Non-Crimp Fabric Composites. Woodhead Publishing Series in Composites Science and Engineering

Description: Non-crimp fabric (NCF) composites are reinforced with mats of straight (non-crimped) fibres, giving them such advantages as strength, ease of handling and low manufacturing costs. Non-crimp fabric composites provide a comprehensive review of the use of NCF composites, their manufacture and applications in engineering.

Part one covers the manufacture of non-crimp fabrics, including also topics such as structural stitching and automated defect analysis. Part two goes on to discuss the manufacture of non-crimp fabric composites, with chapters covering such topics as deformability and permeability of NCF. Part three focuses on the properties of NCF composites, with chapters on stiffness and strength, damage progression and fatigue. Finally, part four covers the applications of NCF composites, including chapters on the aerospace and automotive industries as well as wind turbines and helicopter applications. The book concludes with a discussion of cost analysis of NCF composites in engineering applications.

With its distinguished editor and international team of expert contributors, Non-crimp fabric composites is an essential reference for composite manufacturers and structural and mechanical engineers in industries using NCF composites, as well as academics with a research interest in the field.

- Provides a comprehensive review of the use of NCF composites, their manufacture and applications in engineering
- Reviews the manufacture of non-crimp fabrics, including also topics such as structural stitching and automated defect analysis
- Examines the properties of NCF composites considering stiffness and strength, damage progression and fatigue

Contents:

Part 1 Manufacturing of non-crimp fabrics: Production of non-crimp fabrics for composites
  - Standardisation of production technologies for non-crimp fabric composites
  - Structural stitching of non-crimp fabric preforms for composites
  - Understanding and modelling the effect of stitching on the geometry of non-crimp fabrics
  - Automated analysis of defects in fibre placement in non-crimp fabrics for composites.
Part 2 Manufacturing of non-crimp fabric composites: Deformability of textile performs in the manufacture of non-crimp fabric composites
  - Modelling the deformability of biaxial non-crimp fabric composites
  - Permeability of non-crimp fabric preforms
  - Understanding variability in the permeability of non-crimp fabric composite reinforcements
Part 3 Properties of non-crimp fabric composites: Mechanical properties of non-crimp fabric (NCF) based composites: Stiffness and strength
  - Damage progression in non-crimp fabric composites
  - Fatigue in non-crimp fabric composites
  - Mechanical properties of structurally stitched non-crimp fabric composites
  - Predicting the effect of stitching on the mechanical properties and damage of non-crimp fabric composites: Finite element analysis
Part 4 Applications of non-crimp fabric composites: Aerospace applications of non-crimp fabric composites
  - Modelling drape, stress and impact behaviour of non-crimp fabric composites

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