

Obituary

Dr. T.V.S.R. Appa Rao



(February 07, 1941 - February 17, 2022)

Dr. T.V.S.R. Appa Rao, FNAE, Emeritus Scientist, CSIR- Structural Engineering Research Centre (SERC), Chennai and formerly Director, SERC, Chennai born on February 07, 1941 passed away on February 17, 2022. He was elected to INAE Fellowship in the year 1990 and was affiliated to Engineering Section I (Civil Engineering).

Dr. T.V.S.R. Appa Rao had made significant contributions in the areas of Computer Aided Analysis and Design of Structures including Risk and reliability-based design of structures; FEM for advanced structural analysis; Damage Assessment and Vulnerability Analysis of Structures in Cyclone-prone areas; Earthquake-resistant Design of Structures and High-Performance Concretes. During 2005-2007, he contributed to the establishment of the Centre for Disaster Mitigation and Management at the VIT University, Vellore, at the state-of-the-art level that resulted in a number of knowledge products in the area of disaster mitigation.

Dr Appa Rao had a brilliant academic track record and an outstanding professional career. He obtained the first rank with a Gold medal at the Bachelor's degree with Honours in Civil Engineering from the Andhra University in 1962. Because of his exceptional merit, he earned the East-West Centre Fellowship and pursued post graduate studies at the University of Hawaii in the USA; and obtained a Master's degree in Structural Engineering. Thereafter, he obtained his Ph.D. degree from the Cornell University, Ithaca, N.Y., USA in 1968. During 1967-68, he worked as Post-Doctoral Research Fellow at the Cornell University, and thereafter had a brief stint as a consultant in the USA.

Back home in 1969, he joined the team of the then Director, Legendary Professor G.S. Ramaswamy at SERC, located in the campus of the CSIR-Central Building Research Institute in Roorkee. In mid-1970's, SERC finally shifted to its present campus in Chennai. Seldom does an outstanding young scientist morph into an institution-builder, manager and formulator of administrative policy, whose legacy will continue to be cherished and admired by the scientific community. Most would agree that Dr Appa Rao was indeed an exceptional personality. The few who may hesitate, would have to admire the resoluteness of a young engineering student who decided he would go to the US for further studies, and return to head a research institution in a very short time. This was a shining example of his commitment to contribute to the Country's R&D efforts. His first research contribution as SERC Scientist on stress hybrid technique of FEM presented at the First International Conference on Structural Mechanics in Reactor Technology in Berlin, was the forerunner for further research in this area by scientists at the Massachusetts Institute of Technology, U.S.A., and other institutions. Dr. Appa Rao made a unique and strategic contribution for evaluating the safety of nuclear power plant structures by testing a pre-stressed concrete true model of the Madras Atomic Power Project, nuclear reactor containment vessel - first of its kind in India and one among the few in the world!

Dr Appa Rao took over as the fourth Director of SERC on 28th February 1995. During his term as Director, he followed up the cutting-edge R&D creating a niche while nurturing young scientists to take up innovative programs. He initiated the process of establishing world class wind engineering laboratory and the earthquake engineering laboratory (named as ASTaR – Advanced Seismic Testing and Research laboratory) using his technical and administrative skills. While the Wind Engineering Laboratory was established through the UNDP, the ASTaR was built with strong support of the Department of Atomic Energy. As a Societal Scientist through his Project Directorship of the United Nations Development Programme Action Plan he successfully organised transfer of technology for cyclone disaster mitigation, to grass root level artisans/skilled workers. Dr.

Appa Rao expected nothing short of excellence by setting his own example from his team in the pursuit of research and deliverables. The industry interaction rose to a different level and so was the demand from the industry seeking powerful yet simple and cost-effective solutions. He was responsible to nominate young scientists to represent in various BIS Committees that provided many of the technologies/processes developed at SERC get due recognition. He mentored several scientists and guided them with timely suggestions. After the thirty-two years of illustrious service rendered by him in the CSIR, Dr. Appa Rao superannuated in 2001 and continued to serve SERC as an Emeritus Scientist.

The nearly four-decade long professional journey of Dr Appa Rao took him to several uncharted territories. Areas of his contributions embraced the fields of Computer-aided analysis and design of complex structures such as ship structures, natural draught hyperbolic parabolic RCC Cooling Towers, offshore structures, pressure vessels & reactors; Risk and reliability-based design of structures; Computer software development; FEM for advanced structural analysis; Integrated software packages for design of structures, Damage Assessment and Vulnerability Analysis of Structures in Cyclone-prone areas; Earthquake-resistant Design of Structures and High Performance Concretes. He served with distinction and provided inspiring leadership/direction as Chairman/Co-Chairman/Member of many International Committees representing Indian Scientific community making significant contributions, and in National Committees leading to outstanding and far reaching decisions and results. He commanded many national and international events. During 2005-2007, his contribution to the establishment of the Centre for Disaster Mitigation and Management at the VIT University, Vellore, at the state-of-the-art level, jointly with Dr R.K. Bhandari, resulted in a number of knowledge products in the area of disaster mitigation, and auto-certification series for training of professional trainers. He was also a highly valued member of the team responsible for the growth of National Network of Retrofitting Clinics.

Towards nurturing excellence in Science and Technology and for building international partnerships in the field of Structural Engineering, Dr Appa Rao visited many countries including the USA, Germany, Canada, Bulgaria, Japan, DPR Korea, Malaysia and Thailand. He was on the Editorial Board of the International Journal 'Engineering of Structures'.

Awards, rewards and recognitions followed Dr Appa Rao as his shadow. The Cornell University from which he obtained his Doctorate degree, invited him to serve as a Visiting Associate Professor during 1976-77. Later, in September 1989, he served as a Visiting Scholar at the Stanford University, USA. He was one of the distinguished experts of the special S&T delegation deputed to Bulgaria by the Government of India during the eighties. He was the Chief Technical Advisor to the prestigious UNDP Project on Computerisation of the Construction Design and Calculation Centre of DPR Korea. His paper on "Analysis for ship-water interaction effects earned him the Aerospace Engineering Division Gold Medal of the Institution of Engineers (India) in December 1995." The Rotary Club of Madras Metro gave him Vocational Excellence Award in 1998. The very next year, in 1999, he won the CSIR Prize for Engineering Technology' for contributions in the field of computational technology and software development. And a year later, he received the CSIR Shield for 'Engineering Technology' in the area of Structural Engineering. In November 2003, he received the Indian Building Congress Medal for his paper on *Integration of computer and IT applications*. In 1990, he was elected as a fellow of the Indian National Academy of Engineering. He published over 125 papers in national and international journals and several monographs.

Dr. Appa Rao has been a tremendous source of inspiration for all of us with his unbounded kindness, high sense of integrity, and tireless and undaunted dedication to service. He was soft spoken gentleman to the core, extremely caring and an excellent human being. The passing away of Dr Appa Rao is a great loss to the entire scientific community.

May God bless his soul to Rest in Peace

Written by Dr RK Bhandari, FNAE