Advances in Aircraft Structures

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IIUM Press

Published by:
IIUM Press
International Islamic University Malaysia

First Edition, 2011

Perpustakaan Negara Malaysia Cataloguing-in-Publication Data

ISBN: 978- 967-418-148-2

Member of Majlis Penerbitan Ilmiah Malaysia – MAPIM
(Malaysian Scholarly Publishing Council)

Printed by :
IIUM PRINTING SDN. BHD.
No. 1, Jalan Industri Batu Caves 1/3
Taman Perindustrian Batu Caves
Batu Caves Centre Point
68100 Batu Caves
Selangor Darul Ehsan

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Simulation Study of Composite Structure Subjected to 3 Point Bending Load

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Abstract

Advanced vehicles use composite materials to improve their performance. Local composite structures, especially those made of carbon fibers, are more brittle than metal structures, and absorb less energy before being fully collapsed. Knowledge of the strength helps to exploit the potential of composite materials and produce vehicle designs that take the collisions into account. Due to high stiffness and strength, composite structures of different orientation are used increasingly not only in aerospace applications, but other area as well, like automotive and building construction.

In this chapter, the Finite element analysis (FEA) of 3 Bending Point is performed using the FE code SAMCEF. The FEA results are in good agreement with the experimental results.

Keywords: *composite, carbon fiber, 3 points bending, indentation, glass fiber, FEA simulation.*

1. Introduction

Typically, this chapter consists of proposing finite element analysis model and validating the model with test results. The experimental parts are three bending point using cylindrical and spherical indenters. The cylindrical bending test is done with two different sizes of indenters. These tests are concerns with the small