GLOBAL ELECTRONICS

Issue No. 94 **July, 1989**

I.B.M. STILL OUTSELLS 'JAPAN, INC.'

The Japanese electronics industry is posing a formidable challenge to its U.S.-based competitors in many areas, but the worldwide computer industry is still dominated by one American-owned company: IBM. Despite the revaluation of the Japanese Yen, IBM's computer-related revenues in 1988 still exceeded the computer sales of all 16 Japanese-owned companies listed in the "Datamation 100." The Datamation 100 is **Datamation** magazine's yearly compilation of Information Systems industry leaders. (June 15, 1989)

Datamation calculates IBM's information system revenues as US$55,002.8 million in 1988. The Japanese contenders, paced by Fujitsu (US$10,999.1 million computer-related revenues) and NEC (US$10,475.7 million), managed combined sales of only US$53,528.0 million. Note that the IBM total includes its activity in Japan, while the Japanese firms' revenues are measured globally as well.

The **Datamation** figures do not include non-computer sales. IBM's total sales in 1988 were US$59,681.0 million, compared to Hitachi, Japan's largest electronics manufacturer, at US$41,330.7 million, US$8,247.6 million of which was from computer business. Like IBM, Fujitsu's total US$14,797.3 million in revenues were focused on information systems, while NEC amassed gross income of US$19,626.1 million. (**Fortune**, July 31, 1989)

The Japanese share of the world computer market may continue to rise, particularly if additional revaluation of the Yen magnifies the Japanese market, but even the most successful Japanese electronics firms must be cast as well positioned challengers in the computer market, facing an entrenched and undefeated champion.

CYPRESS CHALLENGES CONSORTIUM

T.J. Rodgers, the outspoken founder of Cypress Semiconductor, a growing niche producer in Silicon Valley, has told Congress that it would be bad for the U.S. semiconductor industry to give anti-trust exemptions to consortia such as U.S. Memories. (See **Global Electronics** No. 93.)

Though U.S. Memories initially plans to build dynamic random access memory chips (DRAM's), Rodgers expressed concern that the joint venture of major computer and chip firms would soon move into markets where Cypress has thus far been successful, such as static RAM's. Rodgers told the House Judiciary Subcommittee on Economic and Commercial Law, "The reality is that the consortium will have to make anything required to make it economically viable. There is no company in the world today manufacturing dynamic RAM's that does not also manufacture static RAM's and other types of semiconductors." (**San Jose Business Journal**, July 31, 1989)

TECNICA: A LITTLE HELP GOES A LONG WAY

TecNICA, a Berkeley-based technical assistance organization, is now sending volunteers to Southern Africa to help the African National Congress (ANC) of South Africa and the Southwest Africa People's Organization (SWAPO) of Namibia use microcomputers for desktop publishing, computer networking, and database management.

Since 1983 TecNICA has been sending computer specialists and other highly trained volunteers to Nicaragua. (For more information contact TecNICA, 3254 Adeline St., Berkeley, CA, 94703.)

MAQUILADORA CITY IS PROPOSED

The *maquiladora* industry, the string of assembly plants along the Mexican border with the United States, has grown rapidly in the past few years. Peso devaluation has moved Mexican wage rates, about US$4 per day, well below of those in Asia's major offshore assembly centers. Manufacturers, primarily American and Japanese-owned, now employ 400,000 Mexicans there.

The development has "stretched Mexico's border cities thin. They're grievously short of water, roads, bridges, and housing." One American developer, Charles Crowder, proposes to overcome those problems by building a planned community, called Santa Teresa, on both sides of the border. He told **Business Week** (July 31, 1989) that the "key to success" lies in meeting the needs of the development's workers. "How can you be efficient," he asks, "if you wake up with no plumbing, walk through a slum to work, and worry about your grandmother's safety?"

Crowder controls land and water on both sides of the New Mexico-Mexico border, just west of El Paso. But he lacks the $30 million minimum financing to start building housing on the site, and despite his high-level connections he still lacks permission—for an industrial border crossing—from the Mexican government.

R.C.A. OPPOSES UNION IN MALAYSIA

Though American electronics companies in Malaysia prefer in-house unions to a national federation (see **Global Electronics** No. 93), they appear hostile to all forms of worker organization. In particular RCA's semiconductor assembly plant, now controlled by Harris, is pulling out all stops in its opposition to a unionization drive. Nevertheless, the RCA Workers Union has reportedly signed up half the plant's 2100 workers. ("Malaysian Trade Unions: The Electronics Saga Continues," Singaporean and Malaysian British Association, 82A Tooting High St., London SW17 0RN, England.)

The RCA Workers Union applied for government recognition in late January, The Malaysian government, smarting from criticism of its refusal to allow industry-wide organizing, registered the RCA union in just two days. (Later the government sided with management against even the in-house union.)

RCA management, however, attacked the union and its leaders, claiming—among other charges—that ethnic Indians in the union leadership were anti-Malay. "It printed 'union resignation' forms, and management personnel were given the task of individually interviewing each worker." Managers photographed those attending union meetings, and security guards confiscated union literature and membership forms. Company managers also reassigned and harassed organizers.

One tactic backfired, however. RCA brought in a fake government official to lecture on "family planning" and Islamic tenets—in reality a union-bashing talk. But the union exposed the phony, and it enlisted the support of other Moslem religious authorities.

THE VALLEY KEEPS E.S.L.

ESL, the Sunnyvale-based electronic warfare and intelligence systems manufacturer now owned by TRW, has decided to keep its chips in Silicon Valley, after all. Earlier this year ESL announced plans to shift as much as a third of its workforce to Livermore, on the Eastern edge of the Bay Area, but in July the company reported that the savings would not justify the hardship of the move. (**San Jose Mercury News**, July 6, 1989)

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"better late than never"

ENVIRONMENTAL UPDATE

• San Francisco-based Hambrecht & Quist, a leading source of venture capital for Silicon Valley, has read the handwriting on the wall—or at least is has smelled the groundwater. The firm has established as $16 million Environmental Technology Fund to bankroll 12 to 15 start-up firms developing clean-up technologies and services. (**San Jose Mercury News**, August 1, 1989)

• Athens Corp. of Oceanside (southern California) is a little further along, selling almost $5 million this year in chemical purification systems for semiconductor wafer fabrication. Formed four years ago with the help of $15 million in venture capital, it survived an alliance with failing Fairchild Semiconductor. It even hired Fairchild's ex-president Donald Brooks to serve as President.

Athens equipment continuously reprocesses sulfuric and hydrochloric acids used to clean wafers during production. Without the Athens system, a typical chip plant uses about 120,000 gallons of year in acid, generating about three times as much in dilute acid waste. **Electronics** (April, 1989) reports that Athens equipment reduces chemical consumption and disposal by 97% while significantly reducing the number of defects caused by impurities. One of Athens' founders told **Electronics** that "the new technology uses and reprocesses chemicals 20 times purer than the ultrapure bottles versions now on the market."

• AT&T has announced plans to reduce sharply its use of chlorofluorocarbons (CFC's) in electronics manufacturing, totally eliminating the ozone-damaging chemicals by 1994. AT&T says it's the first U.S. electronics company making such a promise. IBM, the largest CFC user in California (see **Global Electronics** No. 92) told the **San Jose Mercury News** (August 2, 1989) that it also plans to eliminate CFC's, but as yet the company has made no public announcement.

MID-SIZED COMPUTERS

For many years the Boston area, home to DEC (Digital Equipment), Wang, Prime, and Data General, and Apollo, among others was considered the capital of the mid-size computer industry in the U.S. Though DEC still remains first in that portion of the market, it appears that the leadership in the mid-sized computer business is shifting to Silicon Valley. (We include scientific workstations along with minicomputers in middle range, but we recognize that all such divisions are somewhat arbitrary.)

Apollo has been purchased by Valley-based Hewlett-Packard, while Wang, Prime, and Data General are all having problems. Sun Microsystems, also headquartered in Silicon Valley, has paced innovation in the workstation market, and DEC has taken on Sun only by relying on its own design teams in Silicon Valley. Not only have many of Digital's newest offerings been designed in California, but it is using the reduced instruction set computer (RISC) chip architecture developed by MIPS, a Valley start-up in which Digital has purchased stock.

The Route 128 complex is still a good place to do high-tech business, but as system design has moved more and more onto silicon, Silicon Valley has grabbed more of the technological leadership in computer development. Silicon Valley may no longer be the giant in wafer fabrication, but it remains by far the number one address in integrated circuit design.

P.C. EXPORT RESTRICTIONS EASED

The Apple Macintosh SE upon which this newsletter is being written contains technology so sensitive that our government will not let it be exported to the Soviet Union and other Eastern bloc nations. However, in recognition that Eastern Europeans can now obtain at least some moderately sophisticated personal computers, the Commerce Department has eased some of its computer trade restrictions.

Much to the chagrin of the ever paranoid Department of Defense, IBM PC/AT models and PS/2's, as well as the Macintosh Plus, should soon be available for export to the Soviet Union. (**San Jose Mercury News**, July 19 and 20, 1989). The Soviets can already obtain such computers from at least eleven countries, and some Eastern European countries are reportedly assembling their own AT-compatible machines.

The recent relaxation of controls will not instantly stimulate a new wave of exports for American personal computer manufacturers, but in the long run successive trade liberalization is likely to increase U.S. exports without having much, if any impact on U.S. security. It's ridiculous for the Pentagon to treat widely available consumer goods as sensitive devices capable of tipping the global military balance.

EUROPEAN CHIPS

As the 12-nation European Community (EC)—once known simply as the "Common Market"—prepares for economic integration in 1992, U.S.-based chip manufacturers are feeling pressure to build expensive wafer fabrication facilities within its boundaries. Currently, Texas Instruments and Motorola build chips in Europe, but most other U.S.-based merchant chipmakers limit their European activity to assembly and testing.

The EC already imposes a 14 percent tariff on most chips, and it is expected to enact local content rules, increasing the use of European-made components in consumer electronics products and cars. Furthermore, it no long considers chips locally made if only the final steps—assembly and testing—are carried out in Europe. To be "European," chips must be fabricated in Europe. (**San Jose Mercury News**, August 5, 1989)

TAIWAN BUILDS CHIPS

Taiwan has long been an important source of consumer electronics equipment, and in recent years Taiwan-based companies have made a name for themselves exporting legal and illegal versions of personal computers. Now Taiwan is moving into high volume semiconductor wafer fabrication.

Business Week (August 14, 1989) reports, "Taiwan companies are shelling out more than $1.2 billion to build six chipmaking plants. The first began churning out small volumes of chips in June, and another will start up before yearend. When all six are up and running in 1992, Taiwan aims to supply some 4% of the world's demand for chips—leapfrogging every European country to become the No. 4 supplier, trailing only Japan, the U.S., and Korea." These six plants are in addition to four small facilities already fabricating chips.

Ventures include Hualon Microelectronics, owned by a textile, insurance, and trading conglomerate, and Winbond Electronics, spearheaded by a wire and cable company. We have previously mentioned Vitelic and a joint venture of Acer and Texas Instruments. And the original two government-backed chip producers, United Microelectronics and Taiwan Semiconductor Manufacturing, are planning expansion.

Of course, investing in wafer fabrication does not mean success. **Business Week** suggests that the Taiwanese concerns are "cocky;" since most of their executives and investors have never faced a chip-industry recession, those frequent, inevitable periods that challenge the profitability of even the best-managed semiconductor producers.

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