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## Guest Editorial

Quality assurance and reliability engineering have assumed paramount importance in aerospace technologies due to stringent requirement of 'weight-to-strength' considerations and the need for highly reliable systems. The techniques of inspection and testing have given way to the use of sophisticated reliability engineering concepts, failure mode effects and criticality analysis, design of experiments and total quality management concepts in the accomplishment of superior quality. The role of 'failure analysis' to improve the quality on a continuous basis has been felt by all engaged in the realisation of aerospace technologies. A number of simulation runs help to build up quality during the design and development phase and obviate the need for extensive hardware testing. The techniques of metrology and nondestructive testing have been upgraded considerably over the last decade. Most of the manufacturing techniques, now being computer aided, give consistent production and better quality products.

QUEST' 95 was the first National Conference on Quality Engineering in Aerospace Technologies. It has helped in bringing together, on a common platform, eminent scientists, engineers, designers, technologists and entrepreneurs involved in design, development and quality assurance in the field of aerospace for an interactive discussion and exchange of ideas to enrich the knowledge and face challenges in aerospace activities in the country. Self-reliance without product reliability and quality cannot lead to

economical independence. Hence, quality must be chosen as a national priority and suitable quality management strategies must be evolved to raise the quality level of Indian aerospace technologies and products. This will enable us to compete effectively in the national and international markets. With the focus on total quality management and consequent need to give impetus to introduction of quality systems through ISO 9000, this first national conference held at the Defence Research & Development Laboratory, Hyderabad, during 27-28 October 1995 gained added importance. The theme of the Conference as 'Towards Total Quality and Excellence' was chosen to highlight new strategies to meet the challenges ahead.

I am delighted to note that the concept of quality has spread far and wide in our country. The number of papers on total quality management, quality planning and management, testing of reliability and reliability techniques and quality assurance in design indicates that Indian industries and R&D institutions in aerospace have recognised that quality is the only path to achieve the goal. It is also important to note that advances in manufacturing technologies and materials have integrated quality engineering as an integral part of technological improvements. Many papers have reported the results of investigative work in manufacturing processes and materials. I hope that the findings would percolate to industries and development activities to improve the productivity. At the outset, the concepts of the papers, if any

indicative, suggest that the activities in the field of quality are widespread and our indigenous technology base is ready to face future challenges.

Eight papers out of those presented in the Conference have been selected for inclusion in this special issue of Defence Science Journal (DSJ). I am grateful to Dr APJ Abdul Kalam, Scientific Adviser to Raksha Mantri, for suggesting this special issue of DSJ. I would like to thank the authors for the special efforts made by them for making the necessary changes in the original papers presented in the Conference to meet the requirements for publication in this special issue. I wish to express my gratitude to Dr SS Murthy, Director, Defence Scientific Information &

Documentation Centre and his team for bringing out this special issue.

I hope that the papers included in this issue would give the readers a glimpse of high technology content of quality engineering and motivate the scientists, engineers and technologists working in the quality and related technologies to enable our country to maintain lead in high technology areas.

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