TRACK 5: RSAF INDIGENOUS PROJECTS

"ENHANCING UAS OPERATING SAFETY AND RISK ASSESSMENT"

BY
ME4 OH SHAN CHUN
ME4 LEE JIYOU
REPUBLIC OF SINGAPORE AIR FORCE

ABSTRACT

Today, there is an increasing variety of Unmanned Aerial Systems (UAS) which are commercially available, in particular Commercial-Off-The-Shelf (COTS) drones. This has created more opportunities for UAS to be deployed by both government and commercial agencies with relative ease and at low cost. Similarly, UAS may potentially be used by the Singapore Armed Forces (SAF) and there is a need to ensure that they can be deployed without compromising safety. To achieve this objective, specific operating conditions and mitigating measures have to be developed, and the UAS "impact zone" (due to technical failure) has to be determined to establish a suitable safety template. This requires the computation of safety distances, as well as fatality/infrastructure damage mishap probabilities to better define risk levels. This project looks at the methodologies that have been developed to compute and evaluate UAS operating risks, using academic research and engineering principles.

BIOGRAPHY OF SPEAKER

ME4 Oh Shan Chun is a Staff Officer from Aerodynamics Branch in the Air Engineering and Logistics Department. He is part of the Rotary Wing Section dealing with certification and safety assessment of helicopter and UAS operations. Prior to this appointment, he served as an Officer-in-Charge in the Naval Helicopter Flight dealing with aircraft planning, maintenance, and Airframe related matters. He holds a Degree in Aerospace Engineering at Nanyang Technological University in Singapore.

ME4 Lee Jiyou is a Staff Officer from Aerodynamics Branch in the Air Engineering and Logistics Department. He is responsible for the safety assessment of UAS operation and has developed a probabilistic model in alignment with international standards to estimate the mishap probability due to UAS failure. He holds a Master of Science in Aerospace Dynamics (Flight Dynamics and Controls) at Cranfield University in the UK.