

# THE EUROAVIA MAGAZINE

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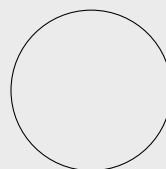
Partners



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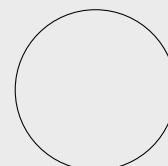


"When you have the best wings, the sky is not the limit it is just the beginning and if you still wonder what these wings are made of. . . I am proud to call them the EUROAVIAN Spirit."

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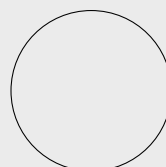
## INTERVIEW WITH DARIO KUBLER

"I think that learning just a little bit more about how Nature works is the most incredible gift we received and it is a must for the mankind to share what we have learned so far to the future generations."



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## INTERVIEW WITH JEAN-FRANÇOIS BROUCKAERT



"Clean Sky wants to underline the fact that our programme provides a lot of opportunities to the students to perform high level research[...] And I think we should consider the possibility of putting in place a mechanism together with EUROAVIA to collect these ideas."

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# From the editor

## THE EUROAVIA MAGAZINE

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Dear reader,

It's an honor for me to present to you the second issue of the EUROAVIA Magazine.

What is EUROAVIA?

It is the European Association of Aerospace Students. Through our association, students from all over Europe and beyond are connected. We regularly provide new opportunities and events, at local and international levels, related to the aerospace sector. Also, we are always open to new collaborations with companies, acting in a business-oriented mindset and developing soft and technical skills for an easier passage to the work environment.

What is inside the Magazine?

Articles from the Newsletter, our primary mean to inform Affiliated Societies about the news of the association. Interviews to experts of the space and aviation fields, showing new frontiers and what is expected from the new generation of engineers. Pictures from our events that captures the essence of the EUROAVIAN spirit.

I would like to thank everyone that kindly contributed to the realization of this project. And as always let's build the wings of our future!

Cordially,

Antonio Luperini  
Communication Working Group Coordinator

# Introduction to the Newsletter

**T**HE first traditional way to communicate among EUROAVIA members is the Newsletter. Even before we started to use Skype meetings and WhatsApp groups to keep in touch, conferences, workshops and groundbreaking events have been spread in the Newsletter so that other societies may benefit from those experience. With this publication, Affiliated Societies can get inspired and strengthen links between Local Groups all around Europe. The Newsletter is our most widespread way of communication.

In the following pages, you can find a collection of news that has been published during this business year. For starting you will be reading the International Board's introduction to the association, followed by a joint event between AS Munich and AS Stuttgart. AS Toulouse and AS Napoli amused their members chasing the legendary Airbus Beluga and building homemade rockets while AS Bucharest offers us the report of their activities throughout the year and AS Istanbul invites us to join its fantastic EMEAC.

# Newsletter

## From the International Board

Dear EUROAVIAns,

Having engineer blood running through our veins should not keep us away from the humanities path. Let me give you a humble example of my vision of EUROAVIA: EUROAVIA is assembled just like a plane, yes, I am not going mental, it is actually an aircraft and YOU are part of it.

International Board is represented by the cockpit. This is the part of the aircraft that faces the wind in first place. Where routes are planned and decisions are taken. It is in the hands of the pilots where the passenger's trust lays. Then we have the engines, the main element regarding the "Work Generation" (allow me the use of these terms) also known as Working Groups. Their contribution to the flight efficiency is critical, allowing planes to get further with less resources. Without them we would not be able to produce the necessary thrust to overcome the drag.

No matter how important these previous parts are, they are just servants to our next element, the fuselage, where all the pieces are assembled, it is what contains the goods of the mission. Everything is set to make the fuselage fly and it has a main role regarding the future since it is quite likely to find a passenger who someday will become a pilot.

By now, you may have noticed that I left one thing out of the list, the most repeated word among EUROAVIAns. The wings, the components that out of a bit of magic here and there lift the whole thing up into the skies. Once a professor told me that you can fly anything using the proper wings. . . and it is for this reason I am not afraid of heights. When you have the best wings, the sky is not the limit it is just the beginning and if you still wonder what these wings are made of. . . I am proud to call them the EUROAVIAN Spirit.

It is said that Socrates once said: "People must rise above the Earth — to the top of the atmosphere and beyond — for only thus will they fully understand the world in which they live".

I am sure you all will find your place on board. Fasten your seatbelts, we are about to take off.

Juan Manuel Lora Alonso  
International Board 17/18 - President

Figure 1: International Board 17/18. From left to right: David Leiser, Valentina Luchetti, Javier Ferrero Micó, Juan Manuel Lora Alonso

## Local Reports

### Toulouse

The new EUROAVIAns are here!!

The EUROAVIA activities kick-started with the get-together and a visit to the Airbus BELUGA flying sight, a secret place in Toulouse, where aircrafts enthusiasts get to spot the BELUGA approaching to land the Toulouse-Blagnac airport, as it flies from Hamburg-Germany, carrying the Airbus' aircrafts parts all the way to the Final Assembly line (FAL) in Toulouse-Blagnac. Ishaan articulates his experience, "After a hectic week of academic activities I was looking forward to the first day of being an EUROAVIAN. We met for the first time near the iconic Mirage of the ISAE SUPAERO campus which I must say was an appropriate spot to begin our "adventure". As we made our way to a hill I was excited to meet the old members and know about their experiences at EUROAVIA. The weather was funny when we reached the hilltop. For a few minutes, it rained and stopped arbitrarily, followed by the bright sun peeking from the clouds. Nonetheless, our spirit wasn't shaken. The plan was to spot the rare sight of the magnificent Airbus Beluga approach.

We explored around quite a bit while waiting for the Beluga. The scenery was beautiful from the cliff with the river Garonne meandering across the base of the hill and a horse stables nearby. We could see the runway at a distance and the entire city. We also saw several drone enthusiasts trying out their planes. The president briefed us about the organization and the future activities while we gathered around for drinks and snacks after a sojourn around the place. Finally, after an hour we heard the roar of the engines we were longing for and there she was, the Beluga gracefully approaching the runway. She is a large bluff body not meant to fly but I would say she is an acquired taste! The very fact that the Beluga flies and does so gracefully is a testament to her designers and to the advancement of modern aeronautics. The sun was setting now as we made our way back after this satisfactory escapade rejuvenated for the coming week and future activities of EUROAVIA. This first gathering on the hilltop had been a truly memorable one."

## Munich

Airbus Defence and Space in Manching, Southern Germany. The beating heart of the German aerospace industry and home to more than 6000 employees. And on the 16th of November, it was ours as well.

We were students from EUROAVIA in Munich and Stuttgart and from EESTEC (our colleagues from Electrical Engineering) and a couple of scattered software engineers. All in all, we comprised more than 70 people interested in the aerospace industry arriving in two buses. It turned out, there was a lot in store for us. After a quick introduction, we were let loose upon the ten stands where the different departments introduced themselves and gave us a look into their daily work – and their open job applications to consider. We met a sizable number of experts, from those with decades of experience in aerospace engineering to recent university graduates, among them former EUROAVIA Munich president Markus Geiser.

The topics of the departments ranged from mission systems to flight testing over simulation and aircraft rigs to optical and photonics data processing. A lot of them also offered short tours around their laboratories and workspaces. Among these were the so-called “iron bird”, a structural mock-up of the original Eurofighter to test actuators and sensors, and a laboratory, where strategies and ideas for the aircraft systems of the future are being developed and simulated in computer scenarios. A visit to the simulation laboratory offered us the unique chance to climb into the cockpit of the Eurofighter and take it for a spin - including the use of its complex systems. For most of us, looking at an aircraft means glancing at the sky and seeing a tiny dot moving, so getting up close and personal with aircraft is quite a rare opportunity. We, however, were delighted to be indulged into a site tour which meant going toe to toe with the 11 ton, Mach 2 capable Eurofighter Typhoon, Europe’s most modern fighter jet. Other aircraft included the P-3 Orion, the A400M and the “eye in the sky”, the NATO E-3. All of this was topped off with a visit to the on-site museum which comprises the last two flying World War II Messerschmitt Bf109s with their original Daimler-Benz DB 605 engines.

This was a truly outstanding day, full of new experiences and chances for all of us. A big thank you must go out to Airbus, whose employees were most forthcoming and eager to share their passion for aircraft and technology with us. At last, but not least, thank you to everybody who took part in this, because you and all your well-crafted questions and impressive résumés make all this possible and create opportunities like these.

Credits: Airbus



## Istanbul - EMEAC Istanbul 2018

Hello EUROAVIAns!

Are you ready to lose yourself in the magical atmosphere of Istanbul?

This is the first time for AS Istanbul to organize an international event after FoWo (Formation Workshop) 2013 Istanbul. ITU Aeronautical and Aerospace Engineering Society, AS Istanbul, founded by ITU and its students contribute to the aviation area from many perspectives, being present on national and international platforms.

For 6 days, participants from different local groups and countries will attend many and different themed conferences, get new international connections with people that can become their future co-workers, and at the same time obtain opportunities to meet pioneer companies in Turkey.

The organization will be in Istanbul Technical University Faculty of Aeronautics and Astronautics.

Istanbul Technical University (ITU), the first technical university in Turkey, has been playing an essential role in the aviation sector as well as its all others sectors throughout its 245 years of existence. Currently, ITU continues its education activities with 6 institutes and hosting more than 40 thousand students spread across

Credits:

<https://www.aegeegolgentimes.eu/agora-istanbul-2018/>

13 faculties. You can reach more information about ITU in the following link. <http://www.itu.edu.tr/en>

To talk about Istanbul, It is the most populous city in Turkey and the country's economic, cultural, and historic centre with a population of around 14.7 million residents.

Also, It is a transcontinental city in Eurasia, straddling the Bosphorus Strait (which separates Europe and Asia) between the Sea of Marmara and the Black Sea. The city's biggest attraction is its historic centre, partially listed as a UNESCO World Heritage Site, and its cultural and entertainment hub can be found across the city's natural harbour, the Golden Horn, in the Beyoğlu district. You can reach more information Istanbul at the following link. <http://www.greatistanbul.com/>

From the April's 8<sup>th</sup> to the 14<sup>th</sup>, the EMEAC 2018 will offer four full days of conferences, one 'Spirits Night', a trip to a company, a guided tour around Istanbul and a Final Dinner.

Credits:

<http://www.haber7.com/guncel/haber/1231641-istanbul-u-beklleyen-korkunc-tehlile>

## Napoli

EUROAVIA Napoli is happy to present you:

### **“UniNaRocket”.**

UniNaRocket is a local event, our first workshop about aerospace engineering, with special regards to the rocketry.

The 30 participants, will be divided into five teams that will compete the one against the other. The winner will be the one who will reach the highest altitude and the best performances, comparing the data taken from our electronics sensors with the ones predicted by the software. The aim is: to improve their aerospace knowledge, to learn how to use a specific software, to craft and to launch a rocket model.

After a long and meticulous research, we have chosen a group of engineering students, which will program the telemetry system, Arduino Nano that will be placed in the rockets nose to measure speed, acceleration and space travelled.

More specifically, the schedule of our event:

**ON THE 7<sup>th</sup> OF APRIL**, in the engineering department of Federico II, San Giovanni a Teduccio, we are going to explain them the rocket theory, with the help of our professor, Raffaele Savino, who will attend a quick lesson, about: aerodynamics, trajectory, stability, hardware, and programming skills.

**ON THE 13<sup>th</sup> OF APRIL**, we will design the rockets; calculating the motion parameters such as: trajectory, velocity and acceleration.

**ON THE 14<sup>th</sup> OF APRIL**, the teams will receive the material and, under our supervision, craft the rockets.

**ON THE 14<sup>th</sup> OF APRIL**, the rockets LAUNCH. It will take place at the airfield “La Selva”, Vitulazio.

Our Space Department is interested in supervising the project, helping us both on the practical and financial part. We are even making arrangements for a continuous cooperation repeating the same workshop in the next years and developing alternative solutions for the propulsive section.

## Bucharest

This year has been all about EUROAVIA spirit for Bucharest!

Why? Because multiple successful projects took place and our EUROAVIAns had lots of fun being part not only of the events with a rich history, as Alumni Gathering and SUCCESS TALKS, but also of those that stand out the most annually.

We had the pleasure of hosting Train New Trainers, during which 6 experienced trainers gathered for the secrets of soft skills to be disclosed. 18 enthusiastic trainees from different countries not only got an opportunity for cultural exchange, but also had experienced 9 full days of sessions to become the second genera-

tion of EUROAVIA trainers. 2 of the participants showed the knowledge acquired, during a local event, Aero-Camp, delivering sessions about Public Speaking, Body Language and Time Management.

One of the most remarkable events was also AEROCONSULT, the annual opportunity fair. Within this project, students were given the chance to interact with leading or renowned aeronautical companies. At its IXth edition, AEROCONSULT got refreshed, a new QR system being introduced. Students were able, this time, to register and easily present their electronic CV to the companies using a unique QR code.

We could not end before mentioning Rocket Workshop, the occasion for students to enhance their abilities, as it is a project that harmoniously combines soft skills and hard skills. Furthermore, RoWo2018 came up with some twists. Firstly, the 100 participants were allowed and encouraged to use Open Rocket Sim-

ulator and secondly, we designed a model rocket, made of composites, whose launch, which reached 844.6m, was recorded by a GoPRO, placed inside the rocket. We consider these to be some key points in our technical improvement.

So, dear EUROAVIAns all around, we hope to hear from you soon and stay tuned for more exciting experiences!

## Quiz

1. The 6<sup>th</sup> February, the company Space X launched a rocket that signed a milestone in the history of space exploration: The Falcon Heavy. You probably know that the payload of the launch vehicle included a Tesla Roadster painted with a "midnight cherry" dye. However, it was not the only oddity loaded in it. Which of these items was NOT carried in the maiden flight of the launcher?

Credits: SpaceX

- (a) The disk "Space Oddity" by David Bowie;
  - (b) An innovative device capable of projecting a holographic version of the movie; "2001 A Space Odyssey";
  - (c) A storage media based on a quartz crystal with "The Foundation Trilogy" by Isaac Asimov stored in it.
2. Where is located the tallest mountain of the solar system?
    - (a) Mars;
    - (b) Venus;
    - (c) Earth;
    - (d) Jupiter.
  3. Which is the best selling aircraft in history?
    - (a) Douglas DC-3;
    - (b) Messerschmitt Bf 109;
    - (c) Supermarine Spitfire;
    - (d) Cessna 172.

Credits: Towpilot

Credits: Chowells

Credits: Marko M

Credits: wiltshirespotter

All pics can be found on Wikimedia Commons: [https://commons.wikimedia.org/wiki/Main\\_Page](https://commons.wikimedia.org/wiki/Main_Page)

4. Which of these aircrafts is able to take off and land vertically?

(a) F-35A;

(c) Yak-141;

(b) J-31;

(d) F-313.

Credits: MSgt John Nimmo Sr.

Credits: Anthony Noble

Credits: wc

Credits: Tasnim News Agency

All pics can be found on Wikimedia Commons: [https://commons.wikimedia.org/wiki/Main\\_Page](https://commons.wikimedia.org/wiki/Main_Page)

5. Which will be your next International Event?

Figure 2: The calendar is subject to changes, please check our social media to be constantly updated on upcoming International Events

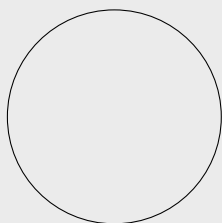
Solutions can be found at page 32

# Introduction to Interviews

**T**HE dream of every EUROAVIAN is to become a part of the aerospace world. Starting with our motto “Build the wings of your future” we constantly try to catch inspiration from virtuous examples of self made men who made their way inside industry or academic research, contributing to make the sky a closer place. Some of our members interviewed professors and professionals to discover more about how our future will look like and hopefully getting some suggestion on how to get prepared to fit at best into this magnificent world.

# Interview to Jean-François BROUCKAERT

ABOUT THE INTERVIEWEE:  
Jean-François BROUCKAERT, Dr



EUROAVIA recently became member of the CLEAN SKY ACADEMY Working Group.

An interview by Juan Manuel Lora Alonso, EUROAVIA President with Dr. Jean-François Brouckaert, Project Officer for Engines and responsible for the CS Academy Working Group.

Interview by Juan Manuel Lora Alonso

## What is Clean Sky?

Clean Sky is the largest European research programme developing innovative, cutting-edge technology aimed at reducing CO<sub>2</sub>, gas emissions and noise levels produced by aircraft. Funded by the EU's Horizon 2020 programme, Clean Sky contributes to strengthening European aero-industry collaboration, global leadership and competitiveness.

The programme is very wide and I invite you and all the students to visit the Clean Sky website for more information: [www.cleansky.eu](http://www.cleansky.eu).

## What is the mission of Clean Sky Academy?

The Clean Sky Academy Working Group has been established back in 2015 by Eric Dautriat, Executive Director at that time. The objective was to better involve the students in our programme through strengthening the link with Academia and Research Centres. The group was composed of a number of independent experts with academic background. Last year, our Interim Director, Tiit Jurimäe decided to formalize this working group at a higher institutional level by appointing officially one representative of the major European Associations active in the academic and research community.

## Who is part of CSA now?

PEGASUS, EASN, EREA, CEAS and EUROAVIA. The group is composed of representatives of these bodies, complemented by other independent high-level experts non-affiliated to the above and also from academia and research bodies, selected via an open call for expression of interest. In terms of membership through these associations, this probably represents more than 40000 email addresses all over Europe.

## What are the main objectives of this working group?

The CS Academy Working Group supports the CS2JU high level objectives and provides advice in the form of reports, opinions and recommendations on:

- Dissemination and communication initiatives.
- Educational aspects.
- The Clean Sky PhD Awards initiative.
- Help to identify long-term research activities, promoting academic inputs, in line with the Clean Sky objectives, typically in relation with the Thematic Topics for example.
- Advising on possible support actions.

Clean Sky Best PhD Award Ceremony at ILA Berlin, April 26, 2018.

From left to right: Jean-François Brouckaert (CSJU), Rainer Groh (3<sup>rd</sup> Prize ex-aequo), Vittorio Memmolo (3<sup>rd</sup> Prize ex-aequo), Christoforos Rekatsinas (2<sup>nd</sup> Prize), Kevin Prieur (1<sup>st</sup> Prize), Fred Abbink (CEAS), Hervé Consigny (ONERA) and Ric Parker (Chairman of the CS Governing Board).

#### **What does it mean for CS to have EUROAVIA?**

I always use the statement “the students of today are the engineers of tomorrow”. Which may seem somewhat simplistic, but in my opinion retains a lot of implications. Not all engineers are going to be involved in R&T in their career, but whatever their function will be, they will benefit from being involved, if not so, at least aware of what is being performed at the cutting edge of technology development in aeronautics.

So it was obvious for Clean Sky that we could not set-up a working group about collaboration with Academia without involving the students.

#### **How's been the collaboration with EUROAVIA so far?**

Excellent! An immediate response from EUROAVIA to participate, and with great enthusiasm! And I must say the European network is working very well. I remember you were able to send on the spot a deputy student from Belgium, because you Juan, as current President, were not available. You have also spontaneously proposed to host the next meeting in Seville at your University in September, and offered me to participate in your next Annual Meeting of the EUROAVIA Congress in Bremen in October. These will be two excellent opportunities for Clean Sky to talk to the students and to promote dissemination.

#### **What common plans do you have with EUROAVIA?**

Beyond the general awareness of what is being performed in terms of research and innovation in aeronautics, it would be to have the opportunity to be involved through their professors is some of the Clean Sky funded projects. Either at the level of the final year thesis or even for a PhD thesis. By the way, Clean Sky just closed the 3<sup>rd</sup> edition of the Best PhD Award in Applied Sciences and Engineering in Aeronautics. The 2018 ceremony was held last April at ILA Berlin. With this award, Clean Sky wants to underline the fact that our programme provides a lot of opportunities to the students to perform high level research, in particular through the opportunity to perform a PhD.

Besides that, one other important aspect is the input from the students themselves! The professors of course have the knowledge and the experience, but you know, in a closed room, you need fresh air! And I strongly believe that the students have a real opportunity here to bring in new ideas, out-of-the-box stuff, things they come across when they are working on their final year thesis or their PhD. And I think we should consider the possibility of putting in place a mechanism together with EUROAVIA to collect these ideas. At Clean Sky, we have just started to launch Thematic Topics in different areas, precisely to promote breakthrough ideas, disruptive concepts and innovative solutions to long known problems. So, any brilliant idea in any area whatsoever is more than welcome! Perhaps we should establish also a Clean Sky



Award for the most brilliant idea! Coming from the students of course ...!

**Is there any specific project that could change student's life within CS? (a bit of spice never hurt anyone)**

It depends what you mean by changing the life ... (smile). Or by spice ... (smile again).

But let me answer on a personal note now: I think that what people are doing in Clean Sky in terms of research is at the forefront of technology in many areas. And it is very exciting to be part of this journey into aeronautics of the 21st century. But we have passed the era where the mechanical engineer was doing mechanics, and the electrical engineer was doing electrics. Everything has become incredibly multidisciplinary in all fields and this is where I believe it be-

comes spicy. Because the engineers of tomorrow will be required to have a much broader vision and skills in many different technology areas across the board. However, the best which can happen to you if you want a spicy job, is to work in research. You are never doing twice the same, and every new thing to do is a new challenge. So this is what I wish to every engineering student who is looking for a "hot" job.

**So, when will EUROAVIAns have a chance to have a closer insight into Clean Sky?**

Well, as I mentioned before, Sevilla and Bremen will be two excellent opportunities for Clean Sky to talk to the students and to promote dissemination and encourage aerospace research throughout Europe. See you there!

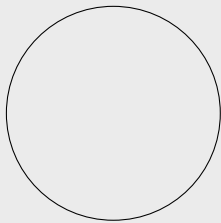






# Interview to Dario KUBLER

ABOUT THE INTERVIEWEE:  
Dario KUBLER, Eng.



Dario Kubler owns a master in Electronic Engineering at the Polytechnic of Milan and he is currently the Engineering Manager at Microchip Technology, a multinational company in the semiconductor market. In 2016 he founded "ADAA" (Associazione per la Divulgazione Astronomica e Astronautica) an emerging association in the Italian realm of divulgation in the field of astronomy and astronautics. In the astronautical field, he participated to the "RLI" (Italian Lunar Radiometer) and to another team effort in which he reconstructed a fully working and faithful replica of the onboard Apollo computer (AGC/DSKY) used to navigate to the Moon.

Interview by Antonio Luperini

## Career Path

**When did your passion for space begin?**

It begun several years ago, when I was a child and I was shocked watching live from the Moon a space-walk of Apollo astronaut Charlie Duke, who by the way then became my friend, from one of our neighbors' black & white TV.

**Have you decided to apply your specialized experiences in the field of electronics in the space sector, or has it been a happy coincidence?**

It has been a pure coincidence, I met with a friend who was participating to a project at FOAM13, the Astronomical Observatory Foundation in Tradate (VA), who asked me to be part of a incredible task, to build a full scale replica of an Apollo Command Module,

CASPER; as soon as I merged the team the person in charge of building the replica of the main control panel left the group and I took the opportunity, and the challenge, to rebuilt not only the entire control panel but also the DSKY (the astronauts interface to the on board Apollo Guidance Computer: AGC).

**What is the motivation you have to carry on the ADAA association and to commit yourself to so many projects?**

The main goal I had in mind when I agreed to found the association was to spread my passion for the Astronomy and the Universe to other people and especially to the young generations; this because I think that learning just a little bit more about how Nature works is the most incredible gift we received and it is a must for the mankind to share what we have learned so far to the future generations.

Dario Kubler at SpaceUp Pisa 2018

## About your job

### What's your job about?

I am a Field Application Manager working for Microchip Technology, a multinational semiconductor company, headquartered in Arizona. Basically, I am the coordinator of a team of more than 20 engineers spread around several European countries, whose main job is to help our clients to innovate using our services, products and solutions.

### Do you travel a lot for work?

Yes, indeed. I have responsibility for a huge area: South and East Europe, spread from Madrid to St. Petersburg to be clear; if you add on top of this the fact our headquarter is in Arizona - US, you can guess how much I travel, let's say a little bit too much according to my wife.

### In your opinion, what are the main difficulties of working in a team?

Let me start mentioning that I can see a lot of benefits by working in a team; sometimes you need to steer

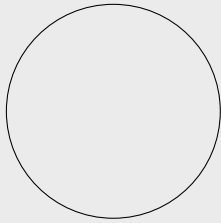
the team activity towards the main goal, anyway the more you practice teamworking, the more you are getting used to share and receive great insights. It could be that sometimes you face somebody with a "lone wolf" attitude and this could compromise the team spirit, it is up to the whole team to react and isolate the ones who are not willing to genuinely provide and share their contribution; basically, if you manage to train your people to do so, your life and the quality of your job is always getting better.

### Do you think that a team composed of people from different cultures can be a benefit for a company?

Absolutely! I am very lucky to work with very smart engineers from so many countries: Italy, Russia, Hungary, Spain, Austria, Romania and Turkey. I can assure you that the most beautiful and incredible ideas are coming out during the team meeting when we practice the brainstorming approach; in such a case you can see how frequently some smart ideas are amplified by the contribution of the other colleagues, because if you are used to thinking out of the box, the chances to accomplish the assigned tasks are much higher.

# Interview to Roberta LAZZERI

ABOUT THE INTERVIEWEE:  
Roberta LAZZERI, PhD.



Roberta Lazzeri is currently Teacher of Elements of Aerospace Structures and Materials at the University of Pisa. She graduated in Aerospace Engineering at the University of Pisa and she obtained a PhD. Since her graduation she had research and teaching assignments with the University of Pisa, collaborating with international aerospace companies and carrying out researches on behalf of European Union and Italian Government.

Interview by Antonio Luperini

## Career paths

**What inspired you to choose this career?**

When I was attending High School, I was very interested in Mathematics, Physics and in Experimental Researches. At the end of the fifth year, I decided to continue my studies in Pisa, at the Faculty of Engineering. Aerospace Engineering exited my curiosity and seemed to me a very stimulating course. I remember that, during my first year, the number of female students was very limited and we were seen as rare flies. Many of us were a bit scared by this and decided to stop studies or to change Faculty. Fortunately, there are many female students today and this is a very positive thing.

**Do you recommend a Student to enrich its knowledge in specific topics or to enlarge the culture in many fields in order to get its first job?**

This is not an easy answer. A strong knowledge in the basic courses allows students to be flexible and to solve problems also in those fields in which they do not have a specific expertise. What I really recommend in order to get the first job is not to fix strict lim-

its; an aerospace engineer can be appreciated in many fields, and the second job can be found easily.

**About the first job, what features it must have in order to have a good career progress?**

The most important thing is to get respect from colleagues. It's much more important to be valued and to gain skills than to earn a bit more. I also suggest to travel abroad in countries which have a developed aerospace industry. There you can learn way faster and you can always come back to your country with an experience that will assure you a big advantage in finding a job. After your first try, probably the second or third job will be the one you really like. I mentored some students in past years that worked in a motorcycle company. After a job abroad they decided to come back in Italy and now they have a respectable position in a company not far away from home.

**In your opinion, how do companies and universities evaluate extra curricular activities in comparison to the academic path in a job interview?**

It depends on what kind of extra curricular activity we are speaking about. Surely, the academic path

is important as well as the university prestige. But in a job interview different point of views are usually investigated, not only the academic path. For example, a good English (and other languages) knowledge, the predisposition to travel, an experience made inside a company. Sometimes, also unusual hobbies can be appreciated by companies, for example historical researches can fit well in a job in a Purchasing Department.

**It's strange to hear that being passionate in historical researches can be helpful in a work like that.**

The example comes from my personal experience. I applied in a Purchasing Department and when I got hired, I asked why they chose me. They explained that they liked the fact that I was passionate in genealogical research and it was a good skill in that position. Usually during a job interview, question which may seem "pour parlé" are useful to find skills that no one else have.

**Do you think universities should encourage teamwork in students' assignments?**

Yes, I think this is really important. At present, people working in big companies are inserted in teams. Many companies organize for new employees courses to explain strategies to work together in mutual respect and to solve conflicts. During the academic path, students at the Aerospace Engineering bachelor and master are "strongly" encouraged to work in team for homework assignments, that are special activities such as projects on different subjects.

## About your job

**Can you introduce us the new technologies that your organization is working on?**

The University of Pisa and the Department of Civil and Industrial Engineering are at the forefront of many technological fields. Obviously, I know in detail only those of which I have personally dealt with.

Among these, recently, with the staff of the Laboratory of Structures and Materials, I carried out a test activity on full-scale components in composite material that will be used to check the design of a new passenger plane. In order to do this, it was necessary to overcome not simple challenges such as carrying out these tests in hot/ wet conditions and I assure you that achieving this for components of unusual dimensions is not a trivial problem.

**Aircraft recycling is becoming a more and more important issue in the design of new aircraft. The current aim is to make recyclable 95% of the aircraft. How do you think composite materials can deal with this necessity?**

Unfortunately, at present we do not have an effective answer to this important problem. The intensive use of composite materials on new generation airplanes has been going on for several years and within

a few years we will have to dispose of an ever-increasing quantity of composite material. Lots of research activities are carried out to solve this need and – as far as I know – there are already small companies that have industrialized a recycling process of composite material, obtaining good results also in terms of performance of recycled materials. Unfortunately these processes are still expensive and so much research still needs to be done. But I am confident that within a decade we can get a result.

**What are the characteristic activities of your work?**

Oh, good question. I am involved in a lot of activities. I consider myself as a teacher and as a researcher. They are connected. Even though many of the experimental results coming from the collaboration with aerospace companies are strictly confidential and I am not allowed to show them, I can teach students the experimental techniques we used and the new trends in the field. In addition, I deal with some small administrative issues related to research activities, such as the preparation of purchase orders.

**Do your job and your career meet the expectations you had before you started?**

When you are young, you do not always have a clear idea of what you are expecting for your future. Surely, I am currently doing a job that I love. I like doing research. I like teaching. I like mentoring thesis activities. All of them are always new and very stimulating fields.

**What do you think will be the next step in your area?**

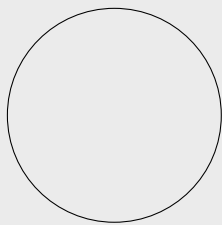
The research activity in the field of composite materials is not yet finished, both as regards the components and as regards the production technologies. In theory, the potential of these materials are continuously new. Thanks to this, smart materials are studied, with the ability to diagnose damage, to make the structures more and more safe and efficient.

**Do you think collaboration between universities and companies and also among companies themselves will be more present in a future scenario?**

I really hope so. Within universities there are very high level skills in many fields. At the same time, industries can realize the results of university research in the practical field. This is true not only at national level, but it would be very useful to achieve it at least at European level. There are many research programs financed by the European Community that have as their objective the collaboration between universities and European industries for the development of research and technological progress.

# Interview to Holger FRIEHMELT

ABOUT THE INTERVIEWEE:  
Holger FRIEHMELT, Dr.Eng.



Holger Friehmelt studied at the Technical University in Braunschweig, in northern Germany, and he did his Master thesis in Georgia Institute of Technology in Atlanta. After graduation he enrolled in a PhD Program.

Interview by Kalliopi Karipidou

**Dr. Friehmelt, tell us a few things about you. First of all, are you from here, from Graz?**

I'm not from Graz. I moved to Graz only about 4 months ago. I have been working all over the world in aviation industry. I have never worked in another industry, so I can say I certainly have the aviation fuel in my blood! I spent more than 10 years in USA, about 3 years in South Africa for aerospace parts manufacturing. It was always in industry, so, at some point, I noticed that maybe it's time now to start teaching and share some of my experience from my professional career with my students.

**Where did you conduct your studies and which were your first steps after graduation?**

I studied at the Technical University in Braunschweig, in northern Germany, and I did my Master thesis in Georgia Institute of Technology in Atlanta. After graduation I enrolled in a PhD Program, I was very lucky that I was offered so soon the opportunity to go to US, work and also do my flight tests at NASA. I used to live in California, working in a research center.

**Why did you choose this career path?**

I entered this sector because I love technology. Furthermore, I think it's something you can see, touch and experience yourself.

**Which exactly is your position in this Department and what is your main occupation?**

Right now, I am Head of the Aviation Institute in this Department and also Head of the Degree Programs. We offer a Bachelor Program which requires a lot of engineering classes in combination with some aviation aspects, so engineering focused on aerospace applications. This program is taught in German. In addition, we provide two Master Programs, both in English, because English is the language of aviation, I guess.

**Why should someone choose this Institute to study Aviation? Is there something special provided here?**

A student can start their studies without saying what is their favorite object. They can learn and experience through the different lectures and the laboratories what is the thing they really want to do. First, they can try different things and at the end they make their final choice. That's a big advantage because you

can experience everything that is associated with aviation, and then make up your mind. You won't get stuck with something you don't like.

**What about internships? You said you have a considerable network all around the globe. Do the students take advantage of this opportunity?**

We have mandatory internship. All the students succeed to find the perfect industry for themselves to do an industry, not only in Austria but worldwide. You can see that all the things you learned make sense now. That's also a way to find a mentor, to decide your thesis's theme and do an arrangement to complete your thesis there, and also usually have a job offer after your studies.

**Does your Institute offer the required qualifications someone is going to need in the workplace?**

The university offers the main qualifications that someone needs, but the students also need to take the opportunity and study really really hard, to spend a lot of time studying text books and doing exercises. Aerospace Engineering is not the easiest Degree, you need to get all the knowledge of different fields, like mathematics, information technology, computational fuel dynamics. You need to have this knowledge and know how to prosper to the field.

**What should someone have in mind, in order to fit in aviation industry? What would you advise your students to prepare them for what is coming after studies?**

- You shall not be shy to speak English. Even though we have all our individual language, you need to speak the common language.
- You need to be a team player. In aviation industry procedures can be so complex, and any way you can't build a plane alone.
- You need to be really enthusiastic, and so on motivated, so that you convince yourself to study really hard anytime.
- Think out the box! What solutions can be found? What can be done now and what in 20 years?

**How do you think new technologies have influenced this field and how will they influence it in the future?**

All I know is that if you do not try new things, you will not end up with something new. You need to try a lot of things to come up with something that actually works. You need to learn and understand why something is or isn't working, because then you won't make the same mistakes again. A good example is composite materials. Theoretically, you could build an airplane out of composite materials, but it would be so expensive, so no one would buy this plane or pay the airline ticket. It's an optimization process between the technical possibilities and the business model of your project.

**Issue: Drones. Nowadays everyone can own a drone, just for hobby, playing and capturing audiovisual content. This have caused some**



discussions about problems that occur with the commercial sell of drones. We're talking mainly about safety problems but even legally, about privacy problems.

It can cause problems, but there are already rules and laws, that set what is acceptable or unacceptable for a private drone. Of course, there are a lot of people that don't abide to these laws. There are people that fly a drone close to an airport or close to a hospital. Or they think that they are really good in flying a drone, and approach a football field, forgetting the fact that there so many people around. For all those things there are laws. Maybe we need to invent some more things, so that drones are not dangerous at all.

On the other hand, if something gets in a mess market, like the market of playing toys, it's much beneficial for more complex and serious applications. If we wouldn't have those hundred thousands of toy-drones, we wouldn't have miniaturized the systems for the commercial drones, we wouldn't have miniaturized electrical motors. It's the same as with the smart phones. They were developed for the general public but there's so much technology, that is helpful and applicable for commercial applications. They both benefit each other.

Referring to drones and UAVs, can we talk about a difference between the two of them?

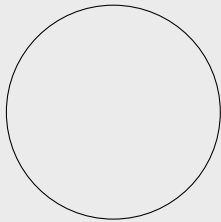
UAV stands for "Unmanned aerial vehicle". The best way to differentiate it is this: The toy-drone has to be remotely piloted, you need to be within the line of sight, the operator still needs to see it. There are a lot of commercial applications where optical contact with the vehicle is impossible: for example, when a UAV is utilized in a "search and rescue" mission near a big fire situation, to see if there are people inside a burning building. That's the biggest difference.

For commercial applications you have to ask who is paying for it. Someone will pay for it only if he has a personal benefit. There are a lot of applications that involve bad weather, darkness, smoke, fire. That's a completely different technological challenge, compared to the commercial use of toy-drone. The amount and quality of the data you need to send back in the ground control station are totally different.

We should avoid a crucial mistake. We shouldn't just simply try to build a drone or UAV and then find an application. We need to ask ourselves, where could a remoted piloted vehicle help. For example, we have to say we need to deliver something somewhere very fast. Then we have to design and construct it.

# Interview to Tom LEENE

ABOUT THE INTERVIEWEE:  
Tom LEENE, Dir.



Tom Leene, 31, is currently the Director of Fokker Engineering Romania and in this interview he talks about what it means to work in an international environment, what guided him through his still-rising career, how he feels, as an aviation company Director, about soft skills and last, but not least, about differentiating between work and personal life. During this interview, he also gives us a short inspiring anecdote, so make sure you check it out.

Interview by Anca-Maria Stan

**Can you tell us something about your background? What did you study and when and where did you start to work?**

I don't think I ever mentioned this before in any other presentation, but I first started in Civil Architecture. That didn't go as planned, I was not really into it, so I stopped after two years and then started a Bachelor in Industrial Management, nothing related to aviation at first. After that I really wanted to continue studying so I did a Master in Business Administration with a specialization in operations and supply-chain, so I was getting more into the technical field. That was in 2012 and after that I was looking for a job. When you graduate you will have absolutely no idea what you want to do and, of course, I was in the same situation. And there is something we have in the Netherlands that may be coming here as well but not as much. The companies offer a traineeship when you are just out of the University. You go there and they give you a quick tour of the company, they give you the soft and the hard skills and what you need to

know to become a manager in the company. Luckily, back then Fokker had a very good traineeship, awarded as the best traineeship in the Netherlands as well. And in those two years I went to several different locations. First, a couple of them in the Netherlands with different assignments just to learn the company from the inside out. And then I went to a small village in the state of Georgia, just to come back to the Netherlands with our electrical wiring company and finish my traineeship program.

**With the traineeship completed, what was next for you?**

My career with project management was started. We were building some components for some missiles and it was my project which was a lot of fun and it was a big one. So, in terms of volume you had a big thing to manage... and a lot of people involved. It was just massive all along. A lot of fun and great interaction with the customer, which I liked. After that, I went for a year and a half in the States where we were setting up a factory and things were not going as planned. We

had it up and running and, suddenly, I was free and I got a phone call from my boss, the Head of Engineering in my company, who asked me 'What do you think about Romania?'. And I've been here since July last year and I've loved it so far.

**How do you find it, running a business that you know nothing about?**

That's a very good question. Engineering is not something that I've done before, I am not trained in it, even though I know what Catia is. At first, I should have been really afraid of it, but this was something that was always happening in the traineeship as well. So, the traineeship really prepared me for that because you always have to work with things that you don't know, but it always comes down to the same principles. It doesn't matter if you do pens or engineering for airplanes. The same principle still holds. You still have finances, you still have IT, you still have the HR. You work with people in the end and it does not matter what they create.

**When do you find time for your personal life? Do you combine your personal and work life?**

For me, the difference between personal life and company life is a bit grey. I don't make clear time slots of when I start and when I stop working. I have co-workers that at 5 p.m. turn their phones off. And I completely understand it, but I don't do it. Even at night, when I am at a bar drinking Gin&Tonic, I remember that I have something to do, or I get something from the States where is early in the morning and I quickly respond. I do that because otherwise I don't think I could fully rest. For me, that's how it works.

**In EUROAVIA we have now a training system and you mentioned something earlier about soft skills.**

**How important do you think they are within a company?**

I think that soft skills and the way you deal with it are, maybe, the most important thing in a company. As an aviation engineer, you should probably know that the plane has wings, but other than that it's soft skills. We can always joke about it, but I once went to a very inspiring presentation of a furniture company that had a rather radical approach of how to do their products. And back then, you could order a piece of furniture and they would say 'We are going to bring it to you in 16 weeks.' 'But why, are you bringing it by foot or something like that?'. And these guys guaranteed that you can have it in 5 days, claiming that they

have everything on stock. But this was never the case, they would do anything the moment the customer ordered it. So, during this presentation one of these guys from the company was asked the same question and he replied that if he could, he would have studied Biology instead of Business Administration, because in the end it's all about people and how to interact with them. You can call it Biology or Psychology but it's all about optimizing the people around you. Not so much about maximizing, but optimizing, making sure that they can do the best of their work in a consistent way. And that's where the soft skills come into play.

**Can you tell us something about the GKN-Fokker fusion?**

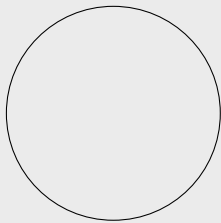
It was a thing that was already happening for a couple of years. Fokker was part of an investment company and they were absolutely a good company, but aviation was not their cup of tea. They were more into oil-gas basis. Our customers already said it many times: Fokker-great technology, the absolute best in terms of new materials, new processes, but they have issues with making things producible. And that also comes down to money. We are just too small to survive in the big aviation world. And if you see the competitors that are staying next to us, that are doing the same thing Fokker is doing, but their companies are triple the size of Fokker. So we were trying to be a major player on the market for major costumers, but we didn't have the size for it. Neither did we have the money to get to that size. And there was also a plan to do an IPO-Initial Public Offering, but we were not fit for that. So we looked for a partner that we could team up with and GKN was a great match because of what they are doing, but we were also able to add some things to their portfolio. They didn't have electrical wiring and landing gears yet, so the product portfolio coming out of the fusion was completely new. So, together with GKN, we finally had the capital and the power to still have a seat at the table with Airbus and Boeing.

**What is your message to young readers across Europe?**

Always love what you are doing. It's so easy to do something and to end up asking yourself 'Why did I do it?'. Especially for EUROAVIA, you guys are very international focused, so one thing for you would be to always reflect on what a person is saying depending on where they are from. Culture is such an important thing. Everybody knows it, but it is sometimes overlooked and aviation is such an international field that this matter becomes really important.

# Interview to Miguel BELLÓ-MORA

ABOUT THE INTERVIEWEE:  
Miguel BELLÓ-MORA, PhD.



Mr Miguel Belló-Mora, got his PhD in Aerospace Engineering at the University of Braunschweig, while he was working at the European Space Agency, from 1985 to 1992. He also specialized in business management, with the IESE general management program, adding to his professional technical profile training in the field of business management. Furthermore, Belló-Mora was elected to the International Academy of Astronautics at the 62nd International Astronautical Congress held in Cape Town (South Africa).

Interview by Liliana Balotti

## Career paths

**Why did you decide to study aerospace engineering?**

I always wanted to follow a technological career. As the exploration of the space is today one of the main challenges for our and next generations, then I decided to be part of this adventure becoming an aerospace engineer.

**What was your position when you used to work for the European Space Agency?**

I arrived to ESA in early 1984, as one of the first Spaniards contractors there. My main responsibility was the Mission Analysis of future missions. That means a very challenging job for the design of interplanetary and exploration missions like Rosetta, Cassini Huygens and others.

**Do you think it is important to study what you love?**

I don't think that this is important, I think that this is absolutely mandatory if you want to enjoy your life. You have to think that most of the time that you spend in your live being awake is working. If you don't love the work that you are doing, then your life is unbearable.

**What do you think about the importance of the communication in a working environment?**

Today, with the strong influence of the web and social networks, internal and external communication is one of the key aspects of a company strategy. This is even more important for a "space company" as you have to transmit to the society the message that all the institutional investment made in space is very well justified because there is an important return in

terms of natural disaster mitigation, weather forecast, telecommunication services, positioning services, environment protection, agriculture optimization, forest management, climate change monitoring, etc, in addition to the purely scientific and technological return.

## About your job

### What is the most satisfying part of your job?

The first satisfaction of my job is when a space mission, where we had an important contribution, has been successfully completed and all the goals are achieved. This may be with European missions like Rosetta or with the Deimos 1 and Deimos 2 Earth Observation satellites. In addition to that, being an entrepreneur in the space sector, there is a satisfaction that I have not much time to enjoy, which is the fact that a company that you start has an important growth with hundred of employees devoted to space activities and impacting in the life of thousand people.

### And which is the one you find more repetitive or boring?

Some management aspects like high level reporting, monthly closing or financial and tax aspects are the most repetitive and boring parts of my day to day work.

### Are there internships opportunities in your company?

Yes, we have an important internship program with agreements with more than 40 Universities all across Europe. Normally we prefer to contract our staff between those who have had an internship with us in the past. In this way we know each other better before getting a contractual relationship. We know very well the skills of our future employee and they know what can be expected from working at DEIMOS.

### What would you recommend to young engineers who want to start with their first job?

First of all, I would recommend to complete a very intense formation period (at least a master degree) and then the word is AMBITION. You must be ambitious putting no limits to your goals.

### When you started working, were you enough prepared from the university?

Yes, I got my Master Degree in the Polytechnic University of Madrid and my PhD in Aerospace in the TH Braunschweig in Germany. At the beginning I was worried about my technical skills at my first job at the European Space Agency, but later I realize that I was very well prepared (European Universities are among the best in the world for the space sector). I was not an expert in all space domains, but I got the basic skills to be able to find out by myself how to get the required basic information to do my job.

## Specific questions

### How can your company's philosophy and management methods be described?

In DEIMOS, the most important asset, and the center of our philosophy is our staff. Our main value is the talent of our people, therefore to attract, to motivate and to retain the best engineers is the most important process in the company. This allows us to offer to our customer the most efficient technological solutions. Excellence, innovation and commitment are our main company values, always based on the satisfaction of our staff.

### Would you like to expand your company into new geographic areas in Europe or in other countries?

Today we are working from Spain, Portugal, United Kingdom, Romania and Italy within Europe, from Cameroon in Africa and from Peru in South America. Our goal is to extend our subsidiaries to all relevant countries in Europe and to have a footprint in all continents, being Asia and Australia our next target.

### What expectations have the company regarding the new candidates?

Largest countries in Europe like France and Germany; Countries with a large space tradition like Belgium and countries that got recently a high interest in those activities like Luxemburg.

## Observation of Earth

### Have you achieved the results you expected with the Deimos-2 satellite?

Yes, both Deimos 1 and Deimos 2 mission have been very successful and all the technical challenges were achieved. All major technical problems were properly solved and its operational use demonstrated, in such a way that now they are now owned and operated by Deimos Imaging, an independent company of our Group.

### Do you think that the Observation of Earth is important for the future?

Yes. The first important contribution from the space to the community was the telecommunication systems from GEO, which is a key mature activity with thousands of employees around the globe and giving high value services to the society. Then the Meteorological services and the satellite navigation (GPS, Galileo) were important contributions from the space sector to the community. Today the emerging space

activity which is already bringing unique assets to the society is the Earth Observation, in aspects like fire monitoring, Earthquake disaster mitigation, volcanic eruption control, flooding analysis, agriculture optimization, forest management, maritime services, climate change monitoring, etc.

**Are you planning to launch a new satellite to monitor the environmental conditions of the Earth or will your company be involved in projects related to preservation of the Earth?**

Yes, we are already developing our new Earth Observation satellite, which is characterized by a very high resolution with an unprecedented level of detail in those aspects that we want to monitor.

## Space

**Do you think that the colonisation of Mars is possible?**

Yes, we are firmly convinced. We need a high level political commitment to get this goal and a global international collaboration. In just a decade we were

able to put a man in the Moon in the 60's with a limited technological capability. Today we are more advanced and we just need the proper institutional impulse.

**What was the role of Deimos in phase E of ExoMars? And in phase C?**

In this challenging ESA mission, we were responsible of the Mission Analysis, Flight Dynamics, interplanetary trajectory design and the Guidance, Navigation and Control for the very complex Mars atmospheric entry phase.

## Radio

**What does it mean for Deimos have been selected by OACI/CORPAC to carry out the renovation of air navigation radio aids systems in Peru?**

This important contract in Peru, with other extension in the Ministry of Defense of this country, helped us to consolidate our Aeronautics and Maritime division, providing new navigation aids to most of the Peruvian airports.

# EUROAVIAns around the World





# Abbreviations

<b>AS</b>	Affiliated Society
<b>WG</b>	Working Group
<b>FoWo</b>	Formation Workshop
<b>AMEAC</b>	Annual Meeting of the EUROAVIA Congress
<b>EMEAC</b>	Electoral Meeting of the EUROAVIA Congress
<b>IB</b>	International Board
<b>PAS</b>	Prospective Affiliated Society
<b>RoWo</b>	Rocket Workshop

## Solutions of the quiz

- |   |   |     |
|---|---|-----|
| 1 | ! | (b) |
| 2 | ! | (a) |
| 3 | ! | (d) |
| 4 | ! | (c) |



AS Aachen AS Ankara AS Athens AS Berlin

AS Beograd PAS Bologna AS Braunschweig AS Bremen

AS București AS Cádiz AS Carlow AS Cluj-Napoca

AS Covilhã AS Delft AS Dresden AS Hamburg

AS Helsinki AS İstanbul PAS Kocaeli AS Leuven

AS Lisboa AS Madrid AS Milano AS München

AS Napoli AS Oostende AS Padova AS Palermo

AS Paris AS Patras AS Pisa AS Rzeszów

AS Samsun AS Sevilla AS Stuttgart AS Technion

AS Terrassa AS Thessaloniki AS Toulouse AS València

AS Zagreb AM Zewail City



EUROAVIA  
LUSTRUM

The 60th anniversary of EUROAVIA

Lustrum & EMEAC

May 3 - 11, 2018

Aachen, Germany