

CASE STUDY

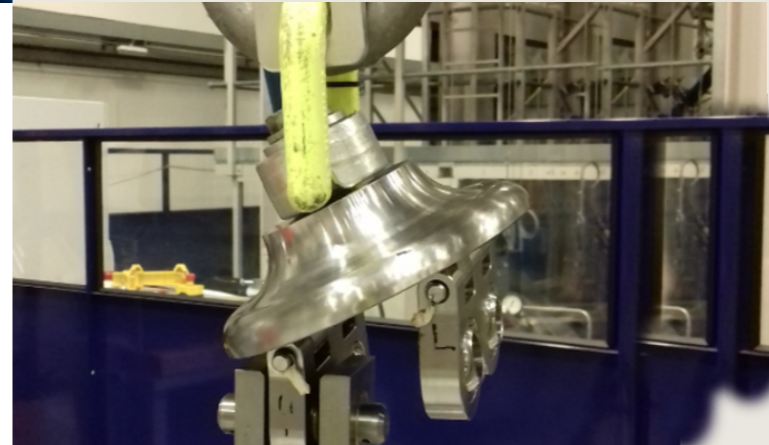
AIRBUS H135 Human External Cargo Load Carrying System



Static Strength Substantiation

The load carrying system mostly utilises Commercial Off-The-Shelf (COTS) industrial lifting components delivered with Certificates of Conformity and guaranteed minimum strength.

For the critical AIRBUS designed Main Swivel Unit (shown below), providing a single load path between the main lifting rope and x4 insulating rods, a static ultimate test was performed at AIRBUS Filton.



Fatigue Evaluation

For metallic COTS parts, EN specification cyclic load requirements were compared with LIMIT loads experienced by the load carrying system to establish adequate fatigue life.

For AIRBUS-designed metallic parts, a loading spectrum was developed, and a safe life was determined for each critical feature by referencing material S~N data and applying an appropriate scatter factor.

It was agreed with EASA that fatigue tests need to be performed to substantiate the fatigue life of all critical non-metallic load-carrying components. Fatigue tests of the main rope and insulating rods were also performed by AIRBUS Filton.

Task Objectives

AFD Systems was engaged by AIRBUS to provide expertise and guidance to support the structural certification of a family of Human External Cargo (HEC) Baskets and the associated Load Carrying System.

The load carrying components sit between the helicopter main lifting dual hook and the basket.

The equipment includes six different baskets, all designed for the transportation of human operators to powerlines for repair and maintenance operations across France and Spain using a H135 helicopter.

Human External Cargo

EASA imposes specially written regulations for carrying human cargo beneath helicopters: CS 27.865 – External Loads, paragraph (c).

These regulations require compliance to a more stringent set of static strength requirements and also require a fatigue evaluation per CS 27.571.



“We engaged AFD on the Human External Cargo (HEC) programme at a critical point when EASA had just begun to scrutinise our first of many STC applications for the Load Carrying System / Basket Type 1.

At this time AHUK faced several technical challenges and simply put, AFD offered quick and effective support; working as a team with us to resolve some challenging technical problems, enabling confidence to be built between AHUK and EASA at panel level, and ultimately leading to a successful STC application.”

Gordon Bailey | Chief Designer

Contact the specialist team at AFD Systems to discuss your next complex engineering challenge
03330 150 563



Visit our website

