

Dr. Katherine Louise Critchley

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Skills and Expertise

Current training - Catia V5 Airbus Functions, Catia V5 Airbus Methods, Catia V5 Systems Admin, Primes 2 Designer, Primes 3 Designer, Primes 3, Level 4 Vaulting. CPDA Aerospace Manufacturing and Assembly, Aerospace Composites Design.

Computer Literate. Masters in Computer Aided Engineering numerous CAE packages including ANSYS, Peps, CATIA V5, Primes, I-Deas, AutoCAD and Euclid, across multiple platforms (Windows / UNIX / MacOS X) and knowledge of several programming languages. A competent user of MS Office and various mail packages.

PhD in Mechanical Engineering. The project was to analyse the draw bending process as applied to small diameter thin walled tubes, and produce a structured scientific basis for the calculation of spring back and elongation in order to enable the production of right first time components. The project was in collaboration with BWL Components Engineering Limited.

Background in engineering design and design principles. I have taught engineering design and design principles at both degree and post graduate level. I have a good knowledge of manufacturing principle having completed the EITB Basic training certificate as part of technician training.

Employment History

Current – 2005

Atkins Aerospace

Engineer

Design, Primes 2 / 3, Catia V5 (Airbus)

Configuration Controller for both A350 Trailing edge and A400M Fuel pump fairing work packages. Responsibility for the delivery of the work package to the client. Chairing the weekly Digital Mock-up (DMU) review to ensure that within the Atkins environment the design is to the correct standard and clash free. Upon sign off at the DMU review, ensuring delivery of that work package, in order to update the clients PDM and ensure good concurrent engineering practices. Ensuring that the work package is linked correctly within the clients PDM and that the clients DMU reflects the delivered standard. Responsibility for the bill of materials (BOM) and ensuring that the Catia models reflect the current BOM.

Catia V5 Design: 2D: A400M leading edge assembly design. Responsible for producing assembly drawings for the A400M leading edge. Representing the Atkins team at Airbus DMU reviews. Producing drilling path models (point vectors for the machine tool) and drawings.

3D: being the responsible engineer for the forward fairing and fork fitting on the A380 smoke generator work package. Working with Atkins stress team in order to ensure the components are fit for purpose.

Design Quality: Producing Design related and IT related quality procedures.

I am responsible for workflow procedures for design related work. This currently uses the UNIX file permissions in order to ensure the design team have confidence in the parts they are working on by controlling permissions. This is in until a commercial PDM is deployed. I have supported audits representing Design Quality in order to retain accreditation for Atkins.

2nd Year

EITB Technician Training

Based within several companies in Coventry: Alvis (Design), Blundells Ltd. (Design), and Motor Panels (Coventry) Ltd. (Systems – Computer Aided Engineering) with main interests being in Design and Computer Aided Engineering.

Education

1993 – 2002

Coventry University

Ph.D.

Structural Design and Computer Aided Engineering

Working within the University's Centre for Integrated Design: researching structural analysis software for the draw bending of small diameter thin walled tubes. Analysing the material behaviour of tubes during the draw bending process to enable right first time components through the prediction of spring back (ANSYS FEA – linear static) and axial elongation (dedicated program).

1991 – 1992

Coventry University

M.Sc.

Computer Aided Engineering.

M.Sc. Project: Structural Analysis of a left-hand gear box mount.

The left-hand mount had failed during testing when the company had tried to change the design from cast iron to cast aluminium. The project was to establish the failure mode, this was achieved through a structural strength analysis of the aluminium part, using finite element analysis (I-Deas) and using the lab reports ordered after the failure. The failure mode was established as shrinkage porosity, which had been present in the aluminium casting.

1988 – 1991

Coventry University

B.Eng. (Hons)

Engineering 2:2

Final Year Project: Secondary Stresses and Ratchetting Strains in Thin Walled Tubes. A long running project within the mechanical division of the school of engineering has been to analyse the problem as established in Hill "The Mathematical Theory of Plasticity" of secondary stresses and ratchetting strains in thin walled tubes. The project was to assist the researcher by producing ANSYS Non-linear FEA models to cyclically load thin walled tubes under internal pressure.

1984 – 1987

Coventry Technical College

BTEC National Certificate Engineering.

Membership of Institutions

Associate Member of the Institute of Mechanical Engineers.

Publications

"An analysis of springback in the draw bending of small diameter thin walled tubes" presented at SheMet 1995

"Process Analysis Software for the prediction of elongation with respect to the Draw Bending of Small Diameter Thin Walled tubing." accepted for Journal of Materials Processing Technology, [Volume 167, Issue 1](#), 25 August 2005, Pages 41-46