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Introduction

- Taiwan industries are well-known for their manufacturing capabilities and entitled for building up their core competence. While forging ahead through the global industrial development trends, the island, however, must upgrade the industries to design- or innovation-oriented ones to increase the add-on value. Its decision to shift to a “knowledge-based economy” has laid a proper foundation for R&D investment, has focused industry on value-added growth, and has created a culture rewarding innovation.
- The Science and Technology Advisory Group of the Cabinet has recently proposed the following industries for development: *flexible electronics* (to become a central R&D location for flexible electronics design and technology); *nanotechnology*; *intelligent robotics industry* (to achieve an output of NT\$ 90 bio. by 2013); *intelligent buildings* (to become a model for lifestyle); *intelligent vehicles industry* (to develop automated automobiles and components, establish intelligent transportation systems, improve system service models); *RFID application* (to reach an output of NT\$ 70 bio. by 2013).
- Taiwan spent US\$10 billion on research and development in 2007, accounting for 2.62 % of GDP, a record high.

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1. MOU between Chiayi University and University of Huelva in Spain

(Central News Agency, 02. 12. 2008)

National Chiayi University (NCYU) in Chiayi County has signed a memorandum of understanding on academic cooperation with Spain's University of Huelva. The MOU will allow for exchanges of teaching personnel and students between the two schools and cooperation in opening joint courses and research projects. NCYU has four campuses and six colleges covering disciplines from agriculture and life sciences to art and is especially known for its agricultural programs.

Full article:

<http://www.cna.com.tw/CNAeng/RealTimeNews/NewsDetail.aspx?strNewsDate=&strNewsID=200812020023&strType=JD>

2. Antofine could be potent anticancer pro-drug: Taiwanese scientist

(Central News Agency, 02. 12. 2008)

A study by a Taiwanese professor has led to the finding that antofine -- a phenanthroindolizidine alkaloid compound -- can effectively eliminate human cancer cells and could serve as a new anti-cancer prodrug.

Full article:

<http://www.cna.com.tw/CNAeng/RealTimeNews/NewsDetail.aspx?strNewsDate=&strNewsID=200812020034&strType=OT>

3. Academicians awarded Italian science prize

(Central News Agency, 08. 12. 2008)

Two academicians, Wu Maw-kuen and Chu Ching-wu, of Taiwan's top research institute Academia Sinica won the Italian "Ettore Majorana" award for their discovery of the Y Ba₂ Cu₃ superconductor, which is the first superconductor system with a transition temperature exceeding 77 degrees Kelvin, in addition to their continuous contributions in physics education. Wu, who was made an academician in 1998, directs Academia Sinica's Institute of Physics and is a foreign associate of the U.S. National Academy of Sciences. Chu, an academician since 1988, is also the president of Hong Kong University of Science and Technology. The prize was established by the Sicilian Parliament in 1990 to recognize scientists whose research helped improve the development of peace for human beings. The award is named after Italian physicist Ettore Majorana, known for his achievements in neutrino masses. Recipients of the award are elected every year by members of the World Federation of Scientists, which, founded in Switzerland in 1973, has over 10,000 scientist members from over 110 countries. The federation is known for establishing the "Erice Statement" in 1982, which opposes the use of science for militaristic means and promotes its use for peaceful purposes.

Full article:

<http://www.cna.com.tw/CNAeng/RealTimeNews/NewsDetail.aspx?strNewsDate=&strNewsID=200812080029&strType=JD>

4. Easy-to-carry 'electric pills' developed

(Central News Agency, 09. 12. 2008)

A novel "electric pill" that can generate three watts of electricity to power portable digital devices has the potential to become a more eco-friendly alternative to existing batteries, according to Industrial Technology Research Institute (ITRI). The only residue of the power generation process is sodium metaborate (NaBO₂), a low-toxic chemical that is much less hazardous to the environment than the conventional electricity cell, ITRI said.

Tsao Fang-hei, a division chief at ITRI's Energy and Environment Research Laboratories, explained that when added to a micro fuel cell, the white pills of concentrated hydrogen can easily produce electricity by interacting with the catalysts inside the cell. "A pill of 2-3 centimeters in diameter can provide three watts electricity for at least one hour," said Tsao. The electricity is sufficient to power a mobile phone or even a laptop computer, he said.

Full article:



<http://www.cna.com.tw/CNAeng/RealTimeNews/NewsDetail.aspx?strNewsDate=&strNewsID=200812090021&strType=EM>

5. Chang Gung University reveals new augmented-reality technologies for brain surgery

(Central News Agency, 11. 12. 2008)

Chang Gung University has developed a new set of augmented reality technologies for brain surgery that can shorten the time needed for surgery and reduce the risks involved. The technologies, invented by researchers at the Chang Gung University and Chang Gung Memorial Hospital in Taoyuan, combine holographic display, augmented-reality surgery, an automated skull-opening drill, and customized tools for skull repair implants.

Unlike virtual reality (VR), which uses computer-generated graphics to recreate items on a screen, augmented reality (AR) creates images by modifying real-time images of objects with additional computer-generated graphics. Explaining the function of the technology, Lee Shih-tseng, director of the Medical Augmented Reality Research and Development Center operated by the university and hospital, said holographic displays can analyze medical data to produce a "remodeled" skull on screen, which allows 360-degree inspection and free removal of all bone and tissue. Lee said that with the holographic display, brain surgeons can get a better idea of their patients' conditions and can determine the best path and means of surgery.

Full article:

<http://www.cna.com.tw/CNAeng/RealTimeNews/NewsDetail.aspx?strNewsDate=&strNewsID=200812110030&strType=JD>

6. Fruit peels to facials, university students score big with bio-innovation

(Liberty Times, 11. 12. 2008)

Dayeh University's Biophysics Product Technology Department has developed a nanoscale fiber material that uses discarded fruit peels combined with beneficial bacteria to produce a silky facial mask. The mask tones and tightens the face. This technology has been honored with a silver medal in the Ministry of Economic Affairs' "Biotechnology R&D Creativity Competition".

The mask utilizes fibers with a diameter between 0.05 and 0.08 nanometers, which is just 1/133 the diameter of the material used in most facial masks, which are made of nonwoven material. The mask feels silky smooth, yet it has great strength. It can be used as a makeup sponge if put into cosmetics, or dipped into antiseptic it can be used to cleanse wounds without irritating or catching on the wound edges.

Full article:

<http://www.taiwanheadlines.gov.tw/ct.asp?xItem=143514&CtNode=9>

7. 90% avian flu vaccine trial subjects produce antibodies: research

(Central News Agency, 13. 12. 2008)

Dayeh University's Biophysics Product Technology Department has developed a nanoscale fiber material that uses Results of a clinical trial on avian influenza vaccine in Taiwan show that antibodies formed in over 90 percent of the trial subjects and that even if the virus mutated, 45 % of the vaccinated subjects would still be able to resist the virus. The results were released at an academic conference held by the Taiwan Society of Pulmonary and Critical Care Medicine Saturday. The trial -- part of an Asia-Pacific clinical trial on vaccine against the H5N1 strain of avian flu -- was hosted by National Taiwan University College of Medicine Dean Yang Pan-chyr.

Full article:

<http://www.cna.com.tw/CNAeng/RealTimeNews/NewsDetail.aspx?strNewsDate=&strNewsID=200812130020&strType=JD>

8. Taiwan-designed folding chair wins Red Dot Design Award

(Central News Agency, 14. 12. 2008)

A folding chair without screws designed by a teacher at Shu-Te University in Kaohsiung County and his student has won a Red Dot Design Concept Award in the competition for Germany's 2008 Red Dot Design Awards, considered "the Oscars of the design world."



Full article:

<http://www.cna.com.tw/CNAeng/RealTimeNews/NewsDetail.aspx?strNewsDate=&strNewsID=200812140018&strType=EM>

9. High school student's cancer-fighting discovery nets gold medal

(Liberty Times, 15. 12. 2008)

"If there's a cocktail of drugs used to treat AIDS, could humans come up with one to treat cancer?" Chen Chi-kuan, a senior at Taichung's First Boys High School and just 17 years of age, has used vitamin A acid to raise the efficiency of Paclitaxel against cancer cells. The combination is also capable of reducing the degree of harm the drug causes to the patient's body, representing a major breakthrough in cancer treatments. Yesterday, Chen was feted with the MXIC Science Award, a gold medal for his work.

Full article:

<http://www.taiwanheadlines.gov.tw/ct.asp?xItem=143850&CtNode=39>

10. Taiwan teen's invention of plant watering device wins international award

(China Times, 16. 12. 2008)

Another new inventor and invention from Taiwan have attracted attention at this year's Nuremberg International Invention Exhibition, which is the world's largest invention-oriented exhibit. Su Yin-fa, who is only 17 years old and is a student at Kuang-Hwa vocational High School of Technology in Taichung, won a silver medal for his invention, which is an electric device to control the amount of water given to potted plants. A solar panel is used to convert solar power into electricity that drives the motor, which then can repeatedly water plants as required.

Full article:

<http://www.taiwanheadlines.gov.tw/ct.asp?xItem=143941&CtNode=9>

11. ITRI Works out World's First Solid-state Hydrogen Storage Pill

(Taiwan Economic News, 16. 12. 2008)

The Industrial Technology Research Institute (ITIR), has worked out the world's first solid-state hydrogen storage, which is shaped into a one gram, white pill instead of compressed into a high-pressure hydrogen bottle, and is able to fully charge a battery for a mobile phone with only 3g of the pills.

ITRI indicated that a hydrogen-based fuel battery is smaller in size than conventional power generation devices, and therefore is widely applied onto car engines and 3C (computer, communication and consumer electronics) products.

Full article:

http://cens.com/cens/html/en/news/news_inner_25671.html

12. Taiwanese in star-dwarf research

(Taipei Times, 16. 12. 2008)

A Taiwan-US astronomical research project has discovered the first ever direct evidence that brown dwarfs, sub-stellar object form in the same way as other stars, a finding that may settle the argument on whether brown dwarfs form like stars or like planets.

The paper, which is published in the Astrophysical Journal Letters, stated that a brown dwarf dubbed "ISO-Oph 102" was observed developing an accretion disk and two outflow jets in opposite directions — the unique phenomena of star formation.

Full article:

<http://www.taipeitimes.com/News/taiwan/archives/2008/12/16/2003431229>



13. Taiwan inventors win big at the Seoul International Invention Fair

(Liberty Times, 17. 12. 2008)

In total, 33 countries this year took part in the 2008 Seoul International Invention Fair. The team for Taiwan participating in the event came away with nine gold medals, 11 silver medals, seven bronze medals and nine special prizes. Chen Tsung-tai, the chairman of the Taiwan Invention Association and the leader of Taiwan's delegation to the fair, said that Taiwan entered 31 items in this year's event, many of which were cooperative efforts between the academic and industrial sectors. In addition to displaying the design and creative abilities of Taiwan's small- and medium-sized enterprises, the entries from Taiwan exhibited the research and development acumen of Far East University and WuFeng Institute of Technology.

Full article:

<http://www.taiwanheadlines.gov.tw/ct.asp?xItem=144041&CtNode=9>

Related article:

<http://www.taiwanheadlines.gov.tw/ct.asp?xItem=144188&CtNode=9>

<http://www.chinapost.com.tw/taiwan/int'l--community/2008/12/19/188330/Taiwan-wins.htm>

14. Biological mystery of 'speciation' gene uncovered

(Taipei Times, 17. 12. 2008)

A breakthrough has shed light on the biological mystery of why there are so many different types of species in the world after the discovery of a "speciation" gene in budding yeast by Academia Sinica (AS) researcher Leu Jun-yi. Leu's finding was published in the renowned journal Cell on 12 Dec.

Full article:

<http://www.taipeitimes.com/News/taiwan/archives/2008/12/17/2003431294>

15. Textile institute introduces new concept in vertical gardens

(Central News Agency, 17. 12. 2008)

A new concept in "vertical gardens" based on newly developed non-woven fabrics made its debut on 17/12, introduced by the Yunlin branch of the non-profit Taiwan Textile Research Institute (TTRI).

Vertical gardens are nothing new in the world of horticulture, but the technology using composite non-woven and cloth fabrics as a base on which plants and flowers can grow is a new twist. The know-how and application of non-woven vertical gardens can help private houses and public buildings build gardens in an easy, inexpensive and environmentally friendly way.

The gardens were introduced at a workshop held at the TTRI's Yunlin branch, where other new innovative products developed by TTRI researchers were also introduced, including solar fabrics and cosmetic masks and wound dressings that use biotechnologically developed cellulose.

Full article:

<http://www.cna.com.tw/cnaeng/EnglishTopNews/TopNewsDetail.aspx?strTopNewsDate=&TopNewsSerialnum=3029&strTopNewsID=200812170022>

16. Novel method of chaotic communication proposed by physicists

(Central News Agency, 18. 12. 2008)

Two Taiwanese physicists have invented a new method of chaotic communication that has proved better than the conventional ones in terms of fending off intrusions and external noise. The two researchers of Academia Sinica's Institute of Physics use the message carriers themselves as binary codes rather than hiding the message in the carrier, to achieve higher transmission security. Their research paper on the topic -- titled Chaotic Communication via Temporal Transfer Entropy -- has been published in the Dec. 12 issue of Physical Review Letters, a leading international physics journal.

Full article:



<http://www.cna.com.tw/CNAeng/RealTimeNews/NewsDetail.aspx?strNewsDate=&strNewsID=200812180030&strType=JD>

17. First college of photonics to nurture talent in Tainan County

(Central News Agency, 19. 12. 2008)

Taiwan's first college of photonics at the National Chiao Tung University (NCTU) in Tainan will start operations 2009 as a cradle for industry personnel. NCTU wants the branch to become one of the world's top institutes in terms of developing photonics personnel and hopes to set up a lab to develop core technology for relevant industries.

Full article:

<http://www.taiwanheadlines.gov.tw/ct.asp?xItem=144286&CtNode=9>

18. Taiwan internet use at all-time high: poll

(Taiwan News, 20. 12. 2008)

The number of internet users in Taiwan reached a record high of nearly 14 million in the year 2008, a 0.7 million increase over last year, according to a new survey on Taiwan's digital divide revealed by the cabinet-level Research, Development, and Evaluation Commission.

"The reason for the increase of internet users is that the government has undertaken tremendous efforts into narrowing down the digital gap by making computers and the internet more accessible to the underprivileged," said RDEC Chairman Jiang Yi-hua.

Full article:

http://www.taiwannews.com.tw/etn/news_content.php?id=817900&lang=eng_news&cate_img=49.jpg&cate_rss=news_Society_TAIWAN

19. Infotech institute launches Moblin Enabling Center

(Central News Agency, 23. 12. 2008)

The semi-official Institute for Information Industry (III) has launched its own Moblin Enabling Center to help foster Taiwan's Moblin industry. The center's priority is to help domestic IT manufacturers produce Moblin 2.0-compatible laptops, nettops, and other mobile internet devices.

Moblin, an open-source project led by Intel, aims to develop a Linux-based software platform for mobile internet devices and other new categories of devices such as netbooks and nettops.

With the platform, developers can build visually rich, dynamic, and ready-to-use applications that run on Intel CPU-using devices.

Full article:

<http://www.cna.com.tw/CNAeng/RealTimeNews/NewsDetail.aspx?strNewsDate=&strNewsID=200812230016&strType=EM>

Related article:

http://cens.com/cens/html/en/news/news_inner_25751.html

20. Hsinchu Biomedical Science Park to be complete by 2013

(Central News Agency, 24. 12. 2008)

The Hsinchu Biomedical Science Park will be fully operational by 2013, following a modification to the development strategy earlier in 2008. Most of that area of the park will be devoted to a national medical center that focuses on clinical research and translational medicine. It is hoped that the center will bridge the gap between clinical practice and biomedical research to boost Taiwan's biomedical industry.

Full article:

<http://www.cna.com.tw/CNAeng/RealTimeNews/NewsDetail.aspx?strNewsDate=&strNewsID=200812240020&strType=EM>



21. Taiwan's Biggest Solar-cell Cluster Forming in Central Taiwan

(Taiwan Economic News, 24. 12. 2008)

With Sunmaterials Technology recently having joined nine other photovoltaic-materials manufacturers to open a factory at the Letzer Industrial Park, Yilan County. The park now is home to the largest group of solar-product manufacturers in Taiwan.

The county government is persuading the central government to open a verification laboratory locally to round out services to the manufacturers.

Full article:

http://cens.com/cens/html/en/news/news_inner_25744.html

22. Taiwan's MIC Prescribes Manufacturing-to-Service Upgrade to Sharpen Edge

(Taiwan Economic News, 24. 12. 2008)

The Ministry of Economic Affairs in Taiwan and its Industry & Technology Intelligence Services (ITIS) have been sponsoring a series of seminars themed "Discovering Taiwan 2008: Building Future Industries." As part of this program, the Market Intelligence Center (MIC) of the Institute for Information Industry (III) has been exploring, based on tapping opportunities within the information and communication technology (ICT) sector, various issues, including "the developmental trends of Taiwan's IT sector; building new superiorities in Taiwan's IT sector by tapping green concepts and values; and the outlook on the ten key IT software issues in 2009."

Full article:

http://cens.com/cens/html/en/news/news_inner_25739.html

23. Telecom Technology Center accredited to test cryptographic modules

(Central News Agency, 25. 12. 2008)

The government-founded Telecom Technology Center (TTC) said it has been authorized by the US National Voluntary Laboratory Accreditation Program (NVLAP) to conduct cryptographic module validation in Taiwan.

Officials of the Kaohsiung-based center explained that after receiving the accreditation, the center's InfoCom Security Testing Laboratory will be able to validate all cryptographic modules before they are exported to the United States, reducing the time and cost of having them tested in the States.

A cryptographic module is a security device that controls access to sensitive data, secured service, or restricted areas. Common products include the digital signature recognition module for e-commerce or online banking service, and the fingerprint reader for household and office access monitoring.

Officials said that TTC is the first institute in Taiwan and in Asia to be accredited by NVLAP, a laboratory accreditation program run by the U.S. National Institute of Standards and Technology.

Once a product is verified by the center, they said, it will automatically be approved by the Federal Information Processing Standard 140-2 (FIPS 140-2), allowing its sale in the United States.

Full article:

<http://www.cna.com.tw/CNAeng/RealTimeNews/NewsDetail.aspx?strNewsDate=&strNewsID=200812250020&strType=EM>

24. Taiwan's R&D spending accounts for 2.62 percent of GDP: survey

(Central News Agency, 25. 12. 2008)

Taiwan spent US\$10 billion on research and development in 2007, accounting for 2.62 % of the country's gross domestic product for the year, according to National Science Council (NSC).

Citing results of the National Science and Technology Survey conducted by the NSC, the council's Deputy Minister The results showed that Taiwanese private sectors' investment in research and development increased every year since 2003. It accounted for more than 70 percent of the national level for 2007, while the government's investment did not increase by much.

Meanwhile, Taiwan had 6,128 patent applications approved in the United States in 2007, dropping one notch to rank fifth place in the world and trailing behind South Korea for the first time. Taiwan ranked 4th place in 2006. In



terms of the Science Citation Index – an index of how often scientific papers from various countries are cited, Taiwan ranked 15th in the world, up two notches from the level a year earlier. Each research paper was cited 3.05 times, up from 2.92 times in 2006. Meanwhile, Taiwan ranked the 9th in terms of the number of research papers covered in the Engineering Index, up two notches from the previous year. The index is a comprehensive bibliographic database of engineering research literature.

Full article:

<http://www.cna.com.tw/CNAeng/RealTimeNews/NewsDetail.aspx?strNewsDate=&strNewsID=200812250023&strType=EM>

25. Taiwan gets world's highest full-score success rate in math exam

(Central News Agency, 28. 12. 2008)

Taiwan enjoyed the highest full-score rate in the world in the recent American Mathematics Contest 8 (AMC8) , with 124 of the country's junior high school students attaining full marks among the 9,100 registrants, the 99 Cultural and Educational Foundation.

Although the United States generated the most full-mark students, Taiwan ranked first in terms of the ratio of students within the top 5 %.

Full article:

<http://www.taiwanheadlines.gov.tw/ct.asp?xItem=145108&CtNode=9>