



Obituary: Professor J S Rao
(27th Dec. 1939 – 4th July 2020)

The sudden passing away of Professor J. S. Rao on July 04, 2020 came as a shock to his students, colleagues and friends around the world. In a career spanning almost 60 years, Prof. Rao made phenomenal contributions to the fields of engineering and education. He was an inspiring teacher much loved by his students, and a dedicated professional immensely admired by colleagues and associates.

A world renowned academician in the area of Machine Dynamics, Jammi Srinivasa Rao was born on 27th December 1939 in Madugula village in Visakhapatnam district in the state of Andhra Pradesh in India. His father was an official at the Madugula Fort estate. He lost his mother at a very early age and was brought up by his sisters. The most significant moment of his early life was to have received the blessings of the Father of the Nation Mahatma Gandhi, at Samalkot railway station.

He received his Bachelor of Engineering degree in Mechanical Engineering with Honours in 1960 from Andhra University. Thereafter he completed his M.Tech. from the Indian Institute of Technology (IIT) Kharagpur in 1963 and obtained his Ph.D. (1965) and D.Sc. (1971 while being on the faculty from the same institute. Professor J.S. Rao became a full professor at IIT Kharagpur in 1970. He then moved to IIT Delhi in 1975, to establish the Center for Industrial Tribology, Machine Dynamics and Maintenance Engineering. He also chaired the Department of Mechanical Engineering at IIT Delhi and subsequently occupied the Bharat Heavy Electricals Ltd. (BHEL) endowed Chair. Prof. Rao served the Government of India for five years during 1981-86 as Science Counsellor at the Indian Embassy in Washington DC. He played an important role in setting up linkages in science and technology between the US and India. In the year 2000 Professor Rao moved from academics to industry on a permanent basis. He became the Chief Technology Officer at QUEST, Bangalore and played a major role in its rapid, nearly ten-fold, growth in four years. He later assumed the role of CSO at ALTAIR, Bangalore. He also provided academic services to Kumaraguru College of Technology, Coimbatore, KL Deemed University, Vijayawada and several other Educational Institutions.

Prof. J.S. Rao's research interests covered Vibrations, Blade and Rotor Dynamics, Design, Theory of Machines and Mechanisms and Thermo Fluid Mechanics. He served as reviewer for numerous international conferences and journals and authored over 300 research publications and written over 20 textbooks and guided over 30 students for doctoral degree. His final, single-authored research manuscript, entitled "Earth under Current Climatic Conditions" was submitted by him personally to JNET on June 17th, 2020, barely less than three weeks before succumbing to illness on July 4th, 2020.

Professor J.S. Rao was a visiting Professor at many universities around the world, which include - University of Surrey, Guildford; National Institute of Applied Sciences, Lyon; Concordia University, Montreal; Rochester Institute of Technology, New York; Technical University, Kassel; National Chung Cheng University, Chia-Yi; Institute of Fluid Flow Machinery, Polish Academy of Sciences and The University of New South Wales, Sydney among others. He was a consultant to over thirty major industries, which include the Gas Turbine Research Establishment (GTRE), Bharat Heavy Electricals (BHEL), Indian Space Research Organization (ISRO) amongst others in India, and Washington Metro and Stress Technology Inc., in USA; Twyflex Couplings, England; Taipower Company, Taipei and others. Notable accomplishments amongst several consultancy jobs were, investigation of the catastrophic failure of an Atomic Power plant in Narora, India, where the root cause was identified through successful analytical simulations, and investigations into the brake-squeal problem of Washington Metro trains. He was a full-time consultant to Stress Technology Inc., Rochester. He conducted short courses in USA, Germany, Canada, Australia, Singapore, Malaysia, Taiwan, Venezuela, Korea, Hong Kong, Dubai and India and gave special lectures in more than one hundred and forty Universities, Research Laboratories and Industries in America, Europe and Asia.

Prof. J.S. Rao played a significant role in advancing design culture in private industry in India, particularly in the fields of rotor and blade dynamic technologies for several multinational companies like, General Electric, Nuo Pignone, Pratt and Whitney, Rolls Royce and GE Hydro. He contributed significantly to the design of LP Compressor for the Kaveri engine of the Light Combat Aircraft and to the rotor dynamic design of High-Speed Cryogenic Pumps for Last Stage of Geostationary Launch Vehicle for ISRO. Professor Rao was also a Director on the Board of GMR Energy Group.

He played a critical role in the establishment of IFToMM, right from its inception – in preparing the constitution and signing the same at the inaugural ceremony in 1969 in Poland. He was Chairman for the Sixth Congress held in New Delhi in 1983. He was a member of its executive council. He also played a major role in establishing the Rotor Dynamics Technical Committee of IFToMM and chaired it for two terms, steering it into a leading and very reputed international body; he was elected lifetime Emeritus Chairman of this committee. He was also chairman of Permanent Commission on Conferences and member of several committees over the years for IFToMM.

Prof. J.S. Rao was a Fellow of The American Society of Mechanical Engineers; Honorary Life Fellow, Association of Machines and Mechanisms; Fellow, Indian National Academy of Engineers; Fellow, Institution of Engineers (India) etc. He established the Indian Association for Machines and Mechanisms – IFToMM organ in India. He was President of the Indian Society of Theoretical and Applied Mechanics (ISTAM) and founder President of the Vibration

Institute of India (TVII). Prof Rao was the Chief Editor and also the Founding Editor of the journal “Advances in Vibration Engineering” (AVE) which was established in 2002. The journal was subsequently renamed as “Journal of Vibration Engineering & Technologies” (JVET) in 2014. Prof. J.S. Rao was honoured by several bodies for his outstanding scientific achievements and developing international understanding in science, that include: Association of Scientists of Indian Origin in America; American Society of Mechanical Engineers,; Institution of Engineers (India); American Biographical Institute; International Biographical Center, Cambridge, England; Association of Machines and Mechanisms; Pacific Center of Thermal-Fluids Engineering, Hawaii. He was honoured with the IFToMM Distinguished Service Award 2004. He received Outstanding Alumnus Award from College of Engineering Kakinada at its Diamond Jubilee Celebration, 2006.

Prof. Rao also received the Distinguished Alumnus Award for Outstanding Achievements and Contributions awarded by IIT Kharagpur at its Diamond Jubilee Celebration and Convocation on 22 August 2011 and delivered by then Prime Minister Dr. Manmohan Singh. The J.S. Rao Medal in Vibration Engineering was established in 2017 in honour of Prof. J.S. Rao for his enormous contributions in the relevant field. The Medal is awarded annually to someone who has made a significant contribution in the fundamental theory and engineering applications of vibration engineering and technologies in both research and education.

Prof. J.S. Rao passed away in Bangalore, in the early hours of 4th July 2020 after a brief illness. He is survived by his wife Mrs. Indira Rao, a lady of great fortitude and patience, daughter Shailaja, son Chikka, grandchildren and great-grandchildren.

Academics, students, researchers and engineering practitioners associated with Professor J.S. Rao while deeply feeling the vacuum created by his demise shall do their best to carry forward his legacy. We pray that his soul rests in peace.