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SCIENCE BULLETIN

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New Air Conditioning System Installed

The Energy and Mining Research/Service Organization, ITRI, in order to narrow down the gap of electricity consumption between peak and off-peak periods, has since 1984 introduced the technology of installing the ice thermal storage central air conditioning system to this country and has compared its energy use efficiency with that of traditional air conditioning systems. The successful installation of the first ice thermal storage central air conditioning unit at the Mining Resources Hall of the Energy and Mining Research/Service Organization, ITRI, in 1984 also facilitated the comparison.

The ice thermal storage central air conditioning system functions by applying the principle of thermal storage by freezing. It uses an ice machine within the unit to generate ice during off peak periods and stores it in the ice storage tank which can be used the next day during peak periods for cool air production. Generally speaking, the power supply capacity of any power generating facility is determined to a great extent by its power demand at peak periods.

If power at off peak periods can be stored to supplement peak period usage, then the gap of power consumption between peak and off peak periods would be narrowed and the power supply capacity of the power station would also be reduced considerably.

In fact, the idea of using a design such as the ice thermal storage central air condition system to store energy during off peak periods and then release it next day at peak periods originated in the 1930's.

It did not receive the attention it deserved until 1982 after the first energy crisis.

Power consumed by installing central air conditioning systems at most of the commercial buildings, according to statistics, accounts for more than one half of the total budget paid as electricity bill.

If part of the power supply of those air conditioning systems can be derived from off peak periods, a power station with the same power supply capacity would be able to provide more electricity for household consumption.

Fig: Ice storage tank of the Ice Thermal Storage Central Air Conditioning System.

New Material Tested For Cusing Ducts

Scientists and specialists of the Veteran's General Hospital, National Yang Ming Medical College, and the Hsinchu Science Based Industrial Park Administration, in an attempt to develop a new polymer material for Cusing duct making, are recently engaged in a five-year cooperative research project. The Cusing duct is a clinical appliance used extensively for the treatment of glaucoma and brain edema.

Occular presure of glaucoma patients, after installing the Cusing duct, can be effectively controlled.

With pressure inside the eye considerably released, the patient's optic nerve can gradually be restored to its normal function. However, the installation of the Cusing duct to cure glaucoma is not without defects.

The major setback comes from its material character. One of the major side effects of using the traditional Cusing duct is tissue rejection, and it can also be plugged as a result of its material defects.

By combining polymer jelly, noble metals, and some enzymes, a newly developed polymer material has been synthesized by the Oxlex Corp., one of the hi-tech firms in the Science Based Industrial Park. Tests of this newly synthesized material on rabbits by manipulating it into Cusing ducts and then installing them in rabbit eyes has been conducted for one year and the preliminary result, according to the research group, is a success.

Another two years of animal tests and subsequent clinical experiments would be required and this information combined with the material precision, physical and chemical analysis data will serve as basic reference for further consideration on its posibilities for clinical use.

Science City At Hsinchu Planned

Hsinchu, a city in northern Taiwan where National Tsing Hua University, National Chiao Tung University, the Industrial Technology Research Institute, and the Science Based Industrial Park Administration are located, has been proposed for development into a Science City for this country.

The second run of such a discussion was held on May 20 in the city with representatives of all the above mentioned institutes as well as officials of the city government participating. It was preliminarily concluded that a sub-committee in charge of the planning and design be set up and the overall design of the science city will be asked for from Chung Yuan University, a university also in the vicinity of the city.

A draft of the overall design is scheduled to be completed and presented to the National Science Council for further deliberation before the deadline of 15 July.

Advanced Study Applications Received During June

Announcements of applications for science and technology personnel to do advanced study at foreign or domestic graduate schools were released on May 19th.

Candidates may tender their applications to the National Science Council from June 1 to 30, 1986.

Fields of learning in which candidates may receive priority consideration during evaluation include Information Science, Electronic Engineering, Biotechnology, Manufacturing Automation, etc..

Besides receiving applications passively, the National Science Council also actively recruits specialists to be trained in their specific fields as well.

Those whose fields of learning are related to the study of Optic Electronics, Computer Software, Hepatitis Prevention, and Synchrotron Radiation will be considered favorably under this scheme.

They will be appointed to some specific research institute to pursue advanced study or conduct research through international exchange programs.

Fracture of Metals Symposium Held

The second session of the Sino-Korean Symposium on Fracture of Metals was held May 5-10, 1986 at National Tsing Hua University with seven Korean scholars and fifteen local scientists participating.

A total of 22 papers were announced by both parties. The symposium was followed by a four day tour on which major research facilities in this field were put visited on the participant's itinerary.

The Eighth Board Meeting of The Advisors for Science and Technology The Executive Yuan

Conclusions and Recommendations Group 8 Electronics and Information

Bob O. Evans
April 25, 1986

1985 did not provide the desired results in electronics overall as exports slipped 4% from US$5.16B to US$4.97B. This was due to many factors including the U.S. computer and semiconductor industries' slump that continued throughout 1985 as well as increasing consumer electronics competition from countries such as Korea whose growth rate was much higher than ROC's.

However a notable success was achieved in 1985 by ROC information industry who, despite the serious slump, grew 21% from US$1.04B in 1984 to US$1.22B in 1985. Moreover the

NSC Awards 2480 Research Subsidies

A total of 2480 people engaged in research in public and private universities and colleges and research institutes around the island have passed the project screening in this fiscal year and been awarded subsidies for their research performance and research projects by the National Science Council.

The processing of applications for subsidies on specific research projects are conducted three times a year.

The release of the recent name list was made by the Council's 97th committee meeting held on May 9th in which 155 researchers including 64 professors, 82 associate professors, and 9 instructors, were awarded subsidies.

They are the third batch in this year that have been funded in order to perform their research.

If those honored the first and second times are added, all together a total of 907 research fellows have been awarded financial assistance during this fiscal year from this council under the category of "encouraging and financing specific research projects".

Besides those awarded for their specific research projects, there are researchers, 1573 of them, also being cited and subsidized for their outstanding research performance in this fiscal year.

Semiconductor Specialists Training Sessions

The second session of semiconductor specialists training concluded the course on April 26 1986 with 250 trainees finishing their basic course on semiconductor principles and concepts. The training center, which is affiliated with the Hsinchu Science Based Industrial Park Administration, has so far completed the training of 500 semiconductor specialists who are all research staffs of the Industrial Technology Research Institute and employees of the firms in the Science Based Industrial Park.

The third round of training, which will last for three months from June 16 to Sept. 16, has been planned by the training authority.

According to Dr. Huang Hueiliang, Director, Semiconductor Specialists Training Center, a total of 300 college graduates, who are considered as beginners in the semiconductor industry, will be enrolled in the third session.

Courses offered at this session are also a bit different from the preceding ones with special emphasis being put on factory operation and practical experience transfer.

To be effective in fulfilling that mission, an array of new facilities and equipment such as beam coater, device I-V C-V test system, etc. LPCVD, Mask aligner, electron will be installed in the center.

ROC product content increased thus reducing the dependence on foreign subassembly contracts.

Most important, there has been good progress in many areas:

* Dr. Chang's bold new VLSI plan
* ERSO's R&D on ROC-unique technologies and products.
  System 3030 – a multi-user work station family
  PC 450 and 500 Programs
  PC Networking
  System 7000 – fault tolerant, transaction processing
  Winchester disk technologies
  Impact printer technologies
  Operating system software
  Chinese text-information-graphics
* Five-year plan for information industry graduates
* III – MIC-organized and operating,
  software projects
  standards
  software task force
* University R&D programs
* A. D. Little consultancy working well
* New interbank network plan
* Joint TL/ERSO projects

As always there are issues and suggestions. I will not take the time of this group to cover most of the recommendations. Instead, I will continue discussion with the relevant agencies on each point that arose this week.

However, there are three subjects worthy of this group's consideration that I wish to outline this morning.

First, the problem of establishing overseas marketing, sales and service channels for ROC-unique information industry products. OEM relationships will be insufficient; ROC information industry will need durable, professional, and substantial direct marketing abroad.

There is no doubt that ROC industry can develop information industry products that can compete in world markets. However, we have learned, as did for example, the Japanese, that producing competitive products is completely insufficient without distribution and service capabilities. Direct sales and marketing are very expensive to establish and maintain and nearly impossible to manage remotely. This is well demonstrated by the Japanese companies Fujitsu, Hitachi and NEC, who, rather than assemble their own distribution channels, set up partnerships including equity investments in selected companies possessing established marketing, sales and services forces.

In ROC, IDB has already committed NT$284M to cooperative industry projects, and ERSO has a broad program of developing technologies and product designs that will be the foundation for future ROC participation in world markets. Yet, without effective marketing, sales, and service, most of the ROC projects and products will fall far short of their sales and profit potential.

ROC needs a carefully constructed program to develop long term partnerships with selected, strategically important companies in the major countries of the world starting with the U.S. Japan, the U.K., Germany, France, and, in time, Canada, Italy and Brazil.

I recommend that MOEA be given the assignment to study the alternatives and develop a plan for achieving these essential relationships including the specific fields where such alliances will be required in line with the ROC information industry strategic plans. And, the study should select target partners and alternates as a prelude to actions to be taken after approval of the MOEA study recommendations. I will be pleased to work with MOEA if they wish my advice.

(Continued on next issue)

Chinese Herb Medicine Studies

A meeting cosponsored by the Life Science Division and the Nature Science Division of the National Science Council on "Chinese herb medicine and natural products" was held on May 9th with 26 specialists participating.

It was concluded that natural products that can be used in cancer prevention, in the treatment of cardiovascular diseases, in the study of liver function and blood sugar metabolism, and in the development of analgesics and tranquilizers and that they should be listed as top priorities for advanced research. Creative, systematic, and integrated efforts are encouraged in order to upgrade the academic standards of research in these studies. It is hoped that the knowledge thus gained could be channelled directly to clinical practice.

As research of Chinese herb medicine has also been conducted enthusiastically in most of the other Asian countries, information interflow among them should be enhanced as well as researcher's contact through international symposia and workshops.