

Professional CV

ANTONY M. HURST

Key Qualifications:

B.Eng, 1st Class Honours, Mechanical Engineering, Four Year Course, Imperial College, University of London, 1983. C.Eng, F.I.Mech.E., A.C.G.I.
Graduate of Goldman Sachs 10,000 Small Businesses Programme, Said Business School, Oxford University, 2019

Key experience:

Structural and seismic stress analysis of engineering components & structures, including material non-linearity, contact and cracked body analysis. Design code assessments of vessels and piping. Low and high temperature fracture mechanics. Creep rupture and fatigue damage. Seismic and dynamics analysis. Irradiation-induced creep analysis of core components. Technical audit/peer review.

Suitably Qualified Experienced Personnel (SQEP) Qualifications are:

- Role code 0: Classic Strength of materials
- Role code 1: Design code & piping assessments
- Role code 2: Design codes
- Role code 3: Stress/fracture Finite Element Analysis (complex)
- Role code 4: Pipework analysis
- Role code 5: Fracture assessment, R6
- Role code 6: Creep-fatigue crack growth assessment, R5 Volumes 4, 5 & 7
- Role code 10: Seismic analysis
- Role code 11: Dynamic analysis
- Role code 14: Pipework Support Survey
- Role code 15: Creep rupture and R5 Volume 6 assessments

Technical Director & Managing Director
Engineering Analysis Services Limited

April 1998 – Present

Consultant to Rolls-Royce Power Engineering. Providing references for the independent expert working group formed by ONR to review the use of the French fracture code RSE-M in a safety case for a UK nuclear power station.

Consultant to Nuclear Directorate of Health & Safety Executive. Assessment of structural integrity of the proposed European PWR and Westinghouse AP1000 PWR nuclear island designs as part of the (step 4) generic design assessment.

Consultant to EDF Energy Nuclear Generation. Manager responsible for a team providing stress analysis, fracture assessment and safety case production in support of the UK nuclear power programme. Piping analysis to PSA5, CAESAR II and ADLPipe. Simple and complex finite element heat transfer, stress and impact analysis using ABAQUS. Impact analysis using R3. Fracture assessment to R6 and creep-fatigue crack growth assessments to R5. Design code assessments to ASME III, BS5950. Led the analysis and assessment of the hot box dome for the “hot spots” safety case. Led the design, analysis and assessment of external steel restraints fitted to Hartlepool and Heysham 1 boiler closure units. SQEP advisor to project for fitting filtered containment venting system to Sizewell B. Contributed to fleet critical programmes for independent review of the initiation and growth of brick keyway root cracking, leading to multiply cracked brick, including critical appraisal of the various modelling methods, and identified areas for improvement. Consultant to B G Technology, Advantica, Transco, J Murphy & Sons. Fracture assessment of piping components for the uprating of the National Gas Transmission System on behalf of B G Transco. Independent assessment of seismic design of 110km long sub-sea pipeline off Trinidad. Supervision and management of professional staff and contractors.

Consultant to NNC. Independent technical assessment of reports produced in support of the 2005 Faslane Shiplift Safety Case and the Astute Class Safety Case.

Supervision and management of professional staff and contractors.

Instrumental in achieving third party accreditation (LRQA) of company quality management system to BS EN

ISO 9001:2015.

Stress Consultant

January 1994 – March 1998

On contract to Rolls Royce & Associates, Derby

Stress analysis of steam raising plant for UK nuclear submarines. Stress, heat transfer, fatigue, fracture, creep and irradiation swelling analysis of in-core components, vessels and valves. Analysis using ABAQUS and ANSYS programs. Developing FORTRAN programs to model material behaviour. Research into effects of crack tip constraint on failure prediction of defected structures and weld residual stress modelling. Supervision and training of junior and other senior staff. Promoted from Senior Stress Engineer in April 1997.

Principal Stress Engineer

April 1993 - July 1994 (part time)

On contract to Mowlem Engineering, Bromborough

In charge of stress analysis section. Set up procedures and working plans. Supervision and training of staff. Stress analysis of piping and steel structures for power and chemical plant using CAESAR II piping program.

Senior Stress Engineer

May 1992 to April 1993

On contract to Rolls Royce & Associates, Derby

Stress analysis of steam raising plant for UK nuclear submarines. Stress, heat transfer, fatigue and fracture analysis of valves, pressure vessels, specialising in 3D structures and bolted joints. Analysis using ABAQUS, ANSYS, ASAS, BERSAFE, PATRAN and DYNA programs. Assessment to ASME III.

Pipe Stress Analyst

October 1991 - May 1992

On contract to OSC Process Engineering, Stockport.

Stress analysis of chemical plant piping using the CAESAR II piping program and assessment to ANSI/ASME B31.3. Assessment of attached plant and equipment to various codes eg. WRC107, BS5500, API and TEMA.

Stress Engineer and Company Director

April 1991 - present (part time)

Stress Engineering, Warrington

Providing consultancy services in finite element stress analysis to various client companies in the nuclear, automotive and aerospace sectors. Analysis using ANSYS-PC. Extensive experience of stress analysis of bellows and seismic assessment.

Stress Engineer

April 1989 - March 1991

On contract to Nuclear Electric plc, Wythenshawe

Working in the stress analysis unit providing specialist technical support and advice to the generating stations in the north of England and Wales. Stress analysis and fracture mechanics assessments of nuclear power station components, pressure vessels, turbines, steam piping, gas ducting and circulator pumps. Formulation of quality system for the unit. Verification and validation of analyses produced in-house. Limited amount of supervision and advice given to junior members of the unit. Analysis using BERSAFE, PATRAN, ABAQUS and ADLPIPE programs. Types of analyses covered include elastic, elastic-plastic, fatigue, non-linear creep and fracture mechanics. Also experience of CEGB in-house assessment programs for stress intensity factor evaluation, defect assessment, crack leakage flow calculation etc. Experience of BS5500, ASME III, BS806, ANSI B31.1 & B31.3, BS1113 codes of practice and CEGB in-house codes R5 and R6.

Stress Engineer

April 1988 - April 1989

On contract to BNFL, Risley

Working in department providing specialist finite element stress analysis services to other departments in the company. Stress analysis of co-axial pipelines and piping components. Seismic stress, thermal and fatigue analysis of vessels. Assessment to ASME III, BS5950 and BS5500. Experience of ANSYS and I-DEAS

programs.

Engineer/Analyst

June 1985 - March 1988

W S Atkins Engineering Sciences, Warrington

Providing consultancy services in the analysis of engineering components and structures, mainly stress analysis, but also some structural dynamics, fluid mechanics and hydraulics. Stress analyses using hand calculation methods and the finite element method. Stress, heat transfer, thermal, seismic, modal and fatigue analyses of various mechanical components for nuclear, aerospace, automotive industry clients. Analysis using ANSYS, ASAS, FEMVIEW, FEMGEN, PATRAN, I-DEAS and PSA5 programs. Assessment to ASME III, ASME VIII, BS5500, BS449 and BS5950.

Contract Engineer

Nov 1984 - May 1985

Ames Crosta Babcock, Heywood

Supervising engineering and purchasing; and writing sub-contract specifications for a £5 million sewage treatment works project in Doha, Qatar. Experience of manpower and financial management.

Site Planning Engineer

Oct 1983 - Nov 1984

Ames Crosta Babcock, Jeddah, Saudi Arabia

Broad experience in site construction and management. Planning construction programmes for £22 million water treatment plant. Partly responsible for materials control: supervision of shipment and clearance through customs of tools and equipment; management of the storage and distribution of materials on site; and local purchase of small items and shipped shortages. Some first-hand experience of mechanical and electrical equipment installation. Main construction works completed on-time in September 1984.

Professional Training

Sept 1978 - Oct 1983

Ames Crosta Babcock, Heywood, Lancs.

Completed the professional training requirements for corporate membership of the Institution of Mechanical Engineers in 1983.