Flight_Deck_Human-Machine_Interface_2.edited.docx

by

Submission date: 17-Feb-2021 06:29PM (UTC+0800)
Submission ID: 1511430296
File name: Flight_Deck_Human-Machine_Interface_2.edited.docx (15.87K)
Word count: 699
Character count: 4353

Flight Deck Human Machine Interface

Name

Institution

Course

Instructor

Date

Flight Deck Human Machine Interface

Today, aviation technology has significantly improved due to rapid technological advancement in the global sphere. This has seen modern aeroplanes' flight decks flooded with more sophisticated automation. In response to this sundry automation, the aviation industry has significantly embraced and adopted them objectively to lower the flight crew's workload, add extra capabilities, and increase flight fuel economy. Similarly, modern air transport's reliability and efficiency have significantly been increased by continuous automation in the flight deck.

Issues and Concerns of Flight Deck Human-Machine Interaction

Regardless of the prevailing automation in the flight deck, the aeronautical engineering field is yet to realize a complete fail-safe strategy. The field is yet to fully use new and existing technology to explore aeroplanes' design features and practices that shall inherently respond to any failure to cause reduced or no harm to passengers, the environment, or other equipment. Thus, the aviation industry still exhibits critical issues and concerns despite embracing rapid automation due to technological advancement. Therefore, there is a need to address such issues and concerns to improve further the aviation industry's safety (Flight Safety Australia, 2015). Most incidences were directly linked to hitches in the interaction between flight deck automation and flight crew based on recent flight accidents. Hence, there is a need to address the issue of flight crew error in aviation.

Subsequently, the HF investigation team has continuously noted that flight deck automation regularly behaved differently from the flight crew's expectations. This has raised concerns about whether pilots understand the limitations, capabilities, modes and operating principles, and flight deck automation techniques. Likewise, the differing levels of automation have often left the aviators in a dilemma of whether they should switch on or off the automation

in the face of unfamiliar situations (Flight Safety Australia, 2015). Next, there is the issue of poor communication and coordination. Here, there is prevailing discordancy between systems that control air traffic and aeroplane working proficiencies.

Moreover, poor communication exists between operators, researchers, and designers. Last but not least, the issue of mode surprises is at the core of flight deck automation. This is commonly brought about because an airliner may exhibit more than 40 different modes for an auto flight that controls the lateral and vertical manoeuvres' airspeed. Lastly, human performance is not fully addressed by the means utilized in "designing, training and regulatory functioning of the automation" (Flight Safety Australia, 2015).

Regardless of the pros above, flight deck human-machine interaction under the fail-safe concept's guidance exhibits some advantages. Flying an aeroplane has become an easy task (General Aviation News, 2015). Secondly, pilots have been enabled to practically interact with the weather by interface features such as visual, voice recognition, and larger display systems. Generally, flight deck human-machine interaction has improved flight safety. Lastly, it has helped the flight crew to perform their duties efficiently by lowering training, reducing their workload, and increasing awareness (Aviation Week, 2013).

Positive and Negative Hazards

Suppose the interface makes a wrong decision; the automation leaves the pilot out of control of the flight. This is because the aeroplane exhibits its mind, and it is bound to make independent choices that are indisputable. Concerning areas such as aircraft performance to health and traffic, the avionics must convert the unprecedented amount of data in the flight decks into a version that a user can understand. Correspondingly, interfaces make pilots more and

tightly engaged in the aeroplane, making the automation complex. In the face of failure and rare operations conditions, a single pilot flight deck may exhibit both human and social problems.

Summing, there is a need for FAA to educate operators and pilots on flight deck automation systems. It should also increase edification about air traffic services. To ensure the automation systems' operations are well understood transversely across different pertinent parties, the gap between designers, researchers, operators and flight deck human-machine interface trainers should significantly be made narrower.

References

Aviation Week. (2013). Connectivity, Human Factors Drive Next-Gen Cockpit. http://aviationweek.com/awin/connectivity-human-factors- drive-next-gen-cockpit

General Aviation News. (2015). The pros and cons of automation in aviation. https://generalaviationnews.com/author/janicewood/

Flight Safety Australia (2015). Design for a living—why human-machine interface matters. http://www.flightsafetyaustralia.com/2015/05/design-for-living-why-human-machine-interface-matters/

Flight_Deck_Human-Machine_Interface_2.edited.docx

ORIGINALITY REPORT

0%	0%	0%	0%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

Exclude quotes	Off	Exclude matches	Off
Exclude bibliography	On		