Dr. Anthony Geoffrey Sheard

DSc, DPhil, PhD, MBA, BEng, CEng, FIMechE, FRAeS, FCIBSE, FASME

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Industry authority in the design, performance, and analysis of industrial fans.

Expert witness uniquely qualified through credentials, experience, and academic distinction.

Dr. Sheard is an innovative engineer with 40+ years' experience in the aerodynamic and mechanical design of rotating equipment. He has authored over 260 publications covering aerodynamic design, aero and industrial turbomachinery performance, noise control, and diagnostic methods demonstrating sustained expertise in mechanical engineering and establishing international recognition. Through leadership roles with Rolls-Royce, Fläkt Woods Group and AGS Consulting client engagements, Dr. Sheard drives innovation, ensures product reliability, and mitigates risk, helping clients succeed in complex technical and regulatory environments.

Dr. Sheard has played a transformative role in shaping the global fan industry through his leadership and advocacy. As a key figure in the European fan community, he contributed to the development of EU Regulation 327, helping unify and guide industry practices across member states. His tenure as President and later Chair of the AMCA Board of Directors furthered his impact, as he worked to align international stakeholders, influence regulatory dialogue, and elevate the role of technical standards in the air movement community. His efforts have strengthened collaboration across regions and helped position the fan industry for greater global cohesion and innovation.

Dr. Sheard holds three doctoral degrees, including the Doctor of Science (DSc) degree awarded in 2015. In awarding the DSc, the Aston University Senate recognized Dr. Sheard's distinguished, substantial, and original contributions to knowledge in adapting and applying technology originally developed in the aerospace community to the design of low-noise, high efficiency fans intended for air movement application.

Granted E11 immigrant classification in the U.S., Dr. Sheard met the requirements of the USCIS for *extraordinary ability in the sciences, arts, education, business, or athletics*. This classification is reserved for individuals who *demonstrate that they have sustained national or international acclaim with achievements recognized in the field of expertise, indicating that they have risen to the very top of their field of endeavor*.

Education

DSc | Aston University — 2015
Research Topic: Innovation in Industrial Turbomachinery

PhD | University of Northampton — 2007
Research Topic: Leadership & Team Development

MBA | Cranfield School of Management — 2000
Two-year executive program

DPhil | Oxford University — 1989
Research Topic: Gas Turbine Aerodynamic & Mechanical Performance; Rolls-Royce CASE Award

BEng | Liverpool University — 1984
National Engineering Scholar, Final year design prize

Professional Experience

AGS Consulting, LLC 2014 to present

President

AGS Consulting LLC is a leading independent engineering consultancy specializing in the air movement and control industry, with core capabilities that include:

Aerodynamic Design & System Optimization

- Designed axial, mixed-flow, and centrifugal fans from first principles, based on client specifications
- Delivered fan designs for a range of commercial HVAC and heavy-duty industrial applications, balancing aerodynamic performance with structural integrity
- Developed aerodynamic geometry, and adapted designs to meet stress and natural frequency constraints
- Produced manufacturing drawings to support client fabrication of pre-production prototypes for lab validation
- Delivered new product development projects, resulting in the creation of patentable intellectual property
- Drafted invention summaries and collaborated with patent attorneys on successful patent filings

Failure Analysis & Root Cause Investigation

- Conducted numerous failure analysis and root-cause investigations, in support of product liability claims
- Determined causes of mechanical failure, typically involving either overstress or design-induced resonance
- Identified root causes stemming from either aero-thermal performance or mechanical design flaws, including fatigue, imbalance or improper equipment selection
- Evaluated system-level performance limits to determine whether failure originated from improper use or fundamental design deficiencies
- Delivered technical findings that support assignment of liability and inform redesign or mitigation strategies

Engineering Process & Product Development

- Streamlined product design workflows using selection tools, configurators, and parametric 3D CAD systems
- Defined aero-thermal and mechanical operating limits to guide product development
- Revised engineering processes, procedures, and workflows to align with forthcoming regulatory requirements
- Led engineering process updates triggered by failure analysis findings or new regulations

Performance Testing & Certification Support

- Designed laboratories and test systems to support performance verification and regulatory compliance
- Applied a hybrid approach combining 3D CFD analysis with physical testing to reduce development costs
- Helped clients meet emerging regulatory requirements through new lab setup and test planning

Global Business & Market Access Support

- Supported non-U.S. companies in expanding operations into the U.S. market
- Guided clients through U.S. regulatory compliance processes, including third-party accreditation of domestically manufactured products
- Ensured that all products brought to market met relevant U.S. standards and performance requirements through early integration of regulatory strategy in design and testing phases

Expert Analysis & Litigation Support

- Conducted independent technical evaluations of system performance, mechanical failures, and design compliance in both commercial and industrial applications
- Provided expert analysis across two primary domains: aero-thermal performance and mechanical integrity
- Established whether failures result from improper operating practices or latent design or manufacturing defects
- Prepared expert reports for use in legal, insurance, and product liability proceedings
- Testified in federal court as well as binding arbitration hearings
- Provided expert guidance in product liability, failure analysis, and intellectual property disputes

Fläkt Woods Group 2001-2014

A world leader in air movement technology for commercial building and industrial applications with 3,700 employees in 65 countries and a €680 million turnover. Formed in 2002 through integration of the Woods Group (owned by Marconi) and the Fläkt organisation (owned by ABB).

Vice President – Fan Technology

Executive engineering oversight of all strategic, operational, and regulatory R&D and design initiatives related to rotating machinery. Shareholder of the Fläkt Woods Group and statutory director of Fläkt Woods Ltd. As a member of the senior management team, contributed to Fläkt Woods Group policy, strategic direction, financial planning, and performance.

- Led a team of 270 engineers across five countries.
- Director of the Tunnel & Metro business unit, €15 million turnover, P&L responsibility.
- Led innovation and technology acquisition initiatives in collaboration with universities and external research organizations.
  - Established and directed a University Technology Centre at Sapienza University of Rome.
  - Partnered with Cranfield University to develop and deliver advanced technology demonstrators.
- Oversaw product safety, regulatory compliance, and adherence to engineering statutes and directives.
  - Managed the company's technical risk mitigation program, ensuring alignment with industry standards and corporate objectives.
  - Presented risk mitigation strategies to insurers, reducing the organization's risk profile.
- Managed Quality Assurance processes in alignment with ISO 9000 standards and UK Ministry of Defence (MOD) accreditation requirements, integrating lessons learned from fan failures into engineering quality assurance procedures.
- Executed post-merger restructuring plans, driving a 20% improvement in operational efficiency.
- Implemented new product development process, increasing on-time delivery of new products from 30% to 90%.
- Delivered "design to cost" initiative, reducing average product costs by 15%.
- Outsourced high volume product manufacturing to India and China, reducing product cost by 30%.
- Implemented online product selection and configuration tools for key product lines.

Rolls-Royce plc

Chief of Turbomachinery Engineering 1998-2001

Responsible for the Rolls-Royce plc industrial business turbomachinery function with an annual turnover of £476m.

- Led a team of 75 engineers, managing resource allocation and subcontracting across all product development and support programs.
- Identified and implemented turbomachinery-related technology acquisition programmes with partner companies and universities to advance turbomachinery capabilities.
- Increased productivity by 30% through the design and implementation of a cross-functional, team-based organizational structure within the Turbomachinery Engineering function.

Allen Steam Turbines

Chief Engineer – Steam Turbines 1996-1998

Overall accountability for the Allen Steam Turbines engineering function, managing a team of 40 staff and overseeing a £20M business unit within Rolls-Royce plc's 200-person division.

- Served as a key member of the commercial team, with final technical authority over contract bids, securing £30M in contracts over two years.
- Developed and executed a two-year product development plan that reduced lead time by 35% (from 14 to 9 months) and lowered unit cost by 33% (from £2.4M to £1.6M).
- Led the product development team in delivering the new "power generation" product range on schedule and within budget.

Early Career: Manager, Aerospace Division, BICC Thermoheat Ltd. | General Manager, Techniche Group Ltd. | System Sales Engineer, Rotadata Ltd. | Post graduate, University of Oxford, Department of Engineering Science | Apprentice, Rolls Royce plc.

Professional Affiliations

Liveryman of the **Worshipful Company of Engineers**, 2009

Fellow of the **Chartered Institute of Building Service Engineers**, 2006

Fellow of the **American Society of Mechanical Engineers**, 2005

Fellow of the **Royal Aeronautical Society**, 2000

Fellow of the **Institution of Mechanical Engineers**, 1994

European Incorporated Engineer (EurIng), **Federation Europeene d'Associations Nationales d'Ingenieurs**, 1998

Chartered Engineer (CEng), **UK Engineering Council**, 1988

Industry Leadership

Conference Chairman, **Fan 2028**

Past Conference Chairman, **Fan 2025,** Antibes, France, 2025*,* **Fan 2022**, Senlis, France, 2022, **Fan 2018**, Darmstadt, Germany, 2018, **Fan 2015**, Lyon, France, 2015 and **Fan 2012**, Senlis, France, 2012

Member, **US Dept of Energy ASRAC Negotiated Rulemaking Working Group Commercial & Industrial Fans**, 2015

Advisory Committee Member, **International Conference on Organization and Management**, Abu Dhabi, UAE, 2015

Organizing Committee Member, **Int'l Symposium on Aerodynamic & Ventilation of Fire Tunnels**, Seattle, USA, 2015

Conference Chair, **ASME International Gas Turbine & Aeroengine Congress & Exhibition**, Montreal, Canada, 2015

Advisory Board, **Sapienza University of Rome 'Inventive Engineering' Master's Degree**, 2014-2018

Chairman, **Air Movement & Control Association Board of Directors**, 2014-2015

Founding Chairman, **ASME International Gas Turbine Institute Fans & Blowers Committee**, 2014-2016

President, **Air Movement & Control Association Board of Directors***,* 2013-2014

Member, Board of Directors, **ASME International Gas Turbine Institute Board of Directors***,* 2012-2016

Vice Chairman, **Institution of Mechanical Engineers Fluids Machinery Group**, 2012-2015

Member, **Institution of Mechanical Engineers Fluids Machinery Group**, 2010-2015

Technical Program Chair, **ASME International Gas Turbine & Aeroengine Congress & Exhibition**, Amsterdam, 2002

Chair, **ASME Int'l Gas Turbine Inst Controls, Diagnostics & Instrumentation Committee**, 2000-2002 & 2010-2012

Academic Affiliations

External Examiner, **Stellenbosch University Department of Mechanical and Mechatronic Engineering**, Stellenbosch, South Africa, 2026

Visiting Professor – Leadership & Team Development, **University Northampton**, 2008-2021

Honorary Professor, **Aston University School of Engineering & Applied Science**, 2011-2015

Visiting Professor, **Sapienza University Dipartimento di Ingegneria Meccanica e Aerospaziale**, 2011-2018

Member, **Aston Univ. School of Engineering and Applied Science Industry Advisory Board**, 2009-2018

External Examiner, **Aston University Department of Engineering & Applied Science**, Aston, Great Britan, 2011

External Examiner, **Cranfield School of Engineering**, Cranfield, Great Britan, 2002-2004

Invited Lectures

The NIAGARA Group, Tunnel Ventilation Seminar, Manila, Philippines, 14 March 2025

The INCE Foundation, hosted by the National Academy of Engineering (NAE), Engineering a Quieter America: Progress on Consumer and Industrial Product Noise Reduction Workshop, 'Large Industrial Air Movement Devices,' Washington DC, USA, 6-7 October 2015

The Institute of Fire Engineers, Latest Trend for Tunnel Ventilation Installations & Equipment, Hong Kong Branch, 22 November 2010

Aston University, Department of Engineering and Applied Science, 2008

Sapienza University of Rome, Dipartimento di Ingegneria Meccanica e Aerospaziale, 2007 & 2011

Cranfield University School of Management, 2004 & 2005

Journal Roles

Associate Editor, **Journal of Power and Energy**, 2016-Present

Editor-in-Chief, **Journal of Management Development**, 2013-2018

Member, **Journal of Power and Energy Editorial Board**, 2012-2016

Member, **Leadership & Organisational Development Journal Editorial Review Board**, 2010-Present

Associate Editor – Gas Turbines, **Journal of Turbomachinery**, 2013-2015

Associate Editor – Gas Turbines, **Journal of Engineering for Gas Turbines & Power**, 2013-2014

Member, **Journal of Management Development Editorial Advisory Board**, 2006-2013

Professional Recognition & Esteem

- ASME Turbo Expo Fans & Blowers Technical Committee Best Paper Award, 2017
- ASME International Gas Turbine Institute Fan & Blowers Technical Committee Outstanding Service Award, 2017
- IMechE Donald Julius Groen Prize for best paper given at an IMechE event or published in an IMechE journal, 2013
- ASME International Gas Turbine Institute Controls & Diagnostics Committee Outstanding Service Award, 2004
- Journal of Management Development most downloaded article of 2004 and most downloaded monograph of all time
- 41st ASME Turbo Expo Controls, Diagnostics & Instrumentation Best Paper Award, 1997
- 37th ISA International Instrumentation Symposium Best Paper Award, 1992

Publications

Over 268 publications, including 10 books, two monographs, and 71 journal articles and patents in nine research streams, including:

- Passive noise control in commercial and industrial fans
- Stall detection and control in commercial and industrial fans
- The application of computational methods in commercial and industrial fan design

Complete publication list available upon request.