

# CALL FOR PAPERS



**31st Congress of the  
International Council of  
the Aeronautical Sciences**

**Belo Horizonte, Brazil**  
**September 09-14, 2018**

Hosted by:



Please submit your abstract online at [icas.org](http://icas.org) before July 15 2017

# **CALL FOR PAPERS**

It is our great pleasure to invite you to the 31st International Council of Aeronautical Sciences (ICAS) Congress, the only international forum that *covers the world of aeronautics*, bringing together a global array of topics and participants. ICAS was established 60 years ago under the leadership of Professor Theodore von Karman. Today ICAS continues to support the work of aerospace professional Member Societies around the world. Through Associate Memberships, ICAS brings together aerospace companies, national laboratories and educational institutions.

The 2018 ICAS Congress will be held in Belo Horizonte, Brazil; the first time the Congress will be held in South America. The tremendous success of the recently concluded ICAS Congress in Daejeon, Korea is an indication of the value to be gained from your participation in the ICAS Congress.

Presentations at the Congress, from oral paper reports to interactive discussions, cover all aspects of aeronautical science and technology including military and civil aviation applications. Engineers, scientists, technologists, managers and leaders in aeronautics from around the world will be there to:

- Present their work to an informed and truly global audience
- Hear the latest developments from internationally recognized experts
- Exchange information and opinions with colleagues from around the world
- Develop collaborative relationships
- Build long lasting networks with colleagues in other countries and cultures
- See and understand the implications of technical advances throughout aviation

The ICAS Program Committee ensures that presentations cover core aeronautical disciplines such as: Aircraft Design, Materials and Structures, Systems and Subsystems (a full list of ICAS 2018 topic headings is appended). The Congress agenda also highlights topics that reflect new challenges and opportunities facing aviation today. They include, for example, novel approaches to solving aeronautical problems, emerging technologies that lead to improved performance, a cleaner or quieter environment, or more agile development processes. Additionally, areas showing rapid growing impact have been strategically added to the 2018 agenda including: Additive Manufacturing (3D Printing), Industrial Internet of Things (for design, manufacturing, or support), Model Based Systems Engineering, and Electric Propulsion. There is sure to be increased focus on unmanned air vehicles and autonomous systems, along with the operational challenges these technologies present for the global air transport system.

We invite you to more than attend the ICAS Congress, and encourage you to submit an abstract to the congress to present your current work. The appended topic heading list is not exhaustive - papers from other relevant aeronautics areas are welcome. We look forward to receiving your abstract and to welcoming you in Belo Horizonte in 2018!

*Susan Ying*  
President

*Shinji Suzuki*  
Chair Programme Committee

***Authors are invited to provide an abstract for a potential paper before 15 July 2017***

## Timeline for Authors

- Upload your abstracts on [www.icas.org](http://www.icas.org) until 15 July 2017
- Authors receive an answer by 30 November 2017
- Upload your full paper prior to 15 March 2018 to be reviewed, otherwise
- Upload your full paper prior to 01 July 2018
- Register to the Congress prior to 01 June 2018
- Please check out [www.icas.org/Call\\_for\\_papers.html](http://www.icas.org/Call_for_papers.html) frequently for updates concerning submission/paper handling till the congress.

## Congress Programme

The ICAS Programme Committee will assemble a Congress programme containing eleven or more parallel sessions and interactive presentation exhibitions. Student presentations (see page 4) will be embedded in the technical sessions. Based upon the experience of previous Congresses, the final programme is expected to contain more than 450 oral presentations. In addition, there will be a number of high quality, invited lectures on topics of particular importance and general interest in the technical sessions. A number of "General Lectures" on subjects of major importance, delivered by leading experts, will be included in the morning and afternoon plenary sessions.

## Congress Proceedings

All papers accepted for presentation (oral, standby and interactive presentations) will be included in the Congress Proceedings online and on a data medium which will be published in a national library. If an author refuses to present at the Congress, the paper will not be included.

## Congress venue

The 31<sup>th</sup> Congress will be held in Belo Horizonte, Brazil. The host and local organizer is the Brazilian Society of Mechanical Sciences and Engineering (ABCM) – the ICAS Member Society in Brazil. More information about the venue and the logistic arrangements are given on page 6.

## What is the International Council of the Aeronautical Sciences?

- It was founded by Theodore von Kármán in 1957.
- It is a non-government, not-for-profit organization that facilitates and encourages the free exchange of information on aeronautical research and technology at a global level.
- It is the global organization supporting aeronautical engineering professional societies and associated organizations from around 30 countries.
- It organizes a major biennial Congress presenting timely, high quality work from the world-wide research community covering all aspects of aeronautical science and technology and their application to both military and aviation.
- More than 800 engineers and scientists from all over the world attended the last ICAS Congress in Daejeon, Korea and about 450 papers were presented.
- All papers presented at the congress are included in the electronic publication available at the Congress. In addition, the ICAS electronic archive, containing over five thousand documents, is freely available to the world-wide aeronautics community.
- The ICAS Congress provides a unique forum for engineers and scientists from all over the world to meet, to hear the results of the latest research and to exchange

## ICAS Contact information:

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**Please submit your abstract online at ICAS website [www.icas.org](http://www.icas.org) before 15 July 2017.**

Authors are invited to pay careful attention to the presentation and content of their abstract. Knowing that there are more candidates than possible presentations, paper selection for the ICAS Congress is done based on the quality of the abstract only. Some important criteria for the abstract to be selected are scientific/technical content, importance to the field, style/clarity, and completeness.

Abstracts should be written concisely; include a preliminary title and the opening sentences should indicate the subjects dealt with and the objectives. The abstract should be intelligible and complete in itself. Abstracts should have a length of about two pages including figures and diagrams. When uploading your abstract you will be requested to upload also a short version (about 50 words) to be used in the Congress final programme. Please indicate for which ICAS topic area the paper is intended.

Your abstract should also include author(s) name, affiliation, complete mailing address, telephone and fax numbers, and email address. Due to limited space in the printed programme, the number of authors should be limited to three (use acknowledgements if applicable).

At the uploading of your abstract, you should indicate if your paper is intended as an oral or as an interactive presentation. Furthermore, it should be indicated if your paper is intended as a student paper.

### **Abstract review by Member Societies**

The abstracts will be made available to the national Member Societies by the ICAS Secretariat for screening and evaluation and the Member Societies will be asked to submit their recommendations ("not supported, supported, strongly supported") to the ICAS Programme Committee for final evaluation and selection. **NOTE:** If there is no national ICAS Member Society in the country, the abstracts will be evaluated only by the ICAS Programme Committee.

**Authors will be informed about the acceptance/rejection of their paper not later than 30 November 2017. Full papers must be delivered at the latest by 1 July 2018 for inclusion in the Congress proceedings.**

### **Interactive Presentations**

Interactive Presentation sessions will be organized for the cases where this mode of presentation is preferred by authors or considered more appropriate by the Programme Committee. There is in principle no limitation in number for interactive papers and they are selected on their merit only.

### **Student Presentations**

Undergraduate or postgraduate students, who will not have completed doctorate studies by the date of the Congress, may submit an abstract on any topic of the Congress. To participate in the Mc Carthy Award, students must check the participation request upon uploading their full paper. Students must ensure before accepting selection in November 2017 that they can cover their travel and hotel expenses. The two best student papers will be awarded with the ICAS McCarthy Award, which also includes a financial stipend. To be eligible to take part in the competition for the ICAS McCarthy Award, the abstract and subsequent paper is to be authored and presented by students only.

### **Paper review (optional)**

For authors who apply for it, ICAS will provide a Paper Review by experts from the ICAS Programme Committee. Authors have to indicate when uploading their abstract if they are interested in this process. These papers will be reviewed based on technical content, importance to field, completeness, style and clarity. Papers that successfully pass the review will obtain an ICAS Recommendation letter. Note that, due to the length of such a process, candidates will be requested to supply their full paper by 15 March 2018. This process will enable a feedback from the reviewer(s) in time prior to the Congress.

## **ICAS 2018 TOPIC AREAS**

### **1. Aircraft Design and Integrated Systems**

- Commercial Transport Aircraft
- Military Aircraft and Missiles
- Non-conventional Aviation Systems and Concepts
- Unmanned Air Vehicles
- Hypersonic Aircraft
- Rotorcraft
- Sailplanes and Ultra light Aircraft
- Multi-Disciplinary Optimization
- Design for Survivability
- Design Education
- Life Cycle Value

### **2. Systems Engineering and Integration**

- Systems Engineering
- Systems Integration
- System of Systems
- Engineering Management
- Distributed Development
- Model Based Development
- Integrated Product and Process Development
- Design Methodology
- Industrial Internet of Things

### **3. Aerodynamics**

- Subsonic
- Transonic and Supersonic
- Hypersonic Aerothermodynamics
- High Angle of Attack, High Lift
- Computational Fluid Dynamics
- Flow Stability, Transition and Turbulence
- Wind Tunnel and Flight Testing
- Experimental Facilities and Techniques
- Aero acoustics and Reduction of Noise
- Flow Control
- Biologically-inspired flight

### **4. Materials and Structures**

- Composite Materials and Structures
- Applications and Issues
- Metallic Alloys
- High Temperature Materials and Structures
- Structural Mechanics
- Fatigue and Damage Tolerance
- Structural Dynamics and Aeroelasticity
- Dynamic Loading, Acoustic Loading and Impact
- Structural Testing
- Nanotechnology

### **5. Propulsion and Energy**

- Propellers and Fans
- Hypersonic Propulsion
- Inlets and Nozzles
- Propulsion / Airframe Integration
- Noise and Emissions
- Experimental Facilities and Techniques
- Electric Propulsion
- Alternative Fuels

### **6. Flight Dynamics and Control**

- Flight Dynamics
- Control Techniques and Systems
- Aircraft Handling Qualities
- Flight Testing and Simulation
- Performance and Trajectory Optimization
- Missiles Guidance
- Autonomous Operations
- Neural Networks
- System and Parameter Identification

### **7. Systems, Subsystems and Equipment**

- Integration of Equipment Systems
- Power Optimised Aircraft Systems
- Electrical, Hydraulic and Pneumatic Systems
- Avionic Systems
- Landing Gear and Braking Systems
- Auxiliary and Emergency Power Generation
- Aircraft Fuel Systems
- Lightning, Cabin and Water/Waste
- Ice and Rain Protection
- Advanced Sensor Systems
- Emergency Systems
- Aircraft Systems Testing

### **8. Manufacturing and Supply Chain Management**

- Supply Chain Management
- CAD/ CAM and Computer Integrated Manufacturing
- Information System Technology/ 3D Printing
- Robotics
- Automated and Assistive Technologies
- Cognitive Manufacturing
- Total Quality Management

### **9. Air Transport System Efficiency**

- Aircraft Operation
- Flight Management
- ATM and Airspace Capacity
- Weather Effects
- Airport Capacity
- Intermodality Issues

### **10. Safety and Security**

- Accident Prevention
- Accident Survivability, Crashworthiness
- Human Factors
- Airworthiness and Certification
- Ageing Aircraft
- Aviation Medicine
- Airborne Aircraft Security
- Airport Security
- Cyber Security

### **11. Operations and Sustainment**

- Maintenance, Repair and Overhaul
- Reliability and Maintainability
- Logistics and Through-life Support
- Reliability and Risk
- Extreme Environmental Conditions
- Continuing Airworthiness
- Ageing Systems and Upgrade
- Total Lifecycle Analysis
- Customer and Product Support

# ICAS 2018 – Belo Horizonte, Brazil

## General Information

The 31st Congress of the International Council of Aeronautical Sciences will be hosted by the Brazilian Association of Engineering and Mechanical Sciences (ABCM) and will be held from 9 to 14 September in Belo Horizonte, Minas Gerais, Brazil.

## See you in Belo Horizonte!

Founded in 1897 as the first planned state capital of Brazil, Belo Horizonte is a young metropolis in which tradition and modernity live side by side. The city provides all of the essential services a visitor may need, a wide variety of hotels, sophisticated commerce and a vivid cultural life. In terms of infrastructure and services, the city offers excellent options for the organization of small, medium and large events, in line with its vocation for business tourism. The rich surroundings that offer natural and cultural attractions, its proximity to historic towns, the panorama of Serra do Curral, and the hospitality of the Belo Horizonte citizens are what make the capital of the State of Minas Gerais unique. We are looking forward to the opportunity of welcoming you to Belo Horizonte.

## Congress Venue

The ICAS 2018 Congress will be held in the Minascentro Convention Center at the heart of downtown Belo Horizonte. Minascentro is a multipurpose space designed in the early twentieth century to be the headquarters of the Health Secretariat of State of Minas Gerais. In 1982, the whole building underwent renovation and the theaters, auditoriums and exhibition areas were built. In its more than 33 thousand square meters, Minascentro can receive up to three large simultaneous events. In addition to the infrastructure, it has an experienced and qualified team, which is able to provide the necessary support for major events. Moreover, in its surroundings, the visitor will find a wide network of hotels, banks, restaurants and tourist attractions; for instance, the Belo Horizonte Central Market is right across the street.

## Social Programme

There are numerous planned activities in the Belo Horizonte metropolitan area and adjacent cities. Full day or half day activities and excursions will be prepared for the participants and their accompanying persons. Moreover, pre- and post-congress tours will also be arranged.

## Technical Visits

ICAS participants are invited to visit a number of research centers and enterprises of the aeronautical engineering industry, as well as the leading academic institutes in the states of Minas Gerais and São Paulo. Examples of technical tour sites include higher degree institutions such as the Federal University of Minas Gerais (UFMG) and the Technological Institute of Aeronautics (ITA), Embraer's Engineering and Technology Center in Belo Horizonte and Main Assembly Line in São José dos Campos, São Paulo, MRO centers such as the Air Force Aeronautical Material Park (PAMA-LS), Increase Aviation Services and Gol Airlines and state of the art research facilities such as the National Space Research Institute (INPE).

## Registration Fee

The Congress registration fee is expected to be approximately 800 Euros (early bird registration) for representatives of ICAS member societies and associates, and 975 Euros for non-members. Accompanying person registration fee is planned to be about 75 Euros. The registration fee for students is expected to be approximately 150 Euros.

**For further information please check the websites below or contact:**

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