DR. V. NARAYANAN, DIRECTOR, LPSC, DISTINGUISHED SCIENTIST(APEX SCALE)

Dr. V Narayanan, a Distinguished Scientist (APEX Grade) is a Rocket and Spacecraft Propulsion Expert. He is currently Director, Liquid Propulsion Systems Centre (LPSC), one of the major Centres of ISRO. As Director, he is providing techno-managerial leadership for the development of Liquid, Semi Cryogenic, Cryogenic Propulsion Stages and control systems for launch vehicles, Chemical and Electric Propulsion Systems for Satellites, and Transducersfor health monitoring.As Director of LPSC, the Centre has delivered 190 Liquid Propulsion Systems and Control Power plants for 45 nos of Launch Vehicles and 40 nos of Satellites.

Dr. Narayanan has completed his schooling and DME with First Rank and AMIE in Mechanical Engineering.He has completed M.Techwith First Rank in Cryogenic Engineering and Ph.D in Aerospace Engineering. Immediately after completing DME, worked with TI Diamond Chain Ltd, Madras Rubber Factory, BHEL, Trichy& BHEL, Ranipet for one and half years. He has joined ISRO in 1984 and functioned in various capacities before becoming Director of LPSC on January 2018. During initial period he has contributed in Solid Propulsion System realization for Rohini Sounding Rockets and Augmented Satellite launch vehicle.

As Project Director for C25 Cryogenic Project of GSLV Mk III vehicle, led the team, successfully developed C25 Cryogenic Stage powered by a 20-tonne thrust Engine using Liquid Oxygen and Liquid Hydrogen and played vital role in the successful launch of GSLV Mk III vehicle in its maiden attempt and made it operational. When India was denied the Cryogenic Technology for GSLV Mk-II vehicle, played crucial role in successful development of Cryogenic Upper Stage (CUS) and contributed in making it operational. His M.Tech Thesis on "Cavitating Venturies for Cryogenic Rocket Engines Flow Control" and PhD thesis on "Thrust & Mixture Ratio Regulation System of Cryogenic Rocket Engines" is employed in Indian Cryogenic Rocket Engines. **Thedevelopment of Cryogenic Propulsion Systems made India one among six countries to have this capability and ensured self reliance in Launch Vehicle.**

Towards **GSLV Mk-III M1/Chandrayaan-2 &LVM3/Chandrayaan-3 missions**, his team has developed &delivered the L110 Liquid Stage and C25 Cryogenic Stage for the LVM3 propulsion systems which took the spacecraft from Earth to the moon's orbit and Throttleable propulsion system of the Vikram lander used for soft landing on the south pole of the moon.He was the **Chairman of the National Level Expert Committee** which pinpointed the reasons for Chandrayaan -2 hard landing and recommended necessary improvements which eventually contributed in the success of Chandrayaan-3.

For **PSLV C57/Adithya L1 mission**, his team has realised 2nd and 4th Stages and control power plants of PSLV C57 vehicle and the propulsion system used for moving the spacecraft from earths orbit to L1 point and retaining it in the Halo orbit. As the Chairman of the Mission Readiness Review, reviewed and cleared all systems of the mission.

Towards Human Space Flight Gaganyaan Programme, contributed in Human Rating of LVM3 vehicle, development of Human rated L110 & C32 Cryogenic Stages, EnvironmentalControl & Safety Systems, Service and Crew module propulsion systems and Test vehicle for Crew escape system demonstration. As the Chairman of Mission Readiness Review of Test Vehicle (TVD1) mission, reviewed and cleared the Systems and contributed in successful demonstration of crew escape system in its maiden attempt. As Chairman of Gaganyaan Certification Board, contributing in certification process of various systems for Human Space Flight.He has guided and developing a 200-tonne thrust Lox-Kerosene Semi Cryogenic Rocket Engine,a 100T thrust LOX-Methane engine for future launch vehicles, as well as Electric and green propulsion systems for spacecrafts. He is a Member of major decision making forums like Space Council and ISRO Council.

Dr. Narayanan has been honoured with 25 awards. He is a recipient of Silver Medal from IIT Kharagpur for First Rank in M.Tech, Gold Medal from Astronautical Society of India (ASI), ASI Award for Rocket and Related Technologies, Team Award from High Energy Materials Society of India (HEMSI), Performance Excellence Award and Team Excellence Award of ISRO, National Design Award from NDRF, Institution of Engineers, India and National Aeronautical prize from Aeronautical Society of India, Honorary Degree of Doctor of Science (HonorisCausa) from Sathyabama University, Chennai, Distinguished Alumnus Award-2018 by IIT, Kharagpur, APJ Abdul Kalam Award 2023 and Tamil Nadu Chief Minister's award for Chandrayaan-3, Life Fellowship Award of IIT-Kharagpur in 2023.

Dr. Narayanan is a Member of Space Propulsion Committee of International Astronautical Federation (IAF), Member of International Academy of Astronautics (IAA),Fellow of Indian National Academy of Engineering,Fellow of Institution of Engineers (India), Fellow of Indian Cryogenic Council, Fellow of Aeronautical Society of India, Fellow of Astronautical Society of India, National President of Indian Systems Society of Science & Engineering. He has served as Governing Council Member of INAE for 6 years, and Member in various National and International Professional Bodies.Member of IIST Board and Governing Council.Dr. Narayanan has published large number of technical papers including 1200 internal ISRO reports, 50 Journal & conference papers and few numbers of book chapters.