

# Training

## Introduction to Composites for Engineering Staff

3<sup>rd</sup> November 2010, Chesterfield, UK

This course is specifically aimed at designers and engineers who require a working knowledge of composite materials, their properties and relevant processes. Once covered, you will learn how to translate this new knowledge into appropriate designs.

Designing with composites is more complex than many other materials however, the extra opportunities that can be exploited once the process is understood are well worthwhile.

This course removes much of the mystery surrounding composite materials to allow practical and economic designs to be achieved.



### Topics Covered

- Principles of Composites
- Materials
  - Glass, Aramid, Carbon
  - Comparison of the various fibre types
    - What's available in the designers armoury
  - Resins
    - What are available?
    - What are the pertinent properties for the engineer?
- Processes
  - Underlying principles,
  - Process Descriptions,
- Properties
  - Mechanical
    - Strength, Stiffness, Fatigue, Creep, Impact
  - Physical
    - Fire, Thermal Expansion
  - Environmental
    - Temperature effects, Corrosion Resistance, Moisture effects
- Property prediction
  - Glass content / Resin to Glass ratio, thickness calculations
  - Rule of Mixtures, Young's Modulus, Strength, Expansion coefficient, Poisson's ratio, Density
  - Off-axis E, off-axis strength
  - Unit strength, unit modulus
- Cost and performance
  - Material costing, Process costs, Cost comparisons with competitive materials.

### Other NetComposites Courses and Workshops

- Introduction to Composites for Engineering Staff
- Introduction to Composites Manufacture
- Reach for Composites
- Repair of Composite Materials
- Non Destructive Testing Techniques
- Reducing your Carbon Footprint

## Training Continued...

- Design Codes
  - BS4994
    - General approach
    - Design factors
    - Relevance to design in general
  - Eurocomp
    - Background & use
    - Design factors
- Case study
  - Vertical cylindrical tank

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### About the Tutor

Jim Quinn (CEng, MIET) was a Royal Academy of Engineering visiting professor. He has worked in the composites industry for 40 years and has held various roles concerned with engineering design, production and testing of structures and components in composite materials. In 1991 he set up a private practice as a Consulting Engineer in the field of composite materials, specialising in design, analysis and manufacturing of composites. He has also acted in an expert witness capacity on many occasions and has produced various papers and publications including "Composites – Design Manual" which is available to purchase on [www.netcomposites.com](http://www.netcomposites.com).

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### Fees & Registration

The course costs £225 (ex. VAT) per delegate to attend. This includes a full days tutoring and course notes as well as lunch and refreshment breaks.

To register please download a form from the Industry Calendar at [www.netcomposites.com](http://www.netcomposites.com) or request one from [info@netcomposites.com](mailto:info@netcomposites.com).

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### Enquiries

Please direct all enquiries about the NetComposites courses to Claire Whysall using the contact details to the right.



### NetComposites Ltd

NetComposites has a history of supporting training within the composites industry, which along with a successful programme of established events has contributed to the formulation of the training course programme.

All courses will take place at NetComposites' new premises in Chesterfield, UK.

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