

**33RD CONGRESS  
OF THE INTERNATIONAL COUNCIL  
OF THE AERONAUTICAL SCIENCES  
STOCKHOLM, SWEDEN, 4-9 SEPTEMBER, 2022**



**After four years, the ICAS community  
will meet again in-person to discuss  
Aeronautics Research and Innovation  
for Future Generations**

# **PRELIMINARY PROGRAMME**



**HOSTED BY  
THE SWEDISH SOCIETY OF AERONAUTICS AND ASTRONAUTICS (FTF)  
IN COOPERATION WITH  
THE SWEDISH STRATEGIC INNOVATION PROGRAMME FOR AERONAUTICS (INNOVAIR)**





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## Welcome from the ICAS President



Dr. Joao Luiz Azevedo  
President, International Council  
of the Aeronautical Sciences

On behalf of the International Council of the Aeronautical Sciences (ICAS), it is my pleasure to welcome you to the 33rd ICAS Congress in Stockholm, Sweden. ICAS was established in 1957 under the leadership of Professor Theodore von Kármán and ICAS biennial congresses have been providing a forum for an open discussion of current and relevant topics in aeronautics since 1958. The collaborations and partnerships that have become a reality as a result of the opportunities provided by ICAS congresses demonstrate the value of such a high-level forum.

In 2022, the ICAS Congress is returning to Stockholm after 32 years. The last time that an ICAS Congress was held in Sweden was in 1990. Our Swedish colleagues have been hard at work, for quite some time now, and they are striving to uphold the ICAS tradition of bringing together a global array of topics and participants as ICAS Congresses constitute the only true international forum that covers the world of aeronautics. All of us at ICAS are very grateful for their efforts that will give us the opportunity to meet again, in-person, after the several difficulties generated by the Covid pandemic. We are also grateful to our sponsors for this year's congress, whose names will be prominently displayed in this program and throughout the congress venue.

The scientific portion of the congress will take place at the Stockholm Waterfront Congress Centre, which is a world-class facility, extremely conveniently located and that affords beautiful views of the Stockholm waterfront. I believe that our ICAS Program Committee has been able to put together an extremely strong and interesting technical program. As usual with our congresses, the technical program includes the award and general lectures as well as the parallel technical sessions. For the present Congress, there was a definite effort to also invite keynote talks for the various technical panels and, even, invite complete sessions that would address current topics of interest for our industry. Several of these invited sessions will allow for further in-depth discussion of issues addressed in the general lectures. Hence, topics such as certification by analysis, validation of computational tools, sustainable aviation and clean aviation, among other subjects, have all been included as invited sessions. In order to accommodate these additions to the technical program, 14 parallel sessions are being planned throughout the week. I am confident that you will find the technical program for the 33rd ICAS Congress to be insightful and relevant for the current needs of the aeronautical industry.

It is, therefore, with great pleasure that I extend to you my warmest welcome to Stockholm. I encourage you to actively participate in this year's ICAS Congress, taking advantage of the very encompassing technical, networking and cultural opportunities that have been prepared by our Swedish colleagues in the Local Organizing Committee and by the ICAS Program Committee. I am sure that the 2022 ICAS Congress will be a memorable experience.

## Welcome by FTF & Innovair



Dr. Roland Karlsson  
President, The Swedish Society  
of Aeronautics and Astronautics



Dr. Anders Blom  
Program Director, Innovair

Dear Colleagues,

On behalf of the Swedish Society of Aeronautics and Astronautics (FTF) and the Swedish Strategic Programme for Aeronautics (Innovair), we are proud to invite professionals from academia and industry, as well as governmental representatives, to attend the 33rd Congress of the International Council of the Aeronautical Sciences (ICAS).

ICAS 2022 shall be held at the Stockholm Waterfront Congress Centre in Sweden on 4-9 September 2022, and FTF and Innovair will host the event.

ICAS was established in 1957 as a non-government, non-profit scientific organisation with the mission to advance knowledge and facilitate collaboration in aeronautics. Today ICAS gathers members from 30 countries from five continents. One of the essential activities of ICAS is the biennial international Congress. Since the first ICAS Congress in Madrid in 1958, this has become the world's primary forum for aeronautical technology. The Congress attracts leading experts and leaders of top aerospace research centres, industries, universities, and representatives from governments. The topics of the Congress include the most recent scientific achievements in aeronautics and top priorities in the design of future generation aircraft, engines, and systems to cater for the greening of sustainable aviation. Moreover, the Congress is a unique platform for companies to showcase products and services and network with professionals worldwide. An essential part of the gathering is introducing and encouraging young people to enter the aeronautics sector via higher education and research activities.

Sweden has a long and successful tradition of designing and producing aircraft and propulsion systems, both for the civil and military markets, which are unique for a small country. Furthermore, the Swedish industry, and society, are well-known for efficient, innovative, and non-hierarchical organisations. Besides our big companies, there is a structured innovation system including academia, research institutes, and an increasing number of sub-contractors available in Sweden.

A large number of papers will be presented at ICAS 2022 Congress in Stockholm, together with an exhibition of products and services from world-leading companies, and we anticipate more than 800 delegates from some 40 countries to attend.

We very much look forward to welcoming you to ICAS 2022 in Stockholm.

# ICAS Organization and Committees

## THE INTERNATIONAL COUNCIL OF THE AERONAUTICAL SCIENCES

ICAS was founded by Theodore von Karman in 1957 as a non-governmental, not-for-profit scientific organization to encourage the free international exchange of information on aeronautical research and technology.

The mission of ICAS is to provide regularly scheduled events and publications that enable a better understanding of engineering science and practice and an improved level of cooperation among aeronautical engineering professionals from around the world. ICAS currently serves as the only international support organization to representative aeronautical engineering professional societies and their members in 30 countries.

ICAS functions under three primary bodies: Council (meets biennially), Executive Committee (meets at least twice each year) and Programme Committee (meets annually). ICAS holds an International Congress in the fields of Aeronautical Sciences on a biennial basis. The venue is chosen by the Council and changes from Congress to Congress. Furthermore ICAS organizes a thematic workshop in the year between the congresses in connection with the meeting of the Program Committee.



## THE ICAS COUNCIL

### Representatives of Member Societies

C. Bil, Australia  
H. Deconinck, Belgium  
L. Alves, Brazil  
G. Languedoc, Canada  
J. Yao, P.R. of China  
J. Juracka, Czech Republic  
M. Kanerva, Finland  
B. Stoufflet, France  
E. Stumpf, Germany  
D. Rohacs, Hungary  
H. Bhatia, India  
H. Djojodihardjo, Indonesia  
O. Rand, Israel  
A. Viviani, Italy

K. Rinoie, Japan  
J.H. Han, Korea  
J. Melkert, The Netherlands  
T. Goetzendorf-Grabowski, Poland  
L. Campos, Portugal  
F. Zaganescu, Romania  
A. Mirzoyan, Russia  
B. Rasuo, Serbia  
J. Monk, South Africa  
A. Blom, Sweden  
L. Manfriani, Switzerland  
F. Haselbach, United Kingdom  
T. Irvine, U.S.A.



## THE ICAS EXECUTIVE COMMITTEE

### Officers

President: J. Azevedo, Brazil  
P.C. Chair: D. Mavris, U.S.A.  
Treasurer: G. Holmberg, Sweden  
Past President: S. Suzuki, Japan  
Executive Secretary: A. Probst,  
Germany

### Members

C. Atkin, United Kingdom  
M. Peters, The Netherlands  
M. Scott, Australia  
S. Remy, France  
X. Zhang, China  
R. Gerhards, Germany  
S. Bagassi, Italy  
F. Collier, U.S.A.  
S. Chernyshev, Russia  
A. Gustafsson (ICAS 2022)

## THE ICAS SECRETARIAT

The ICAS Secretariat is hosted by the Deutsche Gesellschaft für Luft-und Raumfahrt (DGLR) and located in Bonn, Germany. Axel Probst is the ICAS Executive Secretary and is assisted by Bodo Heinrichs as the ICAS Coordinator.

Address: ICAS Secretariat, c/o DGLR, D-53175 BONN, Germany

Phone: +49-(0)228-30805-0, Fax: +49-(0)228-30805-24, E-mail: [icas@icas.org](mailto:icas@icas.org)

## THE ICAS PROGRAMME COMMITTEE

All members of ICAS Programme Committee are listed on the ICAS Web-Site.

Below are listed those who took part in the preparation meeting for ICAS 2022.

A. Alaimo, IT	R. Gerhards, DE	R. Mange, US	T. Rogalski, PL
L. Alves, BR	T. Gibson, UK	F. Marulo, IT	C. Mari, FR
G. A. Amiryants, RU	T. G.-Grabowski, PL	F. Mastroddi, IT	M. Scheidt, US
K. Anderson, AU	Z. Goraj, PL	D. Mavris, US	P. Schmollgruber, FR
A. Andreeva-Mori, JP	E. Gowree, UK	J. Melkert, NL	M. Scott, AU
C. Atkin, UK	D. Gu, CN	J. Mieloszyk, PL	Y. Shang, CN
J.L.F. Azevedo, BR	G. Halila, BR	A. Mirzoyan, RU	P. Stezycki, PL
S. Bagassi, IT	J.H. Han, KR	J. Monk, ZA	B. Stoufflet, FR
J. Bayandor, AU	M. Harigae, JP	R. Mori, JP	E. Stumpf, DE
E. Belo, BR	F. Haselbach, UK	D. Mueller-Wiesner, DE	S. Suzuki, JP
C. Bil, AU	G. Holmberg, SE	B. Nagel, DE	H. Toebben, DE
A. Blom, SE	T. Ikeda, JP	J. Nairus, US	P. Vijgen, US
Ch. Breitsamter, DE	A. Isikveren, FR	P. Oliveira, PT	N. Viola, IT
P. Camanho, PT	E. Itoh, JP	M. Padulo, FR	A. Viviani, IT
L. Campos, PT	L.P. Jiang, CN	M. Peters, NL	N. Voevodenko, RU
Y. C. Chen, CN	J. Juracka, CZ	O. Pinon-Fischer, US	R. Wahls, US
F. Collier, US	M. Kanerva, FI	P. Prakasha, DE	T. Wan, TW
M. Consiglio, US	Y. Kim, KR	O. Rand, IL	Y. Watanabe, JP
S. Conway, US	B. Kimmel, US	B. Rasuo, RS	I. Yimer, CA
H. Djojodihardjo, ID	L. Kiskowskiak, PL	K. Rein-Weston, US	S. Ying, US
B. Fredriksson, SE	A. Krein, DE	S. Remy, FR	X.G. Zhang, CN
S. Fu, CN	P. Krus, SE	S. Ricci, IT	Y. Zhang, CN
Y.L. Fu, CN	M. Lott, BR	K. Rinoie, JP	D. Zing, CA
Z.H Gao, CN	L. Manfriani, CH	D. Rohacs, HU	

## THE ICAS 2022 Local Organizing Committee



**Chair:** Dr. Roland Karlsson, FTF President

**Vice Chair:** Dr. Anders Blom, Innovair Programme Director

**Secretary:** Björn Jonsson, Defence Materiel Administration

**Budget/Finances:** Anders Gustafsson, FTF/Innovair

**Partnership/Exhibition/Events:** Olle Bååthe, Sys-tecon AB

**ICAS Liaison & Webmaster:** Anders Gustafsson, FTF/Innovair

**Other members:**

**Göran Bengtsson**, Saab Aeronautics

**Robert Lundberg**, GKN Aerospace Sweden

**Fredrik Olofsson**, Aerospace Cluster Sweden

**Christina Ahremark**, Swedish Armed Forces

**Mats-Olof Olsson**, Swedish Armed Forces

**Prof. Petter Krus**, Linköping University, Linköping

**Louise Fischer**, KTH Aerospace student

**Caroline Knies**, Meetagain Konferens AB (Congress Secretariat)

**THE LOCAL ORGANISING COMMITTEE CAN BE CONTACTED AT:**

[info@icas2022.com](mailto:info@icas2022.com)

# ICAS Member Societies & Associates

## THE ICAS MEMBER SOCIETIES

### Australia

**The Royal Aeronautical Society - Australian Division**  
PO Box 1583  
Crows Nest, NSW 2065

### Belgium

**VKI - Von Kàrmàn Institute for Fluid Dynamics**  
Chaussée de Waterloo 72  
1640 Rhode - St. Genese

### Brazil

**ABCM - Associação Brasileira de Engenharia e Ciencias Mecanicas**  
Praça Tiradentes, 10, 9º andar  
Centro  
20060-070 Rio de Janeiro, RJ

### Canada

**CASI - Canadian Aeronautics and Space Institute**  
350 Terry Fox Drive Suite 104  
Kanata, Ontario, K2K 2W5

### People's Republic of China

**CSAA - Chinese Society of Aeronautics and Astronautics**  
No.2 Beiyuan, Andingmenwai  
Chaoyang District, Beijing  
100012  
Post Box 761-2, Beijing

### Czech Republic

**CSM - Czech Society for Mechanics**  
c/o Brno University of Technology  
Institute for Aerospace Engineering  
Engineering Technicka 2896/2  
616 69 Brno

### Finland

**The Finnish Association of Graduate Engineers TEK**  
Ratavartijankatu 2  
00520 Helsinki

### France

**AAAF - Association Aéronautique et Astronautique de France**  
6, rue Galilée  
75782 Paris Cedex 16

### Germany

**DGLR - Deutsche Gesellschaft für Luft und Raumfahrt**  
Godesberger Allee 70  
53175 Bonn

### Hungary

**GTE - Scientific Society of Mechanical Engineers**  
PO Box 433  
1371 Budapest

### India

**AeSI - Aeronautical Society of India**  
13-B, Indra Pashra Estate  
New Dehli - 110002

### Indonesia

**IAAI - Institute of Aeronautics and Astronautics Indonesia**  
**Institut Teknologi Bandung**  
Jalan Ganesha 10  
40132 Bandung

### Israel

**Israel Society of Aeronautics and Astronautics**  
P.O. Box 15524  
Rishon Le-Zion 7505401

### Italy

**AIDAA - Associazione Italiana Di Aeronautica e Astronautica**  
Casella Postale 227  
00187 Roma V. R.

### Japan

**JSASS - Japan Society for Aeronautics and Space Sciences**  
4-1-21 Nihonbashi-Muromachi,  
Chuo-ku,  
Tokyo 103-0022

### Korea

**KSAS - Korean Society for Aeronautical and Space Sciences**  
#635-4, Yeogsam-dong,  
Gangnam-gu, Seoul 135-703

### Poland

**Polish Society of Aerospace Sciences**  
c/o Warsaw University of Technology  
ul. Nowowiejska 24  
00-665 Warsaw

### Portugal

**Ordem dos Engenheiros**  
Avenida António Augusto de Aguiar, N.º 3-D  
1069-030 - Lisboa



**Romania**

**INCAS - National Institute  
for Aerospace Research  
"Elie Carafoli"**  
220 Iuliu Maniu Blvd., Sector 6  
061126, Bucharest

**Russian Federation**

**TsAGI - Central  
Aerohydrodynamic  
Institute**  
1, Zhukovski Street  
Zhukovski  
Moscow Region 140160

**Republic of Serbia**

**Serbian Aerospace  
Society**  
c/o Faculty of Mechanical  
Engineering,  
University of Belgrade,  
Kraljice Marije 16,  
11120 Belgrade 35

**Republic of South Africa**

**AeSSA - Aeronautical  
Society of South Africa**  
P.O. Box 14717  
Sinoville 0129

**Sweden**

**FTF - Swedish Society  
of Aeronautics and  
Astronautics**  
c/o SSC  
PO Box 4207  
SE-17154 SOLNA

**Switzerland**

**SvFW - Schweizerische  
Vereinigung Für  
Flugwissenschaften**  
c/o RUAG Aerospace  
CH-6032 Emmen

**The Netherlands**

**NVvL - The Netherlands  
Association of  
Aeronautical Engineers**  
Anthony Fokkerweg 2,  
1059 CM, Amsterdam

**United Kingdom**

**RAeS - Royal  
Aeronautical Society**  
4 Hamilton Place  
London W1J 7BQ

**United States**

**AIAA - American Institute  
of Aeronautics and  
Astronautics**  
12700 Sunrise Valley Drive  
Suite 200  
Reston, VA 20191-5807

## THE ICAS ASSOCIATE MEMBERS

### Australia

**Department of  
Defence - Science and  
Technology**

506 Lorimer Street,  
Fishermans Bend,  
Victoria 3207

### Brazil

**Embraer S.A.**

Av. Brigadeiro Faria Lima,  
2.170  
12227-901 – São José dos  
Campos – SP

### Canada

**Aerospace NRC**

Montreal Road  
Ottawa, Ontario, K1A 0R6

### China

**AASRC - Taiwan,  
China**

Room R3-211, No. 300,  
Jhongli City, Taoyuan  
County 320

### **CAE - Chinese**

**Aeronautical  
Establishment**

P.O. Box 761 No.2 Anwai  
Beiyuan Beijing 100012

**COMAC - Commercial  
Aircraft Corporation  
of China, Ltd.**

Zhang Yang Road 25  
Shanghai 200120

**Tsinghua University,  
School of Aerospace  
Engineering**

No.1 Qinghuayuan, Haidian  
District  
Beijing 100084, China

### Czech Republic

**VZLU - Aeronautical  
Research and Test  
Institute**

Beranovych 130  
199 05 Praha - Letnany

### France

**ONERA - French  
Aeronautics and  
Space Research  
Center**

BP 72  
92322 Chatillon Cedex

### **SAFRAN**

2 bd du Général Martial  
Valin  
75724 Paris Cedex 15

### Germany

**Bauhaus Luftfahrt e.V.**

Willi-Messerschmitt-Str. 1  
82024 Taufkirchen

**DLR - German  
Aerospace Center**

Linder Höhe  
51147 Köln

**Technical University  
of Munich**

Arcisstraße 21  
80333 Munich

### Italy

**C.I.R.A.-Italian  
aerospace research  
centre**

Via Maiorise  
81043 Capua (CE)

**University of Naples  
"Federico II"**

Department of  
Aerospace Engineering  
Via Claudio, 21  
80125 Napoli

### Japan

**JADC - Japan Aircraft  
Development  
Corporation**

Hibiya Kokusai Bldg. 7F  
2-2-3, Uchisaiwai-cho,  
Chiyoda-ku, Tokyo, 100-  
0011

### Japan (cont.)

**ENRI - Electronic  
Navigation Research  
Institute**

7-42-23 Jindaiji-higashi-  
machi, Chofu,  
Tokyo 182-0012

**JAXA - Institute of  
Aeronautical  
Technology (IAT)**

7-44-1 Jindaiji-  
higashimachi, Chofu,  
Tokyo 182-8522

**Mitsubishi Aircraft  
Corporation**

Nagoya Airport, Toyoyama-  
cho, Nishikasugai-Gun  
Aichi 480-0287

### Lithuania

**Vilniaus Gedimino  
technikos  
universitetas - VGTU**

Saulėtekio alėja 11,  
Vilnius 10223

### Pakistan

**Institute of Space  
Technology**

1, Islamabad Highway,  
Islamabad 44000

### Poland

**ILOT - INSTITUTE OF  
AVIATION**

Al. Krakowska 110/114  
02-256 Warsaw

**Instytut Techniczny  
Wojsk Lotniczych -  
Polish Air Force  
Institute of  
Technology**

6 Ks. Bolesława Street  
01-494 Warsaw

**Russia**

**CIAM - Central  
Institute of Aviation  
Motors**  
2, Aviamotornaya St.  
111116 Moscow

**MAI - Moscow  
Aviation Institute**  
4 Volokolamskoye shosse  
125993 Moscow

**Republic of South  
Africa**

**CSIR - DPSS**  
PO Box 395  
Pretoria 0001

**Sweden**  
**FOI - Swedish  
Defence Research  
Agency**  
SE-16490 Stockholm

**SAAB AB**  
SE-58188 Linköping

**The Netherlands**

**Airbus S.A.S.**  
2 Rond Point Maurice  
Bellonte  
31700 – Blagnac

**NLR – Netherlands  
Aerospace Centre**  
PO Box 90502  
1006 BM Amsterdam

**United Kingdom**  
**Poll Aerosciences**  
114 High Street  
Cranfield - Bedfordshire -  
MK43 0DG

**Rolls-Royce**  
PO Box 31  
Derby DE24 8BJ

**United States**

**Aerospace Systems  
Design Laboratory  
Georgia Institute of  
Technology**  
Atlanta, GA 30332-0150

**Boeing Company  
WEO&T Enterprise  
Technology Strategy,  
External Technical  
Affiliations**  
P.O. Box 3707, MC 03-FR  
Seattle, WA 98124-2207

**Honda Aircraft  
Company**  
6430 Ballinger Rd  
Greensboro, NC 27410

**Lockheed Martin  
Corporation**  
6801 Rockledge Drive  
Bethesda, Maryland 2081



## Detailed Technical Programme

For the current version of the Detailed Technical Programme please use the following link:  
<https://icas.dglr.de/icas2022/programme.html>



## List of Reserve Papers

For the current version of the List of Reserve Papers please use the following link:  
<https://icas.dglr.de/icas2022/reserves.html>



## List of Interactive Presentations

For the current version of the List of Interactive Presentations please use the following link:  
<https://icas.dglr.de/icas2022/interactive.html>



## Social Events

### Welcome Reception Sunday 4th September

The welcome reception on **Sunday evening 18:00-20:00** will be held at the Stockholm Waterfront Congress Centre, where the **registration desk will be opened from 16:00 to 19:00**.

(This event is included in the registration fee for congress participants and accompanying persons.)

### Congress Reception Monday 5th September

The Congress Reception on **Monday evening 19:00-21:00** is hosted by **the City of Stockholm and will be held at the Stockholm City Hall**.

This symbol of Sweden's capital city is located just across the water from the Congress Centre (5 min walk).

(This event is included in the registration fee for congress participants and accompanying persons.)



### About the City Hall

The City Hall hosts a large variety of activities and is the seat of the City Council of Stockholm. The Blue and Golden Halls, among the world's finest banquet premises, are what people most frequently associate with the City Hall. Naturally the highlight of every year is the Nobel Banquet held in December (picture above). [international.stockholm.se/the-city-hall/](https://international.stockholm.se/the-city-hall/)

### Student Party Tuesday 6th September 20:00-23:00.

**- 100 SEK (= 10 EUR) VAT included**

The student party will be held at the Waterfront Congress Center. In the bar area at level 5 you will enjoy a magnificent view of Stockholm and Lake Mälaren while networking with your peers from all over the world. Food and drinks will be served and there will be music and a great friendship party! **Please confirm your intention to participate when you register online.**

### Congress Banquet Thursday 8th September – 950 SEK (= 95 EUR) VAT included

The ICAS 2022 Congress Banquet will be held at the **Vasa museum**, which is a magnificent setting for a banquet with dinner tables set up under the prow of the old ship. A truly unique experience – leaving you with everlasting memories. A guided tour of the Vasa and the exhibitions is included. **Please book and pay your banquet ticket when you register online.**



#### About the Vasa Museum

In 1961, the Vasa was raised from the depths of Stockholm harbour where she had lain for 333 years. Now housed in an award-winning museum, seeing this Royal flagship up close is a never-to-be-forgotten experience. Vasa is a real treasure from the 17th century that offers us a rich history, from the work at the shipyard to life on board a warship. This is the most visited museum in Sweden. **Location:** 10-15 minutes by public transport from the Central Station. [www.vasamuseet.se/en](http://www.vasamuseet.se/en)



## Accompanying Persons Programme

Stockholm with surroundings has a lot to offer visitors. Magnificent art, dynamic culture, ornate palaces, medieval history or unspoilt nature. Read more about all this under [www.icas2022.com/stockholm/](http://www.icas2022.com/stockholm/) or on [www.visitstockholm.com](http://www.visitstockholm.com).

Some accompanying persons may wish to visit attractions on their own and can find numerous suggestions on the links above. **For those who prefer organized tours one tour per day is offered Monday through Thursday – see some details below.**

**Prices for these tours are expected to be available in May and will then be included on the website. When we get closer to the congress an email with more details and a special booking link will be sent to registered accompanying persons.**



Drottningholm Castle

Old Town

Archipelago Tour

ABBA museum

### Monday 5th September

#### Old Town walkabout (lunch included)

Gamla Stan (Old Town) is one of Europe's best preserved. This is where Stockholm was originally founded in the 13th century and the medieval atmosphere is still evident, with narrow cobbled streets, low-rise old-style houses, squares, workshops, and boutiques. We walk around with an experienced guide and conclude with joint lunch.

Time: 10-12 plus lunch

Price: TBD

Suggestions for individual visits after lunch: Livrustkammaren (500 years of Royal History) or the Nobel Museum.

### Tuesday 6th September

#### Drottningholm Palace by boat (lunch included)

Drottningholm Palace, situated on Lake Mälaren just 15 km from Stockholm, dates from the 17th century. The palace, which is Sweden's Royal Residence, was built along the lines of Versailles in breath-taking grounds. The 18th century Royal Court Theatre is the world's oldest playhouse still in use and its original scene-changing machinery is still intact. The palace – along with the court theatre, park and Chinese Pavilion – is one of the UNESCO cultural heritage sites in Sweden.

Time: 11-16

Price: TBD

### **Wednesday 7th September**

#### **Art museum tour (including lunch)**

There are several art museums in Stockholm like Nationalmuseum, Moderna Museet, Waldemarsudde, The Thiel Gallery and Millesgården, with its vast sculpture garden. Based on what is planned to be exhibited in September the tour will start with Moderna museet [www.modernamuseet.se/stockholm/en/](http://www.modernamuseet.se/stockholm/en/) and then Nationalmuseum [www.nationalmuseum.se/en/](http://www.nationalmuseum.se/en/) where we also will have lunch.

Time: 10-16

Price: TBD

### **Thursday 8th September**

#### **Archipelago Tour to Vaxholm**

The Stockholm archipelago has about 30,000 islands and many different tours are on offer. For ICAS accompanying persons we suggest a tour to the archipelago capital town Vaxholm. This is the perfect tour if you're looking to experience a picturesque archipelago town. The small town is idyllic with narrow alleys, shops and galleries, the Vaxholm citadel and much more.

Time: To Vaxholm with lunch onboard: 10:30-12:00. Return directly with the same boat 12:00-13:15 or stay in Vaxholm for some hours and return with the next boat 15:30-16:45.

Price: TBD

## Technical Tours

Technical tours are planned to be arranged on Friday 9th September as outlined below.

### Saab in Linköping including a visit to the Air Force Museum

A full-day tour with bus travel to Linköping (2 hours from Stockholm), including a visit to the Saab facilities in Linköping and the Air Force Museum located near Linköping. Saab is well known for developing many generations of military aircraft and its commuter aircraft Saab 340 and Saab 2000. Saab has, together with Boeing, developed the new T-7A Red Hawk trainer. Saab Aeronautics today offers advanced airborne systems, related subsystems, Unmanned Aerial Systems (UAS), aerostructures, and services to defense customers and commercial aerospace industries worldwide. Read more about Saab in the chapter [Aeronautics in Sweden](#).

**The number of visitors is limited to about 100, in two buses.**



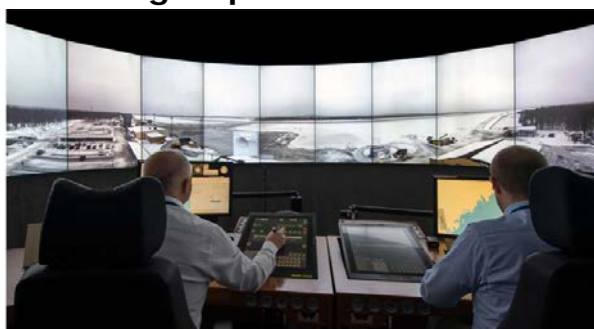
More about the Air Force Museum:

<https://www.flygvapenmuseum.se/languages/engelska/>

### ATC Arlanda – Remote Tower Centre

A half-day tour to Visit Arlanda Remote Tower Centre at the Stockholm main airport – located 40 km north of Stockholm. The Remote Tower Centre Stockholm remotely controls four Swedish airports. The Swedish Air Navigation Service Provider (LFV) and Saab were the first in the world to put remote air traffic control towers into operation. Saab Digital Air Traffic Solutions developed the system LFV operates at Arlanda. A second Remote Tower Centre is located at Sundsvall Airport, where Saab Digital Air Traffic Solutions, SDATS, is the service provider and operates two Swedish airports.

**Only available for a small group.**





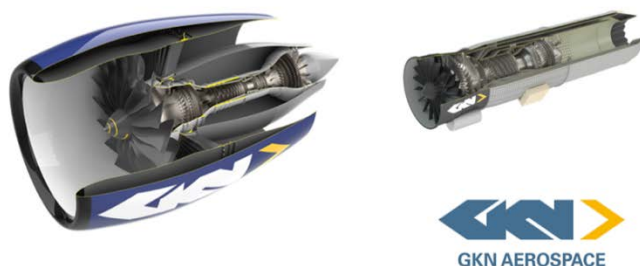
Please indicate your interest in the technical tours to Linköping and Arlanda ATC when you register. Please note that participation may be restricted for security reasons.

The participants will be selected after the Early Bird deadline June 15 and will then receive an email with more information and a link for final confirmation and payment.

### **GKN Aerospace Engine Systems in Trollhättan**

Trollhättan is located 400 km west of Stockholm at the lake Vänern.

GKN Aerospace Engine Systems, located in Trollhättan, Sweden (formerly Volvo Aero) develops and manufactures components for aircraft, gas turbines and rocket engines with high technology content in cooperation with the world's leading producers. Read more about GKN Aerospace Engine Systems in the chapter [Aeronautics in Sweden](#).



### **Important information about the possibility to visit GKN:**

The tour to GKN Aerospace in Trollhättan, originally planned as a day trip on Friday 9<sup>th</sup> September, has for various reasons become difficult to arrange.

For congress participants who have professional contacts with GKN and want to visit, a post-congress tour can be arranged. You may then for example travel to Gothenburg by train (3 hours) during the weekend. The visit to GKN in Trollhättan can be arranged on Monday September 12. On the way to Trollhättan, from Gothenburg (a one-hour drive) a stop could be made at Brogren Industries [www.brogrenindustries.com/en](http://www.brogrenindustries.com/en), an SME company that is a GKN supplier.

The visit to GKN will comprise presentations of aerospace activities at GKN Aerospace Engine Systems as well as a visit to PTC Innovatum, a research arena for industrial production processes R&D on metallic and composite aerospace products also located in Trollhättan.

**If you are interested to take part in such a post-congress tour to Trollhättan please send an email to [gknvisit@icas2022.com](mailto:gknvisit@icas2022.com).**

## ICAS 2022 Registration fees

### EARLY BIRD REGISTRATION 1 MARCH – 15 JUNE 2022.

Registration fees are presented in SEK. Exchange rate 1,00 EUR ≈ 10,00 SEK

	ICAS 2022 registration fees in SEK – incl. VAT (excl. VAT)			
CATEGORY	Very Early Bird <31 dec. 2021	Early Bird <15 June	Regular <31 August	On-site
Members*	8 750 (7 000)	9 250 (7 400)	10 500 (8 400)	11 500 (9 200)
Non-Members	9 875 (7 900)	11 000 (8 800)	12 375 (9 900)	13 500 (10 800)
Students**	2 000 (1 600)	2 000 (1 600)	2 000 (1 600)	2 500 (2 000)
Retired (> 65)	5 000 (4 000)	5 000 (4 000)	5 000 (4 000)	5 000 (4 000)
Accomp. Persons***	750 (600)	750 (600)	750 (600)	1 250 (1 000)

The Swedish VAT rules for a physical congress imply that all delegates will be charged 25% VAT, but the **VAT can in most cases be reclaimed**.

If you would like to read more about this, please check the page [VAT rules and applicability](#).

### Conditions

\* Member = Member of any [ICAS Member Society](#) or [ICAS Associate Member](#)

\*\* Student = undergraduate or full-time graduate students at the time of the Congress

\*\*\* All accompanying persons must be registered

### Registration fees include:

**Regular Delegates** – Attendance at the Congress sessions, Welcome Reception on Sunday, Congress Reception on Monday, lunches Monday to Thursday, coffee/tea and water through the days, and Congress bag.

**Students** – Same as for Regular Delegates plus Student Party on Tuesday.

**Retired Persons** – Same as for Regular Delegates.

**Accompanying Persons** – Attendance at the Welcome Reception on Sunday, and the Congress Reception on Monday evening, possibility to book an organized Accompanying person tour.

### EARLY BIRD REGISTRATION IS OPEN FROM 1 MARCH UNTIL 15 JUNE

To be eligible for a VAT refund you must have the VAT or tax registration number for your company/organization available when you register.

Before you proceed to the online registration, please also check the different options for [Technical tours](#), [Social events](#) and [Accompanying persons programme](#).

PROCEED TO THE [ONLINE REGISTRATION LINK](#)

### **Cancellation – registration fee**

The registration can be cancelled until July 15, 2022. However, a cancellation fee of 500 SEK will be charged. After this date, no refunds are possible. Should you be unable to attend, you may, however, be substituted by a colleague. Cancellation or name changes must be made in writing and sent to: [icas2022@meetagain.se](mailto:icas2022@meetagain.se).

## **Accommodation**

### **Hotels for ICAS 2022 in Stockholm, Sweden**

Please check the congress website for a list of hotels within walking distance from Stockholm Waterfront Congress Centre (the venue) and the Central Station. Two examples are noted below.

Stockholm's hotels are at the forefront when it comes to sustainability. In fact, hotels simply can't survive in the Swedish hotel market without credible, well-documented sustainability efforts. You are encouraged to book your hotel room via our online links shown below as "*Book Now*". Please book early to ensure a room at one of these preferred hotels.

### **Radisson Blu Waterfront Hotel – adjacent to the Stockholm Waterfront Congress Centre (the venue) and Central Station**

Situated in the heart of the Swedish capital, the Radisson Blu Waterfront Hotel Stockholm, is an ideal spot for both business and leisure travelers.

**Address:** Nils Ericsons Plan 4 111 64 Stockholm

### **Prices (including VAT, breakfast and complimentary WiFi):**

Standard single: 2 395 SEK per night

Standard double: 2 595 SEK per night



**[Book Radisson Blue Now](#)**



### **Generator (a cheap alternative for student participants)**

Generator Stockholm is located in central Stockholm, just 5 minutes' walk from the Central station. Generator Stockholm unites the city's strong sense of design and patterning with inspired art, great food and drinks, on trend music and the best events.

It's a Stockholm hot spot loved by both locals and tourists. Here you can book a single or a double room but also a shared room in 4 or 6-bed dorm.

**Address:** Torsgatan 10, 111 23 Stockholm

### **Prices (including VAT, breakfast and complimentary WiFi):**

Double room for single use – 1450 SEK/night including breakfast.

Twin room (2 persons) – 1500 SEK/night including breakfast.

Four-bed room (4 persons) – 2140 SEK/night including breakfast.

**Note: only 535 SEK/person in shared four-bed room!**



Rooms that have not been booked will be released from 30 days before arrival. Rooms can still be booked after this date, but to ordinary rates.

Free cancellation up until 24 hours upon arrival, thereafter 100 % payment.

**Book Now – BOOKING CODE: ICAS 2022**

Participants book their rooms by sending an email

to [groups.gesto@staygenerator.com](mailto:groups.gesto@staygenerator.com) or call +46 (0)8 505 323 70.

Please email the following details:

- First and last name
- Telephone number
- Email
- Arrival and departure date
- Room type (double room for single use OR twin room (2 persons))

**Booking links to other hotels are provided on the congress website.**

## Transportation to/from airports

Wherever you are in the world, you'll find Stockholm easily accessible. It's a key hub with direct flight-connections to and from many destinations.

### Stockholm Arlanda Airport

Stockholm Arlanda Airport is the primary gateway to Stockholm and is located 40 kilometers (25 miles) north of Stockholm City. Many airlines serve non-stop routes to international destinations to/from Arlanda.

Once you arrive, it's just a 20-minute journey into the city center with the Arlanda Express train. You are then only an escalator away from the Stockholm Waterfront Congress Center!

*Airport link to Stockholm city center*

The Arlanda Express Train provides a shuttle service between Stockholm Arlanda Airport and Stockholm Central Station. The journey takes 20 minutes with trains departing every 15 minutes. The train platform is easily accessible, underneath the arrivals terminal. The ordinary price for a one way ticket is **299 SEK** (reduced price if you are below 25 or above 65). However Arlanda Express offers special rates for congress delegates. Book your ticket online at [www.arlandaexpress.com](http://www.arlandaexpress.com) or via the QR-code below.

 <p><b>Book online and get 15% discount.</b></p> <p>Buy Ticket</p> 	<p><b>Special web deal.</b></p> <p>We offer all ICAS 2022 delegates a smooth way to and from the airport. Buy your ticket at <a href="http://arlandaexpress.com">arlandaexpress.com</a> and use discount code*: ICAS22</p> <p><small>*Code applicable 90 days ahead of congress.</small></p> 
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#### PLEASE NOTE:

**The discount code ICAS22 is only valid from June 6 to September 16.**

In addition, there is a coach-service departing every 10-15 minutes between Arlanda Airport and the CityTerminal – located next to the Central Station. The travel time is 35-40 minutes. A typical coach service price from Arlanda to downtown is **119 SEK**.

Taxi and limousine services are available at fixed rates. Travel time: 35-50 minutes, depending on time of day.

**Please note:** Taxi fares in Sweden aren't regulated, which means that prices can vary significantly between companies. With this in mind, we recommend that you use the services of well-known firms like Taxi Stockholm, Sverigetaxi/Taxi 020 or Taxi Kurir. A typical fixed price fare for taxi from Arlanda to downtown is **575 SEK** (but may depend on time of arrival).

More information Arlanda: [www.swedavia.com/arlanda/](http://www.swedavia.com/arlanda/)

### **Bromma Stockholm Airport**

Bromma Airport is a smaller airport offering domestic flights as well as flights to selected European destinations. It's located conveniently close to central Stockholm, and waiting times are generally short.

#### Airport link to Stockholm city center

Bromma Airport offers coach-services with departures timed with arrivals and departures at the airports. Travel time: 20 minutes.

More information Bromma: [www.swedavia.se/bromma/](http://www.swedavia.se/bromma/)

### **Stockholm Skavsta Airport**

Stockholm Skavsta Airport is located 100 km south of Stockholm – right next to the main E4-highway. Budget airlines, like Ryanair and Wizz Air offer cheap flight connections to/from many places in Europe.

#### Airport link to Stockholm city center

Skavsta Airport offers coach-services with departures timed with arrivals and departures at the airports. Travel time: 80 minutes.

More information Skavsta: [www.skavsta.se](http://www.skavsta.se)

### **Travel times**

- Stockholm Arlanda Airport – City center: 20 min by express
- Bromma Stockholm Airport – City center: 20 min by airport coach.
- Stockholm Skavsta Airport – City center: 80 min by airport coach.

## Useful hints and answers to questions you might have

### Climate

The climate in Stockholm during September can be summarized as mild and reasonably dry. September is in the fall / autumn in Stockholm and is typically the 4th warmest month of the year. Daytime maximum temperatures average around a cool 15°C (59°F), whilst at night 9°C (48°F) is normal.

### Currency

Sweden is one of few EU countries that opted to keep their currency and not use the Euro. The currency in Sweden is called the Swedish crown, or the krona (SEK). Bank notes come in the following values 500 SEK, 200 SEK, 100 SEK, 50 SEK and 20 SEK. If you still need cash, there are many ATM machines available in central Stockholm. For money exchange, the companies "Forex" and "X-change" have offices at the airports and in the city.

### Can I pay cash or with credit card?

Most stores handle cash but it is more common to pay by credit card today and please note that some shops and restaurants do not accept cash! Major credit cards are accepted in hotels, restaurants and shops. It is advisable to carry an identity card or other form of photo identification.

### Am I expected to leave a tip?

Tips are not used in hotels and taxis but in restaurants it is common to show your appreciation for good service by leaving a little extra.

### What time zone is it in Sweden?

The time zone in Stockholm is GMT + 1 hour. Daylight Saving Time is used until October 31st.

### Can I drink the tap water?

The drinking water quality in Stockholm is of high and consistent quality, which means that you can drink it directly from the tap.

### What about electricity?

The standard voltage is 230 V, and the frequency is 50 Hz. The power plugs and sockets are of type F, also known as "Schuko". This socket also works with plug C and plug E.





### **Mobile phones**

Visitors from within European Union do not have to pay any additional charges to use your mobile phone in Sweden. Visitors from outside of Europe are recommended to check with your service provider before your trip to Sweden. Maybe they offer some special (data) plan for going abroad and have a deal with any of the main Swedish brands: 3, Tele2, Telenor and Telia.

## Partners & Exhibitors

### ICAS 2022 PARTNERS & EXHIBITORS

PLATINUM



**SAAB**

GOLD



GOLD



SILVER

**AIRBUS**

SILVER



SILVER



EXHIBITORS



**Systecon**



**Quintus**  
TECHNOLOGIES

**AEROSPACE**  
**CLUSTER**  
**SWEDEN**