Frederick J. Ellert

FREDERICK J. ELLERT

1929–2005

Elected in 1987

"For outstanding leadership in developing and applying high voltage direct current technology to large-scale electric utility power networks."

BY GLENN BREUER, DALE SWANN AND CLARA K. ELLERT
SUBMITTED BY THE NAE HOME SECRETARY

FREDERICK J. ELLERT was a talented engineer and business leader who was known for maintaining a balance between innovation, detailed analysis, and schedule. His impact on General Electric (GE) businesses will long be remembered.

Fred was born in New Britain, Connecticut, on April 8, 1929, to parents who had emigrated from Bavaria, Germany. Engineering was in his blood, and he set his goal early in life to become an engineer himself. Upon graduation from New Britain High School, he was awarded a four-year alumni scholarship to Rensselaer Polytechnic Institute (RPI), where he earned a bachelor's degree in1951, graduating first in his class, a master's in 1952 (with a Tau Beta Pi Fellowship), and a doctorate in 1964, all in electrical engineering.

Fred's career at GE began when he participated in a co-op program while a student at RPI. In 1952, he joined the company as a permanent employee in the Specialty Control Department, where he was engaged in the development of electronic controls for machine tools. In 1954, he transferred to the GE General Engineering Laboratory, where he played a leading role in the development of magnetic amplifiers, silicon-controlled rectifier circuits, and advanced control systems for industrial and military applications.

During this time, Fred became acquainted with Dr. Charles Merriam, author of *Optimization Theory and the Design of Feedback Control Systems* (McGraw-Hill, 1964), who stimulated Fred's interest in the field of optimization. His research in that field led to his dissertation, "Indices for Control System Design Using Optimization Theory."

Until the 1960s, high-voltage, direct-current (HVDC) transmission systems used mercury arc valves, but rapid advances in thyristor ratings showed that solid-state valves would have significant technical and economic advantages. Based on this research, GE decided to enter the HVDC business designing and manufacturing systems that incorporated static valves. After a search for a talented engineer to lead this new venture, Fred was asked to lead the GE Power Delivery Group in Philadelphia, Pennsylvania, which was working on the development of the first solid-state HV valves for use in HVDC transmission systems. Solid-state valves had considerably better availability than mercury arc-rectifier valves and soon became the industry standard. Fred also led the development of the complex controls required for these valves.

Fred held several managerial positions related to the DC transmission-equipment business, including manager of the Circuit Protection and Control Laboratory. During his 13-year tenure, Fred was a prominent figure in the development and testing of power-transmission and distribution equipment. He also authored numerous technical publications and was granted ownership of several patents.

In 1977, Fred transferred to the GE Electric Utility Systems Engineering Department in Schenectady, New York, where he led all engineering activities related to transmission and distribution, including systems development, product-application engineering, and consulting services for the utility industry worldwide. Fred and his team are credited with many innovations in system design and applications related to HVDC systems, static Var control, and series capacitors.

In 1980, Fred was promoted to general manager of the Electrical Utility Systems Engineering Department, and his responsibilities were expanded to include power-generation

systems and industrial and marine applications. Fred was widely recognized for his leadership of this multifaceted business. After his retirement from this position in May 1989, Fred formed the Ellert Consulting Group, Incorporated, a consulting firm specializing in power-system economics and technology.

Fred was a member of three engineering honor societies, Tau Beta Pi, Eta Kappa Nu, and LCR, and he was elected a Fellow of both Tau Beta Pi and the Institute of Electrical and Electronic Engineers (IEEE). In 1987, he was elected a member of the National Academy of Engineering for "his outstanding leadership in developing and applying high-voltage direct-current transmission technology to large-scale electric-utility power networks."

During his career, he served on committees for IEEE, American National Standards Institute, International Electrotechnical Commission (IEC), and International Council on Large Electric Systems (CIGRE). He was chair of the IEC Subcommittee on Converters for High Voltage D.C. Power Transmission, which developed international standards for DC power equipment. He was also a member of the U.S.-U.S.S.R. Working Group on Ultra High Voltage Power Transmission, which was a forum for the exchange of technical information under the auspices of the U.S. State Department.

Fred was an Eagle Scout and a leader of the scouting organization for many years. A member of the RPI tennis team, he continued to demonstrate his athletic prowess later in life by consistently beating younger challengers in the GE tennis league.

Fred died on July 13, 2005, after a courageous battle with mylodysplasia syndrome.

He is survived by his wife of 51 years, Clara; a son, Frederick Paul; a daughter, Judith Ann; and five grandchildren.

BY CLARA K. ELLERT
SUBMITTED BY THE NAE HOME SECRETARY

Fred and I were married on May 15, 1954. We met at GE where I was a secretary. We had a wonderful and happy 51

years together — we had so much in common coming from foreign parents. We had 2 fantastic children — Frederick Paul, born in 1956, who graduated with a masters degree in mechanical engineering from Cornell, and Judith Ann, born in 1960, who graduated from the University of Rochester with a degree in general science and biology and is now a practicing physician's assistant. Frederick Paul married Hilary Wichert in 1981. Judith Ann married Anthony Luscher in 1985. There are five grandchildren — Joseph A. Ellert, a welding engineer in Ann Arbor, Michigan; Ashley Rose Ellert, now Sister Pio Maria with the Dominicans in Ann Arbor, Michigan; Elizabeth M. Luscher, a junior at Ohio State; Matthew A. Luscher, a freshman at Ohio State; and Rebecca A. Luscher, who is in middle school.

Fred was a wonderful husband, father, grandfather, and friend. We spent our winter months in Florida and thoroughly enjoyed the life playing golf, walking the beach, and having fun with our many friends there. He is terribly missed and I think of him all the time.