

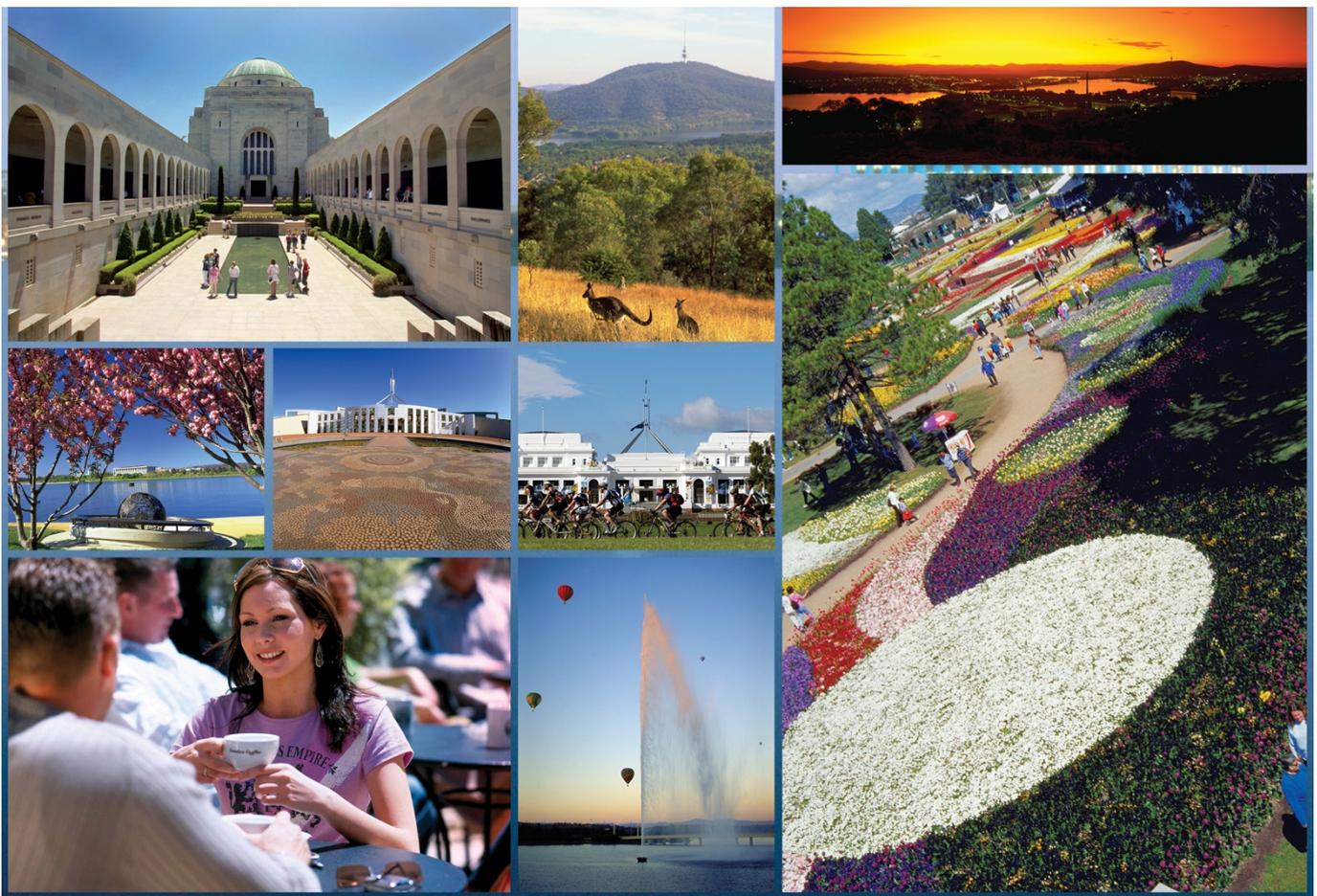
# ISABE2019

24th ISABE Conference



22-27 September 2019, Canberra, AUSTRALIA

# CALL FOR PAPERS



Hosted by UNSW Canberra



**UNSW**  
CANBERRA

# ABOUT THE CONFERENCE

## Conference location

The 24<sup>th</sup> ISABE Conference will be held at the National Convention Centre Canberra in the middle of Canberra's commercial heart. Canberra is Australia's capital city. The city centre is well connected to Canberra Airport, about 20 minutes by bus or 15 minutes by taxi. CBR has direct international flights to Singapore and Doha, as well as international connections to most other cities via Sydney, Melbourne and Brisbane.

**Find out more at: [www.nccc.com.au](http://www.nccc.com.au), [visitcanberra.com.au](http://visitcanberra.com.au) and [www.australia.com](http://www.australia.com)**

### WELCOME TO CANBERRA, AUSTRALIA

Australia is a strong and prosperous nation that, given its location in the Southern Hemisphere, bridging the Indian, Pacific and Southern Oceans, relies heavily on air-breathing propulsion to remain an integral part of the world. As a consequence, Australia is strongly dependent upon the gas turbine for air transport to service our tourist industry and maintain international trade via our own airlines and those that service our shores. The Australian Defence Force are also heavy users of gas turbines in their aircraft, ships and even tanks. In addition, Australia has a preeminent position as a world leader in hypersonic research, particularly in the flight-testing of scramjet propulsion systems.

Australia has a longstanding tradition in ISABE and has been a strong supporter since the beginning. The University of New South Wales and its academic, industrial, defence and government partners would like to welcome the ISABE conference back to Australia in 2019. It will have been almost a quarter of a century since the ISABE conference last graced our shores and it is only fitting that we intend to hold the 2019 conference in Canberra, the nation's capital.

Canberra is a dynamic city, often known as the "*Bush Capital*". It combines the nation's grand institutions and a vibrant restaurant and café culture in the idyllic setting of open spaces and countryside, bringing together lakes, rolling plains, forest and mountains. It is populated by all manner of native flora and fauna most especially our kangaroos. Furthermore, Canberra is best experienced during the September Spring time when we will host ISABE2019.

Canberra is also home to two of the nation's leading universities, as well as the headquarters of the Australia Defence Force, AirServices Australia, the Civil Aviation Safety Authority and the Australian Transportation Safety Bureau. Hidden in the hinterland of the Australian Capital Territory, within half an hour's drive of the city, the tracking station at Tidbinbilla forms a vital part of NASA's Deep Space Communications Network, one of three such ground stations spread around the globe. Tidbinbilla is now part of Canberra's rapidly growing role as the space hub of Australia.

We would be honoured to welcome you all back to Australia in 2019 for the 24<sup>th</sup> ISABE Conference, where you can experience the best of what Canberra has to offer.

Prof Andrew Neely

*ISABE Vice President and Australian National Representative*



## About ISABE

The International Society of Air Breathing Engines [ISABE] is an organisation that was formed to further the free exchange, on an international level, of knowledge in the field of air breathing propulsion for flight vehicles.

ISABE has national representatives from more than 25 nations and holds events on six continents. For more than 40 years, ISABE has produced some of the most memorable and important conferences in the field of air breathing propulsion.

The Society produces a major conference every two years with invited lectures, contributed technical paper sessions, pre-arranged sessions, special forums and social events for informal discussions, networking and relaxation.

Find out more at: [www.isabe.org](http://www.isabe.org)



## Programme of events

### Invited lectures

Lectures by distinguished leaders in air breathing engines and associated industries.

### Contributed technical paper sessions

Papers on topics associated with air breathing engines for flight vehicles and aeroderivative engines for power generation.

### Pre-arranged sessions

Sessions of contributed technical papers on specific topics of current interest organised by the experts from various member nations.

### ISABE & ICAS

A joint session provided by ISABE and ICAS.

### Networking and socialising

Social events are planned to encourage informal discussions, networking and socialising between delegates. Technical exhibitions and visits will also be available.

There will be an opportunity to take part in excursions and cultural visits including the fine arts, Australian social and political history. This will give you a taste of Canberra's museums and galleries.

There will also be a programme of events offered through local companies for those people accompanying delegates to Canberra.

For more information on things to do in Canberra visit

[visitcanberra.com.au/attractions](http://visitcanberra.com.au/attractions)

## PARTICIPATION

### Proposals for participation

You are invited to take part in the conference with a personal contribution as listed below.

- Technical paper sessions
- Pre-arranged sessions
- Special forum
- Technical exhibition

### Technical paper sessions

#### Submitting a paper

Subject areas are listed on the following page and details for abstract and paper submission can be found opposite.

#### Chairing a session

To offer to chair a session please send an email to your national delegate [for the full list of delegates, please visit [www.isabe.org](http://www.isabe.org)] and copy your email to [isabe2019@unsw.edu.au](mailto:isabe2019@unsw.edu.au)

Please give details of the subject areas of your expertise.

### Pre-arranged sessions

#### Organise a pre-arranged session

To offer to organise a pre-arranged session please select a co-organiser from a nation other than your own and together select a topic area.

For further information on how to proceed, please contact [isabe2019@unsw.edu.au](mailto:isabe2019@unsw.edu.au)

### Collaboration with RAeS

The *Royal Aeronautical Society* will publish a special issue of its *Aeronautical Journal* during the ISABE 2019 conference as it did for ISABE 2017. NOTE this will require submission of the full paper by **16 August 2018** for review and consideration for inclusion.

## Submitting a paper

Please note that different deadlines apply depending on which process you are submitting to. When preparing an abstract or paper please follow the guidelines provided in the "*Instructions for Authors*" at [www.isabe.org](http://www.isabe.org)

When you submit your extended abstract you will be asked to indicate which review track you prefer.

**Review Track:** Review of abstract & full paper.

**Non-Review Track:** Review of abstract only.

### Abstract and paper submission

This is the standard process adopted in previous ISABE conferences: an extended abstract of at least 2 pages is submitted to the ISABE Executive Committee, who will review it for publication.

#### SUBMISSION AND REVIEW TIMELINE

Extended abstract due:	<b>31 July 2018</b>
Full paper for consideration for <i>Aeronautical Journal</i> special edition:	<b>16 August 2018</b>
Abstract review feedback:	<b>1 October 2018</b>
Full paper on <b>Review Track</b> due:	<b>1 March 2019</b>
<b>Review Track</b> paper feedback:	<b>3 June 2019</b>
Full paper on <b>Non-Review Track</b> due:	<b>28 June 2019</b>
Early Bird Pre-registration:	<b>28 June 2019</b>
Revised Papers on <b>Review Track</b> due:	<b>1 Aug 2019</b>
<b>ISABE2019 Canberra</b>	<b>22-27 September 2019</b>

# SUBJECT AREAS

Following is a list of major subject areas of interest. All aspects of air breathing engines for flight propulsion in all regimes of speed and aero-derivative engines for power production are included, as well as components that are ancillary to engines and new propulsion paradigms in terms of emerging technology and markets. The greatest emphasis is on creation and utilisation of the best technology for sustainable progress.

## **Systems**

New developments in gas turbine engines, ramjet, scramjet engines, combined cycle engines, pulsed and other detonation engines, various assisted engines, micro-engines, multipurpose engines, integrated systems, hybrid systems and integration technologies.

## **Cost and Business**

Economics of engine development, testing, production, certification, usage and maintenance, civil and military engine business, acquisition, ownership and marketing, lifecycle and other costs. New applications and markets.

## **Environment**

Chemical and noise pollution.

## **Safety**

Engine safety and engine-caused safety problems, material and structural failure. UAV and FOD ingestion.

## **Aeromechanics, Flutter, Vibration, and High-Cycle Fatigue**

Design, prediction and model validation. Random and intentional mistuning. Life prediction. Experimental methods.

## **Engineering Sciences**

Problems of fluid and gas dynamics, sprays, combustion, heat transfer, conventional and advanced materials, acoustics and noise.

## **Thermal Management**

Cooling technology, coolers, heat exchangers and energy bypass schemes, compressor and turbine cooling, scramjet cooling.

## **Aero-Derivative**

Other applications of aero-derivative engine technology including power generation, pumping and maritime and land transport.

## **Intelligent Engine Control and Health Monitoring**

Embedded sensors, telemetry, big data, cyber security, the internet of things.

## **Materials and Structures**

Smart and multifunctional materials and structures, titanium technology, composites, ceramics, thermoelasticity, structures, coatings.

## **Compressors, Turbines**

Axial and centrifugal compressors, axial and other turbines, aerodynamics, mechanics.

## **Fuels, Injection, Ignition and Combustion**

Fuels for gas turbines and ramjets/scramjets, alternate fuels, combined cycles, microengines, endothermic fuels for cooling, fuel cracking, injection technologies, ignition technologies, combustion technologies, combustion acoustics.

## **Simulation and Design**

CFD, FEM, coupled multiphysics modelling, fluid-structure interaction, DOE and optimisation methods.

## **Integrated Testing, Prediction and Evaluation**

Test and simulation methods.

## **Manufacturing Processes**

Machining, casting, additive manufacturing.

## **Engine and Fleet Operations**

Fleet management, lifing, operations, upgrades.

## **Maintenance, Repair and Overhaul**

## **Synthesis Methods**

From concept to usable product; rational methods of synthesis, virtual development and testing.

## **Engine Integration**

Intakes, nozzles, nacelles, distributed propulsion, embedded propulsion.

## **Diagnostics, Instrumentation and Sensors**

Improved and novel sensors.

## **Hypersonic Vehicle Propulsion**

Space launch vehicles, cruise vehicles, military systems. Engine technologies and integration.

## **STOVL Vehicle Propulsion**

Thrust vector design options, controls, ground effects.

## **Unmanned Air Vehicle Propulsion**

Propulsion and autonomous control systems for UAVs.

## **Helicopter Propulsion**

Small engines, propellers, special air intakes, noise control.

## **Micro and Small Engines**

Components and systems. New markets for personal air transport.

## **Education and training**

Re-engineering of the gas turbine curriculum, education partnerships, best practices.

## **Skills challenges**

Demographics, apprenticeships, global skills, systems engineers

