ISABE 2017 CONFERENCE

ECONOMY, EFFICIENCY AND ENVIRONMENT

3 - 8 SEPTEMBER 2017

MANCHESTER, UK

(the city where The Honourable Charles Rolls met Sir Henry Royce)

Hosted by
UK Organising Committee &

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Welcome

Dear Colleagues,

On behalf of the UK National Organizing Committee of ISABE 2017, it is my pleasure and privilege to welcome you all to the 23nd ISABE Conference to be held in Manchester from 03 to 08 September 2017.

At this year's conference, we are excited to have presentations from recognized world leaders and technical experts from academia, industry, and government agencies, who will present their latest achievements in the area of air breathing propulsion research and development.

With this year's theme **"Economy, Efficiency and Environment"** we will be examining ways that everyone around the world, in the core and peripheral industries in air breathing engines, can work together by sharing and exchanging knowledge, information, and resources to face the challenges that lie ahead of us with state-of-the-art technologies in this ever changing world.

ISABE 2017 is privileged to have distinguished invited speakers from around the globe representing government, academia, and industry speaking on the present and the future of the core topic of air breathing propulsion as well as other related exciting and interesting topics.
In addition, there will be a Special Panel Session on Friday featuring outstanding experts from Europe, America, and Asia, highlighting many experiences in global collaboration on technology developments.

We are very excited about hosting this 23nd ISABE conference as we have planned an exciting program for you with technical, social, and networking focus in mind. The ISABE 2017 conference will experience presentations of nearly 250 papers by 300 authors from 24 countries where the authors will share with you their exciting latest research and findings.

We hope you can make time during this busy 5 day conference to enjoy the unique, rich, and colourful cultural experience that Manchester and its surrounding area have to offer. Once again, a warm welcome to all of you and we hope you take home many happy memories from ISABE 2017 and the United Kingdom

Professor Pericles Pilidis
Chairman for the UK National Organizing Committee

www.rolls-royce.com/futuretechnology

We're working on technology today that will fly his kids around the world.

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Rolls-Royce

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Honeywell

THE POWER OF **CONNECTED**

Steering Committee & UK National Organizing Committee

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President: Prof. Richard 'Ric' J Parker - *Rolls-Royce*

Vice President: Prof. Pericles Pilidis - *Cranfield University, UK*

Founding Secretary: The late Dr. S.N.B. Murthy

Administrative Secretary: Prof. Rainer Walther

Treasurer: Dr. Glen Snedden - *DPSS-CSIR, South Africa*

UK National Organizing Committee

National Representative:	Chairman:	Executive Secretary:	Business Manager:
Prof. Riti Singh	Prof. Pericles Pilidis	Dr. Suresh Sampath	Mr. Alvise Pellegrini
Cranfield University	*Cranfield University*	*Cranfield University*	*Cranfield University*

Committee Members

Abhinav Premnath - *WilliamHackett Ltd (ISABE Websites)*

Alejandro Block - *Cranfield University*

Anthony Cassidy - *Manchester Convention Bureau*

Caroline Day - *Rolls-Royce*

Chana Goldberg - *Cranfield University*

Dodeye Igbong - *Cranfield University*

Eleanor Collins - *Cranfield University*

Emmanuel Osigwe - *Cranfield University*

Firas Abdulsattar - *Manchester University*

Francesco Mastropierro - *Cranfield University*

Gemma Haynes - *Cranfield University*

Hasani Azamer Aguirre - *Cranfield University*

Ibrahim Eryilmaz - *Cranfield University*

Jesús Ortiz Carretero - *Cranfield University*

Kingsley Ibrahim - *Cranfield University*

Lucas Pawsey - *Cranfield University*

Mosab Alrashed - *Cranfield University*

Parash Agarwal - *Cranfield University*

Rory Stieger - *Rolls-Royce*

Sarah Llyod - *Cranfield University*

Simon Gallimore - *Rolls-Royce*

Xiaoxiao Sun - *Cranfield University*

Yize Liu - *Cranfield University*


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Program Overview:
ISABE 2017 Week at a Glance

= Social Events
= Keynotes
= Technical Sessions
= Break/Lunch

SUNDAY, 3 SEPTEMBER 2017

15.00	18.30
Registration	**ISABE Welcome Drink**

MONDAY, 4 SEPTEMBER 2017

09.30	10.00	11.00	12.00	12.45	13.45	14.45	15.15	19.30
Welcome	**Keynote** Paul Stein *Rolls-Royce*	**Keynote** J. F. Brouckaert *Clean Sky*	LUNCH	**Keynote** Alan Epstein *Pratt & Whitney*	**Keynote** D. K. Venkatesh *HAL*	BREAK	**Technical Sessions**	Rolls-Royce Dinner

TUESDAY, 5 SEPTEMBER 2017

08.00	09.00	10.00	10.30	13.00	13.45	14.45	15.45	16.15	19.00
Keynote Simon Weeks *ATI*	**Keynote** Inaki Ulizar *ITP*	BREAK	**Technical Sessions**	LUNCH	**Keynote** Gary Smith *easyJet*	**Keynote** Zeyong Yin *AECC*	BREAK	**Technical Sessions**	ISABE Board and Invited Speakers Dinner at the *Midland Hotel* (by invitation)

WEDNESDAY, 6 SEPTEMBER 2017

08.00	09.00	10.00	10.30	13.00	13.45	14.45	15.45
Keynote Jim Kroeger *Honeywell*	**Keynote** Charles Champion *Airbus*	BREAK	**Technical Sessions**	LUNCH	**Keynote** Eric Ducharme *GE Aviation*	**Keynote** Frank Grauer *MTU*	**Conference Visits**

THURSDAY, 7 SEPTEMBER 2017

08.00	09.00	10.00	10.30	12.30	13.15	14.15	15.15	15.45	19.00
Keynote Iain Gray *AIRC*	**Keynote** Claus Bauer *Lufthansa Technik*	BREAK	**Technical Sessions**	LUNCH	**Keynote** Janet L. Kavandi *NASA*	**Keynote** Susan Ying *ICAS*	BREAK	**Technical Sessions**	ISABE Banquet *Exchange Hall*

FRIDAY, 8 SEPTEMBER 2017

08.00	09.00	10.00	10.30	13.00	13.45	14.45	15.15	16.45
Keynote Fariba Alamdari *Boeing*	**Keynote** Jerome Bonini *Safran*	BREAK	**Technical Sessions**	LUNCH	**Technical Sessions**	BREAK	**Panel Discussions**	Invitation to ISABE 2019 by Andrew Neely National representative of Australia

Invited Speakers

Dr. Eric Ducharme
General Manager
Advanced Technology Operations
GE Aviation
Wednesday, 6 Sept'
13:45 -14:45

Prof. Iain Gray
Director of Aerospace
Cranfield University (AIRC)
Thursday, 7 Sept'
8:00 - 9:00

Prof. Zeyong Yin
Director of the Science & Technology Committee
(AECC) Aero Engine Corporation of China
Tuesday, 5 Sept'
14:45 -15:45

Dr. Janet L. Kavandi
Center Director
NASA Glenn-Research Center
Thursday, 7 Sept'
13:15 -14:15

Dr. Simon Weeks
Chief Technology Officer
Aerospace Technology Institute (ATI)
Tuesday, 5 Sept'
8:00 - 9:00

Mr. D. K. Venkatesh
Director
(Eng. and R&D) of Design Complex
Hindustan Aeronautics Limited
Monday, 4 Sept'
13:45 -14:45

Dr. J. F. Brouckaert
Project Officer
Clean Sky
Monday, 4 Sept'
11:00 -12:00

Dr. Iñaki Ulizar
Technical Director/ Chief Technology Officer
ITP
Tuesday, 5 Sept'
9:00 -10:00

Dr. Fariba Alamdari
Vice President of Marketing and Aviation Policy
Boeing Commercial Airplanes
Friday, 8 Sept'
08:00 - 09:00

Dr. Paul Stein
Chief Technology Officer
Rolls-Royce plc
Monday, 4 Sept'
10:00 -11:00

Invited Speakers

Prof. Alan Epstein
Vice President of Technology and Environment
Pratt & Whitney
Monday, 4 Sept'
12:45 -13:45

Dr. Jerome Bonini
Vice President of Research and Technology
Safran Aircraft Engines
Friday, 8 Sept'
9:00 -10:00

Mr. Gary Smith
Head of Engineering
easyJet
Tuesday, 5 Sept'
13:45 -14:45

Mr. Jim Kroeger
Director of Propulsion Systems Engineering
Honeywell Aerospace
Wednesday, 6 Sept'
08:00 - 09:00

Dr. Charles Champion
Président of Airbus Operations SAS & Executive Vice President Engineering
Airbus
Wednesday, 6 Sept'
09:00 -10:00

Dr. Claus Bauer
Vice President Engine Service
Lufthansa Technik
Thursday 7 Sept'
09:00 -10:00

Dr. Susan Ying
President
International Council of Aeronautical Sciences (ICAS)
Thursday, 7 Sept'
14:15 -15:15

Dr. Frank Grauer
Director Engineering Advanced Programs
MTU Aero Engines AG
Wednesday, 6 Sept'
14:45 -15:45

Invited Panelists

Friday, 8 September, 14:30-16:00

Prof. Riti Singh
Panel Chair
Cranfield University

Dr. Fariba Alamdari
VP Marketing
Boeing Commercial Airplanes

Dr. Jerome Bonini
VP Research and Technology
Safran Aircraft Engines

Dr. Janet Kavandi
Center Director
NASA Glenn Research Center

Prof. Ric Parker
President
International Society of Air Breathing Engines (ISABE)

Dr. Susan Ying
President
International Council of Aeronautical Sciences (ICAS)

Receptions, Dinners & Banquet Information

Registration Reception

Sunday, 3 September, 15:00-18:30

An informal gathering where all participants will have an opportunity to meet and mingle before the official opening on Monday, 4 September. Attendees are welcome to drop in for the ISABE welcome drink between 18:30-22:30 after registration is complete.

Rolls-Royce Dinner

Monday, 4 September, 19:30-22:30
Victoria Warehouse, Manchester

All ISABE 2017 attendees are invited to the Rolls-Royce Dinner. The conference hosts will take this opportunity to welcome everyone to Manchester and the conference, while enjoying a buffet style meal.

ISABE Board & Invited Speakers Dinner

(by invitation)

Tuesday, 5 September, 19:00-22:30,
Midland Hotel, Manchester

The dinner is reserved for ISABE Board Members, Invited Speakers, and their Accompanying Persons.

ISABE Banquet

Thursday, 7 September, 19:00-22:30
Exchange Hall, Manchester Central

Dress Code

Business attire is recommended for the Opening Ceremony, for the ISABE Board and Invited Speakers Dinner and for the ISABE Banquet. Business casual for the rest of the conference, and casual attire for the social events.

Instructions for Speakers & Chairs

Information for Speakers

Please follow these guidelines when preparing your presentations:

- Laptops with Windows 7 and Microsoft Office 365 will be in each session room along with a projector and screen
- Please provide your presentation file(s) on a USB memory stick only
- Please use standard Microsoft PowerPoint software
- Those presenting in the Exchange Auditorium are required to hand in their presentation by 7:45 am on the day of their allocated technical session.

Information for Session Chairs

- Session chairs can pick up a folder containing author biographies and session evaluation form at the registration desk.
- Please return the evaluation form to the staff in your room after closing and summarizing your session.

Meeting Spot for Presenting Authors & Session Chairs

- All presenting authors and chairs should meet in the session room 15 minutes prior to their start time.
- This will provide an opportunity for; introductions, review meeting expectations, transfer presentation files to in-room computers, and review of biographical information.

The Venue: Manchester Central

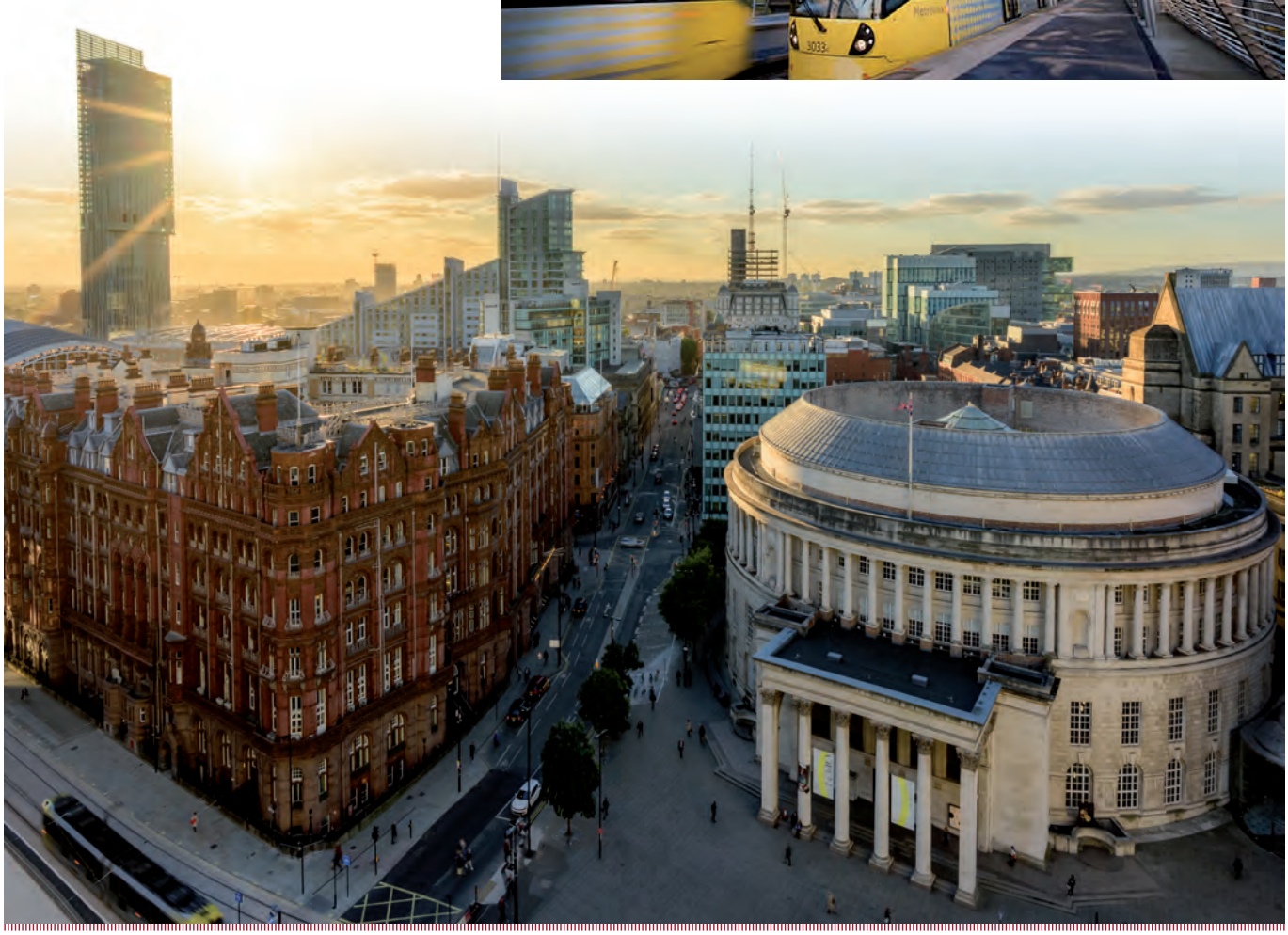
Manchester Central

Windmill St
Petersfield
Manchester
M2 3GX

Phone: +44 (0)161 834 2700
Email: isabe2017@cranfield.ac.uk

Location Information:

Manchester Central is easily accessible from Manchester airport and train stations either by Metroshuttle bus, Metrolink tram (nearest stop: Deansgate-Castlefield), or by taxi.

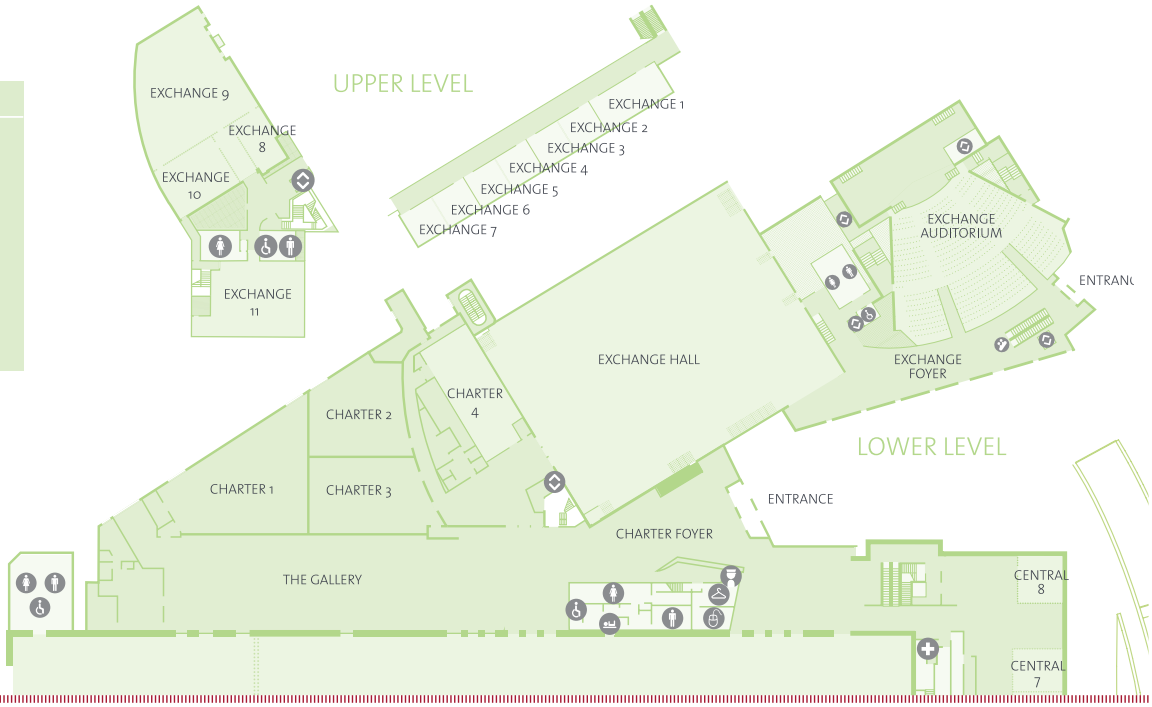


Conference Venue Map

Site plan

Key

- TOILETS
- ORGANISERS' OFFICE
- FIRST AID
- ESCALATORS
- LIFT
- CONCIERGE
- CLOAKROOM
- BABY CHANGE



Visit to Manchester Museum of Science & Industry

Wednesday, 6 September, 15:45-19:30

The Museum of Science and Industry (MSI or MOSI) in Manchester is a large museum devoted to the development of science, technology and industry with emphasis on the city's achievements in these fields.

There are extensive displays on the theme of transport (cars, aircraft, railway locomotives and rolling stock), power (water, electricity, steam and gas engines), Manchester's sewerage and sanitation, textiles, communications and computing.

The museum is an Anchor Point of the European Route of Industrial Heritage; and is situated on the site of the world's first railway station: Manchester Liverpool Road, which opened as part of the Liverpool and Manchester Railway in September 1830.

Monday, 4th September

Technical Session 01: **Compressors**

Chairs: Reid Berdanier (The Pennsylvania State University), Ulrich Wenger (Rolls-Royce)

Exchange Auditorium

15.15	15.45	16.15	16.45	17.15
ISABE-2017-21330	ISABE-2017-21348	ISABE-2017-21351	ISABE-2017-21362	ISABE-2017-21369
Investigation on Aerodynamic Performance of Liner Compressor Cascade with Tubercle Leading Edge Blade	LES Investigation of Wake Development in a Transonic Fan Stage for Aeroacoustic Analysis	Flow Structure Driven End-Wall Contouring for a Highly Loaded Axial Compressor	Turbo-compressor Aerodynamic Test at a Turbine Altitude Test Facility	Numerical Prediction of Stability Limit in Centrifugal Compressors with Vaneless Diffuser
Baofeng Tu **Kai Zhang** **Hua Liu** **Jun Hu**	**Chunill Hah** **Michael Romeo**	**Motoyuki Kawase** **Aldo Rona**	**Antonio Antoranz Perales** **Leyre Armañanzas** **Andoni Puente**	**Carlo Cravero** **Davide Marsano**

Technical Session 01: **Compressors** (continued)

Chairs: Reid Berdanier (The Pennsylvania State University), Ulrich Wenger (Rolls-Royce)

Exchange Auditorium

17.45	18.15			
ISABE-2017-21397	ISABE-2017-21493			
Numerical and Experimental Studies on Variable Geometry and Variable Camber Inlet Guide Vanes on Low Speed Axial Compressor Performance	Exploring a Database of Optimal Airfoils for Axial Compressor Design			
Emandi Rajesh **Bhaskar Roy**	**Markus Schnoes** **Eberhard Nicke**			

Technical Session 02: **Fluid and gas dynamics**

Chairs: Ruben Del Rosario (NASA), Andy Geer (Rolls-Royce)

Exchange Room 1

15.15	15.45	16.15	16.45	17.15
ISABE-2017-21331	ISABE-2017-21344	ISABE-2017-21352	ISABE-2017-21382	ISABE-2017-21393
Investigations on the Leakage Flow Characteristics of the Brush Seal with Annular Pressure Reduction Groove	Computational Study on Pseudo-shock Wave in a Rectangular Duct	Investigation of the Boundary Layer Development at the Corner of the Special-Shaped Expansion Pipe	Turbulent Flow Development inside a Rotating Two-Pass Square Duct with Porous Blocks	Influence of Combustor Swirl on Turbulence at the Large Scale Turbine Rig (LSTR)
Jun Li **Yuanqiao Zhang** **Xin Yan** **Zhigang Li**	**Ruoyu Deng** **Jintu K . James** **Heuy Dong Kim**	**Teng Fei** **Jiabin Li** **Lucheng Ji** **Weilin Yi**	**Firas Abdulsattar** **Dennis Cooper** **Hector Iacovides** **Shanying Zhang**	**Manuel Wilhelm** **Marius Schmidt** **Florian Goertz** **Heinz-Peter Schiffer** **Christoph Lyko**

Technical Session 02: **Fluid and gas dynamics** (continued)

Chairs: Ruben Del Rosario (NASA), Andy Geer (Rolls-Royce)

Exchange Room 1

17.45	18.15			
ISABE-2017-21488	ISABE-2017-22643			
Comparative Studies of Ground Vortices Induced by Engine Inlets and Propellers near the Ground	Study of a Conceptual Design for Cooled Cooling Air in a Preswirl Cavity			
Luis Gustavo Trapp **Marina Cavalli** **Roberto da Motta Girardi**	**Zixiang Sun** **John W. Chew**			

Monday, 4th September

Technical Session 03: **New developments in gas turbine engines**

Chairs: Simon Gallimore (Rolls-Royce), Jun Li (Xi'an Jiaotong University)

Exchange Room 2

15.15	15.45	16.15	16.45	17.15
ISABE-2017-21319	ISABE-2017-21355	ISABE-2017-21377	ISABE-2017-22586	ISABE-2017-21451
Quiet Powerplant Concept with Adaptive Fan Variable Cycle Engine for Future Supersonic Commercial Aircraft	A Variable Pitch Fan and Ultrahigh Bypass Ratio Turbofans. A Conceptual Evaluation	Test Bench Development for Experimental Characterisation of Oil-air two-phase Flow for Breather in Modern Aero Engine Oil System	A Fast and Robust Automated 3D Aerodynamic Design Environment for Turbomachinery using Graphics Processor Units	Investigations of Synergistic Combination of the Composite Cycle and Intercooled Recuperation
Vladimir Korovkin Alexander Evstigneev Vladimir Makarov Aleksey Mironov	**Gregorio Corchero Jesús U. Sainz**	**Mariano Di Matteo J. Steimes, O. Berten, P. Hendrick, J. Thibault, L. Seguinot, B. Fulleringer, O. Robert, C. Corre**	**Ricardo Puente Roque Corral García**	**Sascha Kaiser, Markus Nickl Christina Salpingidou Zinon Vlahostergios Stefan Donnerhack Hermann Klingels**

Technical Session 03: **New developments in gas turbine engines** (continued)

Chairs: Simon Gallimore (Rolls-Royce), Jun Li (Xi'an Jiaotong University)

Exchange Room 2

17.45	18.15			
ISABE-2017-22659	ISABE-2017-22661			
Scale Effects on Conventional and Intercooled Turbofan Engine Performance	An Approach to Multi-Disciplinary Aero Engine Conceptual Design			
Andrew Rolt Vishal Sethi Florian Jacob Joshua Sebastiampillai Carlos Xisto, Tomas Grönstedt Lorenzo Raffaelli	**Konstantinos G. Kyprianidis**			

Monday, 4th September

Technical Session 04: **Hypersonic vehicle propulsion**

Chairs: James Felder (NASA), Alessandro Cappelletti (Università degli Studi di Firenze)

Exchange Room 3

15.15	15.45	16.15	16.45	17.15
ISABE-2017-21335	ISABE-2017-21414	ISABE-2017-21424	ISABE-2017-21442	ISABE-2017-22532
Study on Overall Performance Design of Hypersonic Precooled Combined Cycle Engine with Paralleled Heat Release and Compression System	Flow Properties of SHSI Fuel Supplied from Porous Square Injector	Testing of a Ducted Rocket with a Paraffin/Oxygen Hybrid Gas Generator	Tunable Diode Laser Absorption Spectroscopy (TDLAS) Technique for Simultaneous Measurements of Temperature Velocity & H2O in High Enthalpy Hypersonic Wind Tunnel	Mach 4 Experiment of Hypersonic Pre-Cooled Turbojet Engine
Pengcheng Dong Hailong Tang Min Chen	**Shigeo Obata**	**Daniel Komornik Alon Gany**	**Shunhua Yang, Shunping Zhang, Jialing Le, Shuang Chen, Xiyao Wang, Ruifeng Kan, Zhenyu Xu, Jun Ruan, Lu Yao**	**Hideyuki Taguchi Motoyuki Hongoh Takayuki Kojima Toshihito Saito**

Technical Session 04: **Hypersonic vehicle propulsion** (continued)

Chairs: James Felder (NASA), Alessandro Cappelletti (Università degli Studi di Firenze)

Exchange Room 3

17.45	18.15			
ISABE-2017-22546	ISABE-2017-21427			
A Numerical Study Into Hypersonic Fluidic Thrust Vectoring	Experimental Investigation on Laser-Induced Plasma Ignition of Hydrocarbon Fuel in Scramjet Engine at Takeover Flight Conditions			
Hilbert van Pelt A. J. Neely J. Young J.H.S. De Baar	**Xi-Peng Li Wei-Dong Liu Yu Pan Lei-Chao Yang**			

Technical Session 05: **Cooling technologies**

Chairs: Reinhard Niehuis (Bundeswehr University Munich), Mikhail Ivanov (CIAM)

Exchange Room 4

15.15	15.45	16.15	16.45	17.15
ISABE-2017-21302	ISABE-2017-21337	ISABE-2017-21338	ISABE-2017-21446	ISABE-2017-22516
Aerodynamic Design of a Cooled Cooling Air System for an Aero Gas Turbine	Effect of Rim Seal Purge Flow on the Aerodynamic Performance of Turbine Stage and Cooling Effectiveness of Rotor Blade Endwall Part I: Coolant Flow Rate	Effect of Rim Seal Purge Flow on the Aerodynamic Performance of Turbine Stage and Cooling Effectiveness of Rotor Blade Endwall Part II: Inlet Preswirl	Numerical Simulation on Effect of Ingress for Counter-Rotating Turbine Discs	Considering the Effects of Turbine Blade Cooling on Engine Performance Estimation
Alastair Duncan Walker Bharat Koli Apostolos Spanelis Peter A. Beecroft	**Jun Li Qing Gao Zhigang Li Liming Song**	**Jun Li Qing Gao Zhigang Li Liming Song**	**Jianping Hu Yanqing Zhang Zhenxia Liu**	**Janaina Ferreira da Silva Vinícius Tavares Silva Ana Adalgiza Garcia Maia Jesuino Takachi Tomita Cleverson Bringhenti**

Technical Session 05: **Cooling technologies** (continued)

Chairs: Reinhard Niehuis (Bundeswehr University Munich), Mikhail Ivanov (CIAM)

Exchange Room 4

17.45	18.15			
ISABE-2017-21383	ISABE-2017-22591			
Numerical Calculation of Internal Blade Cooling Using Porous Ribs	Numerical Study of Uneven Wall Heating Effect for a One Side Rib-Roughened Channel Subject to Rotation			
Qahtan Al-Aabidy T.J. Craft H. Iacovides	**Zhi Wang Roque Corral García**			

Monday, 4th September

Technical Session 06: **Noise pollution**

Chairs: Charles Trefny (NASA), Anestis Kalfas (Aristotle University of Thessaloniki)

Exchange Room 5

15.15	15.45	16.15	16.45	17.15
ISABE-2017-21368	ISABE-2017-22509	ISABE-2017-22515	ISABE-2017-22538	ISABE-2017-22545
Turbine Tone Noise Reduction via Optimized Acoustic Coupling	Effects of Fan Design Parameters and CFD Conditions on Fan Noise and Aerodynamic Performance	Wall-Resolved Large Eddy Simulation for Aeroengine Aeroacoustic investigation	Advanced Noise Abatement Procedures for a Supersonic Business Jet	Noise of Small Turbofan Engine DGEN380
Adolfo Serrano Gonzalez **José R. Fernández Aparicio** **Paloma González** **Diego Torre**	**Shuhei Tomita** **Hiroki Hano** **Yuzo Inokuchi** **Nobuhiko Yamasaki**	**Yujing Lin** **Rao Vadlamani** **Paul Tucker** **Mark Savill**	**Jeffrey J. Berton** **Scott M. Jones** **Jonathan A. Seidel** **Dennis L. Huff**	**Tatsuya Ishii** **Kenichiro Nagai** **Hideshi Oinuma** **Takuya Harada**

Technical Session 06: **Noise pollution** (continued)

Chairs: Charles Trefny (NASA), Anestis Kalfas (Aristotle University of Thessaloniki)

Exchange Room 5

17.45	18.15			
ISABE-2017-22587	ISABE-2017-22697			
Assessment of Civil Aircraft Certification and Component-Level Noise During Landing Take-off Cycle	Propulsion Noise Reduction Research in the NASA Advanced Air Transport Technology Project			
Fakhre Ali	**Dale Van Zante** **Douglas Nark** **Hamilton Fernandez**			

Technical Session 07: **Integrated systems**

Chairs: Vladimir Makarov (CIAM), Theo Nikolaidis (Cranfield University)

Exchange Room 6

15.15	15.45	16.15	16.45	17.15
ISABE-2017-21390	ISABE-2017-21450	ISABE-2017-21470	ISABE-2017-22523	ISABE-2017-22685
Off-Design Performance of a Streamline-Traced External-Compression Supersonic Inlet	A Design Approach for a Coupled Actuator System for Variable Nozzles and Thrust Reverser of Aero Engines	Liquid Hydrogen Fuel for a Blended Wing Body Aircraft: Case Study on the N3-X	Establishing Viable Fault Management Strategies for Distributed Electrical Propulsion Aircraft	Vibration Testing and Validation Of Aero Engines Pipe Work
John W. Slater	**David Grasselt** **Klaus Höschler** **Stefan Kazula**	**Chana Goldberg** **D. Nalianda** **V. Sethi** **P. Pilidis** **R. Singh**	**Marie-Claire Flynn** **Catherine E. Jones** **Patrick J. Norman** **Stuart J. Galloway**	**Muthukrishnan Muniyandi** **Andrew Dowding** **Stefan Anders**

Technical Session 07: **Integrated systems** (continued)

Chairs: Vladimir Makarov (CIAM), Theo Nikolaidis (Cranfield University)

Exchange Room 6

17.45				
ISABE-2017-22673				
Compressor Development for a Turbocharged UAV Power Unit				
Colin Rodgers **Chris Robinson**				

Tuesday, 5th September

Technical Session 08: **Compressors**

Chairs: Ralf von der Bank (Rolls-Royce), Peter Schiffer (Technischen Universität Darmstadt)

Exchange Auditorium

10.30	11.00	11.30	12.00	12.30
ISABE-2017-21409	ISABE-2017-21416	ISABE-2017-21455	ISABE-2017-22565	ISABE-2017-22624
Evaluating Effects of Rotor Tip Clearance on Downstream Stator Performance in a Multistage Axial Compressor	The Impact of Numerical Schemes on Flow Separation Capturing of a Linear Compressor Cascade Using DES Method	Numerical and Experimental Studies of Reynolds Number and Rotor-Stator Clocking Effect on Performance of a Highly-loaded Two-stage Compressor with 3.7 Total Pressure Ratio	Mitigating Secondary Flows in a 1½ Stage Axial Turbine by a Guide Groove Casing	Analytical and Experimental Study of Compressor Performance for Gas Generator Cycle Air Turbo Ramjet Engine
Reid A. Berdanier **Nicole L. Key**	**Ruiyu Li** **Limin Gao** **Lei Zhao** **Tianlong Zhen**	**Victor Mileshin** **I. Druzhinin** **P. Kozhemyako** **V. Semenkin**	**Hakim Kadhim** **Aldo Rona** **J. Paul Gostelow** **Katrin Leschke**	**Ryojiro Minato** **Ryoji Imai** **Kazuyuki Higashino** **Daisuke Nakata** **Mayu Ishihara**

Technical Session 09: **Fluid and gas dynamics**

Chairs: Glen Snedden (CSIR), Chunill Hah (NASA)

Exchange Room 1

10.30	11.00	11.30	12.00	12.30
ISABE-2017-21396	ISABE-2017-21412	ISABE-2017-21448	ISABE-2017-22527	ISABE-2017-22662
Numerical Simulation of Air-oil Separator with Metal Foam in Aero-engine	SAS-SST Simulations of the Flow and Heat Transfer Inside a Square Ribbed Duct with Artificial Forcing	Numerical and Experimental Study of Overexpanded Flows in Planar Supersonic Nozzles at Low Reynolds Numbers Saya Inoue	Experimental Study of the Pressure Loss in Aero-Engine Air/Oil Separators	The In-service Burn out Effect on the Transonic Leakage Flows over High Pressure Turbine Blade Tip
Xiaoxue Zhang **Lifen Zhang** **Zhenxia Liu**	**Piotr Zacharzewski** **Richard Jefferson-Loveday** **Hervé Morvan**	**S. Yagi** **D. Ono** **S. Nakao** **Y. Miyazato**	**Laura Cordes B. Tim Pychynski** **C. Corina Schwitzke** **D. Hans-Jörg Bauer** **A. Thiago P. de Carvalho** **B. Hervé P. Morvan**	**Zainab Saleh** **E. J. Avital** **T.Korakianitis**

Technical Session 10: **New developments in gas turbine engines**

Chairs: Andrew Rolt (Cranfield University), Isaac Lopez (NASA)

Exchange Room 2

10.30	11.00	11.30	12.00	12.30
ISABE-2017-21342	ISABE-2017-21454	ISABE-2017-21491	ISABE-2017-22677	ISABE-2017-22680
Comparative Assessment between Variable Area Fan Nozzle Concepts at Inner and Outer By-Pass Duct Surfaces	Simplified dynamic simulation of Gas Turbine SOFC Hybrid Systems	Sensitivity Analysis of a Triple Bypass Adaptive Cycle Engine Concept	The Impact of Clean Sky Technology on Future 3500 lb Single Engine Light Rotorcraft	Comparison Between the Optimum Performance of Mixed and Unmixed High-Bypass Turbofans
Chetan Kumar Sain **Klaus Hoeschler**	**Iacopo Rossi** **Alberto Traverso** **David Tucker**	**Abraham Josué Hernández Vega** **T. Nikolaidis**	**Julien Enconniere** **J. Ortiz-Carretero,** **I. Goulos, V. Pachidis** **C. Smith, J. Stevens** **R. d'Ippolito, L. Thevenot**	**Adel Ghenaiet**

Technical Session 11: **Hypersonic vehicle propulsion**

Chairs: Hong-Gye Sung (Korea Aerospace University), Charles Trefny (NASA)

Exchange Room 3

10.30	11.00	11.30	12.00	12.30
ISABE-2017-21380	ISABE-2017-21428	ISABE-2017-21447	ISABE-2017-22505	ISABE-2017-22534
Numerical Simulation on Gas-Liquid Two Phases Flow of Fuel Supply System of Scramjet Engine	Numerical investigation of heat flux on HIMICO with ablative TPS	Study on Flame Stabilization in a Kerosene Fueled Scramjet Combustor with Air Throttling in a Pulse Combustion Wind Tunnel	Improved Flammability for Hydrogen Fuelled Scramjets with Preinjection Catalytic Radical Farming	Experimental and Computational Investigations over a Liquid Fuel Ramjet Combustor
Jiang Jin **Liu Cheng** **Li Yanhui** **Sun Qiangqiang** **Weng Xiaohong**	**Takenori Miwa** **Akiko Matsuo** **Hideyuki Taguchi**	**Jialing Le Ye Tian** **Shunhua Yang** **Maoxiong Yue** **Tie Su, Fuyu Zhong** **Xiaoqiang Tian**	**Daniel Paukner** **J. Nowak** **V. Gümmer** **O. Haidn**	**M. Srinivasa Rao** **R. Vivek** **Darshan Kumar Trivedi** **Sunita Devi Jena**

Tuesday, 5th September

Technical Session 12: **Combustion**

Chairs: Alessandro Cappelletti (Università degli Studi di Firenze), Iroizan Ubulom (UNSW Canberra)

Exchange Room 4

10.30	11.00	11.30	12.00	12.30
ISABE-2017-21366	ISABE-2017-21438	ISABE-2017-21479	ISABE-2017-22634	ISABE-2017-22641
Isolator Flow Response To Scramjet-Ramjet Transition In A Scramjet Engine	Ways for Extending the Stable Operation Boundaries of Combustion Chamber Running on Different Fuel Types	Comparative Performance Study of CFD Species Models for Hydrogen Micromix Combustion	Large Eddy Simulation of a Reverse Flow RQL Combustor with Non-Adiabatic Flamelet Combustion Model	Large-eddy simulations of aero-engine combustors using the Conditional Moment Closure model
Rajarshi Das **Ha Jeong Ho** **Heuy Dong Kim** **Foluso Ladeinde**	**Alexander Vasilyev** **R.Medvedev** **O. Chelebyan**	**Ramon Sabin** **Vishal Sethi** **Pierre Q. Gauthier**	**Ozan Can Kocaman** **Sitki Uslu**	**Andrea Giusti** **Epaminondas Mastorakos**

Technical Session 13: **Virtual development and testing**

Chairs: Yiguang Li (Cranfield University), Hilbert van Pelt (UNSW Canberra)

Exchange Room 5

10.30	11.00	11.30	12.00	12.30
ISABE-2017-21389	ISABE-2017-21475	ISABE-2017-22512	ISABE-2017-22543	ISABE-2017-22558
Data Re-use for Preliminary Thermal-Mechanical Design of Gas Turbine	Higher Fidelity Gas Turbine Engine Thermal Performance Modeling	Performance Modelling of an Ultra-high Bypass Ratio Geared Turbofan	Efficient Uncertainty Quantification for an Axial Compressor, Using Adaptive Multi-fidelity Kriging	Cycle Analysis of Conventional and Advanced Airbreathing Engines Involving Real Gas and Condensed Phase Effects
Gan Lu Feng Wang Luca di Mare Michael A. Moss Gordon May	Paul Guaglardi T. Nikolaidis P. Pilidis	Alexios Alexiou Nikolaos Aretakis Ioannis Roumeliotis Ioannis Kolias Konstantinos Mathioudakis	Jouke Hendrik Sietse de Baar Z. Leylek A.J. Neely	Hisao Futamura Hideyuki Taguchi Takeshi Yamamoto

Technical Session 14: **Compressors**

Chairs: Michael Bauer (MTU), Pavlos Zachos (Cranfield University)

Exchange Auditorium

16.15	16.45	17.15	17.45	18.15
ISABE-2017-21415	ISABE-2017-21417	ISABE-2017-21443	ISABE-2017-21478	ISABE-2017-21492
Application of Shear-sensitive Liquid Crystal Coating on Flow Visualization of Compressor Cascade	Numerical Analysis of Unsteady Vaned Diffuser Flow in a Centrifugal Compressor	Investigation on the Effects of Winglet Geometry in a High Loading Compressor Rotor	The Surge Margin of an Axial Compressor: Estimations from Steady State Simulations	Investigation of Variable Inlet Guide Vanes on a Low Speed Compressor Stage with a Cantilevered Stator
Ruiyu Li **Limin Gao** **Shuai Zhang** **Yongzeng Li**	**William J. Gooding** **John C. Fabian** **Nicole L. Key**	**Cui Wei-wei** **Zhou Xiao-yong** **Zhao Qing-Jun** **Xu Jian-zhong**	**Marcus Lejon** **Niklas Andersson** **Lars Ellbrant** **Hans Mårtensson**	**Alok Minesh Shah** **Amboor Madathil Pradeep**

Technical Session 15: **Fluid and gas dynamics**

Chairs: Andrew Neely (UNSW Canberra), Nobuhiko Yamasaki (Kyushu University)

Exchange Room 1

16.15	16.45	17.15	17.45	18.15
ISABE-2017-21350	ISABE-2017-21419	ISABE-2017-21422	ISABE-2017-21465	ISABE-2017-21472
An Efficient Design Method for Applying Vortex Generators in Turbomachinery	Application of Extreme Value Statistics to Reduce Test and Computational Requirements for Quantifying Maximum Engine Inlet Total Pressure Distortion	Experimental Investigation of Infrared Signal Characteristics in a Micro Turbojet Engine	An Evaluation of Depth-Averaged Models of Laminar Falling Wavy Liquid Films	Non-intrusive Frequency Measurements of Bluff-body Vortex Shedding at High Reynolds Numbers
Jiabin Li **Lucheng Ji** **Yanming Liu** **Weilin Yi**	**David S. Kidman** **James D. Brownlow** **Brian A. Binkley** **Craig C. Morris**	**Sunmi Kim** **Seongman Choi** **Rho Shin Myong** **Woncheol Kim**	**Bruce Kakimpa** **Herve Morvan** **Stephen Hibberd**	**Judith Richter C. Steinhausen** **B. Weigand** **M. Beuting** **T. Dreier** **C. Schulz**

Tuesday, 5th September

Technical Session 16: **Diagnostics**

Chairs: Cleverson Bringhenti (Instituto Tecnológico de Aeronáutica), Toshio Nagashima (University of Tokyo) **Exchange Room 2**

16.15	16.45	17.15	17.45	18.15
ISABE-2017-21391	ISABE-2017-21406	ISABE-2017-22638	ISABE-2017-22650	ISABE-2017-22676
The Application Of Multiple Methodologies On Gas Turbine Diagnostics	Diagnostics of Gas Turbine Systems Using Gas Path Analysis and Rotordynamic Response Approach	Experimental Evaluation of fs-IR FBG Sensors for Application in Gas Turbine Temperature Measurement	Integrated Gas Turbine System Diagnostics: Components and Sensor Faults Quantification using Artificial Neural Network	Diagnosis And Isolation For Multiple Gas Path Performance Degradations Of Turbofan Based On A Bank Of Unknown Input Observers
Simone Togni **Theoklis Nikolaidis** **Suresh Sampath**	**Gbanaibolou Jombo** **Suresh Sampath** **Iain Gray**	**Sangsig Yun** **N. Ramachandran** **M. Charbonneau** **R. B. Walker H. Ding, D. Coulas** **S. J. Mihailov**	**Emmanuel Osigwe** **Yi-Guang Li** **Suresh Sampath** **Gbanaibolou Jombo** **Dieni Indarti**	**Chao Yang** **Xiangxing Kong**

Technical Session 17: **Heat transfer**

Chairs: Yeshayahou Levy (Technion – Israel Institute of Technology), D. R. Reddy (NASA) **Exchange Room 3**

16.15	16.45	17.15	17.45	
ISABE-2017-21496	ISABE-2017-21497	ISABE-2017-22570	ISABE-2017-22649	
Experimental Investigation on Onset of Instability of Supercritical Kerosene Flowing in Mini-tubes	Experimental Investigation on Heat Transfer of Kerosene Flowing in Tiny Horizontal Rectangular Tubes at Supercritical Pressure under Gravity	Comparison of RANS and LES on Gas Turbine Combustor Liner Temperature using Conjugate Heat Transfer (CHT) Methodology	Computational Modelling of the Flow and Heat Transfer in Dimpled Channels	
Wang Ning **Wang Hui** **Pan Yu** **Zhou Jin**	**Hu Jiangyu** **Zhou Jin** **Pan Yu** **Wang Ning**	**Yucel Saygin** **Sitki Uslu**	**Khalil Abo Amsha** **T.J. Craft** **H. Iacovides**	

Tuesday, 5th September

Technical Session 18: **Combustion**

Chairs: Yolanda Hicks (NASA), Sean Yun (National Research Council Canada) — **Exchange Room 4**

16.15	16.45	17.15	17.45	18.15
ISABE-2017-21354	ISABE-2017-21356	ISABE-2017-21361	ISABE-2017-21437	ISABE-2017-22595
Fuel Profiles and Operative Pressure's Influence on the NOx Emissions in a Premixed Flame	Flame Transfer Function of Fuel-air Nozzle Characteristics in a Model Gas Turbine Combustor	LBO Predictions of Aero-engine Combustors Based on Improved Semi-empirical Correlations under Off-design Operations	Experience in Development of a Combustion Chamber for a Small Gas Turbine Engine	Preliminary Aerodynamic Design Methodology for Aero Engine Lean Direct Injection Combustors
Alessandro Cappelletti **Francesco Martelli**	**Seongpil Joo** **Jisu Yoon** **Seongheon Kim** **Sudarshan Kumar** **Youngbin Yoon**	**Hu Bin** **Wang Zhong-hao** **Deng Ai-ming** **Zhao Qing-jun** **Xu Jian-zhong**	**Alexander Vasilyev** **R. Medvedev O. Chelebyan** **O. Zubkova** **V. Lyashenko** **V. Zakharov**	**Jie Li** **Xiaoxiao Sun** **Yize Liu** **Vishal Sethi**

Technical Session 19: **Materials, structures and structural failure**

Chairs: Anders Sjunnesson (GKN Aerospace), Panos Laskaridis (Cranfield University) — **Exchange Room 5**

16.15	16.45	17.15	17.45	
ISABE-2017-21343	ISABE-2017-21385	ISABE-2017-22524	ISABE-2017-22695	
Experimental Characterization of Carbon Fiber Brush Seal Leakage Performance as a Function of the Bristle Pack Geometrical Parameters under Dry Conditions	Modelling Approach for Calculation of Leading Edge Deterioration of Fan Blades due to Erosion during the Engine Pre-Design Process	Challenges and Opportunities of Thermomechanical FEM Simulations of High Fidelity Aero-Engine Models by Implicit Time-Integration	Assessment of Propeller Blade Erosion	
Bilal Outirba **B. Patrick Hendrick** **C. Kevin Nicolas**	**Nelli Schmidt** **Frank Grauer** **Jan Gregor Pfitzner** **Stephan Staudacher** **Konrad Vogeler**	**Markus Kober** **Arnold Kühhorn** **Akin Keskin** **Kai Singh**	**Adel Ghenaiet**	

Wednesday, 6th September

Technical Session 20: **Compressors**

Chairs: Peter Schiffer (Technischen Universität Darmstadt), Alan Newby (Rolls-Royce)

Exchange Auditorium

10.30	11.00	11.30	12.00	12.30
ISABE-2017-22533	ISABE-2017-22651	ISABE-2017-22652	ISABE-2017-22667	ISABE-2017-22689
Preliminary Aerodynamic Design of a Fan Stage for an Ultra High Bypass Ratio Engine	An Improved Streamline Curvature-based Design Approach for Transonic Axial-Flow Compressor Blading	Development of a Streamline Curvature Axial-flow Compressor Performance Simulator Graphical-user-interface for Design and Research	A Reduced Frontal Area Turbojet (RFAT) Engine Architecture with Diagonal Flow Turbomachinery	Numerical Investigation on Rotating Instability from the Oscillation of Tip Leakage Flow in Transonic Axial Compressor Rotor
Daniel Giesecke Jens Friedrichs Udo Stark	**Hasani Azamar Aguirre Vassilios Pachidis Ioannis Templalexis**	**Hasani Azamar Aguirre Vassilios Pachidis Ioannis Templalexis**	**Radeshen Moodley**	**Lei Fu**

Technical Session 21: **Fluid and gas dynamics**

Chairs: Nicole Key (Purdue University), Rob Mitchell (Rolls-Royce)

Exchange Room 1

10.30	11.00	11.30	12.00	12.30
ISABE-2017-21452	ISABE-2017-21459	ISABE-2017-21500	ISABE-2017-22540	ISABE-2017-22588
Rainbow Schlieren Visualization of Shock trains in Rectangular Ducts	A One-way Fluid-thermal-structure Coupling Analysis Method for Finger Seal	Optimization of an Axial Turbine Used in Small Gas Turbine Engine Based on 3D Simulations	Aerodynamic Investigation of S-Duct Intake for High Power Turboprop Installed on a Channel Wing	Using Fluidic Curtains to Reduce Turbine Leakage
Taishi Takeshita H. Takano D. Ono S. Nakao Y. Miyazato	**Qiang Wang H.H. Ji Y.P. Hu**	**Luiz Gustavo F. Amaral Jesuino Takachi Tomita Cleverson Bringhenti Osmar F. Reis da Silva**	**Caglar Atalayer J. Friedrichs D. Wulff**	**James MacCalman Simon Hogg Grant Ingram Richard Williams Stacie Tibos**

Technical Session 22: **New developments in gas turbine engines**

Chairs: Aspi Wadia (GE Aviation), Areti Malkogianni (Cranfield University)

Exchange Room 2

10.30	11.00	11.30	12.00	12.30
ISABE-2017-22657	ISABE-2017-22704	ISABE-2017-21339	ISABE-2017-22705	ISABE-2017-22644
Optimisation of an Aircraft Fluid Heat Management Using Exergy Analysis Method	Challenges of Preliminary Aircraft Engine Design with Variable Cycle Technology	Progress in Developing Ultra-High Pressure Ratio Core-Engine Technologies	The Rolls-Royce Advance3 Project – Proving our Future Core	Clean Sky Research and Demonstration Programmes for Next Generation Aircraft Engines
Alexandre Neophytou Jean-Michel Rogero Anthony Roux	**Christian Hennig Frank Grauer**	**Ralf von der Bank, D. Bruna F. Poutriquet, M. Ruzicka S. Donnerhack, A. Lundbladh D. Torr, A. Ornat, E. Basset A. Peschiulli, E. Johann**	**Andy Geer**	**Jean-François Brouckaert François Mirville Kevin Phuah Peter Taferner**

Technical Session 23: **Hypersonic vehicle propulsion**

Chairs: Dries Verstraete (The University of Sydney), John Slater (NASA)

Exchange Room 3

10.30	11.00	11.30	12.00	
ISABE-2017-21426	ISABE-2017-21430	ISABE-2017-22598	ISABE-2017-22623	
Experimental Investigation on Fuel Distribution with Far-Field Injection in a Scramjet Combustor with Dual Cavity	Analysis of Steady State Characteristics of Scramjet Engines	Research on Quantitative Evaluation Method of Scramjet and Integration	Sea Level Static Tests of Gas Generator Cycle Air Turbo Ramjet Engine for Supersonic UAV	
Yu Pan Xi-Peng Li Wei-Dong Liu Lei-Chao Yang Bin An Jia-Jian Zhu	**Zifei Ji Bing Wang Huiqiang Zhang Zhuming Rao**	**Huanrong Zhang Yuchun Chen Yuanhu Cai Junjie Zhao**	**Kazuyuki Higashino D. Nakata R. Minato R. Imai N. Tanatsugu Y. Yashima, H. Mukae**	

Wednesday, 6th September

Technical Session 24: **Combustion**

Chairs: Seongman Choi (Chonbuk National University), Ibrahim Yimer (National Research Council Canada) **Exchange Room 4**

10.30	11.00	11.30	12.00	12.30
ISABE-2017-21433	ISABE-2017-21439	ISABE-2017-21482	ISABE-2017-22517	ISABE-2017-22626
Combustion Instability Characteristics in a Dump Combustor using Different Hydrocarbon Fuels	Development of Front Module for GTE Combustor with Low NOx Emission	Gas Turbine Combustor Modeling with and without Nozzle Guided Vanes --- Phase II	Gas turbine combustion using Low Swirl Injection – Defining a new swirl number	Evaluation of the Lean Blowout Limit of Alternative Fuels in a Gas Turbine Combustor
Donghyun Hwang **Yoonho Song** **Kyubok Ahn**	**A. Vasilyev** **Oganes Chelebyan** **V. Zakharov** **V. Lyashenko**	**Lei-Yong Jiang** **Yinghua Han** **Prakash Patnaik**	**Joseph Kalyan Raj I.** **Yeshayahou Levy**	**Lukai Zheng** **Ihab Ahmed** **Emamode Ubogu** **Yang Zhang** **Bhupendra Khandelwal**

Technical Session 25: **Materials, structures and structural failure**

Chairs: Ann Bolcavage (Rolls-Royce), Dae Sung Lee (Korea Aerospace Research Institute) **Exchange Room 5**

10.30	11.00	11.30	12.00	12.30
ISABE-2017-22629	ISABE-2017-22681	ISABE-2017-22686	ISABE-2017-22701	ISABE-2017-22656
Analysis of an Auxetic Casing Structure for Tip Clearance Control under Various Temperature and Pressure Conditions	Fretting Wear Modeling of Misaligned Spline Couplings in Aero-engine Accessory	Kinetics and Mechanisms of Chemical Reactions at the Unidirectional Continuous SiC Fibre/Ti-17 Composite Interfaces	Thermo Mechanical Fatigue Life of Turbine Rotor for Small Gas Turbine Engine : A Reliability Approach	Predictive Model of Forces for Aeronautic Materials Fir Tree Broaching
Tobias Schmidt **Sina Eisenmann** **Velislav Velikov** **Volker Gümmer** **Andreas Hupfer**	**Wen Li** **Kening Xu** **Xuening Zhang** **Yong Huang** **Tong Zhang**	**Yingwei Fan** **Xiaorong Zhou**	**S. Esakki Muthu** **P. Udayanan**	**Gorka Ortiz-de-Zarate** **Daniel Soler Mikel Cuesta** **Aitor Madariaga** **Ainhara Garay** **Pedro Arrazola Arriola**

Technical Session 26: **Turbines**

Chairs: Jun Li (Xi'an Jiaotong University), Paloma González (ITP) **Exchange Room 6**

10.30	11.00	11.30	12.00	12.30
ISABE-2017-21340	ISABE-2017-21476	ISABE-2017-22539	ISABE-2017-22613	ISABE-2017-21490
Numerical Simulation of ITD Flows in the Presence of HP Blade and LP Vane	Modelling and Performance Analysis of Vaneless Counter Rotating Turbine in Gas Turbine Engines	Efficiency Losses Resulting from Base Pressure Deficit and Energy Separation over the Speed Range	The Difference of Down-stream Mixing Loss due to the Trailing Edge Configuration	On and Off-design Performance of a Model Rotating Turbine with Non-Axisymmetric Endwall Contouring and a Comparison to Cascade Data
Jie Gao **Weiliang Fu** **Xuezheng Liu** **Guoqiang Yue** **Qun Zheng, Xudong Zhao**	**Linyuan Jia** **Yuchun Chen** **Yuan Gao** **Junjie Zhao**	**Jonathan Paul Gostelow** **A. Rona**	**Juo Furukawa** **Masaaki Hamabe** **Kenichi Funazaki**	**Glen Snedden** **Dwain Dunn** **Grant Ingram**

Thursday, 7th September

Technical Session 27: **Advanced Aero Engine Research and Assessments 1**

Chairs: Nateri Madavan (NASA), Devaiah Nalianda (Cranfield University)

Exchange Auditorium

10.30	11.00	11.30	12.00	
ISABE-2017-22531	ISABE-2017-22660	ISABE-2017-22605	ISABE-2017-22535	
Vision 20 – Rolls-Royce's Long Term Civil Aircraft Propulsion System Concept and Technology Strategy	Selecting Combinations of Advanced Aero Engine Technologies	Integrated Assessment of Vehicle Architecture Tradeoffs for Variable Pitch Geared Fan Engine	Turbo-electric Vehicle Study – A Techno-economic and Environmental Risk Assessment of NASA's N3-X	
John Whurr **Peter Beecroft**	**Andrew Rolt** **Joshua Sebastiampillai** **Florian Jacob** **Vishal Sethi** **Carlos Xisto**	**Jimmy C. M. Tai** **Christopher A. Perullo** **Dimitri N. Mavris** **John Whurr** **Douglas Boyd**	**Chana Goldberg** **J. Felder D. Nalianda** **V. Sethi** **P. Pilidis** **R. Singh**	

Technical Session 28: **Fluid and gas dynamics**

Chairs: Paloma González (ITP), Theo Nikolaidis (Cranfield University)

Exchange Room 1

10.30	11.00	11.30	12.00	
ISABE-2017-21388	ISABE-2017-22555	ISABE-2017-22572	ISABE-2017-22653	
Experimental Results of Shock Trains in the Thermal Ablation C-SiC Composite Isolator	Comparison of Turbulence Modelling on the Secondary Flow in the Linear T106 Cascade at High Altitude Condition	Influence of Active Flow Control on different kinds of Separation Bubbles	Numerical Simulation of Nacelle Flowfield for Counter-Rotating Open Rotor Propellers	
Xue-bin Cao **Yan-jin Man** **Shou-mei Zhu**	**Naoki Tani**	**Julia Kurz** **Reinhard Niehuis** **Martin Hoeger**	**Vinícius Tavares Silva** **L. M.da Silva,** **J. T. Tomita, C. Bringhenti,** **T. Grönstedt, O. Petit,** **A. C. Patrao**	

Technical Session 29: **New developments in gas turbine engines**

Chairs: Anestis Kalfas (Aristotle University of Thessaloniki), Alan Newby (Rolls-Royce)

Exchange Room 2

10.30	11.00	11.30	12.00	
ISABE-2017-21392	ISABE-2017-21453	ISABE-2017-22536	ISABE-2017-22583	
ENOVAL - Low Pressure System Technologies for Ultra High Bypass Ratio Engines	Numerical and Experimental Investigation of Variable Area Ejector Jet Nozzle Aerodynamics	Assessment of the Fan Simulation for quantifying the Boundary Layer Ingestion benefits on an Experimental Propulsion System	The Effect of a Hub Fillet Radius on a Non-axisymmetric Endwall Contour	
Joerg Sieber **Edgar Merkl**	**Artem Karpenko** **Sergiy Riznyk** **I. Kravchenko**	**Gilles Billonnet** **O. Atinault** **R. Grenon**	**Dwain Dunn** **Glen Snedden**	

Technical Session 30: **Combustion**

Chairs: Ibrahim Yimer (National Research Council Canada), Askin Isikveren (Safran)

Exchange Room 3

10.30	11.00	11.30	12.00	
ISABE-2017-22526	ISABE-2017-22609	ISABE-2017-22620	ISABE-2017-22630	
Fuel Vaporization in Small Jet Engine's Vaporizers	Simulated Altitude Testing of Replacement Fuels for Aviation Piston Engines	Effect of Air Swirler Configuration on Lean Direct Injector Flow Structure and Combustion Performance with a 7-point Lean Direct Injector Array	Supersonic Combustion Behaviors for Mixtures of Methane and Ethylene in a Scramjet Model Combustor	
Yeshayahou Levy **Vladimir Erenburg** **Igor Gaissinski** **Valery Sherbaum**	**Pervez Canteenwalla** **Wajid Ali Chishty** **Malcolm Imray**	**Yolanda R. Hicks** **Kathleen M. Tacina** **Robert C. Anderson**	**Ryosuke Kinoshita** **Toshiki Nomura** **Shinji Nakaya** **Mitsuhiro Tsue**	

Thursday, 7th September

Technical Session 31: **Turbines**

Chairs: D. R. Reddy (NASA), Seongman Choi (Chonbuk National University) — **Exchange Room 4**

10.30	11.00	11.30	12.00	
ISABE-2017-21349	ISABE-2017-21499	ISABE-2017-22602	ISABE-2017-22604	
Investigation on Internal Flow Field Non-axisymmetric Characteristics in a Double-sided Centrifugal Compressor with Non-balanced Inlets	Design and Commissioning of a Rotating Turbine Rig for Cavity Flows Investigation	The Design and Modelling of an Inward-flow Radial (IFR) Turbine Stage	A Strategy to Implement Optimization Techniques in the Preliminary HPT Design Phase	
Hanzhi Zhang **Ce Yang** **Dazhong Lao** **Ding Tong**	**Daniele Simoni** **Pietro Zunino** **Davide Lengani** **Roberto Guida**	**Francis V. Smit** **SJ van der Spuy** **TW von Backstrom**	**Osmar Francisco Reis da Silva** **Jesuino Takachi Tomita** **Cleverson Bringhenti** **Diogo Ferraz Cavalca** **Vinicius G. Monteiro**	

Technical Session 32: **Intelligent engine control and health monitoring**

Chairs: Rainer Walther (MTU), Yury Temis (CIAM) — **Exchange Room 5**

10.30	11.00	11.30	12.00	
ISABE-2017-21346	ISABE-2017-21436	ISABE-2017-21484	ISABE-2017-22578	
Application of ROMs to Aeroengines Health Monitoring	Nonlinear Model-based Adaptation for Off-design Performance Prediction of Gas Turbines	Investigation of Architecture and Characteristics of Oil System with Electrically Driven Pumps for Gas Turbine Engine	Study for the Effect of Inlet Flow Distortion on a Control Efficiency of Turbofan	
Luis Sánchez de León **J. M. Vega** **J. L. Montañés** **J. Rodrigo**	**Elias Tsoutsanis** **Yi-Guang Li** **Pericles Pilidis** **Mike Newby**	**O.S. Gurevich** **A.I. Gulienko** **Shchurovskiy Yury**	**O.S. Gurevich** **S.E. Krasnov** **F.D. Golberg** **Sergey Smetanin**	

Technical Session 33: **Diagnostics**

Chairs: Massimiliano Di Domenico (GE Aviation), Jouke de Baar (UNSW Canberra) — **Exchange Room 6**

10.30	11.00	11.30	12.00	
ISABE-2017-22655	ISABE-2017-21333	ISABE-2017-22589	ISABE-2017-22699	
Impact of Reactive Sands on Engine Degradation	Diagnostics Of Power Setting Sensor Fault Of Gas Turbine Engines Using Genetic Algorithm	Remote Operation and Monitoring of a Micro Aero Gas Turbine	Compressor Fouling Influence on High Frequency Data Signals	
Nicholas Bojdo **Antonio Filippone**	**Yiguang Li**	**Michael Diakostefanis** **Theoklis Nikolaidis** **Suresh Sampath** **Theodoros Triantafyllou**	**Jiri Pecinka** **Adolf Jilek** **Suresh Sampath**	

Thursday, 7th September

Technical Session 34: **Advanced Aero Engine Research and Assessments 2**

Chairs: Nateri Madavan (NASA), Chana Goldberg (Cranfield University)

Exchange Auditorium

15.45	16.15	16.45	17.15	
ISABE-2017-21387	ISABE-2017-22592	ISABE-2017-21407	ISABE-2017-22668	
Design of a Counter Rotating Fan using a Multidisciplinary and Multifidelity Optimisation under High Level of Restrictions	Installation Effects for Ultra-high Bypass Engines	Design Optimization of Separate-Jet Exhausts for the Next Generation of Civil Aero-Engines	Turbo-Electric, Distributed Propulsion with Flap Blowing for the NASA N3-X Aircraft	
Lionel Meillard **Cristian Mihail Stanica** **Nabil Ben Nasr** **William Riéra**	**Anders Lundbladh** **Hans Mårtensson** **Andreas Petrusson** **Olivier Petit** **Ludivine Weller**	**Ioannis Goulos John Otter** **Tomasz Stankowski** **David MacManus** **Nicholas Grech** **Christopher Sheaf**	**Jun Wei Tan** **Panos Laskaridis** **Iain Gray** **Esteban A. Valencia**	

Technical Session 35: **Fluid and gas dynamics**

Chairs: Francesco Martelli (Università degli Studi di Firenze), Simon Gallimore (Rolls-Royce)

Exchange Room 1

15.45	16.15	16.45	17.15	
ISABE-2017-22575	ISABE-2017-22628	ISABE-2017-22636	ISABE-2017-22687	
Increasing Blade Turning by Active Flow Control and Tandem Configurations: A Comparison	A Coupled Euler-Lagrange CFD Modelling of Droplets-to-film	Experimental Calibration of a High Speed Blowdown Tunnel	Large-eddy Simulation and Linear Acoustic Analysis of Combustion Instability in a Full-annular Combustor	
Christine Tiedemann **Alexander Heinrich** **Dieter Peitsch**	**Akinola A. Adeniyi** **Hervé P. Morvan** **Kathy A. Simmons**	**David G. Cuadrado** **Jorge Saavedra** **Valeria Andreoli** **Guillermo Paniagua**	**Man Zhang** **Wenjie Tao**	

Technical Session 36: **New developments in gas turbine engines**

Chairs: Andy Geer (Rolls-Royce), Natalie Smith (SwRI)

Exchange Room 2

15.45	16.15	16.45	17.15	17.45
ISABE-2017-21401	ISABE-2017-22506	ISABE-2017-22511	ISABE-2017-22691	ISABE-2017-22703
Staged Multi-fuel Gas Turbine Combustion System	The Brayton Cycle and Entropy Nature at the Space Thermostat Presence	The Rolls-Royce UltraFan® Engine: Delivering the Next Generation of Aerospace Propulsion System	Research and Application of Distributed Aero-engine Control Technology	Simulation and Performance Investigation of Turbo-electric Distributed Propulsion System
Oleksiy Antoshkiv **Thanapol Poojitganont** **Lothar Jehring** **Heinz Peter Berg**	**Mikhail Ivanov**	**Rob Mitchell** **Mike Whitehead**	**Xiaojie Qiu** **Jun Zang** **Linshan Jin** **Fulong Sun** **Yiyan Sheng**	**Jaganmohana Rao Danda** **Tashie-Lewis Bernard** **Suresh Sampath** **Panogotis Lashkaridis**

Thursday, 7th September

Technical Session 37: **Combined cycle engines**

Chairs: Pavlos Zachos (Cranfield University), Ralf von der Bank (Rolls-Royce)

Exchange Room 3

15.45	16.15	16.45	17.15	17.45
ISABE-2017-21345	ISABE-2017-21376	ISABE-2017-21502	ISABE-2017-22502	ISABE-2017-22639
Potential of the Bottom Organic Rankine Cycle to Recover Energy on Various Aircraft Engine Architectures	Design and Experimental Study of a 3D Over-under TBCC Exhaust System	Test of a Rocket-Based Combined Cycle Engine Model at Ejector-Rocket, Ramjet and Scramjet Modes	Geometry Curvature Effect on Boundary Layer Ingestion and Aeroengine Intake Performance	Analysis of Waste Heat Recovery Boosted Turboshaft for Land and Marine Applications
Khaled Zarati **Samer Maalouf** **Askin Isikveren**	**Jinglei Xu** **Wenda Hua** **Yanfeng Niu** **Baocheng Xu** **Shuai Huang**	**Inyoung Yang** **Kyung-jae Lee** **Yang-ji Lee** **Chun-taek Kim** **Dae-sung Lee**	**Theofilos G. Efstathiadis** **Konstantinos I. Magkoutas** **Panagiotis Ntalianis** **Anestis I. Kalfas**	**Ibrahim Sinan Akmandor** **Melih Okur**

Technical Session 38: **Combustion**

Chairs: Sean Yun (National Research Council Canada), Yolanda Hicks (NASA)

Exchange Room 4

15.45	16.15	16.45	17.15	17.45
ISABE-2017-22522	ISABE-2017-22525	ISABE-2017-22564	ISABE-2017-22606	ISABE-2017-22637
The Design and Testing of a Can-type Combustor in a Compressor Test Rig	Coarse and Fine Atomization Regimes in Miniature Airblast Atomizer	Research of Solid Propellant Burning Processes in Low Temperature Aeroengine Gas Generators	Gaseous Emissions Results from a Three-Cup Flametube Test of a Third-Generation Swirl-Venturi Lean Direct Injection Combustion Concept	A Hybrid LES-RANS Validation of Effusion Cooling Array Measurements
Bronwyn Clara Meyers **M. A. Jan** **S. J. van der Spuy**	**Igor Gaissinski** **Yeshayahou Levy** **Valery Sherbaum** **Daniel Kutikov** **Vladimir Rovenski**	**Leonid Yanovskiy** **I.S. Averkov** **A.V. Baikov** **P.D. Toktaliev** **A.F. Zholudev** **M.V. Kislov** **V.A. Struni** **A.V. Shikhovtsev**	**Kathleen M. Tacina** **D.P. Podboy** **F. Lee** **B. Dam**	**Xiaosheng Chen** **Hao Xia**

Thursday, 7th September

Technical Session 39: **Aeromechanics, flutter, vibration & HCF**

Chairs: Markus Kober (Brandenburg University of Technology Cottbus-Senftenberg), Glen Snedden (CSIR) **Exchange Room 5**

15.45	16.15	16.45	17.15	18.15
ISABE-2017-22541	ISABE-2017-22542	ISABE-2017-22568	ISABE-2017-22614	ISABE-2017-22692
Study on Rotor Dynamics Characteristics of Gas Turbine Rotor-Bearing-Seal System	Fluid-Structure Interactions for High-Cycle Fatigue Life Estimation	Model Update and Validation of a Mistuned High Pressure Compressor Blisk	Analysis of Mistuned Forced Response in an Axial High Pressure Compressor Rig With Focus on Tyler-Sofrin Modes	Robust Design Method to Depress the Rotor's Vibration for Aircraft Turbofan Engines
Huang Hai **Ma WenSheng**	**Iroizan Adasi Ubulom** **Andrew J. Neely** **Krishna K. Shankar**	**Bernd Beirow Arnold Kühhorn** **Felix Figaschewsky** **Peter Hönisch** **Thomas Giersch** **Sven Schrape**	**Felix Figaschewsky** **Arnold Kuhhorn** **Bernd Beirow** **Thomas Giersch** **Sven Schrape**	**Yongquan Liu** **Fayong Wu** **Deyou Wang** **Jie Hong**

Technical Session 40: **Virtual development and testing**

Chairs: John Whurr (Rolls-Royce), Andrew Rolt (Cranfield University) **Exchange Room 6**

15.45	16.15	16.45	17.15	
ISABE-2017-21394	ISABE-2017-22544	ISABE-2017-22645	ISABE-2017-22690	
Combustor Design Optimization Using the Prometheus Design System	Multi-fidelity Efficient Global Optimisation of the Geometry of a Transonic Axial Compressor	"Virtual Engine" Approach for the Coupled Analysis of Engine Structure	Optimization of Hollow Impeller - Design for Six sigma	
David J. J. Toal **X. Zhang** **A. J. Keane,** **Simon Stow, M. Zedda,** **F. Witham, J. Gregory**	**Jouke Hendrik S. de Baar** **Z. Leylek** **A. Habib** **A.J. Neely** **T. Ray**	**Joury M. Temis** **A. V. Selivanov** **D. A. Yakushev**	**Xianxin Cai** **Chunlai Wu** **Sixin Qi** **Jian Li**	

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ISABE 2019 CONFERENCE

September 2019

CANBERRA, AUSTRALIA

Friday, 8th September

Technical Session 41: **Combined cycle engines**

Chairs: Jesuino Takachi Tomita (Instituto Tecnológico de Aeronáutica), Aspi Wadia (GE Aviation)

Exchange Auditorium

10.30	11.00	11.30	12.00	
ISABE-2017-21360	ISABE-2017-21456	ISABE-2017-22519	ISABE-2017-22537	
Preliminary Study on Turbine Based Combined Cycle Propulsion System Performance	Advanced Gas Turbine Cycle Performance Modelling Using Response Surface Methods	Design and Performance Prediction of the Rocket-Based Combined Cycle engine at the Ejector-Rocket Mode	Dual-mode Free-jet Combustor	
Jun Liu Huancheng Yuan Ning Ge	**Vaishnavi Seetharama-Yadiyal Giovanni David Brighenti Pavlos K. Zachos**	**Yang Ji Lee Inyoung Yang Kyung-Jae Lee Chun-Taek Kim**	**Charles J. Trefny Vance F. Dippold III Shaye Yungster**	

Technical Session 42: **Cost and business**

Chairs: Toshio Nagashima (University of Tokyo), Ruben Del Rosario (NASA)

Exchange Room 1

10.30	11.00	11.30	12.00	
ISABE-2017-21463	ISABE-2017-21495	ISABE-2017-22504	ISABE-2017-22528	
Novel Engine-like Test Methods for the Development of Ultra-high Ratio Compressor Components	Development of an Aero Engine Life Prediction Methodology for Preliminary Design Multi-disciplinary Optimisation Assessments	Technoeconomic Evaluation of an Aircraft Engine Upgrade: Part 1 - Aircraft Performance Outcomes	Technoeconomic Evaluation of an Aircraft Engine Upgrade: Part 2 - Technoeconomic Analysis	
Sandro Nitschke T. Behnisch, C. Ebert, M. Gude A. Langkamp, T. Klauke S. Pannier, T. Lang, E. Johann B. Ullrichsohn	**Marvin Elter J. M. Sebastiampillai D. K. Nalianda, C. Goldberg D. Chatzianagnostou V. Sethi, S. Staudacher**	**Dodeye Ina Igbong E. Osigwe I. Gray P. Pilidis**	**Dodeye Ina Igbong M. Obhuo I. Gray P. Pilidis**	

Technical Session 43: **New developments in gas turbine engines**

Chairs: Mikhail Ivanov (CIAM), Areti Malkogianni (Cranfield University)

Exchange Room 2

10.30	11.00	11.30	12.00	12.30
ISABE-2017-22508	ISABE-2017-22552	ISABE-2017-22561	ISABE-2017-22635	ISABE-2017-21336
Experimental Investigation of Split Power Offtake on a Twin-Spool More Electric Engine Demonstrator	Oil-free Engine Development	Contrail-free Aero-engines	Conceptual Design of a Turbofan Engine for a Supersonic Business Jet	Effect of Inlet Flow Distortion on Installed Gas Turbine Performance
Susanne Kreuzer Reinhard Niehuis	**Alexander Lanshin Yury Temis Valentin Gavrilov Mikhail Temis Andrey Egorov**	**Sarah Qureshi P. Pilidis M. L. Qureshi**	**Melker Nordqvist Joakim Kareliusson Edna R. da Silva Konstantinos Kyprianidis**	**Theodoros Triantafyllou Theoklis Nikolaidis Michail Diakostefanis**

Technical Session 44: **Heat transfer**

Chairs: Jianzhong Xu (Institute of Engineering Thermophysics - Chinese Academy of Sciences), Natalie Smith (SwRI)

Exchange Room 3

10.30	11.00	11.30	12.00	12.30
ISABE-2017-21357	ISABE-2017-21373	ISABE-2017-21379	ISABE-2017-21429	ISABE-2017-21468
Infrared Signature of Serpentine Nozzle with Different Aspect Ratio	Experimental Set up and Characterization of Air-oil Heat Exchangers in Oil Systems for Aero Engines	The Numerical Simulation and Experimental Study on Aero-engine Bearing Cavity Wall Heat Transfer	The Influence of Descent and Taxi Profiles on the Thermal State of a Jet Engine at Shutdown	Heat Transfer Coefficient on Air-contact Surfaces of an Airfoil Heat Exchanger
Wen Cheng Zhanxue Wang Li Zhou Xiaolin Sun	**Joëlle Vincké Patrick Hendrick Johan Steimes Francesco Baldani**	**Zhenxia Liu Fei Zhang**	**Harry Palfrey-Sneddon A. J. Neely E. O. Smith**	**Yu Ito Hitoshi Nakanishi Takao Nagasaki Kosuke Fukazawa**

Friday, 8th September

Technical Session 45: **Micro and small engines - VTOL & STOVL**

Chairs: Reid Berdanier (The Pennsylvania State University), Chris Robinson (PCA Engineers) — **Exchange Room 4**

10.30	11.00	11.30	12.00	12.30
ISABE-2017-22554	ISABE-2017-22573	ISABE-2017-22611	ISABE-2017-22549	ISABE-2017-22550
Experimental Investigation of Inflow Condition Effects on Tesla Turbine Performance	Design of a Cross-over Diffuser for a Mixed-Flow Compressor	Evaluation of a Hybrid Fuel-cell Based Propulsion System with a Hardware-in-the-loop Flight Simulator	Optimisation of an Electrical UAV Powertrain	The Effects of Blockage on the Performance of Small Propellers
Koji Okamoto Kenta Goto Susumu Teramoto Kazuo Yamaguchi	**Johan van der Spuy Macaera Preston Kock TW von Backstrom**	**Andrew Gong Dries Verstraete Jennifer L. Palmer**	**Rens MacNeill Dries Verstraete**	**Rens MacNeill Dries Verstraete**

Technical Session 46: **Aeromechanics - Engine safety**

Chairs: Richard Parker (Rolls-Royce), Jeffrey Berton (NASA) — **Exchange Room 5**

10.30	11.00	11.30	12.00	12.30
ISABE-2017-21477	ISABE-2017-22679	ISABE-2017-21440	ISABE-2017-21485	ISABE-2017-21494
Numerical Identification of Low-frequency Harmonics of Forces Acting on HPC Rotor Blades due to Rotating Stalls	Experimental Research on Rotor-bearing System Vibration Features Caused by Aero-engine Bearing Assembly Parameters	Turbine Thermomechanical Modelling during Excessive Axial Movement and Overspeed	Enhanced Experimental Measurements of a Gas Turbine Compressor Rotor Analogue Undergoing Thermal Bow	Aerodynamic Performance of an Unlocated High Pressure Turbine Rotor
Vladimir Makarov Victor Shorstov, Sergej Andreev Vladimir Frolov	**Yun-fan Jiang Ya-ting Zhao Ming-fu Liao Si-ji Wang**	**Ibrahim Eryilmaz Vassilios Pachidis**	**Evan Oscar Smith T. Mulholland J.H.S. de Baar A.J. Neely**	**Lucas Pawsey David John Rajendran Vassilios Pachidis**

Technical Session 47: **Virtual development and testing**

Chairs: Alon Gany (Technion – Israel Institute of Technology), Hilbert van Pelt (UNSW Canberra) — **Exchange Room 6**

10.30	11.00	11.30	12.00	
ISABE-2017-22675	ISABE-2017-22693	ISABE-2017-22700	ISABE-2017-22702	
Application of Sub-Modeling Technique for Whole Engine Transient Dynamic Analysis	Bi-objective Optimization of Thermal Cycles for Turboprops	Modeling Boundary Layer Ingestion at the Conceptual Level	An Enhanced Hybrid Component Mode Synthesis Procedure for Rotor Dynamic Analysis of Turbo-fan Engines	
Shoufeng Hu Xianghai Chai	**Adel Ghenaiet**	**Andy Turnbull Hugo Jouan Panagiotis Giannakakis Askin T. Isikveren**	**Shanmugam Arumugam**	

Friday, 8th September

Technical Session 48: **Integrated testing prediction and evaluation**

Chairs: Rob Mitchell (Rolls-Royce), Dale Van Zante (NASA)

Exchange Auditorium

13.45	14.15			
ISABE-2017-21441	ISABE-2017-22569			
A Whole Engine Optimization Based on Medial Object Transformations	Real Time Thrust Estimation and Display for Ski-Jump Takeoff of Fighter Aircraft			
Leran Wang David J.J. Toal Andy J. Keane Felix Stanley	**Aishwarjya Gogoi Budharaju Balaji**			

Technical Session 49: **Cost and business**

Chairs: Richard Parker (Rolls-Royce), Massimiliano Di Domenico (GE Aviation)

Exchange Room 1

13.45	14.15			
ISABE-2017-22530	ISABE-2017-22632			
Flow Visualization of Jet Test Using Background Oriented Schlieren in Altitude Test Facility	Flow Conditioning of Subsonic and Supersonic Blowdown Wind Tunnels			
Feng Wu You Zhang Yating Zhao Jinglei Xu Quanyong Xu	**Jorge Saavedra Guillermo Paniagua**			

Technical Session 50: **Fuels, injection and ignition**

Chairs: Leonid Yanovsky (CIAM), Michael Bauer (MTU)

Exchange Room 2

13.45	14.15			
ISABE-2017-21418	ISABE-2017-22683			
Numerical Study of Fuel Atomization and Vaporization in a Micro Turbojet Vaporizer Tube	Influence of the Primary Spray Characteristics on the Performance of a Double-Swirl Airblasting Atomizer			
Clement Delord Pierre Gauthier Glen Snedden Cesar Celis Vishal Sethi, Pericles Pilidis	**Xu Huasheng Huang Yiyong Zhao Yating Fan Zhencen**			

Technical Session 51 **Compressors**

Chairs: Ulrich Wenger (Rolls-Royce), Rainer Walther (MTU)

Exchange Room 3

13.45	14.15			
ISABE-2017-21445	ISABE-2017-22640			
Aerodynamic Characteristic Research on Final Stage Stator of a Highly Loaded Fan	Using Annulus Contouring to Compensate Compressor Mis-matching Effects in the Presence of Casing Treatments			
Peng Sun Wenguang Fu Jingjun Zhong Muxiao Yang Ruochi Pan, Lili Li	**André Inzenhofer Thomas Lahni Volker Gümmer Bernd Becker, Patrick Grothe Frank Heinichen**			

Friday, 8th September

Technical Session 52: **Manufacturing processes**

Chair: Ann Bolcavage (Rolls-Royce), Anders Sjunnesson (GKN Aerospace) — **Exchange Room 4**

13.45				
ISABE-2017-22529				
Additive Manufacturing of a Compressor Vane with Multi-hole Pressure Probes				
Stefan Bindl **Felix Kern** **Reinhard Niehuis**				

Technical Session 53: **Pulsed and other detonation engines**

Chairs: Konstantinos Kyprianidis (Mälardalen University), Dae Sung Lee (Korea Aerospace Research Institute) — **Exchange Room 5**

13.45	14.15			
ISABE-2017-21431	ISABE-2017-22547			
Performance Analysis of Continuous Rotating Detonation Aero-turbine Engine	Operating Characteristics of Gas Turbine Driven by Pulse Detonation toward Self-sustained operation			
Zifei Ji **Bing Wang** **Huiqiang Zhang** **Zhuming Rao**	Takashi Sakurai Hiroto Takahashi Yuki Hirai Shigehito Yomo			

Technical Session 54: **Chemical pollution**

Chairs: Konstantinos Kyprianidis (Mälardalen University), Kathy Tacina (NASA) — **Exchange Room 6**

13.45	14.15			
ISABE-2017-21471	ISABE-2017-22599			
A Case Study on Contrail Avoidance: Effects of Collection of Condensed Water from Engine Core Exhaust on Aircraft Performance	Prediction of NOx for Double Annular Combustors using Stirred Reactor Approach			
Fernando Lartategui Atela **Devaiah Nalianda** **Vishal Sethi** **Pericles Pilidis** **Riti Singh**	Qi Zeng Xiaoxiao Sun Yize Liu Vishal Sethi Devaiah Nalianda			

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