

## FOREWORD


# The Australian International Aerospace Congress AIAC 19/20


The Australian International Aerospace Congress (AIAC), jointly hosted by the Royal Aeronautical Society Australia Division and Engineers Australia, is the preeminent conference event for aerospace professionals in Australia. Held biannually in conjunction with the Avalon International Airshow, due to the global coronavirus pandemic, the 19th AIAC was held online from 29 November to 1 December 2021 while the 20th AIAC was able to return to its in-person format in Melbourne and Avalon over the period 27 March to 1 April 2023. Once again AIAC are proud to partner with RAeS/Cambridge University Press to bring you this Special Issue of *The Aeronautical Journal*, a curated selection of peer reviewed papers from both the AIAC19 and AIAC20 events.

AIAC19 and AIAC20 incorporated a series of conferences for our delegates including the Australian Aeronautics Conference, the Defence Science and Technology Group (DSTG) International Conference on Health and Usage Monitoring Systems (HUMS), and in 2023, the 17th National Space Engineering Symposium (NSES). AIAC20 was attended by over 550 aerospace industry, government and academia professionals and students, making it the largest AIAC event on record. The technical program consisted of over 112 short form, peer reviewed papers spanning the full breadth of technical topics encompassed by the AIAC's incorporated conferences.

Technical highlights and focus areas from AIAC19 and AIAC20 included the renewed interest and research surrounding vehicles engineering for space, advanced urban air mobility and green aviation technologies. The effects of globalisation leading to consolidation of the aerospace industry over recent years was noted as a key cause in the decline of aircraft manufacturing in Australia (see HdH, GAF/ASTA, Gipps Aero). The industry has been reduced to small, but important, OEMs to components suppliers. The consequence of this process is a diminished sovereign aircraft design capability and loss of talent as designers and engineers move overseas to pursue aerospace design career ambitions. Not all is lost though. The recent push for decarbonisation of aviation and general public demand for affordable, but fast, travel coupled with new defence strategies have led to strong recent focus in areas including advanced air mobility (AAM) and uncrewed teaming systems in civil and military domains, respectively. The recent update of the federal government's List of Critical Technologies in the National Interest emphasises the critical need for advanced manufacturing, composite materials and advanced aerospace technologies. This is a very welcomed development by Australia's aerospace industry.

In Australia there are already several manufacturers of uncrewed aerial systems (UAS including AMSL, Swoop Aero, Innovaero, Quickstep and Boeing Defence Australia, which recently completed the first flight of their MQ-28 Ghostbat). These manufacturers are bolstered by a strong UAS/AAM research community including ANU, QUT, RMIT and Swinburne among others. Despite numerous regulatory and technical challenges, Australia can play a leading role in this nascent market, especially in regional operations.

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