

DYNAMIC LOAD ANALYSIS OF C295 AND CN235 AIRCRAFT

INTRODUCTION

The C295 is a twin engine tactical military aircraft for military transport, maritime patrol and submarine warfare.

Different variants have been developed of the Basic C295 since it was introduced in 2001.

ICEMM has worked in all variants since 2007 in the area of Structural Dynamic & Aeroelasticity defining the dynamic loads of the aircraft in the preliminary design phase and the certification phase.

COMPLETED PROJECTS

Client: EADS-CASA & AIRBUS MILITARY

Date: 2007 a 2011

- C295 - CH02 with underwing Torpedoes
- C295 - PG02 with underwing Spotlight
- C295 - CH01 & CH02 with underwing Torpedoes (Fatigue)
- C295 - PG02 with underwing Spotlight (Fatigue)
- C295 - PG01 with underwing Pods
- C295 - PG01 with underwing Pods (Preliminary Loads)
- CN235 - FR04 (with a flight deck armour)

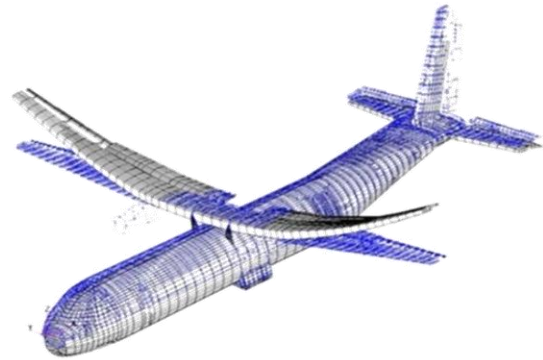


Figure 1 Dynamic FE Model

COMPLETED ACTIVITIES

- Dynamic Finite Element Modelization
- Definition of Mass State
- Modal analysis and identification of normal modes
- Dynamic Landing
- Discrete Gust and PSD (turbulence)
- Taxi
- Torpedoes and payload Release
- Failure load cases: Blade Loss
- Documentation

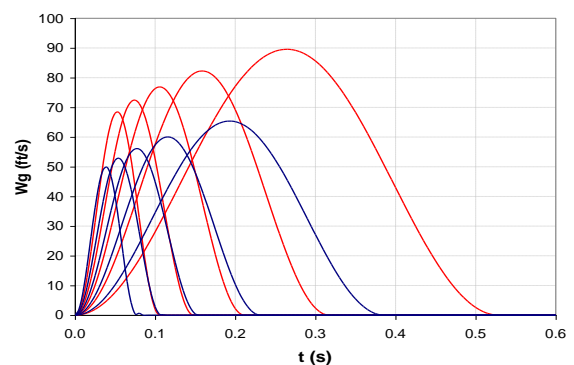


Figure 2 Discrete Gust Loads

TECHNOLOGY

All analyses have been performed using the Finite Element Method with the assistance of the MSC.NASTRAN software and in-house EADS-CASA software for post-processing of loads:

- Normal modal analysis
- Dynamic Transient analysis
- Random analysis
- Aeroelasticity

The pre-processing, optimization and automation of the dynamic load loop has been performed by means of Unix Shell and Python Scripts.