FABRICATION OF PNEUMATIC OPERATED EMERGENCY OVERWING EXIT SYSTEM IN AIRCRAFTS

INTRODUCTION

Overwing exits are found on passenger aircraft to provide a means of evacuation onto the wing, where passengers either continue off the trailing edge by sliding down the extended flaps or by using an evacuation slide that deploys when the exit is opened.Overwing exits are smaller in width and height than standard emergency exits on an aircraft, and therefore have a reduced evacuation capacity, and are typically added to aircraft where there is insufficient evacuation capacity at the main doors to obtain a 90 second evacuation, but where the addition of another set of full sized exits is not necessary to accomplish this.

Overwing exits are primarily self-help exits meaning that in an emergency evacuation the passengers seated immediately adjacent to the exit will be responsible for assessing external hazards and opening the exit.

There are principally two types of overwing exits ,which is not considered an overwing exit - referred to as a Type I exit) in use on modern aircraft. These disposable hatch type exit are called Type IIIA and Type IIIB exits. The first (older) type IIIA is the most common, where the operator must first remove the "plug type" hatch from its frame before disposing of it on the wing (or inside on the adjacent seats). The second type is the self-disposing Type IIIB hatch, found on more modern aircraft which has been designed to both simplify the opening of the exit and to reduce the hazard of the removed hatch blocking the exit. This is accomplished by the passengers simply pulling in and down on a handle recessed into the top of the door and initiating the exit's self-opening mechanism, whereby the door rotates up and out on a hinge at the top of the exit frame.

Depending on the height of the aircraft from the ground, an overwing exit may have an automatically inflating slide that is housed within the fuselage near to the exit(s). If the exit is opened the slide will automatically deploy and inflate to provide a means of evacuation from the wing to the ground. Only the slide and emergency lighting on the same side of the aircraft as the open hatch will operate. However, on aircraft where there is a pair of adjacent overwing exits on both sides of the aircraft (i.e. four in total), such as on variants, opening one of the pair of doors will deploy the slide. Should slide inflation fail, there is a manual inflation handle within the door frame of each exit (the location of which varies but is always indicated on the safety information card) which can be pulled to inflate the slide. Should this also fail exit and sliding down the extend flaps on the rear of the wing is possible.

ABSTRACT:

We are fabricating a pneumatic operated emergency overwing exit system in aircrafts, which uses pneumatic cylinder to slide down the roller when the magnetic switch used in doors repels each other. The magnetic switches are connected to a microcontroller which in turn activated the relay. Once the relay is activated the solenoid valve connected to the relay will allow the air from compressor to pass through the pneumatic cylinder and the roller will slide down immediately for the passengers to exit the aircraft at emergency situations.