

Seminars For Engineers Presents in association with BTG Composites LLC:
Composite Materials Failure Analysis & Repair
A Two Day Technical Seminar

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About the Seminar:

This two day seminar was developed to educate engineers and other technical personnel in the advanced composites topics associated with composite materials design, failure analysis and repair technologies. Background theory and design / failure / analysis scenarios are supported through examples, case studies and practical do's and don'ts associated with real world composites applications. Micromechanics, laminated plate theory (LPT), strength prediction and failure theories, finite element analysis (FEA) approaches, joint design methodology, tooling and dimensional control interactions, damage and repair methodology and numerous references are the focal points of this workshop.

Who Should Attend:

This seminar is beneficial for aerospace, military, commercial, materials, energy, transportation and other industrial engineers who are involved in advanced composites design, analysis and repair activities as well as those involved in any materials selection and characterization, composites manufacturing, product optimization, and testing and inspection certification (NDT, NDI, QA). Although an advanced engineering background is not required, a general understanding of composite materials would be helpful. The instructor has educated over 2,000 engineers in these technology areas.

Benefits of attending:

- Gain a better understanding of differences between metal and composite materials
- Understand the basic building blocks associated with Micromechanics and their limits
- Learn how Laminated Plate Theory (LPT) is used for composites analysis
- Understand how different material forms are modeled
- Know why there are "special laminates" and what to avoid
- Learn about various failure theories and where they have limits
- Gain a better understanding of where PC codes and FEA analysis are used
- Find out what types of joints exist and how they are designed
- Learn about composite damage and find out what repair technology can / cannot do
- Work through examples and case studies of composite designs

Course concepts:

- Composites vs. metals differences that affect analysis
- Micromechanics -- uses and limitations
- Laminated Plate Theory (LPT) -- the basis for starting analysis
- Failure theories for composites
- General practices for designing with composites
- Finite Element Analysis (FEA) -- the necessity for 'real' structures
- Joint design approaches for bolted and bonded configurations
- Tooling, processing interactions with composites
- Composites "damage" types
- Repair methodology for damaged composites
- Several examples of design/analysis applications