



International Conference

AIRCRAFT CABIN ADDITIVE MANUFACTURING Now and the future

6 – 7 March 2019 | Etihad Airways Innovation Center, Abu Dhabi

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AIRCRAFT CABIN ADDITIVE MANUFACTURING



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Aircraft Cabin Additive Manufacturing delivers a unique interactive platform to listen to discussions on additive manufacturing case studies, material usage, machine vendors updates, industrialization challenges and certification and regulation challenges.

ADVISORY BOARD AND EARLY CONFIRMED SPEAKERS:

BERNHARD RANDERATH

VP Design, Engineering and Innovation
Etihad Airways Engineering



STEPHAN KEIL

Senior Manager Production, Project Delivery & Innovation - Design, Engineering and Innovation
Etihad Airways Engineering

DR. KHALED ABDEL MOTAGALY

Manager, Innovation and Technology
Etihad Airways Engineering

MOHAMMAD MAAZ SYED

Manager – POA (Part 21G) Design, Engineering and Innovation
Etihad Airways Engineering

SHEVANTHA KAMIL WEERASEKERA

Head of Engineering & Head of Design Organization
Etihad Airways Engineering

HEIKO MINZER

Project Engineer Innovation
RECARO Aircraft Seating GmbH & Co. KG



DR. MOHSEN SEIFI

Conference Chairman, Director, Global Additive Manufacturing Programs
ASTM INTERNATIONAL



DR. ABDELQADER ABDELAZIZ ABUSAFIEH

Head of Research & Development, Aerospace & Engineering Services
Strata Manufacturing PJSC



SCOTT SEVCIK

VP Manufacturing Solutions
Stratasys



PÄRTEL-PEETER KRUUV

Interior Project Manager
Magnetic MRO



ANDREAS HENNEBERG

Specialist New Manufacturing Technology, Research Cabin
Diehl Aviation



THIERRY THOMAS

EVP Engineering, Former VP Safran Additive Manufacturing
Safran Seats



FRANK KLATT

Additive Manufacturing Engineer, Additive Manufacturing Center
Lufthansa Technik AG



ALISON WYRICK MENDOZA

Additive Manufacturing Training & Services Leader
The Barnes Group Advisors



WAYNE THOMAS

3D Printing and Advanced Manufacturing Project Manager
Air New Zealand



MARKUS GLASSER

Senior Vice President Export
EOS GmbH



BASTIAN SCHÄFER

Innovation Manager at Emerging Technologies & Concepts
AIRBUS



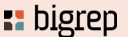
STEPHAN EELMAN

Business Director Service Solutions & Metal Systems
BASF 3D Printing Solutions GmbH



STEPHAN BEYER

CEO
Bigrep GmbH



DANIEL BÜNING

Global Head of Strategy Managing Director NOWlab Innovation
Bigrep GmbH

DR. RASHID K. ABU AL-RUB, PHD

Professor & Acting Department Chair, Department of Aerospace Engineering Professor of Mechanical Engineering
Khalifa University of Science and Technology



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PARTNER:



BASF 3D Printing Solutions GmbH (B3DPS), headquartered in Heidelberg, focuses on establishing and expanding the business with materials, system solutions, compo-

nents and services in the field of 3D printing. It works in agile, startup-like structures to serve customers in the dynamic 3D printing markets. To develop sustainable solutions B3DPS works closely

with BASF's global research platforms and application engineers in the divisions. B3DPS also cooperates with research institutes, universities, startups and industrial partners.

SPONSOR:



EOS is the world's leading technology supplier in the field of industrial 3D printing of metals and polymers. Formed in 1989, the independent company is pioneer and innovator for comprehensive solutions in additive manufacturing. Its product portfolio of EOS systems, materials, and process parameters gives customers crucial competitive advantages in terms of product quality and the long-term economic sustainability of their manufacturing processes.

Furthermore customers benefit from deep technical expertise in global service, applications engineering and consultancy.
www.eos.info



Stratasys is a global leader in additive manufacturing or 3D printing technology and is the manufacturer of FDM® and PolyJet™ 3D Printers. The company's technologies are used to create prototypes, manufacturing tools, and production parts for

industries, including aerospace, automotive, healthcare, consumer products and education. For 30 years, Stratasys products have helped manufacturers reduce product-development time, cost, and time-to-market, as well as reduce or eliminate tooling costs and improve product quality. The Stratasys 3D printing ecosystem of solutions and expertise includes: 3D printers, materials, software, expert services, and on-demand parts production. Online at: www.stratasys.com, blog.stratasys.com and [LinkedIn](https://www.linkedin.com/company/stratasys).

MEDIA PARTNER:



3D Printing Industry is a global media company providing a dedicated resource for anyone interested in 3D printing and 3D scanning – two fields of technology that are rapidly growing in relevance and application across industrial and consumer sectors.

The mission of 3DPI is to report on and create original content centred around the latest developments in 3D printing and 3D scanning to keep our large and growing audience abreast of technology breakthroughs, the latest applications and the opinions of industry insiders.

3DPI works with a dedicated team of experienced writers with a keen interest in 3D printing and 3D scanning. Our Media is also open to the community and external contributors willing to share their passion and insight into 3D printing and 3D scanning. We believe that this open mindset will encourage dissemination of innovation and ideas. It echoes the open source approach that has been so successful in the software industries over the last 30 years.



Aircraft Interiors International is celebrating its 20th Anniversary during

2018 and over the last 20 years it has grown to become the industry's premier publication.

With an ABC audited circulation of just short of 14,000 buyers and key decision makers, the hard copy format is extremely valued by readers for detailed content, sense of style and easy-to-read format, and appreciated by advertisers for consistently generating strong sales leads and wider brand recognition. Industry news is delivered through our weekly email service linked to our website www.aircraftinteriorsinternational.com. You are welcome to take a complimentary copy during the Conference.

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WHAT OUR PAST DELEGATES EXPERIENCED

„For airline it was great opportunity to listen to top airline cabin development presentations.”

Manager Products & Serv. Strategy, CS & Products Services, ANA

„Very constructive atmosphere, good presentations, very good level of discussions and participants, speednetworking is a good idea and workshops a good alternative to presentations only.”

Director Liaison Office Abu Dhabi, Diehl Aerospace Abu Dhabi

„Great content, great participants, great location.”

Executive Vice President Res. & Dev., Recaro Aircraft Seating

„Got to be the best event I have attended. Personal, open, great group willing to discuss and share common experiences/challenges and opportunities.”

Design Director, Factory Design

„Versatile program with speeches and interactive modules. International/interdisciplinary audience.”

Director Strategic Partnering, BMW Design Works

„Fantastic conference. Very effective to meet with existing relations and meet new ones. Well organized. Good topics for workshops. Very friendly atmosphere from everybody. Very honest and open discussions.”

General Manager, ADSE

„Different approach, more practically than other conferences. Better direct contacts with participants and airlines. Workshops good. More open discussion. Good organisation, hospitality.”

Business Development Director, Metzeler Schau





AIRCRAFT CABIN ADDITIVE MANUFACTURING



Now and the future

6 – 7 March 2019 | Etihad Airways Innovation Center, Abu Dhabi

CONFERENCE DAY 1 | Wednesday 6 MARCH 2019

08:00 Registration

08:30 RedCabin and chairman's welcome

Monica Wick – Founder & CEO, RedCabin

Dr. Mohsen Seifi – Conference Chairman, Director, Global Additive Manufacturing Programs, ASTM International

INDUSTRY OVERVIEW AND TRENDS

08:45 Opening Speech

- The vision of the UAE
- Where Etihad Airways Engineering is standing in terms of 3D
- The vision of Etihad building a 3D printed cabin

Bernhard Randerath – VP Design, Engineering and Innovation, Etihad Airways Engineering

09:15 Additive Manufacturing for Airline & MRO

- Why 3D Printing for Airlines & MRO's
- The current state of 3D printing in Airlines and MRO's
- Etihad Airways Engineering use cases including certification
- The current challenges & future of additive manufacturing for Airlines and MRO's

Stephan Keil – Senior Manager Production, Project Delivery & Innovation - Design, Engineering and Innovation, Etihad Airways Engineering

DR. Khaled Abdel Motagaly – Manager, Innovation and Technology, Etihad Airways Engineering

09:45 SPEEDNETWORKING

Get in touch with the other conference guests in quick paced 1-1 meetings – make sure you bring a stack of business cards. The session is followed by a short break.

10:15 Networking Break

10:45 Optimizing Aerospace Applications with Simulation and Novel Materials

The presentation will show results of a study that addresses an optimization problem of an airduct for a representative application in the Environmental Control System as can be found on commercial airplanes. The study intends to display 2 different materials and process solutions that both used topological design as well as design for manufacturing optimization, exhibiting the BASF digital engineering and material capabilities for a given challenge in AM. A comparison concludes with advantages of either design to provide an insight on respective design freedom and limitation.

Stephan Eelman – Business Director Service Solutions & Metal Systems, BASF 3D Printing Solutions GmbH

11:15 What can Additive Manufacture offer airlines in the future?

Most of us are aware of the key benefits of Additive Manufacture; cost effective low-volume runs, less material wastage, new geometries and weight savings. But what other benefits could this new technology offer airlines in the future?

Wayne Thomas – 3D Printing and Advanced Manufacturing Project Manager, Air New Zealand



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Now and the future

6 – 7 March 2019 | Etihad Airways Innovation Center, Abu Dhabi

CONFERENCE DAY 1 | Wednesday 6 MARCH 2019

THE CERTIFICATION CHALLENGE

11:45 Making it Certifiable – Mature Technology Enables Standardization

With roughly 75,000 FDM printed parts flying today, Stratasys will share our experience leading adoption of FDM for flight hardware in the aerospace industry, and where our focus on reducing barriers to adoption, such as the challenge of certification, is leading polymer additive.

- Share the reality of FDM parts flying today and how they have been qualified
- Discuss CMH-17 & NCAMP for additive – how the approach to qualifying composites has been leveraged to lay the ground work for additive
- Highlight the next wave of high performance materials and processes to continue opening application space

Scott Sevcik – VP Manufacturing Solutions, *Stratasys*

12:15 PANEL DISCUSSION

What are the hurdles that AM is not implement already more into the aircraft? Next to the difficult **material qualification/certification** and the EASA process – **is it cost? Is it availability?**

Moderator: Shevantha Kamil Weerasekera – Head of Engineering & Head of Design Organization, *Etihad Airways Engineering*

Panellist: Scott Sevcik – VP Manufacturing Solutions, *Stratasys*

Yazen Shegem – Regional Director MEA, *GE Additive*

Stephan Eelman – Business Director Service Solutions & Metal Systems, *BASF 3D Printing Solutions GmbH*

Stephan Beyer – CEO, *BigRep GmbH*

Heiko Minzer – Project Engineer Innovation, *RECARO Aircraft Seating GmbH & Co. KG*

12:45 *Networking Luncheon*

13:45 INTERACTIVE WORKING GROUPS

The audience will be divided into 3 groups. Each group will attend all 3 interactive working groups.

INTERACTIVE WORKING GROUP – 1

3D-printing applications for cabin interior

Despite the variety of 3D-printing technologies the number of series production parts for aircraft interior application is low. Due to aerospace requirements, only few certified processes and materials are available. Nevertheless current developments show an increasing number of certified parts made with 3D-printing.

What to expect: Open discussion about the identification of future 3D-printing application for cabin interior parts using new technologies and materials.

Andreas Henneberg – Specialist New Manufacturing Technology, Research Cabin, *Diehl Aviation*

INTERACTIVE WORKING GROUP – 2

Challenges of 3D printing in the Aerospace Industry

3D printing has enabled aerospace companies to create complex components previously impossible with traditional techniques, promoting innovation while reducing costs is one of the benefits of 3D printing.



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Now and the future

6 – 7 March 2019 | Etihad Airways Innovation Center, Abu Dhabi

CONFERENCE DAY 1 | Wednesday 6 MARCH 2019

Dr. Abdelqader Abusafieh, Head of Technology at Strata Manufacturing PJSC will be discussing the challenges of 3D printing in the aerospace industry.

Dr. Abdelqader Abdelaziz Abusa eh — Head of Research & Development, Aerospace & Engineering Services, *Strata Manufacturing PJSC*

INTERACTIVE WORKING GROUP – 3

Advancements in Additive Manufacturing Standards, Qualification & Certification

This working group will be focused on the recent advancements on the additive manufacturing standardization, qualification and certification efforts underway at the industry. In addition, some of the challenges and opportunities will be discussed with ideas on how to accelerate the standardization of AM parts.

Dr. Mohsen Seifi — Conference Chairman, Director, Global Additive Manufacturing Programs, *ASTM International*

15:45 *Networking coffee break*

16:15 CONTINUING WITH WORKING GROUPS 1, 2 AND 3

17:15 Results

Each moderator of the Interactive working group is presenting the outcomes of their session

17:30 *BASF Evening Dinner announcement*

17:30 TOUR OF THE ETIHAD AIRWAYS INNOVATION CENTRE

The Innovation Centre is a research center of excellence, where fresh ideas are brought to life as unique products and remarkable experiences.

Facilitating this, is a product concept room where early thinking can be quickly roughed out from scratch. The Etihad Airways Innovation Centre is home to a walk-through reconstruction of the new A380 and B787 aircraft cabins, including real life mock-ups of The Residence by Etihad and the new First Apartments and First Suites.

The walk-through also features Business Class cabins on the A380 and B787, with the airline's new Business Studio, as well as Economy Class cabins with the Economy Smart Seat.

18:15 *Shuttle leaving for Evening Dinner*

18:30 Evening Dinner

RedCabin invites you to a Dinner at Frankie's Italian Restaurant & Bar located in the Fairmont Hotel next to the conference venue. Take this opportunity to network and make new business contacts. Or just relax and round off your first conference day.



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Now and the future

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CONFERENCE DAY 2 | Thursday 7 MARCH 2019

08:30 Registration

08:50 Chairman's welcome

Dr. Mohsen Seifi — Conference Chairman, Director, Global Additive Manufacturing Programs, *ASTM International*

09:00 How does Additive Manufacturing entirely change the Aerospace Industry ?

- Overview of the status quo of AM parts - what's really flying today?
- Understanding the key success factors for additive manufacturing to bridge the chasm to serial production
- An AM technology provider's perspective on industrialization, quality assurance and material development for additive manufacturing
- Call for action: The AM transformation

Markus Glasser — Senior Vice President Export, *EOS GmbH*

APPLICATIONS SESSION

09:30 Safran vision on AM implementation

- Safran is engaged in Additive Manufacturing applications for many years and has already certified parts.
- This presentation will be an opportunity to present Safran vision as well to share challenges and opportunities for aircraft applications in general with a focus cabins.

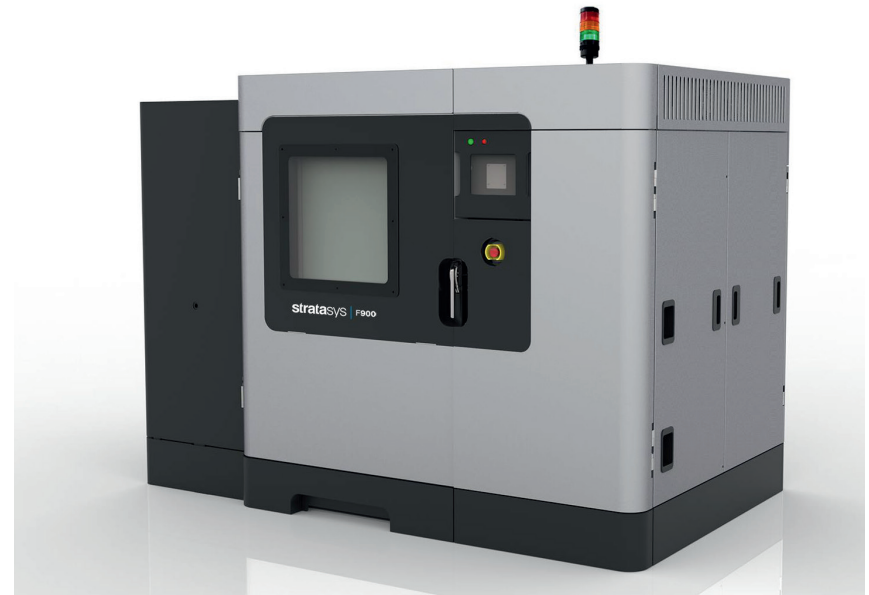
Thierry Thomas — EVP Engineering, Former VP Safran Additive Manufacturing, *Safran Seats*

10:00 Implementation of 3D-printing in daily services of MRO

- Mindset and acceptance of the technology by customers/ engineers/mechanics
- Achieving true rapidness of the process
- Legislation in EASA Part 145 environment
- Possible drawbacks and current limitations of additive technologies

Pärtel-Peeter Kruuv — Interior Project Manager, *Magnetic MRO*

10:30 Networking Coffee





AIRCRAFT CABIN ADDITIVE MANUFACTURING



Now and the future

6 – 7 March 2019 | Etihad Airways Innovation Center, Abu Dhabi

CONFERENCE DAY 2 | Thursday 7 MARCH 2019

11:00 The 3D printed cabin of the future

- Learn how AM can be applied for basically any part of the cabin – from seat to armrest to sidewall panel
- How AM allows you to design individual starting from lot size one to small series production
- Digital design, simulation and additive manufacturing tools allow for the seamless production of highly individualized/wcustomized cabin design/part design
- How to replace original cabin parts with highly individualized additively manufactured and digital designed parts
- Learn how AM allows you to print custom parts that are critical for aircraft operations (in respect to cabin) on demand and in any location

Daniel Büning – Global Head of Strategy Managing Director NOWlab Innovation, *BigRep GmbH*

11:30 Building large metal structures with AM – lessons learnt from the Bionic Partition project

- Moving from a vision for more sustainable aircrafts towards a real component
- Biomimicry meets Generative Design
- Printing a large cabin component from metal
- Moving towards more cost effective solutions enabled by AM

Bastian Schäfer – Innovation Manager at Emerging Technologies & Concepts, *Airbus*

12:00 Potentials and Challenges of Additive Manufactured Cabin Interior Parts

- Reducing complexity with integral design for additive manufacturing
- Design optimization for increasing durability of cabin interior parts
- Potentials and Challenges of additive vs. conventional manufacturing of single parts and small lot sizes
- Post-processing and finishing of additive manufactured polymer cabin interior parts

Frank Klatt – Additive Manufacturing Engineer, Additive Manufacturing Center, *Lufthansa Technik AG*

12:30 *Networking Luncheon*

13:30 INTERACTIVE WORKING GROUPS

The audience will be divided into 3 groups. Each group will attend all 3 interactive working groups.

INTERACTIVE WORKING GROUP – 1

Introduction on additive manufacturing in production, a non defined process.

Open discussion/Brainstorming: Your experience in P21G, Challenges and solutions, Best practices

Mohammad Maaz Syed – Manager – POA (Part 21G) Design, Engineering and Innovation, *Etihad Airways Engineering*



AIRCRAFT CABIN ADDITIVE MANUFACTURING



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CONFERENCE DAY 2 | Thursday 7 MARCH 2019

INTERACTIVE WORKING GROUP – 2

Getting Through Disruptive Innovation: Breaking Barriers, Influencing Change and Ushering in a New Way of Thinking

Most leaders understand if they are not addressing change proactively, someone will likely rewrite their rules for them. At the same time, however, the culture of a large company may heavily reinforce the notion that change and uncertainty should be avoided at all costs. This often hinders companies that otherwise have the resources, talented people, strong product portfolios and deep pockets to really adapt and embrace disruptive, innovative change.

It is understood that there are different ways an organization can adapt to the change AM may bring, and each individual path may be different.

This workshop will look at several strategies which can be mastered to help embrace disruption and radiate it throughout the culture of an organization.

At the end of the workshop, attendees will have the know-how to select appropriate counter initiatives drawing from a tool kit of potential actions.

Alison Wyrick Mendoza – Additive Manufacturing Training & Services Leader, *The Barnes Group Advisors*

INTERACTIVE WORKING GROUP – 3

Latest Trends and research for ultra-strong, light weight 3D Printed Parts

Dr. Rashid K. Abu Al-Rub, PhD – Professor & Acting Department Chair, Department of Aerospace Engineering, Professor of Mechanical Engineering, *Khalifa University of Science and Technology*

15:30 *Networking Coffee*

16:00 CONTINUING WITH WORKING GROUPS 1, 2 AND 3

17:00 Results

Each moderator of the Interactive working group is presenting the outcomes of their session

17:15 Closing remarks by RedCabin and conference chairman





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PAYMENT ARRANGEMENTS AND REGISTRATION MODALITIES

DATE	2 DAY CONFERENCE INVESTMENT
ORIGINAL INVESTMENT	3.155 € + VAT*

* Investment per delegate

AIRLINES PLEASE CONTACT US FOR LIMITED VIP TICKETS!

The delegate fee includes the following services:

- Catering during the entire conference
- Access to the purchased conference packages
- Conference documentation
- Evening event

PAYMENT TERMS

Payment is due on receipt of the invoice.

PAYMENT METHODS

Pay by bank transfer quoting reference Additive Abu Dhabi:

RedCabin – Monica Wick
Berliner Sparkasse
IBAN: DE70 1005 0000 0190 7054 50
SWIFT-BIC: BELADEBEXX

CONFERENCE VENUE

ETHIHAD INNOVATION CENTER | <https://goo.gl/maps/rRpSVh19bGK2>

ACCOMMODATION

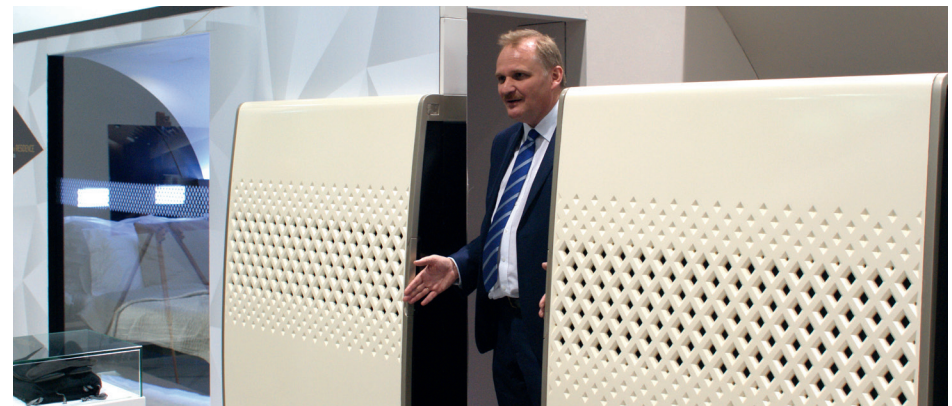
A limited number of reduced rate rooms are available at the FAIRMONT BAB AL BAHR HOTEL which is next to the venue. Accommodation can be booked here: <https://book.passkey.com/go/redcabingermany>
Sales Manager Sergey Elkin (Sergey.Elkin@Fairmont.com).
Please always quote the booking reference „RedCabin Etihad Conference“. Hotel accommodation and travel costs are not included in the registration fee.

FAIRMONT BAB AL BAHR

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