# Noise and vibration control of COTS electronic equipment

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## Introduction

There exists a growing demand for the use of Commercial Of The Shelf (COTS) electronic equipment in military applications. The GARTEUR Action Group 23 focuses on the use of COTS electronic equipment in the wing pod of a fighter aircraft.


*Figure 1 : Fighter aircraft with wing pod*

The problem is that COTS equipment is not certified for the noise and vibration levels to which they are exposed during operation.

## Objective

This research aims to reduce the noise and vibration levels in such a way that COTS electronic equipment can be used in military applications.

## Demonstrator

A solution of the problem is sought on the basis of a demonstrator, which represents a section of the wing pod. The goal is to reduce the acceleration and pressure levels inside the inner box, in which the electronic equipment is placed.

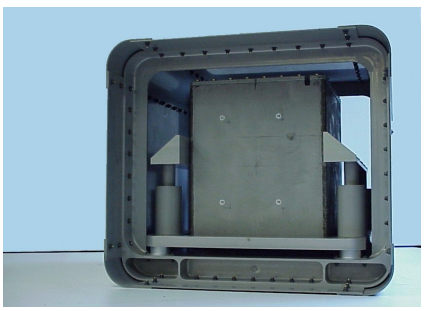

*Figure 2 : GARTEUR demonstrator*

## Methods

Previous research has shown that passive isolation treatments are not sufficient. Therefore active control is applied to obtain the extra needed reduction.
The noise control and vibration control problem are considered separately. An example of an implemented active control system is given below.

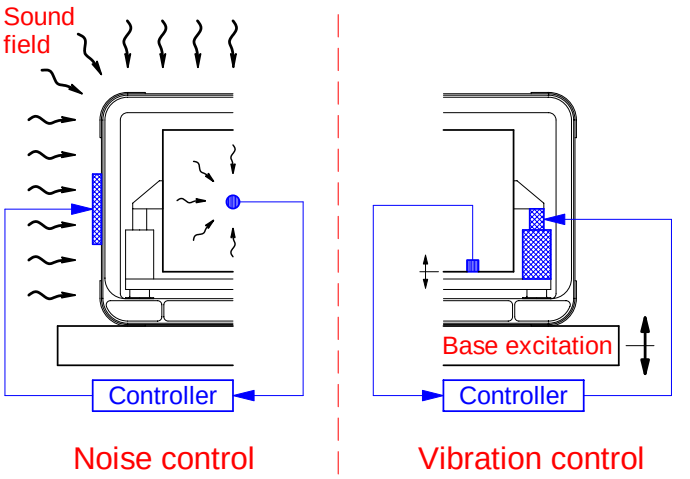


*Figure 3 : Active control of noise and vibration*

Both control problems are tackled using a feedback strategy. In case of the noise control problem a measured pressure is fed back to an actuator attached to the demonstrator. For the vibration control problem an acceleration sensor is used while the actuator is connected between the base and the inner box.

## Further Research

Topics of future research are the choice of an optimal contol strategy, optimal sensor and actuator locations and the selection of appropriate sensors and actuators. After finishing the design, the active control system will be implemented in the demonstrator.

## Acknowledgements

The members of the Garteur AG 23, in particular the Dutch Aerospace Laboratory NLR and Fokker Space B.V., are gratefully acknowledged.