



*Paul M. Anderson*

# PAUL M. ANDERSON

1926–2011

Elected in 2009

*“For contributions that have advanced the analysis and control of electric power systems worldwide.”*

BY ANJAN BOSE

One night in 1958 on the second floor of Coover Hall, a young electrical engineering instructor was setting up another load flow study for one of the Iowa utilities. Many of the Midwestern power companies used the network analyzer on the Iowa State College campus in Ames to study their power networks. As he set up this roomful of analog devices that modeled the Iowa power grid, Paul Anderson knew that the days of such devices were numbered. The digital Cyclone Computer, with a design similar to the Illiac at the University of Illinois, was being built in the same building and Paul was already thinking about how to model the power network on this computer. His 1961 doctoral dissertation showed how this new contraption of vacuum tubes that required five tons of air conditioning and coils of paper tape could be used to solve the power network equations.

Paul Maurice Anderson was born January 22, 1926, in Des Moines, Iowa, the younger brother of Frances, son of Neil and Buena. In 1932 the family moved to the small town of Winterset, Iowa, where Paul finished his schooling during World War II. He enlisted in the Army Air Corps and was still stateside when the war ended in 1945. He then attended Iowa State College (later University), graduating with a BS in electrical engineering in 1949, whereupon he accepted his first job as an engineer with Iowa Public Service Company in Sioux City.

It was at Iowa State University (ISU) that he met his bride to be, Virginia Worswick, and they married in 1950. They set up home in Sioux City, where their first son was born in 1953. As an engineer in a small power company, Paul was immersed in all aspects of hands-on electric power engineering, but what he enjoyed most was going back to Ames to run the network analyzer to conduct the seasonal analysis of the grid. This led, in 1955, to an opportunity for him to go back to ISU as an instructor while working on his graduate degrees. His responsibilities included the running of the network analyzer, which led to his lifelong fascination with the modeling and analysis of the power grid. He found that he loved teaching and, after obtaining his MS and PhD, stayed on at ISU as a faculty member in electrical engineering.

Paul was one of the intellectual leaders in the 1960s who led the application of digital computation to electric power engineering. This application was accelerated by the 1965 blackout in the Northeastern United States, which was the first one that cascaded over a large area of a continent. It became obvious that the design, analysis, and operation of larger and larger interconnected grids all over the globe would require the computational power of the digital computer to accomplish the mathematical modeling and simulation.

In addition to the many papers that record his pioneering work in this area, his first two books established the language and format for power systems analysis in the digital computer era. *Analysis of Faulted Power Systems* (1973) translated the method of symmetrical components into the matrix transformations needed for digital computation. The book is still used as the bible for such studies. *Power System Control and Stability* (1977), coauthored with A.A. Fouad, was the first book to formulate the mathematical modeling of the power grid components needed for digital simulation. He wrote three other books, all of which are popular references.

Paul was recruited by the Electric Power Research Institute to be the founding manager for its Grid Operations and Planning Program (1975–1978), where he sponsored the development of new simulation packages that (or their suc-

cessive variations) are still in production use today. In 1978 he formed his consulting company, Power Math Associates, Inc., and ran it till 1998. He also served as chair in Electric Power Systems at Arizona State University (1980–1984) and was Schweitzer Visiting Professor at Washington State University in Pullman (1996–1997). He was a fellow of the IEEE, where he played a leadership role in establishing the first technical committee on power system dynamics and editing a series of books on electric power engineering.

Paul always loved music, from the time in 5th grade when he used to practice his new baritone horn on the front porch of his home (“probably to the consternation of the entire neighborhood,” he once said) through high school and college. He was a member of several glee clubs, choruses, and big bands. Paul loved playing his beloved Steinway piano and entertaining friends and family with his singing of old Air Corps songs and commercial jingles.

Paul died peacefully at home on April 26, 2011, in San Ramon, California, while listening to Beethoven after complications following congestive heart failure and a long battle with Alzheimer’s disease. He will be remembered for his remarkable contributions to the field of electric power engineering as a researcher, professor, and author, as well as being a loving father and family man. He is survived by his wife of 60 years, Virginia; their four sons and spouses/partners: Bill and Anne, Mark and Holly, Jim and Yuriko, Tom and Tracy; and granddaughter Tomel.