



Sino-Swiss Seminar: Safety Measures and Technology in General Aviation

October 14, 2020

14:00-18:20 (BJ Time, 8:00-12:20 Swiss Time)

Organizers:

Chinese Society of Aeronautics and Astronautics (CSAA)
Swiss Association for Aeronautical Sciences (SVFW)
China Centre for International Science and Technology Exchange (CISTE)
Chinese Aeronautical Establishment (CAE)

Supporters:

International Council of the Aeronautical Sciences (ICAS)
CSAA Technical Committee of General Aviation
Zurich University of Applied Sciences (ZHAW), Centre for Aviation (ZAV)

Final Program

Background

The CSAA (Chinese Society of Aeronautics and Astronautics) and the SVFW (Swiss Association for Aeronautical Sciences) are representative societies in the field of aeronautics in China and Switzerland. The two organizations have signed a MoU by the end of last year. To carry out bilateral exchanges, it's planned to hold a bilateral workshop in Switzerland this year, the second one next year in China in conjunction with the ICAF Congress. Thus, the two organizations will build up a series platform for bilateral cooperation and exchange, attracting professionals, industry leaders, authorities to come together. However, the COVID-19 has interrupted the original plan. To continue with Sino-Swiss cooperation, the two sides decided to hold the first bilateral exchange by virtual. After extensive discussion, the topic of Safety Measures and Technology in General Aviation is confirmed.

As an important part of civil aviation, the safety level of general aviation needs to be further improved. General aviation is a key factor in the frequent occurrence of flight accidents due to the huge variety of aircraft, the less experience of pilots, the complex operating environment, the irregular flight time, the shortage of airborne and ground navigation facilities, and the imperfect safety management system. Many general aviation companies are in shortage of mature pilots and experienced personnel, and relatively lag behind in the management of general aviation safety. Effective safety management will not only reduce flight accidents, but also improve the economic benefits of general aviation enterprises. After ICAO has put forward the concept of implementing a safety management system in each State party, a relatively sound safety management system has been generally established in transport aviation, but not in general aviation.

With the rapid development of general aviation in sync with the overall environment and trends, we must implement the basic work of general aviation safety protection before the industry fully bursts into bloom. Government departments should establish and improve general aviation laws and regulations as well.

Agenda (Beijing Time / Swiss Time)

14:00-14:10 08:00-08:10	Opening Address
14:10-14:40 08:10-08:40	Key-note speech 1 Title: Swiss Aviation Industry Dr. Jürg Wildi, President of SVFW
14:40-15:10 08:40-09:10	Key-note speech 2 Title: Balance between Safety and Development in General Aviation Prof. Yuanyang GAO, Director of General Aviation Industry Research Center, Beihang University
15:10-15:40 09:10-09:40	Lecture 3 Title: UAV Safety Management Mr. Nathanel Apter, Special Advisor for Unmanned Systems, Federal Office of Civil Aviation (FOCA)
15:40-15:55 09:40-09:55	Break
15:55-16:25 09:55-10:25	Lecture 4 Title: Improving Schedule and Training Flights Safety at Same Airport Prof. Weijun PAN, Civil Aviation Flight University of China (CAFUC)
16:25-16:55 10:25-10:55	Lecture 5 Title: Flight Control for GA Aircraft Mr. Ralf Kürzi, CEO, Kuerzi Aviation AG Mr. Pierluigi Capone, Zurich University of Applied Sciences (ZHAW), Centre for Aviation (ZAV)
16:55-17:25 10:55-11:25	Lecture 6 Title: Structural Integrity Issues for Ageing General Aviation Aircrafts and Potential Measures Prof. Leiting DONG, Beihang University (BUAA)
17:25-18:20 11:25-12:20	Panel Discussion

Speakers Information

Seminar Co-Chairs:

Dr. Xinguo ZHANG

**Distinguished Professor, Tsinghua University;
Chief Expert of System Engineering, CAE VP, CSAA**



Biography:

Zhang Xinguo, Ph.D, DBA, ESEP, Distinguished Professor of Tsinghua University, Director of Complex Systems Engineering Research Center, former EVP & CIO at AVIC (Aviation Industry Corporation of China, Ltd.), and former President of CAE (Chinese Aeronautical Establishment). Dr. Zhang is also Vice President of CSAA (Chinese Society of Aeronautics & Astronautics), Executive Committee Member of ICAS (International Council of Aeronautical Sciences), President of INCOSE Beijing Chapter, AIAA Fellow, and RAeS Fellow.

Dr. Zhang is recognized as one of the world's leading Systems Engineering Expert. He spreads the knowledge and promotes the practice of INCOSE Systems Engineering in China. He focuses on developing and applying methodologies of Enterprise Architecture, System of Systems Engineering, and Model Based Systems Engineering to solve complex system engineering problems with very high level of creativity. As former EVP & CIO at AVIC, Dr. Zhang architected the Digital Engineering strategy and carried out the Digital Transformation in the aviation domain, which have been expanded to other industrial domains in China. His efforts have profoundly influenced government policy makers. Due to his tremendous contribution to INCOSE, Dr. Zhang was given the "Founders Award" at the 28th INCOSE International Symposium in Washington D.C..

Seminar Co-Chairs:

Dr. Jürg Wildi

President of SVFW

Biography:

Mechanical engineer MSc and Dr.sc.techn. ETH Zurich. Master thesis and dissertation in the sector of fluid dynamics / aerodynamics and lightweight construction.



Project engineer aerodynamics / wind tunnel testing in the Swiss Aircraft Factory. Project manager ADS95 Ranger military reconnaissance UAV.

General Manager of the Aerodynamics Center of RUAG Aviation.

Co-founder and president of the board of CFS Engineering (Computational Fluid and Structure Engineering), a spin-off of EPFL Lausanne.

Member of the division board of RUAG Aviation, Head of Engineering, CTO and Vice President Technology. Scheduled retirement in 2016, today Senior Adviser in Aviation and Aeronautics.

Co-founder of v₂sky, a company focused on UAV technical and legal consulting.

Lecturer at ETH Zurich in aircraft and car aerodynamics and flight mechanics.

President of the Swiss Association of Aeronautical Sciences.

Privat pilot license holder

Sino-Swiss Seminar: Safety Measures and Technology in General Aviation

Panel Discussion Co-Chairs:

Mr. Lei YANG

CEO of China Aviation Industry General Aircraft Co., Ltd



Biography:

Mr Yang Lei(Researcher) is currently the CEO of China Aviation Industry General Aircraft Co., Ltd. He obtained his bachelor and master degree from Beijing University of Aeronautics & Astronautics and has been rewarded special government allowances since 2015. He successively served in AVIC Shenyang Aircraft Corporation and then acted as executive vice president, president and board of AVIC SAC Commercial Aircraft Company Ltd. Mr Yang Lei has been in charge of the research and development for many civil aircraft projects and has extensive experience in aircraft manufacturing, supply chain management and project management. He has also achieved excellent success in digital enterprise management and international cooperation. He was awarded Special Award for President by AVIC in 2011, got Shen Yang Excellent Entrepreneurs in 2014 and won a first class merit award for management innovation of Science, Technology and Industry for National Defense in 2017.

Panel Discussion Co-Chairs:

Prof. Leonardo Manfriani

Professor of Aerodynamics and Aircraft Systems

Zurich University of Applied Sciences (ZHAW), Centre for Aviation (ZAV))



Biography:

Affiliations

Member of the Board of the SVFW (Swiss Society for Aeronautical Sciences); SVFW representative at the ICAS general assembly

ICAS Programme Committee Member and General Assembly representative for Switzerland

Fellow, Royal Aeronautical Society

Education

1974 - 1976 Università Statale Florence, Italy Preliminary course in Engineering

1976 - 1981 Politecnico Milan, Italy Dottore in Ingegneria Aeronautica (M.Sc. in Aerospace Engineering)

1981 Von Kármán Institute for Fluid Dynamics Belgium Diploma in Applied and Environmental Fluid Dynamics, with Honours

Professional experience

1981 - 1982 Italian Air Force

Treviso AFB, Italy

Technical Officer (2nd Lt.)

- supervision of flight line and hangar maintenance operations of the Fiat G-91R tactical reconnaissance aircraft.

Sino-Swiss Seminar: Safety Measures and Technology in General Aviation

1983 - 1985 Aermacchi SpA

Varese, Italy

Aerodynamicist

- aerodynamic calculations, wind tunnel data reduction, graphical Software programming AM-X program.

1985 - 1987 Pilatus Aircraft Ltd.

Stans, Switzerland

Aerodynamicist

- conceptual study and aerodynamic development of the Pilatus PC-12 Aircraft

1987 - 1991 Aermacchi SpA Varese, Italy

Group Leader, Applied Aerodynamics

- wind tunnel data analysis and validation of CFD codes

1991 - 2004 Pilatus Aircraft Ltd.

Stans, Switzerland

Chief Aerodynamicist

- coordination and supervision of the aerodynamics, performance and flight mechanics group; aerodynamic design of the new PC-21 training aircraft; planning, supervision and analysis of wind tunnel tests; aerodynamic support to the development and qualification of the PC-21 egress system; external noise testing and certification

2005 - 2007 Pilatus Aircraft Ltd.

Stans, Switzerland

Project Manager

- management of a one-year program to develop, test and certify a new version of the Pilatus PC-12; noise and emissions compliance; support to the certification in Canada, South Africa and other countries
- coordination of the feasibility study for a new business jet project
- deputy Certification Verification Engineer (CVE) for flight qualities and Performance

2007 - present Zurich University of Applied Sciences

Winterthur, Switzerland

Professor, Centre for Aviation

- responsible for the courses "Principles of Flight", "Aircraft Systems", "Propulsion Systems",

“Numerical and Experimental Aerodynamics” and “Flight Test Laboratory”

- technical consultancy to Grob Aircraft Ltd., Pilatus Aircraft Ltd., Turkish Aircraft Industries, AGILE Wind Power AG, Wepfer Technics AG
- concept, design and constructions of a low-speed wind tunnel for didactics and research through student projects
- concept, design and constructions of an engineering flight simulator for didactics and research through student projects
- aerodynamic research on wind turbines
- participation to the EU FP7 research project “REsearch on a CRuiser Enabled Air Transport Era” (RECREATE)
- Certification Verification Engineer (CVE) for flight qualities and performance (contract between Pilatus Aircraft Ltd. and ZHAW)

Sino-Swiss Seminar: Safety Measures and Technology in General Aviation

Key-note speech1:

Lecture Title: Swiss Aviation Industry

Speaker: Dr. Jürg Wildi

President of SVFW



Biography:

Mechanical engineer MSc and Dr.sc.techn. ETH Zurich. Master thesis and dissertation in the sector of fluid dynamics / aerodynamics and lightweight construction.

Project engineer aerodynamics / wind tunnel testing in the Swiss Aircraft Factory. Project manager ADS95 Ranger military reconnaissance UAV.

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Co-founder of v₂sky, a company focused on UAV technical and legal consulting.

Lecturer at ETH Zurich in aircraft and car aerodynamics and flight mechanics.

President of the Swiss Association of Aeronautical Sciences.

Privat pilot license holder

Key-note speech 2:

Lecture Title: Balance between Safety and Development in General Aviation

Speaker: Prof. Yuanyang GAO

Professor, Director of General Aviation Industry Research Center, Beihang University



Biography:

Dr. Yuanyang Gao, expert in general aviation industry, is currently the Director of General Aviation Industry Research Center of Beihang University. He plays roles as the vice chairman of GA Committee of the China Communication and Transportation Association, council member of Chinese Aircraft Owners and Pilots Association (AOPA China), visiting scholar of Haas School of Business of University of California Berkeley.

He has participated in the investigation and drafting of many national major general aviation policies, undertaken several national, ministerial and provincial-level research projects, presided over the planning of GA park or aviation towns for more than 50 provinces and cities.

Dr. Gao is also an adviser of aviation industry development for a few provinces and cities. He was interviewed frequently by domestic and foreign media and delivered keynote speeches on many aviation summits.

He once served as the assistant Mayor of Weinan City, Shaanxi Province, where the national general aviation pilot park located. During his term, he was in charge of the development of general aviation industry.

Sino-Swiss Seminar: Safety Measures and Technology in General Aviation

Lecture Summary:

Compare to the Commercial Aviation, General Aviation (GA) have wider application scenes, stronger innovative, more participants and diversified. Those bring more safety factors and greater risk to GA. We should pay more attentions to the safety management of GA.

With the opening of low altitude airspace, China's GA will gain rapid development and is becoming the most important emerging market in the world. During developing, the safety issue of China's GA should not be ignored, although it is still at an acceptable safety level now.

The key to GA safety management is to balance safety and development. Too strict safety control will affect the development of the industry, too loose will bring unacceptable security risks. Classification, moderate management, heteronomy plus self-discipline should be the essences of GA safety management culture

Lecture 3:

Lecture Title: UAV Safety Management

Speaker: Mr. Nathanel Apter

Special Advisor for Unmanned Systems, Federal Office of Civil Aviation (FOCA)



Biography:

Mr. Apter is working for the Swiss Federal Office of Civil Aviation (FOCA) as a Special Advisor for Unmanned Systems. He is FOCA's Ground Risk Expert for Operations with UAVs. As such, he contributes to the establishment of the regulatory frameworks for special operations with unmanned aircraft with a focus on safety aspects. Through the implementation of the Specific Operational Risk Assessment (SORA) and applicable Standards, he supports the development of an innovation-friendly environment. Mr Apter is at the forefront of the development of operation-centric policies and collaborates with international bodies as JARUS, EASA, Eurocae and ASTM to deploy new regulations. He so allows the scaling of projects and businesses involving unmanned systems.

Nathanel Apter has a Msc in mechanical engineering from the Federal Polytechnic School of Lausanne. After a Master thesis on Computational Fluid Dynamics, Nathanel Apter contributed to the development of innovative projects as Windshape's aerodynamics testing facilities in Geneva.

Lecture Summary:

Unmanned Aircraft Safety bring an essential paradigm shift within aviation. In fact, many Civil Aviation Authorities (e.g. FAA, CAAC, FOCA, EASA, CASA etc...) have chosen to regulate the safety of UAVs based on the risks that those will pose during their specific operation. Manned aircraft safety focuses on the safety of the passengers on board the aircraft and so

Sino-Swiss Seminar: Safety Measures and Technology in General Aviation

implicitly protects people on board other aircrafts and people on the ground. This approach would impose heavy requirements on the UAV industry and would not account that UAVs are mostly used in activities that do not involve transport of passengers. For this reason, Civil Aviation Authorities have chosen to evaluate UAV Operations based on the risk for third parties on the ground and in the air.

The Specific Operational Risk Assessment (SORA) developed by the Joint Authorities for Rulemaking of Unmanned Systems tackles this problem and especially tailors the technical and operational requirements to the UAV and its operator depending on the risk profile of the operation.

Using this approach, the FOCA approved many low and medium risk profile operations beyond visual line of sight or above gatherings of people in the past few years. This includes for instance operations for measurement flights, photography flights, drone swarms shows and crop spraying activities. This approach enables the development of new applications for UAVs and also the testing of different new unmanned technologies as airborne wind energy systems or load transport operations. Especially the higher degrees of autonomy and the developments towards operations with decreased human involvement are becoming possible using this methodology. .

Lecture 4:

Lecture Title: Improving Schedule And Training Flights Safety At Same Airport

Speaker: Prof. Weijun PAN

Professor, Civil Aviation Flight University of China(CAFUC)



Biography:

Prof. Weijun PAN is currently the Dean of College of Air Traffic Management in Civil Aviation Flight University of China (CAFUC). He acts as a consultant for the Civil Aviation Administration of China (CAAC) and National Maritime Emergency Consultation. He is meanwhile the council member of the China Communications and Transportation Association, member of the Chinese Society of Aeronautics and Astronautics(CSAA), Chinese Institute of Command and Control. He is the group leader of the first batch of innovation teams of CAAC. Prof. PAN has long been engaged in air traffic management, civil aviation safety teaching and research. He has made achievements in the fields of air traffic management, air traffic control, aviation safety, esp.general aviation safety.

Prof. PAN has published more than 10 books, including Fundamentals of Air Traffic Management, Search and Rescue System of Civil Aircraft and Aerodrome Control of Multi-runway, etc. He won 8 awards in discipline construction, scientific and technological progress. He has presided over more than 30 projects including the National Natural Science Foundation of China, and published more than 100 papers, and held more than 20 patents and software copyrights on aviation.

Lecture Summary:

By the end of 2019, China's total transportation turnover has been growing for more than 30 years. Meanwhile, general aviation has grown fast, in particular, training flights reached

Sino-Swiss Seminar: Safety Measures and Technology in General Aviation

new heights continuously. The total number of general aviation registered aircraft is 2707, and 849 of them were used for flight training. The industry completed 1.065 million hours of general aviation production in 2019, an increase of 13.6% . Among them, 38,6600 hours of training tasks were completed, an increase of 26.1% over the previous year by 1,198 instructors in flight schools. However, compared with USA, the total air transport traffic is only half of it, and the general flight hours are only 1/40.

Although schedule transport flight maintains a highest safety record, the accident rate of general aviation remains high. In 2019, there are 15 general aviation accidents occurred and 8 people died. According to NTSB, 37% of air collisions involve training flights. Transport and training flights at the same airport are facing the high-load operation of this airport with high training flight intensity and high density of aircraft, complex operation environment, the tension of runway resources and airspace resources, the increased risks of human factors and low reliability of guarantee equipment. Therefore, how to improve the safety of transportation and training flights is an important issue.

Improving safety should be carried out from three levels: technology, system and management, corresponding to the improvement of technical factors, organizational factors and human factors. The main countermeasures include: improving safety awareness; distinguishing different types of flights through reasonable airspace classification management; providing a loose operating environment through optimizing the use of airspace resources; improving aircraft positioning accuracy through improved technical; improving aircraft positioning accuracy through air-ground monitoring capabilities; improving personnel quality through human factor research; improving overall management level by establishing a safety management system (SMS); making the security gate forward through adequate information sharing mechanism, and maximizing airport use efficiency by reasonably assessing airport capacity and planning a reasonable proportion of transport flights and training.

Lecture 5:

Lecture Title: Flight control for GA aircraft

Speakers: Mr. Ralf Kürzi / Mr. Pierluigi Capone

Mr. Ralf Kürzi

Kuerzi Aviation AG Job Position CEO

Biography:

I am married, and I have two sons of the age of 13 and 15 years.

I was born in 1971 in Stans Switzerland and I grew up directly on the airfield in Lommis, where my family was running the company Kuerzi Avionics AG.

At the end of my school time I graduated as electronics engineer working for Siemens.

During my military time, I worked as avionics mechanics on Mirage SR III fighter aircraft, in the area of radar and weapon systems.

As next I worked for Sauber Petronas, a Swiss Formula 1 racing team. There I was developing electronics for the racecar and I was responsible for the telemetry system including analysis of data in real time during the car operation (Training and races).

After this I started to work for Kuerzi Avionics AG and since 2003 I am the CEO. The company name has changed to Kuerzi Aviation AG, as we expanded our working scope.

In addition to the role of the CEO I am also certification verification engineer of different EASA panels and head of office of airworthiness in our EASA Design Organization. In our EASA approved Production Organization and Maintenance Organization I am acting also as supervisor and certifying staff.

In my career I was responsible for many aviation projects up to entire aircraft avionics



Sino-Swiss Seminar: Safety Measures and Technology in General Aviation

outfitting of fixed wing and rotorcraft of different size and complexity and I am still fascinated of the entire aviation industry including all the different aspects.

Lecture Summary:

Air-vehicles managed as basis for air taxi operation in the general aviation sector and related challenges to flight control systems:

Air taxi operation is not new but to handle this without pilot, brings new aspects into designs and related certification activities.

New aircraft concepts and their controls in combination with the sum of the related functions and their failure modes and criticality will drive the complexity of the system architectures. Robotics aspects as part of air taxi systems increases the essential functions of an air vehicle control system. Not only controlling the air vehicle in space and time are critical functions. Missing a human being as part of the entire control system is changing the criticality of functions and is adding new functions to the set of essential functions. The set of essential functions will increase and the basic system architecture, to achieve a general minimum acceptable safety level for the entire fleet of an aircraft type will be more challenging as ever. Many open questions exist:

What will be a minimum acceptable value for an entire aircraft fleet, flying in cities above peoples at low altitude?

If functions are designed to actively control the air-vehicle during an accident, to reduce the social impact of this accident, will the socially acceptable decision always be the same? Will this question be answered differently in different cultures? And will this result in different certification criteria or will it also require different flight control algorithm for different cultures, areas?

What will these flight control systems look like?.

Mr. Pierluigi Capone

Zurich University of Applied Sciences (ZHAW), Centre for Aviation (ZAV)

Biography:

EDUCATION

1994, Aeronautical Engineering (5 years course), with 91/100, Politecnico di Milano, Milan, Italy.

Thesis by research: "Adaptive Control of Multi-input Multi-output Aeroservoelastic Systems"

Supervisor: Paolo Mantegazza, Prof. of Aeroelasticity, Dept. of Aerospace Eng.

External examiner: Nicola Schiavoni, Prof. of Automation and Regulation, Dept. of Electronics Eng.

WORK EXPERIENCE

2013-Present: Senior Lecturer Flight Mechanics and Flight Control Systems - ZAV Center for Aviation, ZHAW Zurich University of Applied Sciences.

2008-2013: Head of Control Laws Design - Fly by Wire Integrated Team, AgustaWestland.

Responsible for Flight Control Laws (Primary and Autopilot) Team, Actuators Loop Closure,

Simulation and Handling Qualities, Redundancy Management, Actuator and Inceptors specification/procurement.

2006-2008: Chief Project Engineer for Fly by Wire, Sistemi Dinamici, Italy, on behalf of AgustaWestland. Leading a team of engineers to support the development of the AgustaWestland FBW rotorcraft.

2004-2006: Managerial Staff, Flight Control System Group, AgustaWestland, Italy. Design, verification, clearance and flight test of digital control laws - FCS development / integration.



Sino-Swiss Seminar: Safety Measures and Technology in General Aviation

2001-2004: Engineer Specialist, Active Control Technology Group, Bombardier Aerospace, Canada. Design, verification, clearance, pilot in the loop simulation and flight test of digital control laws.

2000-2001: Senior Engineer, Flight Controls and Handling Qualities Groups, Bell Helicopter, USA BA609 tilt-rotor control laws analysis, design and clearance.

1995-2000: Guidance, Navigation & Control Engineer, Flight Control System Group, Aermacchi, Italy Responsible for M346 Advanced Trainer Control Laws design - handling qualities specification / verification - FCS architecture and requirements - YAK-130D control laws analysis, flight test data analysis and matching - models and tools development.

1995: Aerodynamics Office, Pilatus Aircraft, Switzerland. Performances, flight test and certification.)

Lecture 6:

Lecture Title: Structural Integrity Issues for Ageing General Aviation Aircrafts and Potential Measures

Speaker: Prof. Leiting DONG

Professor, Beihang University (BUAA)



Biography:

Dr. Leiting Dong is currently a professor in the Department of Aircraft Design in Beihang University (also known as Beijing University of Aeronautics & Astronautics). He received his B.S. degree from Xiamen University, China, and his M.S. and Ph.D. degree from University of California, Irvine, US. He focuses his studies in computer modeling methods and software development for the design and maintenance of aircraft structures. Special interests include fatigue damage tolerance design and maintenance of metal structures, multiscale analysis and design of composite materials structures, ballistic impact protection with light weight structures. His research is funded by the Ministry of Science and Technology, the National Natural Science Foundation, the Organization Department of the CPC Central Committee, etc. By far he has published more than 50 peer-reviewed journal articles, with an h-index of 15. He won the CMES Outstanding Author Award in 2015, the ICCES Young Investigator Award in 2017, and he was selected in Forbes 30 under 30 Asia in 2018. He serves as an associate editor for the Journal of Computer Modeling for Engineering & Sciences, and board member for the Chinese Journal of Aeronautics, Acta Aeronautica et Astronautica Sinica, Advances in Aeronautical Science and Engineering (in Mandarin). And he serves as review experts for National Natural Science Foundation of China, Science and Technology Commission, and other organizations.

Sino-Swiss Seminar: Safety Measures and Technology in General Aviation

Lecture Summary:

Structural integrity of ageing aircrafts has become a major concern for the general aviation industry, users, and regulation authorities. Safety issues related to structural fatigue need to be addressed with acceptable MRO costs. In this talk, the differences are pointed out regarding how structural safety is ensured by the design and maintenance of GA aircrafts as compared to those for military aircrafts and commercial airliners. We also discuss the potential measures to track and control the fatigue damage of GA aircrafts by utilizing the readily available flight data and maintenance records. Such measures, although proposed for GA industry, may also find beneficial applications for other types of aircrafts.

Zürich University
of Applied Sciences



The Zurich University of Applied Sciences (ZHAW) is one of the largest multidisciplinary universities in Switzerland. It offers teaching, research, continuing education and other services that are both practice-oriented and science-based.

Research & development at the ZHAW focuses on key societal challenges, with a particular emphasis on energy and societal integration. With its expertise in sustainable development and digital transformation, the ZHAW imparts forward-looking knowledge and takes an active part in shaping the digital and ecological transformation. With locations in Winterthur, Zurich and Wädenswil, the ZHAW is firmly anchored in its region whilst collaborating with international partners.

The Centre for Aviation (ZAV) at the ZHAW is the leading scientific research facility for aviation in Switzerland. The ZAV is actively participating in the Aviation Research Centre Switzerland (ARCS) in order to promote collaboration between all stakeholders relevant for aviation in Switzerland. The researchers at the ZAV apply cutting edge technologies, state-of-the-art methods, and contemporary knowledge to find new and efficient ways to bring global aviation a step further. The ZAV believes that sustainable solutions for the aviation industry rely on successful collaborations in interdisciplinary teams. The ZAV can provide expertise in the areas illustrated on the right hand side.

Centre for Aviation	
Aircraft Technologies	Aviation Operations
 Aerodynamics	 Aeronautical Communications
 Flight Mechanics and Flight Control Systems	 Human Factors
 Structural Integrity and Maintenance	 Human-Factors-Engineering
 Engine Emission Measurements	 Meteorology, Environment and Aviation



China Centre for International Science and Technology Exchange (CISTE)

China Centre for International Science and Technology Exchange (CISTE), previously known as China International Conference Center for Science and Technology (CICCST) is an affiliated institution of China Association for Science and Technology (CAST).

Since its establishment in 1984, CISTE has long been committed to promoting international science and technology exchanges, the major tasks are as follows,

1 to actively engage in the affairs of international scientific organizations, and to serve Chinese scientists to better perform their duties.

2 to hold international conferences and exhibitions at home and abroad in attempt to provide a professional exchange platform for both Chinese and foreign scientists and engineers.

3 to promote people-to-people exchanges between Chinese scientists and their foreign counterparts so as to establish cooperation and friendship.

4 to build a platform for overseas professionals with science and technology background through HOME Program to engage them in the social and economic development in China.

5 to open up new channels for science and technology exchanges and cooperation through Belt and Road Initiative of CAST.

6 to provide a better foreign affairs service for the whole CAST system.

Chinese Aeronautical Establishment (CAE)

The Chinese Aeronautical Establishment (CAE) is a state-owned, government-sponsored overarching aeronautical research organization in China. Founded in 1960, CAE is now leading an advanced research system consisting of 36 research institutes around China. CAE is the key coordinator of bilateral and multilateral cooperation in aeronautical science and technology on behalf of the Chinese government.

CAE is dedicated to top-level aeronautical science and technology research and development. It organizes and conducts basic and applied research programs with its domestic and international partners following the principles of “Exploring, Innovating, Opening and Sharing”.

CAE operates research and test facilities and equipment around China; develops advanced tools for aeronautical computation and simulation; conducts system integration, technology demonstration and conceptual design.

CAE has been running the Aeronautical Science Foundation to sponsor basic research around China for 30 years. CAE is also responsible for the post-graduate education in aerospace arena, with more than 3,000 students having graduated from CAE with master or doctor degrees.

CAE has established close research partnership with national research institutes of Germany, France, the Netherlands, Russia and the United States in the past three decades. CAE is also an active participant in multilateral cooperation to promote scientific and technological research. CAE is the national delegate of the International Forum for Aviation Research (IFAR) as well as International Committee on Aeronautical Fatigue and Structural Integrity (ICAF), and an associate member of the International Council of Aeronautical Sciences (ICAS).

Sino-Swiss Seminar: Safety Measures and Technology in General Aviation



**SCHWEIZERISCHE VEREINIGUNG FÜR FLUGWISSENSCHAFTEN
ASSOCIATION SUISSE DES SCIENCES AERONAUTIQUES
SWISS ASSOCIATION OF AERONAUTICAL SCIENCES**

The Swiss Association of Aeronautical Sciences (german *Schweizerische Vereinigung für Flugwissenschaften, SVFW*) was founded in 1957 at the International Council of the Aeronautical Sciences (ICAS) Congress in Zurich, which is based in Zurich and has 250 members. The association is the representative of the ICAS in Switzerland and one of the members of the Council of European Aerospace Societies (CEAS).

The object of the association is the advancement of the aeronautical Sciences in Switzerland and the presentation of topics to this field as well as providing opportunities for contacts among specialists. It supports the education in the field of aeronautical sciences.

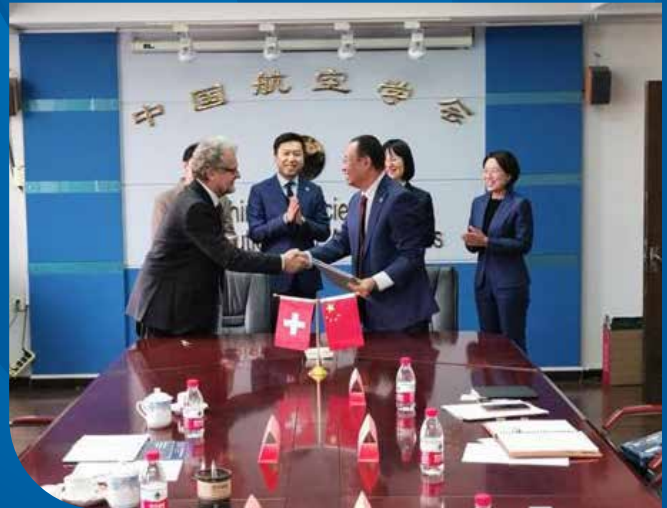
To realise these goals it organizes lectures on actual topics from the field of aeronautical sciences about once per month. They are normally held in the premises of the Federal Institute of Technology Zurich or directly in the location of the presenting industry. About twice per year an industry-visit in Switzerland or neighbouring country will be organised.



Chinese Society of Aeronautics and Astronautics (CSAA)

CSAA was established in 1964. As the only national social organization in China's aeronautical community, it is a member of the China's Association for Science and Technology (CAST) and a full Member Society of the International Council of the Aeronautical Sciences (ICAS) on behalf of the Chinese scientific and technological community. For over 50 years, CSAA has been committing

itself to the development of science and technology, the advancement of aviation industry as well as talents cultivation and awarding. Its mission has been fulfilled through a wide range



of activities implemented by its headquarters as well as its branches, including 36 technical committees, 20 local societies and 7 member stations.



There are more than 200 corporate members and over 100,000 individual members. CSAA has developed cooperation with its counterparts in the U.S., Russia, U.K., Japan, Korea, Australia, Czech, Switzerland and Israel. It sponsors seven periodicals.

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