



INTRODUCTION

To support the development of airborne OSI equipment configurations in a realistic setting prior to actual testing on board an aircraft, an airborne techniques simulator has been designed and constructed. As well as providing a means to support the development of OSI airborne techniques, the simulator offers significant potential to train OSI surrogate inspectors on the application of visual observation, multi-spectral, gamma and magnetic surveys on the ground before embarking on in-flight training.

CONCEPT

At the outset of the project it was decided that the simulator should have the look and feel of an actual helicopter, with appropriate seating and harnesses as well as cabin hard points. Moreover, it should be as versatile as possible, mimicking as many different airframe types as possible including airframes with hatches in the cabin floor and others that have external hard points for mounting pods.



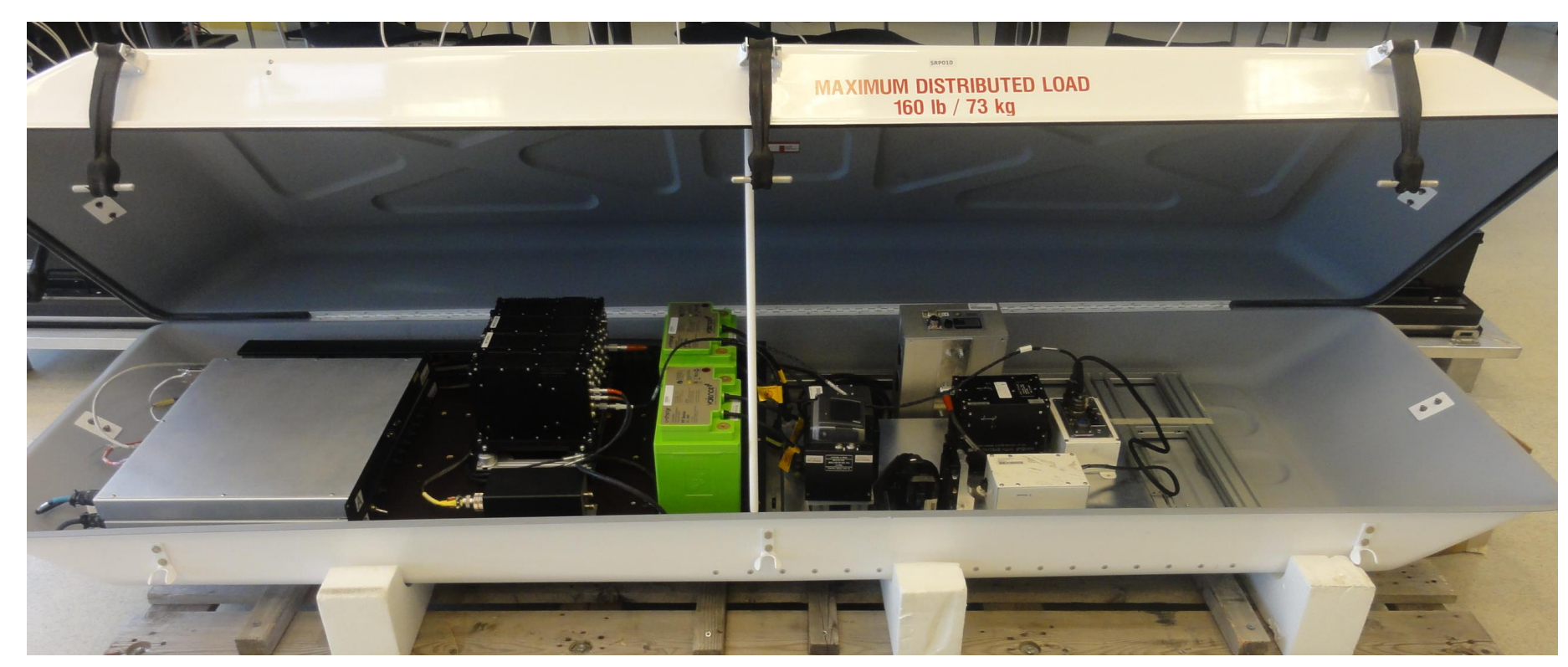
The AS232 Super Puma has a large hatch enabling the installation of sensors over it



The Sikorsky UH-60 Black Hawk also has an internal hatch but considerably smaller than the AS232



The Bell 212 (left) has no internal hatch but does have external hard points onto which an external pod can be installed. Likewise the Eurocopter AS350 (below) also has fixing points for a similar type of external pod.



DELIVERY, STRIPPING & CLEANING

The simulator is built on an Mi-2 helicopter airframe but has been heavily customised to simulate different aspects of various airframes. The airframe has been stripped, cleaned and modified since it was procured. The following pictures illustrate the changes to the airframe.



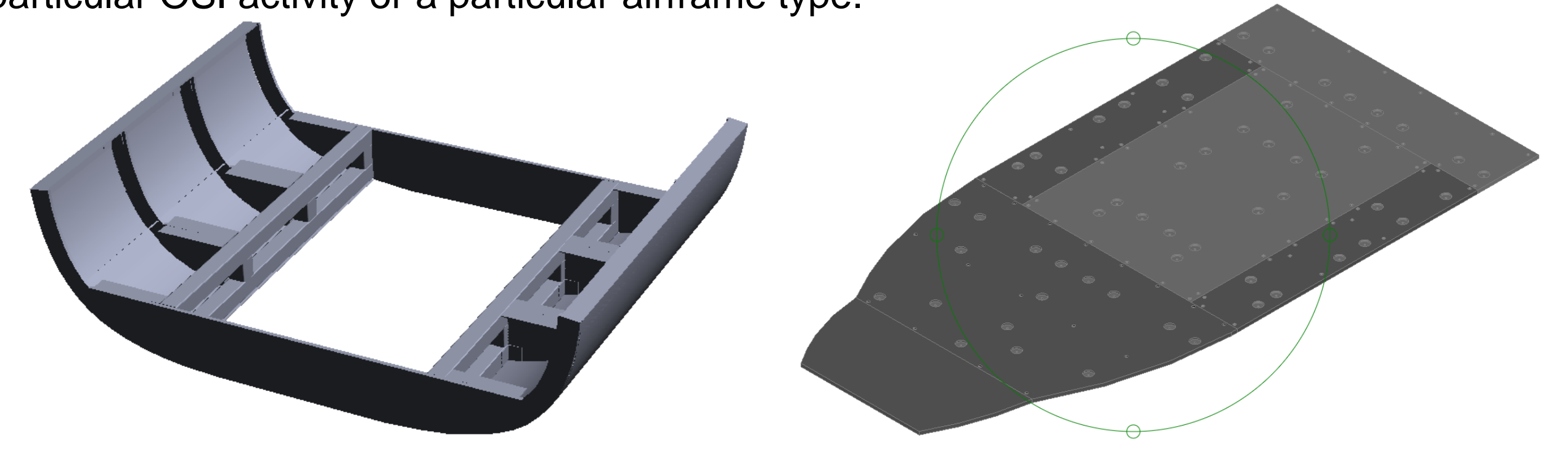
Delivery of the airframe to Gödöllő, 13 March 2019



On delivery, the airframe was stripped of any unnecessary components such as the platform in the central portion of the cabin. Essentially the airframe was reduced to its skeleton to enable the customisation for OSI requirements.

STRUCTURAL MODIFICATIONS

To enable the flexible use of the cabin for OSI needs, the cabin floor had to be structurally modified and secured. Once complete this allowed the installation of a false cabin floor tailored to a particular OSI activity or a particular airframe type.



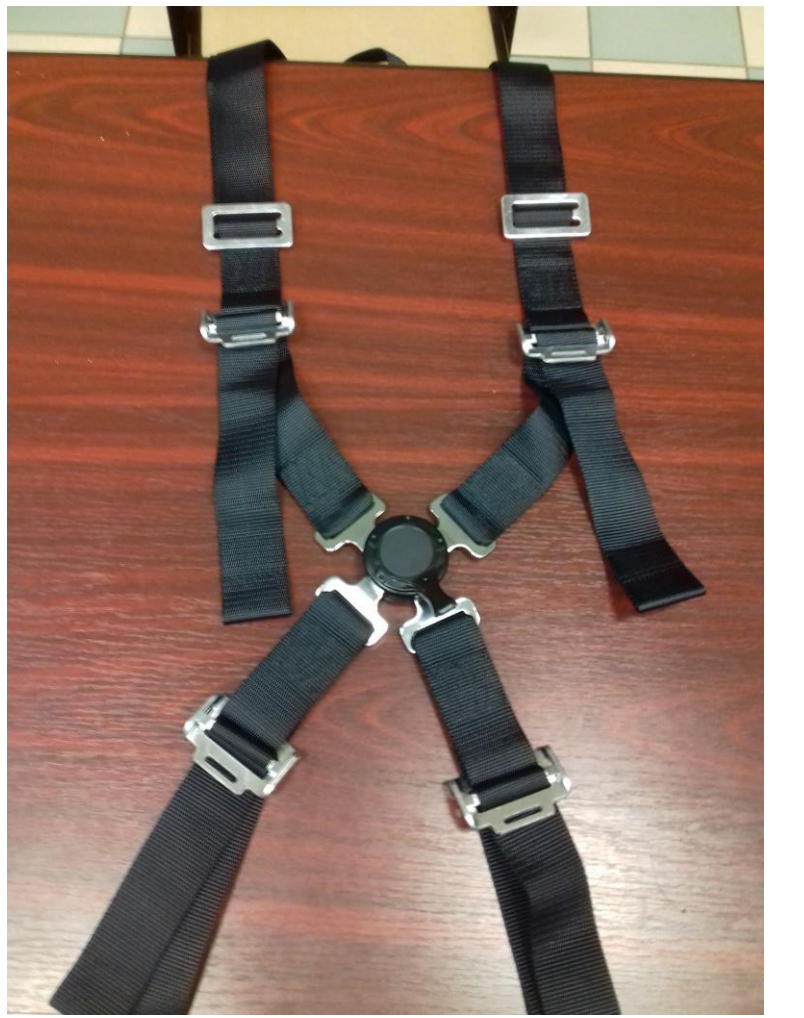
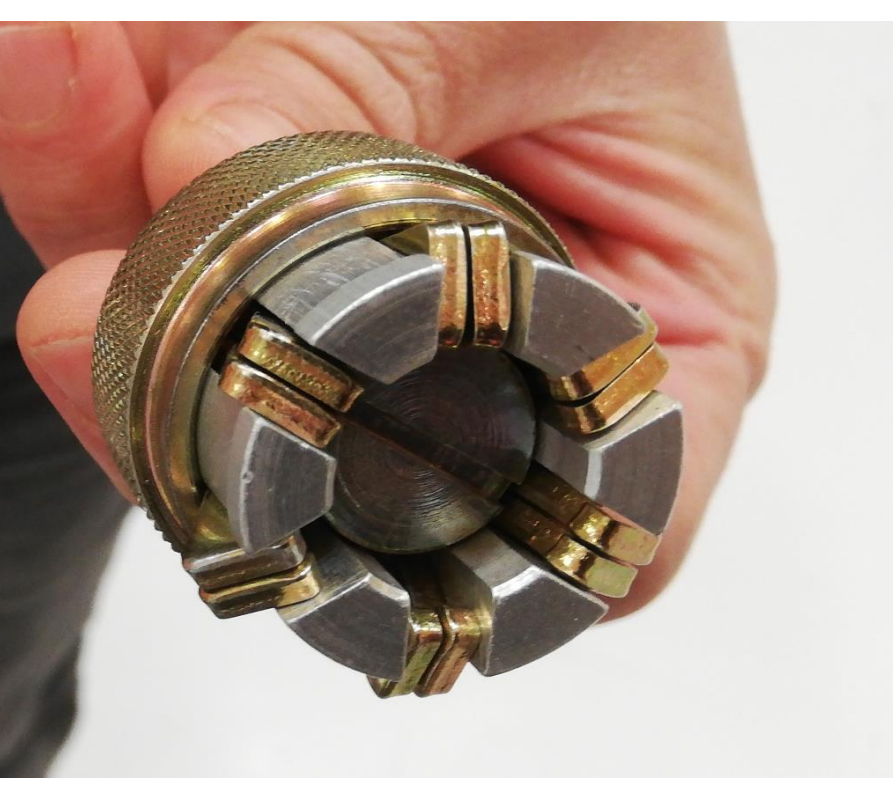
The cabin itself was modelled and entered into a computer aided design software. From this model, structural components were designed and subsequently fabricated.



In contrast a normal airframe, structural components in the simulator could be welded in place. Once complete, a false floor could be added (right).

SEATING, HARNESSSES, LOOK & FEEL

To give trainees a realistic experience while using the simulator, the internal fittings were made to resemble a typical military airframe. Custom chairs were designed and fabricated to enable their use in various seating configurations; for example for the initial overflight and a gamma survey overflight. These seats are locked in place using jaw fittings attached to hard points in the cabin floor.

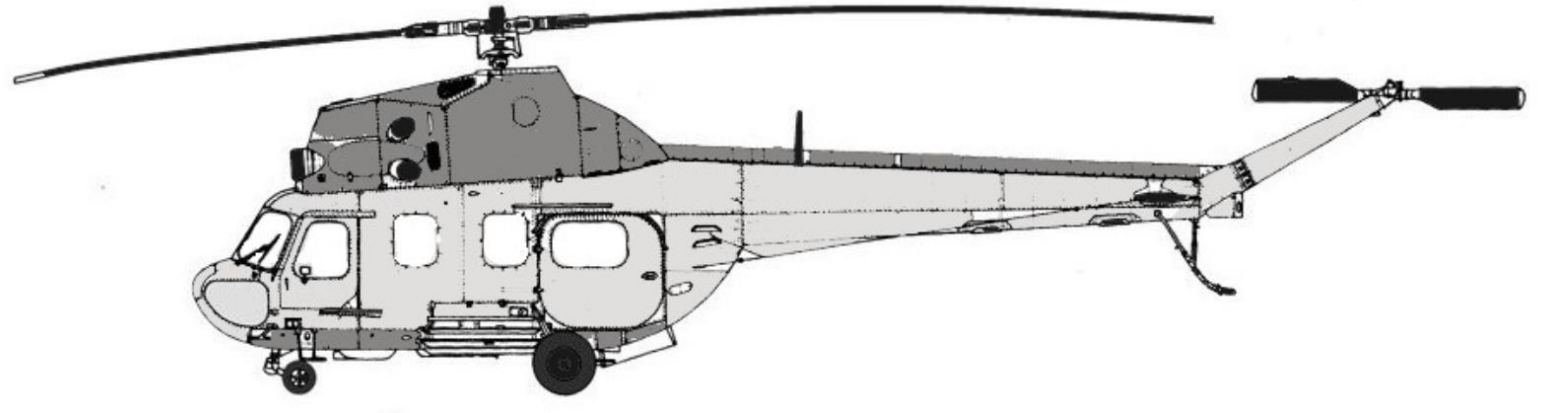


A four point harness was developed and fitted to each chair. It was considered important to demonstrate to trainees the reduced movement possible when such a harness is used as opposed to a conventional lap belt.

The interior of the airframe is completed using a black-grey cloth on the sides and overhead.

PAINTING

The look and feel of the airframe is being completed through the addition of a 3-colour paint scheme.



The colour scheme chosen is neutral, with two shades of grade for the main fuselage and black for appendages and hard points.