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# GLOBAL ELECTRONICS

# INFORMATION NEWSLETTER

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## CHINA

The People's Republic of China is continuing to develop its Shenzhen Special Economic Zone, adjacent to Hong Kong. Most of the enterprises set up there are run by overseas Chinese. The first reported high-tech foreign investment will be in Shekou, a division of Shenzhen run by the Hong Kong-based, People's China-owned China Merchants Steam Navigation Company. Radofin Electronics, a Hong Kong firm 51%-owned by Britain's Fobel International, plans to invest \$9 million in a Shekou plant. The company has outgrown its 11-story Hong Kong plant, where it assembles a variety of products, including Mattel's Intellivision. (*Fortune*, April 18, 1983)

## SANTA CRUZ CONFERENCE

The Silicon Valley Research Project, at the University of California at Santa Cruz, is sponsoring a conference, May 12-15, on "Microelectronics in Transition: Industrial Transformation and Social Change." The conference will focus on both the production and applications of chips and computers. Speakers include both industry leaders and critics. Robert Noyce of Intel and Harley Shaiken of MIT will give the keynote addresses. For more information, contact Wendy Fasset, Conference Assistant, 408/429-4284 or the UCSC Conference Office at 408/429-2611.

## EQUIPMENT MAKERS

In 1982 twelve companies had more than \$50 million in worldwide semiconductor equipment sales. If one considers French-owned but U.S.-based Fairchild to be American, nine of those twelve firms are American. Three - NEC, Canon, and Fujitsu - are Japanese. Of the top twelve, only two, Applied Materials and Kulicke & Soffa, have more than 75% of their sales in semiconductor equipment. (Drexel, Burnham Lambert, Inc., cited by *Electronics News*, March 7, 1983, p. 4)

Company and Subsidiaries	Sales (US\$ millions)
Schlumberger (Fairchild)	155
Perkin-Elmer	150
General Signal (Elec. Beam Micro., Tempress, Ultratech)	100
Varian Associates	100
NEC (Anelva, Kaijo, Ando)	95
Applied Materials (Cobilt, Gasonics)	90
GCS	70
Canon	65
Eaton (D&W, Kasper, Nova, Optimetrix)	65
Teradyne	65
Fujitsu (Takeda Riken)	55
Kulicke & Soffa	55

## OFFSHORE V.D.T.'S

Almost every U.S. manufacturer of video display terminals (VDT's) is moving at least a portion of its assembly overseas to the Far East. **Computer Systems News** (April 11, 1983) reported that several U.S. firms, including Lear Siegler, Visual Technology, Esprit Systems, and Qume have subcontracted with assemblers in Taiwan and South Korea. Others, such as Ampex, Zenith, and Wyse, own their offshore suppliers outright. Lee Falco, head of Sunnyvale's Falco Data Systems, explained his company's recent shift offshore, "We had no choice but to go offshore to maintain a competitive edge."

Meanwhile, TeleVideo, a Silicon Valley firm run by Korean K. Philip Hwang (who owns more than two thirds of the stock), has not altered its international division of labor. **Computer Systems News** (page D14) said, "The company most credited with getting the ball rolling in the area of offshore manufacturing, TeleVideo Systems Inc., has not moved to total offshore production. Major subassemblies are performed by Oriental Precision Co., Korea, but final assembly and testing is done in the U.S. Steve Tatum, TeleVideo North American marketing and sales vice-president, said the type of quality assurance TeleVideo wants is better accomplished under its own roof than on the other side of the world."

It is likely that terminal manufacture will remain concentrated in countries, such as Taiwan and South Korea, where domestic firms have assembled televisions for many years. VDT assembly requires no more expertise than TV production, but tie-ups with U.S. firms are necessary to update product design and assure stable or growing markets.

## INDIAN COMPUTERS

The Government of India's Department of Electronics has proposed the cancellation of licenses and letters of intent for the manufacture of small computers of those firms which

have not yet taken steps toward production. Dr. N. Seshagiri, Director, Information Planning and Analysis Group of the Electronics Commission, said 60 of 120 letters of intent issued earlier would be withdrawn. Only 15 companies, in both the public and private sectors, have initiated production. Fifteen more have begun planning for manufacture. The rest plan systems engineering.

Dr. Seshagiri favored speedier growth of the computer industry, particularly the production of personal computers. He said an investment of up to \$170 million over five years in both the public and private sectors was needed to establish the infrastructure required to make the industry self-reliant. He supported the development of centers for testing and applications engineering.

Noting that there is no bar on the import of electronics technology, Seshagiri said the government should have been liberal in permitting foreign tie-ups in the past. In his personal view, de-licensing the computer industry five years from now will stimulate the industry.

To reduce the cost of computer equipment, he said peripherals should be manufactured in volume by just a few firms. Those firms should not be allowed to build computers, however. The production of central processing units, he argued, should also be concentrated.

On the other hand, he suggested that a large number of enterprises be encouraged to develop software systems and conduct systems engineering. Specific software, however, should not be imported more than once.

## SYQUEST TO SINGAPORE

Syquest, one of numerous new manufacturers of small disk drives in Silicon Valley, has announced plans to assemble drives at a 15,000 sq. ft. facility in Bedok, Singapore. The firm plans to invest \$33.5 million over the next five years. The firm's Silicon Valley plant, actually in nearby Fremont, will shift to the production of newer, higher capacity devices. (**Electronics News**, March 7, 1983)

## **SOUTH KOREA**

In 1981 the South Korean electronics industry exported US\$2.25 billion in products out of a total output of US\$3.7 billion, but the industry remains low on the technological hierarchy of the international division of labor. The industry employs about 250,000 workers, but the bulk of the work is in consumer electronics, not semiconductor production. The biggest chip-makers are U.S.-owned assembly plants. Domestic firms, such as Gold Star, Korea Electronic, and Samsung have moved into the fabrication of unsophisticated chips, such as watch and TV circuits, on 3-inch wafers.

The Hyundai conglomerate, noted for construction and heavy manufacturing, announced this March that it was spending US\$450 million to produce chips. Hyundai is building a US\$100 million production plant at Incheon and a \$27 million factory in Sunnyvale, California. Shim Jae Hoon ("Seoul's Hi-Tech Dash," *Far Eastern Economic Review*, April 7, 1983, pp. 56,58) reports that Hyundai has capitalized Modern Electro Systems, in Silicon Valley, but does not explain whether that is the same venture as the Sunnyvale plant.

## **ZERO TARIFF OPTION**

The Semiconductor Industry Association (SIA), the policy arm of U.S.-based merchant chip producers, is calling for the elimination of tariffs on semiconductors by both the U.S. and Japan. California Congressman Fortney Stark (D-Walnut Creek) introduced legislation including the SIA's proposal this March. (*Congressional Record*, March 7, 1983, pp. 854-855). Should the U.S. suspend tariffs on imports from other countries, it would eliminate the advantages currently resulting from items 806.30 and 807.00 of the Tariff Code, which allow producers to exempt U.S.-origin materials and components from the value, for calculating duties, of items assembled abroad.

## **INTEL JAPAN**

While most foreign chip-makers are facing declining sales in Japan, Intel's Japanese business is soaring. Japan's big manufacturers of electronic equipment, which are also Japan's major semiconductor firms, do not buy foreign products that they can make efficiently themselves. Intel's success, therefore, is based upon specialized products. Japanese microcomputer firms, in designing their machines to be compatible with IBM's PC, have been buying Intel's 8086 microprocessor, the core of the PC.

In addition, Japanese firms are buying Intel's EPROM's (Erasable Programmable Read-Only Memories), a product line where Intel holds an estimated 51% of the world markets. EPROM's, unlike the better known RAM's (Random Access Memory chips), do not lose their contents when the power is turned off. EPROM's are used in video games, microcomputers, and industrial equipment.

## **ILLUSTRATED PAMPHLET**

The Christian Conference of Asia's Urban Rural Mission has published an 85-page pamphlet, in cartoon format, describing the exploitation of women electronics workers in East and Southeast Asia. Entitled "The Plight of Asian Workers in Electronics," the booklet is available from CCA-URM (57 Peking Road, 5/F, Kowloon, Hong Kong) for US\$2.00. Published in October 1982, the pamphlet contains up-to-date information as well as an argument for worker organization.

## **ALIGN-RITE TO WALES**

Align-Rite, a southern California producer of photomasks for semiconductor lithography, will build a \$7.5 million plant in Bridgend, South Wales. Though the 20,000 sq. ft. facility will produce primarily for the European market, *Electronics News* (March 14, 1983) says it may also supply the Eastern U.S.

## MEXICO

The sharp devaluation of the Mexican peso has made Mexico competitive again in the international sweepstakes for export-oriented manufacturing investment. The official exchange rate has fallen from 26 to the dollar to 107-to-1, lowering assembly costs by 30%. (Production costs do not fall in proportion to currency fluctuations because of inflation and the fixed costs of materials, facilities, and equipment.)

IMEC Corp., an electronics subcontractor with five plants in the Tijuana area, has increased its workforce from 600 to 800, with 1,000 expected by June. IMEC assembles for some 24 U.S. firms, including ITT, Xerox, TRW, and Hughes.

**Electronics** (April 7, 1983, p. 62) quotes a manager of Micropower Systems, a Silicon Valley firm which assembles, tests, and markets semiconductors: "Mexico is now the cheapest possible place for labor-intensive work and is still going down." (For most producers, this is probably not true.) Another Bay Area firm, North Star computers, which is increasing its circuit-board assembly in Mexico, reportedly agrees.

Mexico still has some disadvantages that devaluation can't solve. **Electronics** says the government is reputed to be bureaucratic and corrupt. Regulations on data communications hamper real-time links between U.S. firms and their Mexican subsidiaries.

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