ISRAEL HIGH-TECH REPORT

A MONTHLY REPORT COVERING NEWS AND INVESTMENT OPPORTUNITIES

JOSEPH MORGENSTERN, EDITOR

July 1991 Vol.VII. Issue No.7

ISSN 0334-5307

From the Editor's Desk

The Government Takes A Venturesome Ride

"Ah friends, dear friends, as years go on and heads get gray,....." wrote poet William Henry Harrison Murray more than 100 years ago. His words come to mind when thinking about the brave new world dreamed of by Israel's government three years ago.

Inspired by England's successes in privatization, and prodded by its own inability to balance budgets, our leaders found the prospect of a sales bonanza with billions of shekels pouring into Treasury coffers tempting indeed. Investment bankers were brought in and plans were announced to sell off most of the 190 government-owned companies. In a recent *Time* magazine cover story on privatization, Robert Slater states that "the public sector had grown unmanageable, controlling production worth $6 billion, along with a payroll of 65,000. Ministers were eager to end subsidies to losing enterprises."

Since then only a handful of corporations have been sold.

In the same *Time* article, I was quoted as saying the privatization effort has been ineffective. It seems someone forgot a basic truth: in order to be part of any brave new world, one must be brave. The Israeli government, like so many others in democratic countries, is quick to "talk the talk" but reluctant to "walk the walk." Our politicians are afraid of the loss of power involved, and are loath to give up control of such a large segment of the voting public. Yet it is a form of Catch-22, since men notoriously unable to mind their own business should not be trusted to mind the business of others. In fact it can be argued that politicians are the *least* qualified when it comes to managing a financial enterprise; the terms "success" "profit" and "loss" have entirely different meanings to an elected official than they have for your average businessman. In short, the majority of our politicians find it in their interest to support the inefficient status quo rather than sell off their political toys.

But it is in the nature of things that the future comes anyway, whether one welcomes it with courage and flexibility, or whether one is dragged into it kicking and screaming, clutching the threadbare security blankets of the past. The need for funds with which to expand the country's infrastructure to create new jobs for Russian and Ethiopian immigrants is the irresistable force for privatization that will inevitably crumble the immovable object of political hegemony.

But an overprotective parent creates overly dependent children. The government is not the only party unwilling to end state control. Its reluctance is reflected by the country's coddled private sector, and by foreign investors too used to being treated to prime spots at the public trough. Like spoiled youngsters, they continue to call for the government's involvement in and control over many aspects of the economy.

IHTR has been in the forefront of the call for a freer and market- oriented economy, but the call appears to have fallen on deaf ears. Understanding only that its economic offspring are hungry for cash, and refusing to see that the time has come to sever the parental apron strings, our government has taken a move which indicates that it is increasing rather than decreasing its involvement: an agreement has been reached between the Ministry of Trade and Industry and the Ministry of Finance to establish an organization that will hold the hand of fledgling companies. The intention is to provide venture capital with more than $50 million of public funds under the auspices Minister of Trade and Industry Moshe Nisim and Finance Minister Yitzhak Moda'i. The program has been approved by Parliament and will now lumber out of the hallowed halls of the Jerusalem Knesset into the country's economic playground.

In this Issue

Subscription: I year $150.-. Bulk copy and reprint information available on request

Circulation Offices: Israel Publications Inc., 47 Byron Place, Scarsdale, N.Y. 10583, USA.
Attention: Mr. Robert M. Bruckenthal Tel.: 914-723 8321 Fax: 914-723 8340
Editorial Offices: Asia House, 4 Weizmann Street, Tel Aviv 64239, Israel
Tel: 972-3-6979817 Fax: 972-3-219788

Instead of encouraging private enterprise, our politicians have assumed new and high-risk roles for which they are unqualified, and which would be best left to the private sector.

RECENT DEVELOPMENTS

PHARMOS AIMS TO DELIVER THE GOODS

The U.S.-based Pharmos Corporation is seeking to expand its investment and activities in its fully owned subsidiary Pharmos Ltd. at the Science Based Industries Park, adjacent to the Weizmann Institute. Pharmos Israel is developing a number of innovative drug-delivery technologies. The work is focusing on unique pharmaceutical products which would represent advances in the treatment of glaucoma, fungal infections and stroke. The locally developed Submicron Emulsion Technology may prove to be a step forward in the treatment of glaucoma when combined with a new chemical in the cannabinoid class. Prof. Haim Aviv founded Pharmos. A professor of molecular biology at the Weizmann Institute, he started BioTechnology General in 1980. The Pharmos management team includes Dr. Doron Friedman and Dr. M. Vered.

Venture capitalists David and Isaac Blech have backed Pharmos. According to *Fortune,* the Blech brothers started six biotech companies, with Genetic Systems of Seattle being their biggest success. Initially seeding with $200,000, they raised $48.5 million through private placements, public offerings, an R&D partnership and research contracts. They took the company public in 1981 at $1.25 a share, and five years later Bristol-Myers bought it for the equivalent of $10.50 a share. The Blecks pocketed $30 million.

ELBIT DELIVERS F-16 C/D MISSION COMPUTERS TO GEN. DYNAMICS

Deliveries of the latest-generation F-16 C/D block 40 mission computers from Elbit Computers, Haifa, to General Dynamics, Fort Worth, have begun. Development of the computer was initiated two years ago as part of the Israel Air Force (IAF) configuration for their F-16 program (Peace Marble III).

Known as the IGAC (Israel General Avionic Computer), it is equivalent to the standard USAF General Avionics Computer, and complies with the same General Dynamics' specifications for function and performance.

Now entering the production phase, the IGAC program has achieved outstanding results in comparison to programs of similar sophistication, passing all major development milestones and tests successfully in record time. The IGAC is one of the latest product entries in the MIL-STD-1750 ISA (Instruction Set Architecture) market. It is an excellent candidate for several retrofit programs in Israel and the U.S., and for other F-16 users who are replacing older computers with high-performance, large-memory, lightweight models.

Clinical Data Invests in NovaChem

Clinical Data, Inc. (NASDAQ:CLDA) has executed an agreement for a minority equity investment in NovaChem, Ltd., an Israeli developer of scientific instruments for the process monitoring market. NovaChem is developing an on-line diode array spectrometer for process control in the petrochemical, food processing, and pharmaceutical industries.

Under the terms of the investment, Clinical Data shall acquire a 16.7% interest in NovaChem, and certain of NovaChem's products shall be manufactured by Clinical Data's Dutch subsidiary, Vital Scientific NV. The company shall initially appoint one member to the board of directors of NovaChem, and shall have certain rights to the future financing of the Israeli company.

Dr. Stein, commenting on this investment, stated: "The investment in NovaChem is part of our new strategic focus on scientific instrument development and fabrication. The state-of-the-art photometric process monitoring technology being developed by NovaChem, coupled with the existing expertise of our Dutch subsidiary in the manufacture of photometric instruments, bodes well for the success of this endeavor. The investment by the company will allow NovaChem to be eligible for financing and grants from certain Israeli and Dutch government programs, the Israeli-based BIRD foundation, and the Office of the Chief Scientist of Israel and The Netherlands."

ElOp Investment approved

The investment center of the Ministry of Industry and Trade has approved an investment of $3 million in plant and equipment by ElOp Electro Optic Industries. The company, which employs 1,200 people at its Rehovot facility, will receive a number of tax incentives.

Poor first quarter for Ophir

First-quarter profits of Ophir-Aryt Optronics, manufacturers of laser monitors and optics, dipped by 50% to NIS 394,000 compared to NIS 792,000

for the parallel 1990 period. Sales dropped by 22% to NIS 3.8 million versus NIS 4.8 million for the first quarter of last year. Administrative and marketing expenses for the period increased from NIS 570,000 to NIS 865,000. Company sources say new marketing programs were introduced in the first quarter and development was completed on the prototype of a new laser meter now being evaluated by customers.

High-tech in the Negev

In the southern town of Sderot, Reshef Technologies is the second-largest employer. Reshef is owned by Geotec, the U.S. holding company which also owns transformer manufacturer Oram Electric Industries. Reshef specializes in the manufacturer of electronic proximity fuses which sense the altitude of a bomb and set it off just before it strikes the target. Current sales of Reshef total $6 million, but this will increase, as Geotec has decided to invest $5 million in a second Sderot plant for the manufacture of internal audio and video communication systems for schools, hospitals and similar institutions.

$2.3 million order for RADA

RADA Electronic Industries has received a $2.3 million order for automated test equipment (ATE) for submarine systems. The contract, signed with a West European conglomerate, is for software programming services for testers and other products. The sale is under the framework of RADA's Dolphin Combat System program. RADA sees a significant market potential for its ATE both in the military and civilian sectors.

The company, with shares traded on NASDAQ, recently reported first-quarter sales of $6.26 million.

Arrow to speed ahead

The U.S. has agreed to finance 72% of stage two development of the Arrow anti-missile missile, estimated at $340 million. The U.S. will also supply Israel with 10 F-15 aircraft. This agreement was reached in discussions held in Israel between U.S. Defense Secretary Dick Cheney and Israel Defense Minister Moshe Arens. Israel will finance the remaining 28% of stage two development costs. The F-15 aircraft, worth $65 million, are the older A and B models, and will be used mainly for spare parts.

National Semiconductor expansion

National Semiconductor has opened new offices in Migdal Ha'emek. The former premises have been taken over for the production of imaging products, which used to be done in the U.S. Investment in the new building, which has reflecting screen walls, totaled $3.5 million. The two-story structure occupies 3,200 square meters.

The company's exports totaled $75 million in 1990, an increase of 83% over 1989.

I.I.S. doubling workplace

Intelligent Information Systems, manufacturers of peripheral and communications equipment for IBM computers, is doubling the area of its plant in Yokneam to 3,000 square meters. The expansion will enable the recruitment of an additional 100 employees, including residents of Yokneam and new immigrants. I.I.S. President Jacob Herbst says the expansion is a direct outcome of large export orders and the acquisition of the U.S. company Lee Data. I.I.S. manufactures and sells computer terminals under its own label throughout Europe. Production capacity totals about 5,000 units, including terminals, printers and communication controllers.

The company, whose shares are traded on NASDAQ, had 1990 sales of $36.2 million.

Luz powers electric cars with refillable batteries

Luz International of Los Angeles will introduce a refuelable battery to power electric cars. The battery, under development at Luz Electric Fuels in Israel, uses a syrup-like zinc slurry mixed with oxygen in the air to produce electricity. It can be recharged at a service station in five minutes by replacing the slurry with a fresh supply.

More Ormat in Iceland

Ormat Turbines has received a $5 million order to supply four geothermic power stations to the electricity company of Iceland. The units have a combined output of 5.2 megawatts.

The U.S. Associate of Ormat Turbines – OESI Power Corporation – has raised $31.5 million through an offer of 2.25 million shares on the American Stock Exchange. Kidder, Peabody & Co. served as underwriter. Ormat Turbines will now hold a 21% interest in OESI; the LCF Financial Corporation has a 40% holding in the company, with the remaining shares held by management and the public.

OESI was formed in 1986 to market power stations using Ormat equipment, and has since been involved in the development, establishment and operation of geothermal power projects in the western U.S., specializing in utilizing low- to moderate-temperature geothermal resources. In 1990, OESI sold $73 million in Ormat power units. Ormat is planning a

Israeli Companies on Wall Street

Selected income and earnings summaries for the quarters as noted , unless otherwise indicated. Nearly all of these companies are intensively export oriented. Prices are as of June 17, 1991 and the price changes relate to those a month ago.

Company	Revs (in $ mil.)	Net Income (in $ thou.)	Price (in $)	Net Change
ELBIT COMPUTERS Defense electronics ELBTF OTC	95,775 Q1	5,733	21.375	+2.750
ECI TELECOM Telecommunications ECILF OTC	22,368 Q1	5,070	29.875	+2.750
ELSCINT Medical imaging ELT NYSE	45,173 Q1	3,200	4.500	n.c
FIBRONICS Fiberoptics FBRX OTC	14,047 Q1	362	8.625	-0.500
INTERPHARM LAB. Biological products IPLLF OTC	7,894 Q1	924	30.500	+5.750
LASER INDUSTRIES Surgical lasers LAS ASE	8,605 Q1	81	5.750	-0.125
OPTROTECH Electro-optical systems OPTKF OTC	19,491 Q1	126	8.000	+0.500
SCITEX LTD. Computer graphics SCIXF OTC	97,800 Q1	22,534	30.625	+3.875
IIS INTELL. Computer peripherals IISLF OTC	9,826 Q1	1,167	17.125	+2.125
TEVA PHARMACEUT. Pharmaceuticals TEVYF OTC	80,817 Q1	6,848	13.625	-0.375
ELRON ELECTRON. ELRNF OTC	96,000 Q1	3,000	13.375	+2.500

share issue on the Tel Aviv Stock Exchange, and the funds raised will be used for development and working capital.

Carmel Software in U.S. deal

Carmel Software Engineering has signed an agreement with the U.S. software house Central Point to market its Turbo anti-virus program. Turbo can treat more than 200 different types of viruses. The agreement represents a significant breakthrough for Carmel. Central Point, with an annual turnover of $70 million, is located in Oregon and is one of the leaders in the field of PC software. Carmel is privately owned by Baruch Shapira.

Popeye at Paris Air Show

Rafael unveiled its Popeye missile at the Paris Air Show in June. The missile is operational with the Israel and U.S. Air Forces. Popeye is an air-to-ground weapon comprising a communication module, instrumentation and an electronic guidance system. It can hit a target at a distance of 113 km, with a hit probability of 94 %. The U.S. Air Force adopted the missile for use with its B-52 bombers after four years of extensive testing. In the U.S. the Popeye is manufactured by Martin Marietta.

HEALTHCARE TECHNOLOGIES- A COMPANY BACKGROUND REPORT

Healthcare Technologies Ltd. (Healthcare), (NASDAQ:HCTUF-HCTLF- HCTWF), whose principal shareholder is Yissum Holdings Ltd., a public company in Israel, has acquired 100% of Diatech Diagnostica Inc. (Diatech), in exchange for 2,104,075 shares in Healthcare (32%). Diatech develops, manufactures and markets kits for the diagnosis of infectious diseases, through its wholly owned subsidiary, Diatech Diagnostica Ltd. which operates from Science Based Industrial Park, Kiryat Weizmann, Rehovot.

Healthcare is an Israeli public company whose shares are traded over the counter in the U.S. Its concentrates on medical technologies, principally, those involved in medical diagnostics.

Healthcare holds 97% of Savyon Diagnostics Ltd. (Savyon) which develops, manufactures and markets kits for the diagnosis of sexually transmitted and other infectious diseases. In addition, Healthcare owns 50.01% of Medpro Ltd., a company providing laboratory testing services for allergies and sexually transmitted diseases. Healthcare also holds 50% of Galisar Ltd., a company engaged in the development of a blood purification system based on its own technology. Galisar is seeking financing to take the project to full commercialization.

The management of Healthcare Technologies, in consolidating operational activities of Savyon and Diatech, taken together with the Medpro testing services business, has created the infrastructure for much-improved performance. Mr. Boaz Paz, President and Chief Executive Officer of Healthcare, and Chairman of the Board of both Savyon and Diatech, explained that "In our view, the transaction will create a strategic business unit whose product lines, marketing, technology objectives and production methods complement each other. Management intends to bring about a full operational merger between the two companies."

Total product sales of Savyon and Diatech in 1990 was approximately $2.3 million, and management anticipates sustained growth through 1992. Some 90% of sales are to markets outside Israel, including Japan, the U.S., France, Germany, Italy and other Western countries. Products include the following:

Savyon offers two ranges of kits for the detection of Chlamydia, the most common sexually transmitted disease in Western countries. The worldwide market for Chlamydia testing is valued at some $80 million. The IPAzyme line has already received FDA approval in the United States, and similar approvals in markets where these are required.

In addition, Savyon has test kits for the EBV virus (market size about $30 million) and for the CMV virus (market size about $50 million). The company is field testing three direct tests for various sexually transmitted diseases.

Diatech products include Uriscreen – an exceptionally rapid urine screening test that competes in a market valued at $250 million worldwide. A second product is a serology test for mycoplasmal pneumonia. This product is particularly important because 30% of cases of this infection are not responsive to standard antibiotic therapy, and testing is necessary to determine correct treatment.

A third product which recently completed development at Diatech is Diaslide. This is a urine-testing product which complements the company's screening test. Diaslide enables the doctor or laboratory to isolate and separate concentrations of bacteria, reducing the time needed to identify causes of infection from several days to one day. Product sales have already commenced.

Patents, Know-how and R&D

Both Savyon and Diatech have developed their products over a period of years, in close collaboration with university researchers and

academic institutions in Israel and abroad. Both companies continue to benefit from financial participation through the Government Chief Scientist in Israel, the BIRD-F – a joint U.S.-Israel research fund - and two companies in Japan. Savyon is also developing new products with a medical diagnostics company in the U.S. Both Savyon and Diatech have several patents registered in different countries.

In addition to the product ranges currently sold, both companies are also engaged in the development of technologies expected to create new products, some of which will be launched in late 1992. These are as follows:

Savyon plans to introduce several important new products in the areas of sexually transmitted diseases and other infections, particularly those affecting the respiratory tract. These will be direct tests using both ELISA technology and new rapid techniques for both doctor and laboratory.

Diatech is developing novel techniques for multi-application tests suitable for use in the doctor's office.

ISRAELI COMPANIES ON WALL STREET

TEVA PHARMACEUTICALS COMMON STOCK OFFERING OF UP TO 5,000,000 AMERICAN DEPOSITARY SHARES

Teva Pharmaceutical Industries Limited (NASDAQ:TEVIY) has filed a registration statement with the Securities and Exchange Commission with respect to a proposed offering of up to 4.5 million American Depositary Shares. Approximately 1.5 million are expected to be sold by the company, and approximately 3 million are expected to be sold by a subsidiary of W.R. Grace & Co. Of the 4.5 million American Depositary Shares, 3.5 million will be offered initially to U.S. citizens by U.S. Underwriters, managed by Lehman Brothers and Merrill Lynch & Co., and 1 million will be offered to non-U.S. citizens by the International Managers, managed by Lehman Brothers International Limited and Merrill Lynch International Limited.

ECI TELECOM LTD. ANNOUNCES $11 MILLION DCME ORDER

Mair Laiser, President and Chief Executive Officer of ECI Telecom Ltd. (NASDAQ/NMS:ECILF), has announced that the company has been awarded an order in excess of $11 million by a European PTT (Postal, Telephone & Telegraph Authority) for DTX-240B Digital Circuit Multiplication Equipment.

The equipment will be used by the PTT to increase the capacity of domestic intercity routes. Until now, most DCME terminals have been deployed on international digital satellites and fiber-optic submarine telephone links.

"While we have seen the market for domestic network applications for DCME developing in various countries, this order represents the first significant planned deployment of DCME in a domestic environment," said Laiser. The company believes the customer chose ECI Telecom's DCME because it is the quickest, most cost-effective way to add additional intercity trunks and thereby avert congestion.

Laser Industries in University of Washington agreement

Laser Industries announced that its wholly owned U.S. subsidiary, Sharplan Lasers Inc., has signed an exclusive license agreement with the University of Washington-Seattle under which the university has granted Sharplan exclusive licenses entitled "Photocoagulating Scalpel System" and "Method for Cutting and Coagulating Tissue." The licenses include the right to prosecute for past patent infringement.

Rada Results

RADA Electronic Industries, the Herzlia-based manufacturer of sophisticated electronic equipment and distributor of electrical components, circuits and subassemblies, has reported that first-quarter sales rose to $6.26 million from $6.04 million for the parallel 1990 period, while net income declined to $140,000 from $390,000. The decrease resulted from expenses incurred in the R&D and marketing of the company's automated test equipment for the commercial aviation market, as well as by operating inefficiencies caused by the Gulf crisis.

RADA and its California subsidiary, Tasco Electronic Services, were recently awarded BIRD Foundation funds exceeding $500,000 for the VSMART Series 2100 project. This involves development of the next generation of ATE for commercial applications.

RADA's shares are traded on NASDAQ.

Losses for Carmel Containers

Koor Industries subsidiary Carmel Container Systems ended the first quarter of 1991 with a loss of NIS 273,000 compared to a profit of NIS 796,000 in the same period last year. Company sources attribute the loss to increased financing expenses caused by the shekel devaluation of the first

quarter. Sales volume dropped by 6%, with income from sales totalling NIS 37 million compared to NIS 48 million for the same period last year. At the end of April, Carmel exercised its option to acquire 50% of the shares of subsidiary Tri-Wall Containers for $2.2 million. With the acquisition, Carmel holds 100% of Tri-Wall shares.

Carmel Container shares are traded on the American Stock Exchange.

SMALLER & SMARTER CHIPS- APPLIED MATERIALS INC. A MULTI-NATIONAL STARTUP

Intel Israel Ltd. was established in 1974, and National Semi-Conductor Israel Ltd. in 1978. Both parent companies are internationally known for their technological excellence. The Israeli subsidiaries have followed this tradition, and have earned their own reputation for excellence in making innovative contributions to systems and software design for their American corporate parents.

Why haven't more multi-nationals followed in their footsteps and established technology bases in this country? Has the quality of Israel's technologists declined? Has the country lost its attractiveness as a place for companies to establish technology and design centers? Is the country's distance from markets and corporate partners counting against it? Is the lack of political stability in the area an insuperable problem?

The answer in most cases is a resounding "no," according to Dr. Dan Maydan, executive vice president of Applied Materials, Inc. an American multi-national whose worldwide sales last year exceeded $567 million. Dr. Maydan left Israel in the 1960s after earnings his B.S. and M.Sc. from the Technion Institute in Haifa. He obtained his doctorate in physics from the University of Edinburgh. After 13 years with Bell Laboratories, he joined Applied Materials in 1990. Last month Applied Materials celebrated the opening of the Applied Materials Israel Technology Center, "AMIL" in short. *IHTR* was there.

"Applied Materials is in the business of making equipment for the semi-conductor industry. We have a mission to be the leading supplier of equipment for the production of semiconductors. We are dealing with very high-technology equipment, and are proud of the high level of innovation which exists, and the support behind it on a global basis. In 1990, semiconductor production worldwide was $60 billion, and is growing so rapidly that by 1995 it will reach $113 billion. The Japanese influence in the semiconductor industry will be greater than that of the U.S. Japan is a factor which one can not ignore, and it is a country which Israel should try to work with. Applied Materials, because it has a global market, is a global company. We have 39 sales offices world wide, and have manufacturing and development capabilities in the United States, Europe and Japan with a work force of about 3,500. Of the total, 800 are in Japan and the operation will grow, but we are limited in the amount of people we can recruit in Japan. Our bookings in 1990 were $638 million and sales in that year were $567 million, which made us a member of *'Fortune 500'*. We are growing very fast and AMIL will contribute to the operation.

"We grew due to the fact that every nine months, for the past five or six years, we were able to introduce another product. To be successful in this market, one must be better than the competition, capable of introducing high-technology equipment on a very rapid basis. The opportunities are also large. Of a total available market in 1990 of $2 billion, we had 28%. By 1995 this market will grow to $4 billion. If we do no more than maintain our market share, we will be a $1 billion company.

"It is interesting to note that the top 10 companies in the industry have changed since 1980, when nine of them were American and one Japanese. Last year there were only five American firms among the top 10, and only one among the top five - Applied Materials. We intend to stay there, and are hoping to move even higher. We intend to earn that position by maintaining innovation, by coming up with new products and by supporting our customers in the best possible way. For that reason we looked into the possibility of activity in Israel.

Why did we move to Israel? Because Israel will play a major role in the future of Applied Materials. In the first phase, the Israeli branch will develop the electrical control system and the software for future equipment. The reason we selected Israel was, first of all, the availability of talent. Of course there is

Israel High-Tech Report Index*

279.01 + 10.45 %

*ISRAEL HIGH-TECH REPORT INDEX is a weighted index made up of the shares of leading high-tech companies.
BASE=100 AS OF Sep 30,1984

talent worldwide, but the best people in the United States want to work for companies like IBM, Apple and other computer-related companies. Very few will come to work for a company like Applied Materials. But in Israel you will find high-quality of people ready to work for companies like ours. That was a very very important factor in our choosing Israel," explained Dr. Maydan at the AMIL's opening ceremonies.

Israel offers foreign investors a wide range of incentives. In the case of Applied Materials, the availability and quality of technical personnel was clearly the main reason behind the choice.

"The economic incentives given by the government of Israel are important, but not a major consideration for us. We made the decision to move to Israel without any thought to economic support. Israel is demonstrating great success in advanced technology and electronics. Israeli companies such as Scitex - which also worked with a company in Japan - or American subsidiaries such as Intel or National Semi-Conductor and Motorola, all of these successes

Applied Materials executives at opening of Israeli center
J.Taylor, Ted Iwasaki, Dr. Dan Maydan, Dr. M. Brunstein

encourage other companies in the U.S. to move to Israel," adds Dr. Maydan.

Can an Israeli based and staffed company participate as a spoke in the global structure of an international company? "Any successful company must be global; success cannot be local. Israel should learn to understand the Far East as it understands Europe and the U.S." .

The AMIL Technology Center is devoted to development of state-of-the- art software and and hardware controllers for highly automated manufacturing systems.

The engineering group employs 25 people in its Tel Aviv office, with additional staff at Applied's Santa California and Narita, Japan development facilities.

The operation was begun at the home of Dr. Michael Brunstein, managing director of AMIL, nine months ago. Dr. Brunstein expects the local technology center's exports to exceed $2 million in 1992.

CORPORATE HISTORY

Applied Materials is the leading independent producer of wafer fabrication systems for the world semiconductor industry. To achieve that position, AM has become a global company manufacturing, marketing and servicing its systems on three continents. The company is poised to achieve its stated goal of $1 billion in annual revenue by 1993.

In addition to its corporate facilities in Santa Clara, CA, the company maintains research, development and manufacturing centers in the U.S., Europe and Japan.

To support the growing worldwide customer base, sales and service offices are located throughout Europe, Japan, Korea, Taiwan and the People's Republic of China. In all, there are now more than 40 offices worldwide. According to VLSI Research, Applied Materials holds the Number One spot among U.S. semiconductor equipment companies, and the third-ranking position worldwide.

Applied Materials' international presence is vital to maintaining close working partnerships with its customers. This partnering is essential in bringing together the experience and resources needed to develop advanced semiconductor-manufacturing systems.

The company's major product areas are plasma-etching systems; ion-implantation systems; chemical vapor deposition systems, both for epitaxial and non-epitaxial requirements; and physical vapor deposition.

INSTITUTES OF HIGHER LEARNING

JAPANESE FARMS USE WEIZMANN TECHNOLOGY

Farmers in snowy regions of Japan are growing tomatoes and other vegetables in winter with technology developed at the Weizmann Institute of Science.

Some 150 greenhouses in Japan are now using an artificial soil and a computerized greenhouse system developed by Abi Sade, manager of the Weizmann Institute's experimental fields and greenhouses. The two products are marketed in Japan by the Carolina Co. of Toyama.

The artificial soil, known as enriched vermiculite, boosts the development of some plants with little or no need for additional fertilizer, and is widely used in Israeli carnation nurseries.

The institute greenhouse system employs sensors and a microcomputer to monitor and control humidity, temperature and lighting, as well as the amount of water and fertilizer the plants receive.

Sade developed both the controlled environment system and enriched vermiculite as a means of standardizing conditions in the institute's experimental greenhouses and thus facilitate comparative studies by members of the Plant Genetics Department. Now both agricultural aids have proved their worth in areas of Japan that receive up to two meters of snow. They are also being tested in sunny Spain, where Vepex Co. and Guriat Co. have acquired marketing rights. In Israel, enriched vermiculite is marketed by Agrecal, and the greenhouse system by Shanyway Systems.

METHANATOR PROVIDES BOOST

A technology that could someday enable vast amounts of solar energy to be transported from desert regions to industrial areas was given a major boost last month with the dedication of the William Davidson Methanator Pilot Plant at the Weizmann Institute of Science. It is a key component of the chemical heat pipe being developed by Weizmann scientists at the Canadian Institute for the Energies and Applied Research (CIEAR).

The principle behind the chemical heat pipe is the conversion of solar radiation into chemical energy as a mixture of hydrogen and carbon-monoxide (synthesis gas), thereby making it possible to store solar energy over substantial periods and, if necessary, transport it over long distances.

"This is the key to large-scale use of solar energy, because it enables one to collect it in sunny areas, store it, and send it to places where it is really needed," explains Weizmann Institute Prof. Israel Dostrovsky, who initiated the institute's state-of-the-art solar research facility. The CIEAR consists of 64 giant, computer-controlled mirrors that track the sun and concentrate its energy onto a 54-meter receiving tower.

In the chemical heat pipe, this concentrated solar energy is absorbed in a special chemical reactor (reformer), where methane or other hydrocarbons can be converted into synthesis gas. This energy-rich gas can be stored until needed, and transported through a pipeline to the point of use. There, a device known as a methanator recovers the energy latent in the synthesis gas by converting it back to methane, thereby releasing heat that can be used in a variety of ways (e.g. process heat, electricity generation and so on).

The feasibility of this concept has been demonstrated by Prof. Moshe Levy of the Materials Research Department, who carried out many successful tests of the complete cycle at a power level of 10 kilowatts at the Institute's Schaefer Solar Furnace.

Designed by engineer Michael Epstein, who manages the institute's solar research facilities, the Davidson Methanator will be used in conjunction with a wide range of experimental solar reformers. Its flexibility, which enables it to function with different combinations of gases, is expected to facilitate efforts to develop the optimum solar reformer for the chemical heat pipe.

Institute scientists hope to develop such a reformer within a year, at which time it will be possible to test-run the entire chemical heat pipe at the CIEAR facility.

MAJOR STEP FORWARD FOR SOLAR RESEARCH

The two foci of solar research in Israel – the Weizmann Institute of Science in Rehovot and Ben-Gurion University's Blaustein Institute for Desert Studies in Sede Boqer – have established a joint center that should further enhance Israel's status as a world leader in the exploitation of solar energy.

The center will make it possible to take an idea through to final testing on a practical engineering scale under sunny desert conditions. In addition, the center will provide a unique opportunity for training scientists and engineers. Any developments arising from the work will be immediately applicable to all sun-belt countries, hastening the replacement of

fossil fuels by a renewable and environmentally benign energy source.

BGU RESEARCHER STUDIES SEXUALLY TRANSMITTED MYCOPLASMA

Research into *Ureaplasma*, a sexually transmitted bacterium which affects pregnant women and premature infants, is being carried out by a Ben-Gurion University researcher. The project, conducted by Dr. Shulamit Horowitz of the Microbiology and Immunology Unit of BGU's Faculty of Health Sciences, is financed by the Scientific Council of the European Economic Community, and Israel's National Research and Development Council. The Israeli scientist is collaborating with a colleague at Vrije University, Brussels.

Ureaplasma, which affects the urogenital system, is one of the smallest known extra-cellular micro-organisms discovered in recent years to be pathogenic. Dr. Horowitz notes that scientists are displaying increasing interest in mycoplasmas, since there is convincing evidence that they play a decisive role in the development of AIDS. *Ureaplasma* is a major cause of complications in pregnancy, recurrent spontaneous abortion and premature delivery, and in premature infants is a significant factor in respiratory diseases and meningitis. It is also the causative agent of urethritis in men, and pelvic inflammatory diseases in women, and is associated with the development of reactive arthritis (Reiters Syndrome).

Current findings suggest that, of the 14 known serotypes of *ureaplasma*., only a few are pathogenic. Dr. Horowitz' research is aimed at identifying the various serotypes and clarifying their roles in specific diseases through analysis of their protein structure. She has developed a highly sensitive screening test for detection of low-level and 'silent' infection. This will enable early antibiotic treatment, and facilitate analysis of the prevalence of ureaplasmal infections in various populations. Her research is being carried out in collaboration with medical units of the Soroka Medical Center.

BGU AND USSR ESTABLISH FIRST JOINT LABORATORY

The first agreement for scientific cooperation at the laboratory level within the framework of the recent Soviet-Israeli Scientific Agreement was signed on May 12, 1991 between the Academy of Sciences of the USSR and Ben-Gurion University of the Negev. The signing ceremony constituted one of the highlights of BGU's 21st board of governors meeting. It was followed by the first Israel-USSR Energy Conference in Beer-Sheva on May 13-15 under the auspices of the Minister of Energy and Infrastructure, Professor Yuval Ne'eman, the Moscow International Energy Club and Ben-Gurion University of the Negev. This conference was attended by Soviet scientists of international renown.

Close collaboration

The Joint Soviet-Israeli Laboratory for Energy Research being inaugurated under the agreement will be co-directed by Professor Victor Talroze of the Institute for Chemico-Physical Energy Problems (USSR) and Professor Herman Branover, Head of BGU's Center for Magnetohydrodynamics.

Professor Branover, who immigrated to Israel from the Soviet Union in the early 70s, has been collaborating closely with Soviet colleagues for the past year. In March 1990, under the auspices of the Ministry of Science and Technology, his center signed a contract with the Moscow Institute for High Temperatures, headed by Professor A.E. Sheindlin. Since then the Moscow Institute has been supplying components of MHD systems to be used in BGU's Etgar 5 project for the construction of power stations without turbines.

The two scientists then proposed establishing the joint laboratory, which will seek new technologies based on solar and wind energy, oil shales and other resources, examining their feasibility and engaging in joint production and marketing.