



# Reliability, Availability, Maintenance and Safety

Reliability and Maintainability are two centrally important aspects of engineering products, projects, equipment, and designs closely related to safety. In the context of the aerospace industry, the application of reliability and maintainability principles are focused on achieving:

- Increases in the life of engineering products
- Reduced maintainability costs
- Improved safety
- Increased availability

The Reliability, Availability, Maintenance and Safety Research Group in the School of Mechanical, Aerospace and Civil Engineering is making a contribution in the following areas:

- Support systems
- Machinery vibration monitoring and analysis
- Structural fault identification
- Condition monitoring for prevention against accidental explosions
- Vehicles safety, on the earth or in space
- Finite and boundary methods for inverse problems
- Engineering project management
- Smart materials/structures
- Total Care (Functional) Products

- Supported EU companies in product service support systems
- Engine manufacture supplied by condition monitoring methods

# Research areas

The Aerospace Research Institute embraces research across a range of multi-disciplinary areas that encompasses the fields of reliability and maintainability. In particular work is being undertaken in design, reliability and maintainability, creativity and concept design, support system design, and support systems incorporating project management. In addition, novel detection methods for condition monitoring and damage identification, data capture, remote monitoring, data analysis and

interpretation are being developed. Identification of material damage, dynamic response, vehicle safety are important areas of concern. A particular focus is in the area of mathematical modeling incorporating advanced numerical techniques for the simulation of vibration, damage, system dynamics, etc.

# Research facilities

- Thermal imaging camera
- Laser tri-vibrometer
- Machine condition monitoring laboratory
- Wind tunnels
- Fatigue, creep and high speed impact testing facilities



# Relevant postgraduate study

## MSc in Mechanical Engineering Design (MED)

This well regarded Masters provides you with the latest technological knowledge in the mechanical engineering design, reliability and maintainability field and their application to all stages of design and to creative and analytical engineering design activities.

## MSc in Maintenance Engineering and Asset Management

This program aims to introduce you to the basic concepts of maintenance and asset management. The principles of the subject are applied in the context of the industrial environment.

## Research degrees

The School of Mechanical, Aerospace and Civil Engineering is a leading provider of postgraduate research programmes on an international level. Research students in this field are focusing on the investigation of design studies, condition monitoring, signal processing, damage detection, end-of-life options, project management, reliability of support systems, nano-materials, micro-components, smart materials, inverse problems, computational continuum mechanics and fractal mechanics.

# Academic staff



Dr M T Alonso-Rasgado



Dr K Davey



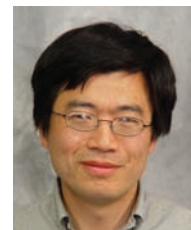
Professor A Gale



Dr O Oyadiji



Dr J Sinha



Dr H Tan

# Contact details

Dr M Teresa Alonso-Rasgado, Reliability, Availability, Maintenance and Safety Theme Leader  
reliability@manchester.ac.uk  
[www.umari.manchester.ac.uk/research/areas/reliability](http://www.umari.manchester.ac.uk/research/areas/reliability)

The University of Manchester,  
Oxford Road, Manchester M13 9PL  
Royal Charter Number RC000797 J1529J 09.07  
[www.manchester.ac.uk/umari](http://www.manchester.ac.uk/umari)