Richard Smith

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Profile

Experienced writer of Engineering Analysis Software with a wide range of mathematical, engineering, computational and software projects skills.

Expertise

- Computational Fluid Dynamics, Thermal Analysis and Stress Analysis
- Finite Element code development and maintenance
- FEAT Training and User Support
- FEAT CL modelling of physical systems

Professional Career

Research Officer, CEGB/Nuclear Electric, Berkeley Nuclear Labs, 1974 - 1995.

Senior Engineer, British Energy Generation Ltd, Gloucester, 1995 - 2000.

Joint Owner and Director of FeatPlus Ltd., 2000 – present

Selected Publications

1. Smith, R.M., 1975, "A Study of Laminar Flow Entrance Sections using the Finite Element Method", CEGB Report RD/B/N3513.
2. Smith, R.M., 1979, "Finite Element Solutions of the Energy Equation at high Peclet Number", Computers and Fluids, **8**, pp 335-350, also CEGB Report RD/B/N4502.
3. A G Hutton and R M Smith, 1979, "The Prediction of Laminar Flow over a Downstream-Facing Step by the Finite Element Method", CEGB Report RD/B/N3660
4. Freeman, R. and Smith, R. M., 1980, "Thermal Diffusivity Measurements of Recirculating Flow to Validate Model Tests for Liquid Metal Reactors", Proceedings of the ANS/ASME/NRC International Topical Meeting on Nuclear Reactor Thermal Hydraulics (Saratoga Springs, New York, Oct. 5-8 1980), NUREG/CP-0014, **3**, pp.1818-1835.
5. A G Hutton and R M Smith, 1981, "On the Finite Element Simulation of Incompressible Turbulent Flow in General Two-Dimensional Geometries", CEGB Report RD/B/5010/N81.
6. R M Smith and A G Hutton, 1982, "The Numerical Treatment of Advection- A Performance Comparison of Current Methods", CEGB Report TPRD/B/0001/N82.
7. Smith, R.M., 1984, "On the Finite Element Calculation of Turbulent Flow using the k-e model", Int. J. Num. Meth. Fluids, **4**, pp 303-319, also CEGB Report TPRD/B/0161/N82
8. Smith, R.M., 1984b, "A Practical Method of Two-Equation Turbulence Modelling using Finite

Elements", Int. J. Num. Meth. Fluids, **4**, pp 321-336.

9. R M Smith, 1985, "Finite Element Predictions of Turbulent Flow in a Driven Cavity using the FEATT code", CEGB Report TPRD/B/0590/N85

10. R M Smith, 1985, "A Finite Element Calculation of Turbulent Flow in the Primary Superheater of a Hinkley Point B AGR Boiler", CEGB Report TPRD/B/0588/N85

11. R M Smith, 1985, "A Prediction of Liquid Metal Flow in a Coreless Induction Furnace by the Finite Element Method", CEGB Report TPRD/B/0589/N85

12. Jones, P., Morss, A. G. and Smith, R. M., 1986, "The Development of a Transport Equation for Turbulent Temperature Fluctuations: A Comparison of Experimental Measurements and Code Calculations", IAHR (Fluid Mechanics in Energy Production Section) 5th International Specialists Meeting on Liquid Metals Thermal-Hydraulics, Grenoble, June 1986.

13. R M Smith, 1986, "FEAT Example Guide 1: Turbulent Flow through a Sudden Pipe-Expansion with Heat Transfer to a Constant Temperature Wall", CEGB Report TPRD/B/0849/P86, CISD/CC/P809

14. A G Hutton, R M Smith and S Hickmott, 1987, "The Computation of Turbulent Flows of Industrial Complexity by the Finite Elements Method - Progress and Prospects", Int.J.Num.Meth.Fluids, **7**, pp 1277-1298.

15. R M Smith, 1993, "A FEAT Calculation of the Mass Flows into a Safety Relief Valve in Hinkley Point B AGR", Nuclear Electric Report TIGA/MEM/0024/93.

16. R M Smith, 1993, "Gas Flows in the Chapelcross Steel Irradiation Experiment", Nuclear Electric Report TD/SID/MEM/0152/93

17. M J Rabbitt and R M Smith, 1994, "Calculations of the Performance of the Sizewell B Emergency Boration System for Normal and Coastdown Conditions", Nuclear Electric Report TEM/REP/0060/94.

18. S Hickmott and R M Smith, 2003 "Development of FEAT for Jet-Pipe Thermofluid Analysis - Part 1 Compressible Flow and Radiation Model Requirements", FeatPlus Limited Report FP/CR/0009/02 issue 2.

19. S Hickmott and R M Smith, 2003 "Development of FEAT for Jet-Pipe Thermofluid Analysis - Part 2. Turbulence Modelling and Verification Examples", FeatPlus Limited Report FP/CR/0010/03 issue 2.

20. R M Smith, 2006, "PGA FEAT-COILU: Modernisation and Cracked-Mesh Facilities", 141 pages, FeatPlus Limited Report FP/CR/0023/06.

21. R M Smith, 2010, "FEAT-PGA: User Guide and Software Design", 125 pages, FeatPlus Limited Report FP/CR/0025/10.

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24. Hickmott, S. and Smith, R.M., 2023, "FEAT User Guide", Versions 3.1.0 - 3.25.0, 987 pages, FeatPlus Limited, Bristol, 2000 – 2023.

25. Smith, R.M. and Hickmott, S., 2023, "FEAT Course Notes", Versions 3.1.0 - 3.25.0, 738 pages. FeatPlus Limited, Bristol, 2000 – 2023.

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27. Smith, R.M., 2022, "FEAT-WMT: Weld-Modelling Tool User Guide Version 3.24.0", 284 pages, FeatPlus Limited, Bristol, 2022.

28. S Hickmott, R M Smith, M J Rabbitt, M Probyn-Skoufa, R Patel and S Pullin, 2022, "FEAT-GRAPHITE: Graphite Weight Loss and Stress Prediction, Theory Manual and User Guide", 364 pages, FeatPlus Ltd Report FP/CR/0030/22.

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