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E-Systems, Inc. History

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Public Company
Incorporated: 1964 as LTV Electrosystems, Inc.
Employees: 18,600
Sales: $2.1 billion
Stock Exchanges: New York London
SICs: 3812 Search Navigation and Aeronautical Systems; 3679 Electronic Components, Nec

Company History:

E-Systems, Inc. is one of the leading defense electronics companies in the United States. This diversified company designs, develops, produces, and services high technology systems, especially surveillance, verification, and aircraft ground-land navigation equipment, primarily for defense applications around the world. The company also develops electronics programs and systems for business, industrial, and nondefense government programs and agencies. Much of E-Systems' business serves the government national security market, with more than two-thirds of its business falling within the two primary areas of intelligence and reconnaissance command, control, and communications. The company includes five divisions and four wholly owned subsidiaries.

The company's definition of electronic warfare includes "timely detection, identification, location, and tracking of the electromagnetic emissions associated with foreign communications and weapons systems," and refers to strategic systems for intelligence, reconnaissance and surveillance applications, tactical systems relating to electronic countermeasures, and jamming and deception devices. The company's command, control, and communications segment includes communications equipment as well as command and control systems to process data for analysis and decision making. The company develops and produces a wide range of systems, including air traffic control systems for the Federal Aviation Administration and communications systems for NATO. The guidance, controls, and navigation segment develops and manufactures flight controls for commercial and military aircraft, including missile steering and tracking systems. The aircraft maintenance and modification area provides specialized service for aircraft of all types, both military and commercial.

E-Systems' predecessor company was created in December 1964 when the LTV Temco Aerospace division of Ling-Temco-Vought Inc. formed LTV Electrosystems, Inc. as a wholly owned subsidiary. In April of the following year, LTV Electrosystems became a publicly-held subsidiary and was listed as an over-the-counter stock. During the summer of that year, it acquired from its parent nearly all of the operating properties of LTV Military Electronics Division (known as the Garland Division), Continental Electronics Manufacturing Company, and Continental Electronics Systems, Inc. It also opened a new facility in South Carolina as an adjunct to its Greenville Division. Sales for 1965 were almost $81 million, with net earnings of $2.1 million.

During the period from 1965 to 1972, the company focused on expansion. A series of acquisitions began during this time that included such companies as Memcor, Inc., Pickard & Burns Electronics, the Eagle Transport Company. However, overly rapid growth led to large debt and deteriorating profits, and the company was forced to divest itself of some companies, only a year or two after acquiring them, to cut

costs and rid itself of marginal operations that could not promise high enough return for the financial risk involved. In 1969, a Memcor plant and most of the assets of Continental Electronics Manufacturing Company were sold because of low profits.

By 1970, the company had returned to profitability; it had net sales of almost $200 million with earnings of $2.8 million, up from the previous year's net loss of $4 million. LTV Electrosystems acquired American Standard Inc.'s Melpar Division in 1970 and established a new Commercial Services Division in Greenville to perform heavy structural modification and maintenance for the airlines. In 1971 LTV Electrosystems acquired Hamilton Watch Company's Electronics division and established a new domestic international sales company known as Electrosystems Export Company. Nevertheless, after unloading several of its acquisitions, employment in 1970 was down to 7,000 from a high in 1968 of more than 11,000.
In 1972, E-Systems emerged as an independent, publicly owned corporation, headed by John W. Dixon, who had served as LTV Electrosystems' president and chief executive officer since 1969. During its first year as a public company, sales reached $156 million, and, with $34 million spent on research and development, total company assets amounted to $90 million. The company employed 5,500 employees, 26 percent of whom were engineers, scientists, and technicians. The entire company occupied less than three million square feet of floorspace.

The 1970s was a decade of reorganization and acquisition for the newly renamed E-Systems Inc. In 1973, the company formed its Aircraft Systems Group through consolidation of its Greenville and Donaldson divisions and the newly acquired Serv-Air, Inc. Serv-Air maintained, modified, and supported all National Aeronautics and Space Administration (NASA) aircraft flown by the astronauts at the Johnson Space Center in Houston. That year, E-Systems also consolidated its Montek, Garland, and Melpar divisions with the newly-acquired TAI, Inc. to form the Electronics Systems Group. TAI was an engineering firm providing consulting services for the construction of telecommunications networks around the world. E-Systems further acquired a major product line called Digicom from GTE Sylvania to augment the company's data systems capabilities. Offices in Korea and Brazil were opened in addition to an international office at the Dallas headquarters.
In 1973, E-Systems' Greenville Division began providing depot maintenance, logistics support, and special modifications for aircraft belonging to the U.S. Air Force's Special Air Mission Fleet. This important contract provided service for aircraft used by the president of the United States, the vice-president, and cabinet members.

In 1974, the Memcor Division became the basis for the newly formed Production Electronics Group. During this time, E-Systems acquired Electronic Communications, Inc. and Air Asia Co., Ltd. of Taiwan from Air American, Inc. In 1976, the company formed an Energy Technology Center for research on developing practical uses for solar energy. The Commercial Division was established in 1978, and merged with the TelSatCom Division the following year.

By the mid 1970s, E-Systems was the world's top supplier of military radios and large earth station antennas for satellite communications as well as one of the top technical consultants for microwave telecommunications systems. E-Systems' business consisted of about 55 percent defense contracts and 45 percent international, industrial, and other nondefense contracts. The company was investing considerable research and development funds in digital techniques, microminiaturization, surface acoustic wave devices, digital processing, and voice and video compression.
E-Systems began its participation in the automation of air traffic control in 1981 with the development and production of the Flight Service Automation System (FSAS) for the Federal Aviation Administration. By 1990, the system included an extensive nationwide network of 400 computers and 3,000 display terminals involving 18,000 airports. It provided general aviation pilots with weather briefings and navigation advisories and assisted them with the filing of flight plans. Updated replacement systems for FSAS provided extensive use of satellite technology and color displays for windowing weather graphics and textual data.
E-Systems had record sales of $827 million in 1983 and booked new orders amounting to more than $900 million. The company's Garland Division was awarded a $31 million contract by McDonnell Douglas

Corporation to upgrade the U.S. Air Force F-4G aircraft with a system to suppress enemy surface-to-air missiles and anti-aircraft artillery systems. The system utilized special electronic warfare equipment along with anti-radiation missiles and conventional weapons. This contract substantially increased the importance of the company's electronic warfare product area. That year *Fortune* magazine rated E-Systems first among company's known for high returns to investors over the past ten years.
The company substantially increased its research and development budget in 1984, concentrating heavily on defense electronics; electronic warfare; and command, control and communications. Over the following year, more than 65 percent of the company's sales were generated by electronic warfare equipment and systems, and sales and new order bookings were at an all time high. E-Systems expanded many of its facilities, opening a total of 264,000 square feet of automated production and engineering facilities at the Communications Manufacturing Division in St. Petersburg, Florida, and the Garland Division. It also added 240,000 square feet of engineering and administrative space at ECI in St. Petersburg and Melpar, based in Falls Church, Virginia.

In 1986, for the first time in its history, E-Systems had sales of more than $1 billion. By this time, employment was at 15,000 with 45 percent of the employees engaged as engineers, scientists, and technicians. The company occupied more than 5.6 million square feet of floor space; research and development expenditures were at a record $211 million; and company assets totaled over $600 million.

This was also the last full year in which John W. Dixon served as chair and chief executive officer. Dixon stepped down in 1987 to become Chairman Emeritus, and was succeeded by David R. Tacke. Under Tacke, the company outbid Lockheed and General Dynamics to develop an important new program known as the Joint Service Imagery Processing System (JSIPS). JSIPS was a transportable ground station for multisensory processing and dissemination of national strategic and tactical imagery. E-Systems also completed a mammoth processing system utilizing high speed programs able to process information at a rate of four billion bits per second and store more than one and a half trillion bits. Analysts compared the processing of this amount of data to processing the contents of the Library of Congress in an average work day. The system, which could take up to an acre of floor space, provided information to top military and civilian defense officials.

In the international arena, E-Systems sold its Taiwanese-based subsidiary Air Asia, after finding it incompatible with the rest of the company's business. The company next entered into a joint venture with the West German company GROB TFE to develop the EGRETT-1, a single-engine, turboprop aircraft. E-Systems was responsible for the plane's aircraft systems integration, which could be adapted for commercial communications, environmental protection activities, or scientific applications such as geophysical surveys. In 1990, E-Systems entered into TELOS, a joint venture with German partners formed for the operational maintenance and logistics support of EGRETT aircraft programs. E-Systems considered this EGRETT program an important opportunity through which to develop its international marketplace, which the company considered a big growth area despite the difficulties in exporting sensitive high technology.

Tacke served as head of the company only until spring 1989, when E. Gene Keiffer, the former president and chief operating officer became chair and CEO of E-Systems. That year the company acquired Engineering Research Associates, located in Vienna, Virginia, a technology leader in the field of high-frequency surveillance systems.

Also during this time, the company was continuing its work on high performance, high speed computer systems and software, applying Very High Speed Integrated Circuit, Monolithic Microwave Integrated Circuit, and Gallium Arsenide technologies to specialized military systems. E-Systems developed artificial intelligence applications for defense systems, as well as specialized systems and programs for speech processing, digital imagery enhancement, and data base management. The company also explored the field of neural networking, which allowed computers to recognize and analyze patterns of information. Work continued in the area of mass data storage as well as the development of a robotic, mass storage

library system using cassettes instead of computer tapes. Furthermore, the company became involved in research concerning new ways to apply fiber optic technology to defense systems.

E-Systems acquired HRB Systems Inc. from Hadson Corp. in 1990 for $65 million, half the price Hadson had paid only two years before. Hadson attributed HRB's decreased market value and declining sales to the end of the Cold War. E-Systems CEO Keiffer, however, thought the investment was a good one, observing that the new acquisition would complement and expand E-Systems' position in the advanced intelligence and reconnaissance systems marketplace. HRB designed and developed signal collection, processing, and analysis systems and was based in State College, Pennsylvania, with about 1,300 employees.

Also in 1990 E-Systems finally settled a criminal and civil lawsuit involving its production of radios for the U.S. Army. The radios were supplied by E-Systems' Memcor division, which had been providing tactical radios to the Army for more than 15 years and at one time had been the world's leading producer of such equipment. In 1985, the Army terminated for default two contracts with Memcor totaling about $19 million. Following the cancellation, E-Systems was forced to shut down Memcor, laying off most of the division's employees. The company appealed the Army's terminations and also filed a $13-million claim against the Army. In early 1988, the federal government informed E-Systems that it was initiating a criminal investigation to determine whether the company had violated any procurement regulations associated with the cancelled contracts. The government charged that three managers and a supervisor at the Memcor plant had neglected to report test failures and repairs as required and, moreover, created fake documents on untested radios. Several former E-Systems employees were indicted for the test falsifications; E-Systems plead guilty to the charges and agreed to pay $4.6 million in fines. (The former employees were acquited of the criminal charges.) In addition, as part of the settlement, E-Systems agreed to drop its suit against the government. Payment of the fines enabled E-Systems to continue to do business with the U.S. government.

In 1993, as the Cold War ended and eastern and western Germany became unified, Germany announced a freeze on defense contracts, a move that affected profits at E-Systems. The EGRETT project was scrapped for both financial and political reasons; analysts estimated that the contract would have brought in between $600 million and $1 billion for E-Systems through the end of the decade.

Consequently, E-Systems began to focus increasingly on commercial and industrial markets over the next few years, emphasizing the adaptation of leading edge technologies for existing systems and applying those technologies in new ways to serve nonmilitary purposes. The company sought wider distribution of its robotic data storage system, EMASS, developed for use by defense and intelligence agencies for storing massive amounts of data on tape cartridges. Major oil companies had purchased the systems to keep track of seismic data, but E-Systems was still having difficulty breaking into other information-intensive industries. In 1993 E-Systems entered into agreements with IBM, Conves, and Cray Research to help market the system. IBM agreed to include the EMASS system along with other data storage systems it marketed.

Other nondefense projects included a contract with the California Department of Forestry and Fire Protection to operate and maintain the state's 31 aircraft in support of the its wildfire suppression program. Furthermore, the U.S. Department of Education established a $16 million contract with E-Systems for a national student loans and grants database. The company had previously won a data processing contract for the government's Stafford Loan program, formerly known as the Guaranteed Student Loan program. In the medical field, a new E-Systems unit, E-Systems Medical Electronics, Inc., worked to promote the company's image-processing, distribution, and storage technology, acquiring Advanced Video Products, Inc., a Massachusetts-based medical electronics company, in the process.

Nevertheless, U.S. Defense Department and military work continued to generate the bulk of E-Systems' income. During 1992, the company's Serv-Air division received a contract from the Army, expected to generate more than $600 million over four years, to operate and manage activity for the Special

Operations Command by providing maintenance, repair, logistics support, systems engineering, and system modifications for military helicopters, avionics equipment, and communications equipment. In early 1993, E-Systems received a $64 million contract to provide two Learjet instrumentation systems and to train pilots and maintenance workers and provide spare parts supplies as well as operator and maintenance manuals. This contract was expected to generate as much as $400 million with its renewal options.

In an E-Systems annual report of the early 1990s, management observed that "in an environment of reduced U.S. forces abroad, reconnaissance, intelligence collection, and signal processing become even more important." E-Systems speculated that the industry could become more competitive as other defense contractors sought to replace lost programs by entering E-Systems' niche in reconnaissance and surveillance, communications, and special aircraft integration. Company officials expected that international sales would be the company's greatest source of growth in years to come as other nations assumed more responsibility for their own security. They also predicted that nonmilitary contracts would account for ten percent of business by the end of the 1990s.

Principal Subsidiaries: E-Systems Medical Electronics, Inc.; HRB Systems, Inc.; Serv-Air, Inc.; Engineering Research Associates, Inc.

Further Reading:

- "E-Systems Agrees to Buy Defense Unit from Hadson Corp." *Wall Street Journal,* August 30, 1990, p. C19.
- E-Systems Annual Reports, Dallas, Texas: E-Systems, 1965-1992.
- "E-Systems Inc. Pleads Guilty to Fraud," *Wall Street Journal,* August 28, 1990, p. B4.
- "Federal Grand Jury Indicts 4 Employees of E-Systems Inc.," *Wall Street Journal,* August 2, 1990.
- "Germany Freezes Defense Contracts," *Wall Street Journal,* February 4, 1993, p. A14.

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