

Profile of Director's Profile

Dr G Madhusudhan Reddy obtained his bachelor's degree in Mechanical Engg with distinction from Kakatiya University in 1985. He completed his master's degree with Honours from IIT Roorkee in 1987. He started his carrier as a Scientist in 1987 at CVRDE, Chennai. He was transferred to DMRL, Hyderabad in 1989. Having acquired significant hands on experience in welding research at DMRL, he then embarked on focused research in the welding of Aluminium-Lithium alloys for his Doctoral degree at IIT Madras. He was awarded Sudarshan Bhat Memorial Prize for best thesis during the convocation in the year 1999. Dr Reddy's career spanning nearly 32 years is marked by significant R&D contributions in the field of materials joining and surfacing and have been direct applications in defence and aerospace technologies.

Dr Reddy is very well known internationally for his excellence in the field of friction-stir welding of very large components required by aerospace programs in India. He has made a significant breakthrough by establishing ballistic capabilities in welds, comparable to those of parent armour. On fundamental research front, niobium segregation, causing Laves phase formation is a major problem in fusion welding of superalloys. Dr Reddy brought out the influence of electron beam oscillation and pulsed laser welding techniques in reducing the Laves phase during welding of superalloys, thereby improving the mechanical properties of aero-engine components. Dr Reddy has also developed the technology for welding of low alloy steel shaft to a cast super alloy blisk in solid state and brazing of aero-foil castings to the shroud rings for aerospace programs. Dr Reddy contributed significantly to the structural Integrity of joints in aerospace components, as the Chairman of a Weld Certification Committee. He has setup one of the leading solid state welding laboratories in the country at DMRL, which he continues to lead. Dr Reddy's pioneering research on the refinement of weld zone microstructure, employing pulsed and arc oscillation technology, led to the development of joining technology for difficult-to-weld aluminium and titanium alloys employed in aerospace. Some of his other notable contributions include failure analysis of weldments related to armoured vehicles, premature failure of several motor casings made of ultrahigh strength steel, bridge layered tanks - to name a few. In recognition of his outstanding contributions towards welding metallurgy, he has been awarded the prestigious 'Metallurgist of the Year Award-2007' from Ministry of Steels and Mines, Govt of India. In recognition of his overall achievements, Dr Reddy has also been awarded the coveted 'Scientist of the Year Award-2013' by DRDO. Dr Reddy received 'National Technology Day Award-2017' from DRDO. In recognition of his innovative and outstanding work in the field of materials joining and surfacing technologies he has been awarded the prestigious 'Bharat Ratna Sir Mokshagundam Visvesvaraya Award-2018' by the Government of Telangana. Dr Reddy is a recipient of 'GD Birla Gold Medal (2019)', 'Binani Gold Medal (2010, 1994)', 'SAIL Gold Medal (2013)' of the Indian Institute of Metals. Dr Reddy has won the 'Technology Leadership Award.