Advances in Aircraft Structures

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CONTENTS

Structural Instability

Structure Analytical Methods

Chapter 5
Propeller Blade Stress Analysis Using CATIA

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Abstract

A procedure for modeling and stress analysis of a propeller blade using CATIA software have been detailed. The blade has been modeled with its twist angle and the results for different material have been presented graphically.
Keywords: *Propeller, design, stress, modeling, CATIA.*

1. Introduction

In the design of propeller one of the major steps is the stress analysis of the propeller. In this work a procedure has been detailed on the stress analysis of blades using CATIA software.

In the design of the propeller the first step is to select an airfoil for the blade that would give the best performance to the propeller and aircraft. Here Clark-Y type is chosen for our airfoil. As a next step, point generations of Clark-Y airfoils using "profili 2.24 software" was made, then the generated point was exported to Microsoft Excel which was later imported to CATIA VR18 software where those points were plotted to get the shape of the desired airfoil. Then connect those points with lines to get the shape of the blade.

As the propeller selected measured 2 meter in diameter, we can set one side of blade as having 1 meter in length and later on we can just mirror the image of blade 1 to the other side to get the two-bladed propeller. As a next step divide the