



Fluid Dynamics and Flow Control Technology

Understanding of fluid dynamics is an essential aspect of many technologies related to atmospheric flight of aerospace vehicles and propulsion units.

The Fluid Dynamics and Flow Control Technology Group encompasses fluids expertise across a spectrum from fundamental turbulence mechanics through to understanding of the certification issues associated with the use of flow control systems on aircraft. The Group has a combination of world-class leadership in Computational Fluid Dynamics (CFD) coupled with excellent experimental facilities and long term research partnerships with the aerospace industry. The Group has a proven track record of delivering high quality science and of generating innovation of direct relevance to industry.

- World-class leadership in Computational Fluid Dynamics and a proven track record of developing fluids-related technological innovation for industry
- Range of high quality subsonic, hypersonic and transonic wind tunnels

Research areas

Experimental Aerodynamics

Broad applied research aimed at understanding and improving the external flow around bodies in motion through a fluid.

Computational Fluid Dynamics

Extensive computational research on external and internal aerodynamics including the aerodynamics of aircraft, helicopters and flow/heat transfer in rotating components of gas-turbines and combustors.

Advanced Flow Diagnostics and Instrumentation

Employing a range of advanced instrumentation to examine problems in aero-thermodynamics.

Turbulence Mechanics

Advancing the understanding of turbulent heat and fluid flow processes and to develop mathematical models of turbulence suitable for reliable numerical simulation of industrial heat and fluid flow systems.

Flow Control Technology

Developing the means by which flow control capability is transitioned from laboratory demonstrations to practical flight hardware.

Research facilities

- Linux clusters for CFD
- Stationary and rotating flowrigs for heat and fluid flow through cooling passages
- Range of high quality subsonic wind tunnels with force balances and optical access
- A range of cutting edge PIV and LDA systems
- Hypersonic and transonic wind tunnels with schlieren visualisation systems
- High flow rate compressed air capability for jet exhaust nozzle research
- Combustion laboratory with burners and an industrial gas turbine combustor (1MW)
- Dedicated thermoacoustics laboratory

Relevant postgraduate study

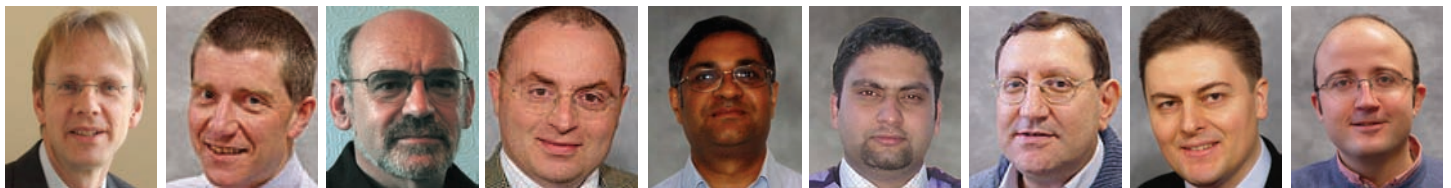
MSc Theoretical and Applied Fluid Dynamics

Producing high quality graduates with specialist training in fluid dynamics and a mixture of topics in theoretical, computational, and experimental fluid mechanics who will be suitable for employment in the aerospace industry.

Research Degrees

Postgraduate research programmes are provided on an international level and can lay claim to some of the most important discoveries in the field of engineering. The fluids academic theme is one of the fields on offer.

Academic staff



Dr W Crowther

Dr D Apsley

Mr D Cooper

Dr A Filippone

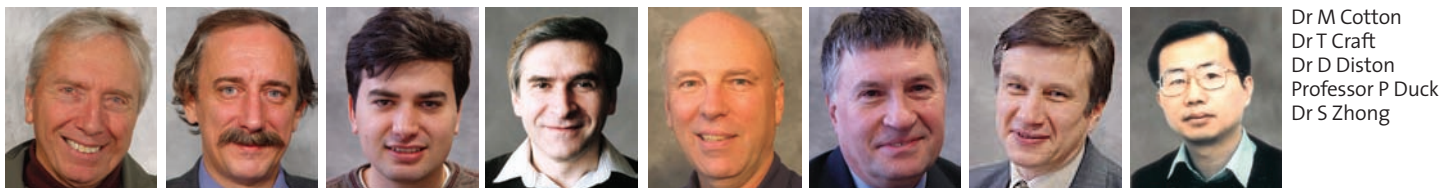
Dr J Gajjar

Dr N Hanspal

Professor H
Iacovides

Dr A Jaworski

Dr K Kontis



Professor B
Lauder

Professor D
Laurence

Dr S Rigopoulos

Professor A
Ruban

Professor P
Stansby

Professor A
Turan

Professor S
Utyuzhnikov

Dr Y Zhang

Dr M Cotton
Dr T Craft
Dr D Diston
Professor P Duck
Dr S Zhong

Contact details

Dr Bill Crowther, Fluid Dynamics and Flow Control Technology Theme Leader
fluid-dynamics@manchester.ac.uk
www.umari.manchester.ac.uk/research/areas/fluid-dynamics

The University of Manchester,
Oxford Road, Manchester M13 9PL
Royal Charter Number RC000797 J1529G 09.07
www.manchester.ac.uk/umari