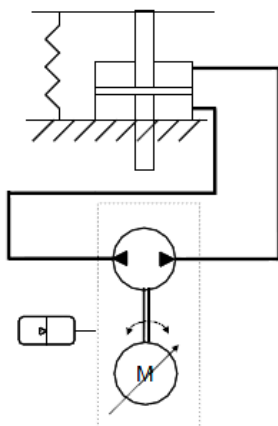
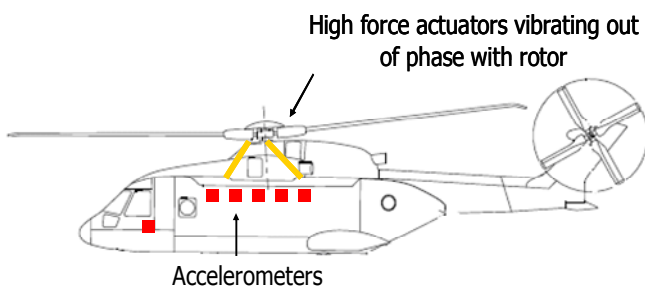


Research Project

VIBRATION ISOLATION FOR ROTORCRAFT USING ELECTRICAL ACTUATION



Objective

The VIREA project is focused on the investigation and testing of a next generation vibration suppression system for use in rotorcraft. Actuators are to be mounted in the struts between the rotor and the fuselage of a ten tonne helicopter to suppress vibration at the blade passing frequency.

Hydraulically actuated struts have been used in the past. An electrically powered system is to be investigated as this would remove the need to connect hydraulic hoses to the struts, be potentially more efficient and lower maintenance, and be suitable for all-electric helicopters. In order to be a competitive system the electrical actuator must be as weight efficient as current passive inertial mass type strut systems, and produce dynamic forces equivalent to hydraulically actuated systems.

Progress

Two electrically powered actuation concepts, a hydraulic piezoelectric motion accumulation device, and a hybrid active-passive electrohydrostatic actuator (EHA), were examined. A proof of concept demonstrator of EHA device was built. Test results quantified the passive isolation effect, and showed that active control could provide further isolation at the required frequency (15-20Hz).

The project is a collaboration with AgustaWestland Ltd. and is supported by Great Western Research

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