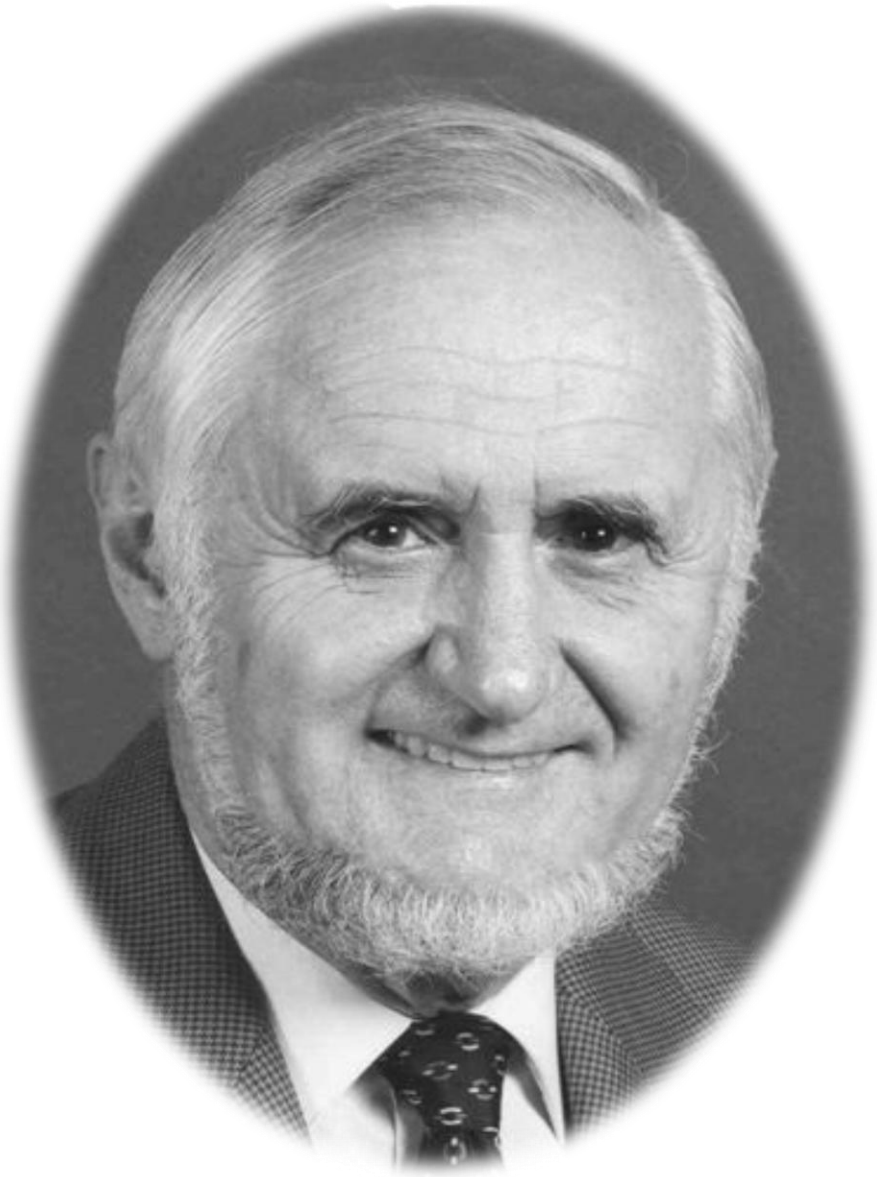
Surge Protection Hall of Fame

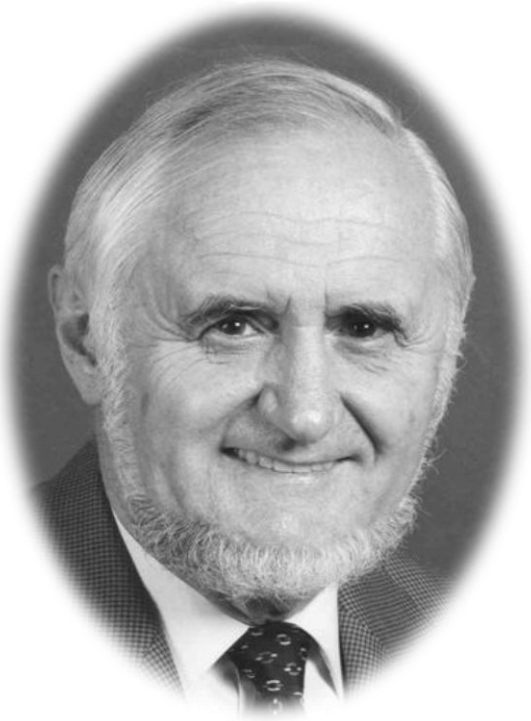


Mat Darveniza

March 2009

Mat Darveniza

Professor, Standards Bearer, Author
And Overvoltage Protection Expert



Professor Darveniza is inarguably the most famous lightning protection expert to ever hail from Australia. His papers and teachings are world renowned. His creativity in testing and evaluating equipment is unparalleled. At age 77 he is still going strong and remains active in many aspects of overvoltage protection and teaching.

Professor Darveniza's Words of Wisdom to all Overvoltage Protection Professionals

It must always be remembered that Lightning Protection and Insulation Coordination of power system equipment is based on the lightning surge conditions that apply to substations that are effectively shielded against direct lightning strikes to the substation and to nearby incoming and outgoing line ends. This means that the severity of over-voltages that stress equipment insulation (where necessary limited by surge arresters) is reduced by corona attenuation and front prolongation as the surge voltage propagates along a line into the substation. The magnitude and the steepness of the incident surge depend on the length of propagation through what some refer to as the "lightning proof" line ends; these are usually the last 3 to 5 spans involving line lengths of about 200 to 600m. The important result is that only after such propagation do the magnitudes and wave-shapes of the lightning voltages and currents have characteristics that resemble those used for impulse testing equipment and arresters – the standard 1.2/50 µs impulse voltages and 8/20 µs impulse currents. If the point of the lightning strike is close to the equipment (as can occur in non-effectively shielded substations), the severity of the lightning over-voltage can be markedly greater, and so this negates the fundamental basis of "standard" lightning protection and insulation coordination. Under these circumstances, neither the withstand ability of the equipment insulation nor the protective capability of the arrester have been demonstrated by test, and so are not known.

Career and Education

BE, PhD, DEng., HonDSc(Eng), FTSE, LIVA, FIEAust(Hon), FIEEE(Life)

John Mat Darveniza, born in 1932 at Innisfail, Australia, is a graduate of the Universities of Queensland (BE 1953, DEng 1980), London (PhD 1959) and Chalmers University (Hon DSc Eng 1990). He has worked in the electricity supply

and manufacturing industries, and has been visiting professor at various overseas universities, including Florida (USA), Munich (Germany), La Plata (Argentina), Southampton and Imperial College (England), and Chalmers (Sweden). He has held visiting appointments at Westinghouse Research Laboratories (1966), University of Florida (1978/79) and ABB Corporate Research in Sweden (1993, 1996, 1998).

He joined the University of Queensland in 1959 and from 1980 to 1997 was Professor (Personal Chair) in Electrical Engineering and Head of Department 1983 to 1987. In 1998, he was appointed Professorial Research Fellow (fractional) and Emeritus Professor. His research interests include lightning protection, high voltage and insulation engineering, electrical overstress protection of electrical and electronic equipment, health aspects of low frequency electric and magnetic fields, and engineering education. He has published over 250 papers on these topics in scientific and engineering publications, including two books "The Electrical Properties of Wood and Line Design" (UQ Press, 1980) and "Lightning Injuries: Electrical, Medical and Legal Aspects" (CRC Press 1992), and is currently working on a third book on “Lightning Protection for Power Systems with Special Reference to Sub-Transmission and Distribution Equipment”. His publications also include 3 patents, 11 book chapters, 92 refereed journal papers, 100 international conference papers and 79 conference papers. His IEAust papers have won 2 Institution Awards, 3 Electrical Engineering Prizes and 2 Madsen Medals (1991, 1993).

Professor Darveniza has extensive experience as a consultant in his areas of expertise, including lightning protection (power system equipment, telecommunication and electronic equipment, and buildings), high voltage and insulation technology, power system engineering and electromagnetic fields

Professor Darveniza is a Fellow (1979) of IEEE (citation - "for contributions to the engineering analysis of lightning effects on electric power transmission systems"), and in 1998 was elected Life Fellow. In 1982, he was elected a Fellow of the Australian Academy of Technological Sciences and Engineering (ATSE). In 1993, Professor Darveniza was awarded the IEEE Herman Halperin Electric Transmission and Distribution Award, and was elected a Foreign Fellow of the Royal Swedish Academy of Engineering Sciences (IVA). He was awarded the IEEE Education Activities Board Meritorious Services Citation in 1995 and the Meritorious Achievement Award in Continuing Education in 1997.

Since 1965, he has been active in professional committees on power systems, including Electricity Supply Association of Australia (ESAA), Standards Australia, International Council of Large Electrical Systems (CIGRE) and Institute of Electrical and Electronic Engineers (IEEE). Because he has direct experience of the electricity supply industry, and over a long period of time has conducted practical research into the reliability of transmission and distribution systems, particularly in respect of lightning protection, he is acknowledged nationally and internationally as an expert in these fields. Between 1978 and 1982, he co-directed a major US Department of Energy project to improve the reliability of electricity utilities in Florida during thunderstorms.

Mat Darveniza

In 1994, he formed Lightning and Transient Protection Pty Ltd and is Principal Executive Officer and Senior Consultant. With Dr David Mackerras, LTP operates as a consulting company with wide experience in the areas related to its partners' expertise. Between 1995 and 2006, Professor Darveniza was Chair of Standards Australia Cttee EL24 "Lightning Protection" and represents it on IEC TC81.

On Australia Day 2003, Emeritus Professor Darveniza was appointed an Officer of the General Division of the Order of Australia (AO citation – "for service to electrical engineering, particularly through research on lightning protection of electrical equipment and as Chairman of Standards Australia committee on lightning protection of structures and to professional education"). In 2003, he received the Centenary Medal awarded by the Governor-General in the category of the General List (citation –"for service to Australian society in electrical engineering and education").

In December 2004, the Queensland Government appointed him Director ENERGEX Board.

In 2008, he was elected to the IEAust Qld Division Hall of Fame.