

THE EUROAVIA MAGAZINE

A high-quality photograph of an astronaut in a white spacesuit working on the exterior of a spacecraft. The astronaut is wearing a helmet with a clear visor and has an American flag patch on the sleeve. The background is the deep blue of space.

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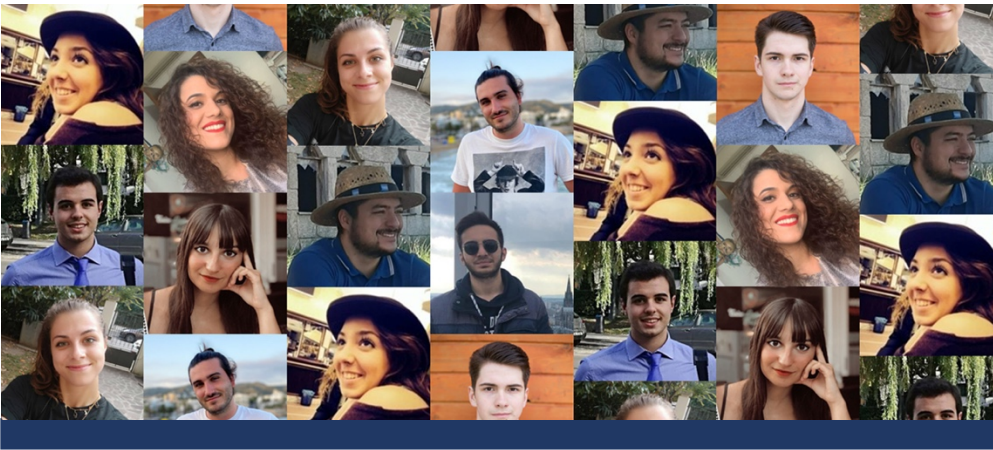


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TALES FROM THE LOCKDOWN



"Even in these uncertain times, when the world seems to be upside down, engineers know how important it is to maintain the reference system. We do not know when or where, but we will gather again and at our farewell we will say "See you around Europe!", because now more than ever, we truly realize what it means. ."

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INTERVIEW WITH CHIARA COCCHIARA

"[...] Only a few hours during the day or the evening were dedicated to leisure activities, such as group games, or watch movies. I kept a diary of those days on Mars, building a memory that will stay with me forever."



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RETINA PROJECT



"[...] controllers are enabled to have a head-up view of the airport traffic even in low visibility conditions since they are no longer limited by what the human eye can physically see out of the tower windows."

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From the editor

THE EUROAVIA MAGAZINE

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Dear readers,

this year has definitely been an atypical one. If 2019 saw the aerospace industry and history thriving more than ever, 2020 definitely tested its (and ours, of course) resilience. As things are starting to hesitantly moving forward, a new normality set in and we are ready to see what the future holds.

EUROAVIA has been able to show its ability not only to adapt to challenging times, but to make the best out of it. As events kept being cancelled and rescheduled for safer times, we reinvented our *modus operandi* to virtually reduce that social distance we are still kept to.

Technological advancement was definitely on our side, even the non-techies have parted their ways from Skype to explore different options to participate to the numerous video calls and conference that studded the past months.

Both on a local and international level, in fact, the engine never stopped since EUROAVIANS found new ways to fuel it. Important events like the Congress were preserved and hosted completely online, but many new ones flourished too. We were able to attend cycles of conferences with prestigious speakers working in the aerospace field and work on our self-improvement.

And now, let's look ahead of us, hopefully to safer and healthier times where we will be able to travel again: 2021 calendar looks more exciting than ever, EUROAVIANS.

I would like to express my gratitude to all of you that contributed to the magazine. This edition, gathering the events of the past months, really displays how we are able to adapt, reinvent and make good use to what life gives us. But mostly, to keep the EUROAVIA spirit alive.

Best regards,

Lucia Mascotelli
Communication Working Group Coordinator



Introduction to Stories from the lockdown



THIS year really tested our routines, activities and life as a whole. As physical meetings, conferences and events were possible no more, our community found many ways to keep the EUROAVIA family as unite as possible, to virtually fill that distance that lockdown created. In the first article Pablo will turn the perspective upside down, filling us with hope for the future. EUROAVIA Forli-Bologna will tell you all the activities they came up with, while EUROAVIA Covilha set up a five-day virtual event: the Airborne Week. The fourth article is all about the Online Training Wave, an amazing way our trainers found to keep stepping up your game and self-development.



A blessing in disguise

IT has been more than six months since masks and gloves became trendy and hydro-alcoholic gel flooded the streets. Six months in which we have seen how one after another our International Events, summer trips and plans with friends have been cancelled. Lost canteen conversations, empty libraries and quiet streets that contrast with the hustle and bustle on the balconies and terraces of our neighbourhoods.

A quarantine that has made a dent in everyone, both healthily and economically. It was not uncommon the day we woke up without reading about adjustments in staffing levels or the closure of a company in the news, especially within a sector such as the aeronautical one, so especially affected by this pandemic.

The chaos of the first months was transformed in a few weeks into teleworking, board games and night video calls. At my home there had never been a fight about throwing away the rubbish or buying bread! Certainly, surrealistic stories that will remain in everyone's memory.

To our fellows in Northern Europe this may be all Greek, or Chinese, to them, since, as always, a coin has two sides. What cannot be denied is that, globally, the COVID has entered our lives abruptly and, to a greater or lesser extent, has disrupted our way of life.

Nevertheless, we have known how to recover, adapt, as we always do, and fight to return to our hated and longed-for routine. We have digitised the meeting rooms, the classrooms, even the meetings with friends.

And EUROAVIA, dear friends, has not stood back. During these six months we have had an atypical but exciting congress, the Online Training Wave, still working, workshops, talks, one physical meeting, and a lot of online work meetings that augur a 2021 full of surprises and, of course, events, both local and international. As a proof of it, AS Napoli tell us how they were able to organise a full cycle of talks with professionals from the space industry to talk with them and discover, first-hand, the work and investigation lines of this sector. And not only in Naples, but also in other AS we know this kind of activities have been very acclaimed by our members, as it keeps alive that curious spirit of the engineering student and which in EUROAVIA it abounds wherever you look.

At International level, as we have already anticipated, the engine has never stopped. Our WGs have kept up their work flow by preparing a "de-escalation" according to your expectations. Especially, working on a calendar of activities that promises to be one of the most attractive we have had in years. With new workshops, new destinations and above all, a lot of enthusiasm for travelling again.

To give you a taste of what's to come, next summer AS Helsinki will be back on the stage with a Radio-controlled Aircraft Workshop. An event that aims to overshadow their last international event, the famous Sauna-In of 1997. The veterans will surely have heard of it, and those of you who haven't, have now a perfect excuse to fly away in the summer and celebrate the comeback of this wonderful team.

The success of last year's edition has led AS Napoli to join the IE Calendar 2020-2021 with its Drone Workshop. A fun, creative competition that will put your engineering skills to the test. I can't tell you more, but if you want to have exclusive information, in the news section of our website you will find two articles about their event: "Game of Drones" and "Game of Drones: The review".

And this is as much as I can tell. I say goodbye here, wishing you all good health, patience for what is yet to come and these words:

Even in these uncertain times, when the world seems to be upside down, engineers know how important it is to maintain the reference system. We do not know when or where, but we will gather again and at our farewell we will say "See you around Europe!", because now more than ever, we truly realize what it means.

by Pablo Flores Chaparro

ABOUT THE AUTHOR:
PABLO FLORES CHAPARRO



I am Pablo a master's degree student in Aerospace Engineering at the Polytechnic University of Madrid. Since my childhood I have been fascinated by space. A passion that I combine with others such as reading, cinema or writing. During this forty-year period, I have been able to dedicate myself to writing again and, despite the fact that I have been in the Communication WG for some time, it is now that I am presenting my first article. I hope you enjoy it, as much as I did writing it!



Lockdown: user manual

Towards the end of February, after two long months of exams, the LB of EUROAVIA Forlì-Bologna was ready to re-ignite its engines.

We were eager for the upcoming local events that we were organising and couldn't wait to be a part of the rocket workshop planned by one of our professors at Alma Mater Studiorum, the University of Bologna.

Unfortunately, the year 2020 had very different plans in store for us. Indeed, at the beginning of March, the Italian Government imposed a national lockdown that ended in May, more than 60 days later. No one was ready for such a long and arduous quarantine, and neither was our LB. Shortly after the lockdown's announcement, everyone's mood was down in the dumps as we slowly realised that the pandemic would have lasted more than just a couple of weeks. This also meant that we would be unable to organise or host any sort of event for the unforeseeable future.

However, something had to be done for our members!

We decided to intensify our social media activity, through sharing posts or stories every day on Instagram and Facebook. On Monday we'd release an inspirational quote, on Tuesday we'd share a space related song and on Wednesday we'd post a few wallpapers that our members could screenshot and use on their phones. However, Thursday and Friday were the real deal. On the former, our Communication WG would entertain our members with fantastic 5-questions quizzes, whereas on the latter, we would post and discuss an interesting factoid.

The whole LB helped our Communication WG with the creation of new ThursdayQuizzes and FridayFacts. This somehow aided us in re-discovering our lost routine whilst still being confined to our homes.

Nevertheless, after a month of quarantine we understood that maintaining our social networks up to date was not enough. The lack of communication with our members quickly became obvious, when keeping in touch and raising interest for the association appeared very challenging. Inspired by the webinars first offered by EUROAVIA Napoli, we decided to follow suit and contact professors and experts to establish our very own Conference Calls.

This adventure began with an online conference on Microbiology in Space held by Luis Zea, Assistant professor at the University of Colorado, USA. He shared with us the main reasons why scientists do Biology and Microbiology research in space and the interesting methods used on the ISS!



The following week, two speakers joined forces and took us on a voyage to the Red Planet, Mars. Pierdomenico Memeo, with a PhD in Astrophysics and Cosmology at the University of Insubria, and Kai Aidan Growcoot, a graduate with a Bachelor's degree in Astronomy, Space Science and Astrophysics from the University of Kent, UK, covered the past, the present and the future of Mars; its formation, the presence of water and life and the many attempted space missions. Finally, we contacted the former ESA astronaut Christer Fuglesang, who is



currently responsible for the Aerospace Master program at KTH Royal Institute of Technology, Sweden, and teaches a course in Human Spaceflight. During his career, Fuglesang was part of two space missions with the Space Shuttle Discovery to the International Space Station in 2006 (STS-116) and 2009 (STS-128). During these missions he participated in five EVAs (space walks). The conference differed from the previous two as it was a live QA session where the astronaut could answer the questions the participants had prepared. Finally,



we hope our members appreciated our effort in facing the quarantine by maintaining our association alive through social media and webinars. During the next year we'd like to continue using these methods involving new and exciting ideas with international speakers.

by AS Forlì-Bologna

ABOUT THE AUTHOR:
EUROAVIA Forli-Bologna



Since February 2019, EUROAVIA Forli-Bologna has obtained more than 140 additional members in Forlì alone. The act of organising both regular and one-off aerospace and cultural events, generated a much needed interest within the community of students in Forlì. More info about EUROAVIA Forli-Bologna can be found at <https://www.euroaviaforlibologna.eu/>.



Airborne Week by AEROUBI

DEAR EUROAVIAns, As you know, this was an unprecedented year.

The pandemic forced all of us to change our routines and kept us from many things we love to do. Sadly, it was not an exception for AEROUBI AS Covilhã, we had to cancel all presential activities we had planned throughout this year. Such activities included several workshops that would be very enriching to our students, visits to national and European aerospace companies, and, most importantly, ENA 2020, our biggest yearly event.

ENA is an opportunity for students to get in touch with companies and people in the aerospace industry. It has two main components: JACs, which consists of a series of lectures, and the academic air show, the only one in the world organized solely by students. ENA would take place from the 5th to the 9th of May, with the last day reserved for the air show. For the first time, it would take place in Ponte de Sor's aerodrome which could allow us to make the most spectacular air show we have ever done.

Despite having canceled all presential activities, we could not neglect our responsibilities towards the students. It is our duty to watch over the student's best interests and that means helping them create valuable connections within the aerospace world. With that in mind, the whole team focused on finding a solution that could somehow replace ENA. The answer was an event online, available for everyone.

With our path roughly traced, we had to put our minds together and brainstorm about the shape of the event. After all, it was the first time we proposed ourselves to do such a thing and our team would need to work together to surpass any difficulties that could arise. The first one was the short time span we had to pull this off. As we waited until the end to monitor the Covid-19 panorama in our country, we ran out of any margins we could have, and we were forced to be as efficient as possible. Luckily, we have an excellent team, and despite having everyone working from distance, all of us contributed with our own ideas. It is a must to make a reference to all the help we got from our sponsors and partners. Their support was essential to reach our goals. Another major obstacle we faced was finding speakers willing to participate in such an event. Due to the COVID-19 situation, many aviation and aerospace companies had to restructure themselves. During such difficult times, it is, understandably, harder to find the time and energy needed to take part in this kind of event. However, with persistence and hard work, we managed to create an interesting group of speakers. This is how «Airborne Week by AEROUBI» was born. An online event that took place daily from the 11th to the 15th of May, broadcast both on our Facebook and YouTube page. It consisted of two to three lectures per day where our guests talked about aviation and aerospace-related themes.

Day 1

This event started with an opening ceremony to which we invited our partners. The participants were Eng. Hugo Hilário and Eng. Rogério Alves, representing the municipality of Ponte de Sor; Eng. Altino Loureiro, from Ordem dos Engenheiros; Dr. João Canavilhas, Vice Principal of UBI; Dr. Francisco Brójo, Head of Aerospace Sciences Department; João Bernardo Amaral, Vice President of AAUBI and Luís Gabriel Andrade, President of AEROUBI AS Covilhã. It was a fruitful talk where several topics were treated, including the pandemic. In the afternoon Eng. Sofia Matias, Eng. Graça Santos and Eng. João Gomes Mota from Albatroz Engenharia gave us an insight into using drones to solve a variety of problems and what has to be done to allow an increasing number of air vehicles to operate in an air space.

Day 2

The second day of the event started with Isabel Casanova Serrano from EUROAVIA, where all attendees got to understand the work that is developed by the association and why it is an advantage to aerospace students. Our students were enlightened about EUROAVIA's role and invited to join this project. In the afternoon, Commander Nuno Moleirinho talked about the biggest aerospace event in the country: «Portugal Air Summit» followed by Eng. João d'Orey from Ordem dos Engenheiros. This last speaker spoke about the importance of this entity to engineers and the advantages it offers to all members.

Day 3

Our third day started differently from the others. ESA BIC, with Carla Duarte and Clara Luxo, provided an opportunity for our students to take part in a workshop entitled: «Mission Possible: Bring Space Down to Earth». Participating teams were asked to develop an idea with the potential to be commercialized using aerospace technology. Later, we proceeded with Eng. Maria José Domingos who enlightened the public on the importance of Air Traffic Control and its functioning.

The day was concluded with an alumni, Eng. Rodolfo Lopes, who is currently working for CEA and Leonardo Helicopters developing a new tilt rotor.

Day 4

In the morning we were delighted with Commander Paulo Soares lecture on Viseu's Aerodrome and how it managed to withstand the impacts of Covid-19. We learned that, despite the extensive grounding of planes, the aerodrome was kept alive and functional. The afternoon started with Mara Caeiro from QSR where useful tips were given on how to enrich the CV and enhance chances on the work market. The day was concluded with Commander José Guedes- "O Aviador", an extremely knowledgeable ex-airliner pilot, who delightfully spoke about his enriching experiences and thoughts on commercial aviation.

Day 5

For the last day, we had the privilege to receive Eng. Paulo Andrade Pestana from NetJets, a private jet company. He spoke about how engineering is of extreme importance on improving the airworthiness of aircraft. Our last guests were Eng. Pedro Meireles and Eng. Marília Pirralho from FHP and enlightened all attendees about project ESCUDO.

This event would not be possible without our sponsors: ESA BIC / Astropreneurs and Serra Shopping. Furthermore our partners were of extreme importance therefore we express our profound gratitude towards UBI, AAUBI, Ordem dos Engenheiros, the municipality of Ponte de Sor, the aerodrome of Ponte de Sor and Portugal Air Summit.

After five very successful days, Airborne Week by AEROUPI came to an end. The aftermaths were definitely positive and all the hard work we had was absolutely rewarded. In spite of canceling ENA 2020, we found a way to work around that and gave the community something in return considering the restrictions.



by AS Covilha

ABOUT THE AUTHOR:
AS COVILHA



Founded in 1993, AEROUBI AS Covilhã - Nucleus of Aeronautical Engineering Students at the University of Beira Interior is an independent, non-profit association, inserted in EUROAVIA - European Association of Aerospace Students.



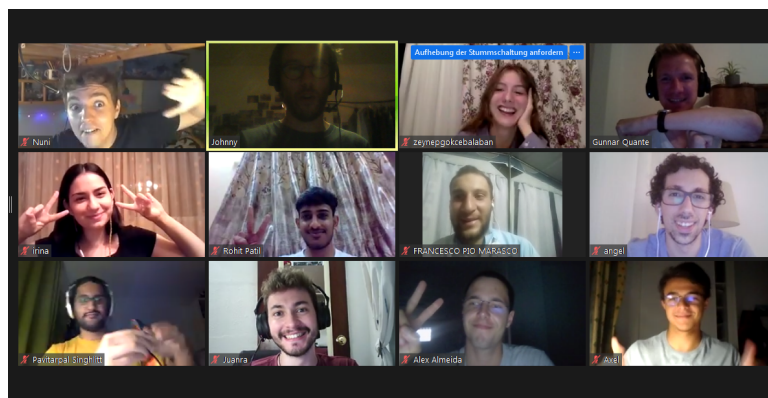
Online Training Wave

Change is inevitable. In all it's good and bad parts.

I suppose you have read statements like "let's find the good in this difficult time", "let's make the best out of it" or "Every disaster has it's chances" by far too often during the COVID-19 pandemic this year. I will leave it at your choice if you identify yourself with such statements or not. In this article I would like to share another story with you. The story of inevitable change.

The EUROAVIA Training System Working Group (ETS WG) had ambitious and powerful plans this year. This year's edition of the Train-New-Trainers (TNT) event was already scheduled for Munich and a majority of the preparations had taken place. The other international event co-organized by ETS WG, the Formation Workshop, was scheduled for autumn. Additionally, many training sessions at other international events were planned. And then – you probably expected this "but" in here – came COVID19 and the TNT and most other events had to be postponed to some time after the virus. Thus, almost all of our plans changed. As so often this year, we found that change is actually inevitable.

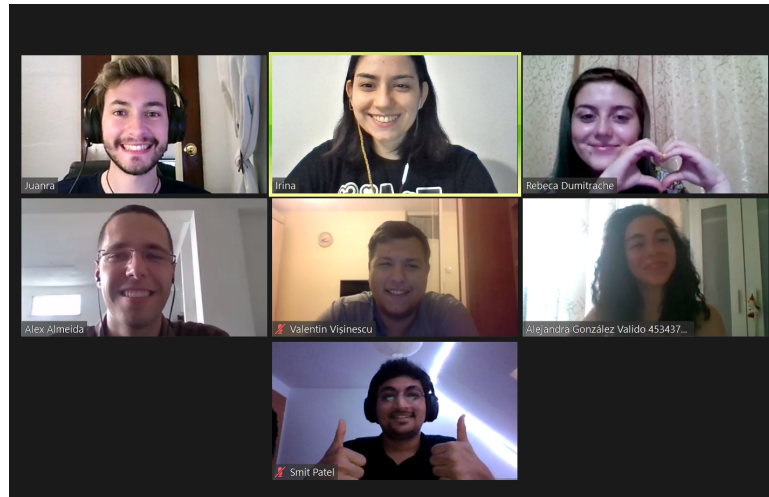
Even though I am not involved in the board of the ETS WG any more, I assume that this change was not really welcome. As the name already tells, the Train-New-Trainers event aims at educating a new generation of EUROAVIA's to design training sessions with a lasting learning outcome. To do so, the participants learn how to grow certain skills in others. After graduating from a TNT event, the new generation of trainers is expected to deliver training sessions all across EUROAVIA, and even beyond. Topics of these sessions range from soft-skill oriented trainings like "Personality Traits", or "Extreme Productivity" to a more technical focus, such as "Artificial Intelligence". Typical occasions are local group meetings, international events, like Fly-Ins or Symposia and of course the training events such as FoWo and the next TNT. Luckily they are not alone in their quest, we already have 3 existing generations of trainers who are eager to deliver trainings, too.



To put these activities in the context of our Statutes, it is described immediately in the object of our association: "to stimulate co-operation between Europe-based associations of students [...] as well as to promote [their] interests" (SB Art. 3 (1)) The way I see it is that our founders emphasized the importance of soft-skill trainings already 57 years before our first generation of trainers started delivering ;)

What happened after we had to indefinitely postpone all of our scheduled events? After a little while we saw many other associations delivering training sessions online. So, we also took the initiative to launch the "Online Training Wave". It is noteworthy that a training session cannot easily be transferred to a platform

such as Skype or Zoom. You will certainly know the effect of a decreased attention span in online meetings compared to a live meeting. Additionally, discussions in greater groups can get very confusing when taking place online. And, one of the biggest points: How to give room for work in sub-groups? All of these items have a significant outcome of the training, because in contrast to a lecture a training session is based on interactivity. Trainings acknowledge the fact that there is a difference between knowledge, which can easily be taken out



of books and lectures, and experience and skills, which both require a certain amount of practice. The goal of each training session is that at the end of the session the participants will be able to use it's content in their everyday lives. Therefore, we had to adopt various aspects of "live trainings" to the virtual environment. Once we had clarified most of these issues, we started with the first session "Coaching Skills for Leaders" on 15th June. Until now, the mid of August, we delivered eight sessions, each of them lasting between 90 and 120 minutes for around ten to 15 participants. Among others, we covered topics such as "Coaching Skills for Leaders", "Tech Consultant Basics", "Feedback" and "Non-Violent Communication". As we evaluated each of the training sessions, we got an image about the impact we achieved: More than 90% of the respondents would recommend the sessions to a friend, the majority would visit a training session every week and most of the participants want to use the training session content in their everyday life. We read amazing feedback, such as "I find these trainings very practical and useful" or "You did a great job".

But the learning did not only happen to the participants. Also we, as trainers, understood the way of delivering training online better by each training session. During the sessions, simply by observing to which extent our plans worked and also from the feedback we received. All this helped us to design the session of the online training wave more tailor-made and I believe that our life sessions will also benefit from this experience once we can deliver this "real" kind of trainings again. I believe that this experience illustrates in great detail the importance of embracing change as a fact. Change will happen and you will have to face it. Sometimes it comes as great pain and sometimes shows up as an opportunity. I personally believe that both images have their justification; more important to me is finding a way of dealing with this inevitable change. I do sincerely hope that you will find your ways of dealing with change, where- and whenever it shows up!

by Gunnar Quante

ABOUT THE AUTHOR: GUNNAR QUANTE



Gunnar Quante is a passionate learning designer since 2016, when Euroavia's first Train-New-Trainer event took place in Naples. After being a member of AS Bremen he is now an Alumni of AS Braunschweig and works for a big german aviation company. He designs learning experiences for groups in training sessions and for individuals by offering coaching.



Introduction to Interviews



IN this section two incredible women working in the space industry will share with you their journeys to a successful career. Be inspired by one of the Forbes 30Under30, Chiara Cocchiara, engineer at EUMETSAT who was also the only European selected for the Mars Desert Research Station as Crew Commander and Crew engineer. Federica Angeletti, PhD student in Space Engineering in Rome was eager to share her research with us but mostly her refreshing activism both in Zonta, as Amelia Earhart Fellow, and in Women In Aerospace-Rome.



Interview to Chiara Cocchiara

ABOUT THE INTERVIEWEE:
Chiara COCCHIARA



Chiara Cocchiara is currently System Operator Engineer at EUMETSAT at the mission control center in Darmstadt in Germany. She was the only European selected for the Mars Desert Research station. In 2015 the Massachusetts Institute of Technology awarded her with the title of Innovator Under 35 for a new drone technology. In 2017 she was listed among the Forbes 30Under30 leaders in Industry. In this interview she agreed to share the exciting projects she was involved during her successful career, her current job and some useful suggestions for anyone wishing to follow a similar path. Do not miss the opportunity to follow her journey around the world at @cocchiarachiara.

Interview by Lucia Mascotelli

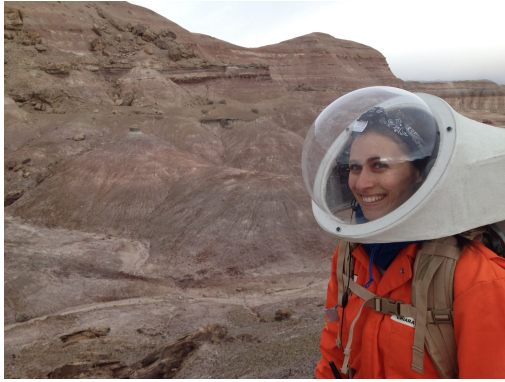
You were the only European selected for the Mars Desert Research Station, a 2-week program to simulate life on Mars. What was your role in the program?

The experience with the Crew159 at the MDRS was a life-changing moment. I played a double role during the simulation: I was the Crew Commander and Crew Engineer.

As Crew Engineer I was responsible for example of ensuring that the equipment was ready to be used at anytime, above all the spacesuits and the oxygen. Moreover I had to make sure that the full station (buildings and systems) were working fine, and I performed maintenance activities where necessary. If any problem occurred, then I used to create an action plan to solve the anomaly and communicate with the Mis-

sion Support.

My second role was as Crew Commander. It was an interesting experiment that we carried out during the two weeks, where we alternated the role of Crew Commander among the Crew members. The Commander is like a manager in any space industry on Earth, s/he has less technical skills, but shall have an overall knowledge about anything that is happening on a daily basis, and s/he shall supervise and be able to take decisions. The most important part of this role is that the Commander is responsible for all the members of the Crew.



How was being the leader in charge in what I imagine being a situation where you and your team are often working under pression?

We often associate the term “pressure” to critical operations, with high risks. In reality, I believe that the main source of pressure for the commander comes from trusting the other Crew members: the Commander is in charge, but s/he cannot control everything, and there were times where I just had to trust the other members, still feeling responsible for them. For example, I remember the time when the Crew Astronomer carried out Moon and Planets observations during the night, with the only company of another member of the crew. This activity is per se easy, there are no big risks associated to it, but I knew I was leaving two members of the crew awake and alone for a few hours in the night, when everyone else was resting. One other time instead we made an experiment in which we decided to draw on the map all the boundaries within which radio-connection was possible during an EVA (Extra Vehicular Activity). This means that we were often loosing connection with the two astronauts on EVA, while they were pushing for outer boundaries of the perimeter. These operations were critical, because losing connection meant that if anything happened to the two astronauts outside, we wouldn’t know, and as Commander I was responsible for the safety of the crew members outside. This generated moments of pressure during the operations.

What are the three top tips to perform well under pressure and maintain a clear mind?

Each individual can develop a different strategy to overcome pressure, but If I shall identify three tips that helped me during my work career (and not only), I would say:

- **Analyze:** before taking any action, one shall have a clear picture of which operation has to be carried out.
- **Prioritize:** not everything is critical in the same way. By organizing the work and assigning priority, you make your life easier.

- **Use lessons learnt:** same or similar scenarios may have occurred in the past. One shall not re-invent the wheel, instead it is easier and safer to use lessons learnt from past operations.

Can you describe a typical day on Mars?

When imagining the life of astronauts on Mars, on the ISS or of analogue simulations, the first thoughts are about the beautiful aspects of the job. In reality there is a lot of work behind. The alarm is early in the morning and there are activities planned for the full day until the evening. I must say that little internet and internet delays make you spend less time in front of the computer or telephone, reducing the useless time we are used to waste while on Earth. A beautiful aspect is that crew members are kind of forced to spend more time together, which is not bad at all.

During the day we ate, we worked and we did physical exercises. Only a few hours during the day or the evening were dedicated to leisure activities, such as group games, or watch movies. I kept a diary of those days on Mars, building a memory that will stay with me forever.



When do you think we will be able to get people to Mars? Do you think Elon Musk’s prediction of 2024 is feasible enough?

There are still too many open questions on this subject, and on top of everything, everyone in the space business knows that it is full of delays all the time. But, on the other hand, we saw how SpaceX and NASA launched astronauts during the COVID-19 pandemic, so everything is possible. Before sending humans to Mars in 2024, Elon Musk shall send the cargo 2 years before, in 2022. In 2022 we will know then if he will be actually able to send humans to Mars by 2024. Personally I hope so.

You are System Operations Engineer at EUMETSAT – what are your main tasks/what is your typical working day like?

I work in the Operations Preparation team for future missions, specifically for EPS-SG. The most beautiful part of my job is that there are not routine working days: when preparing a mission your tasks evolve continuously. Until now I have focused on the definition of Operational Scenarios populating the Reference Operations Plan (ROP), and by the end of this year we will start the Operational Scenario Validation (OSV) campaign, which will last for a few years. This is an exciting phase of the job, because everything that was written on paper over the last years, will now “become real”: the engineers will use the systems simulating operational scenarios, develop procedures and ops guides. What I love the most is the collaboration between teams, everything is linked and somehow dependent from something else.

Where does your love for aerospace and engineering come from? Is there anyone or anything that inspired you into this field?

Probably it was the fact that since I was a kid, my parents made me travel a lot, and I loved the idea of a plane flying in the air, and I always imagined how it would be to fly myself, like astronauts in microgravity. So I started to be curious and interested in the space field, and who doesn't love astronauts? But, while growing, I kept the dream with me, it became a passion and a job. Many people inspired me during my life, but Umberto Guidoni was definitely the one that I have always admired the most and that played an important role in my space career, being the first Italian, and European, to visit the International Space Station.



You left Sicily to travel first around Italy for your undergrad and master studies – Pisa (Italy), San Diego (California), Wuerzburg (Germania), Kiruna

(Svezia), Tolosa (Francia), Forli (Italia) and Roma (Italia), and then you took the leap and now you are a real world citizen, or universal citizen one might say! It takes a lot of focus, strength and determination, so what would you suggest to someone who wants to follow your path?

I had many exciting adventures during my studies, travelling the world, learning not only about space engineering, but above all about life. While everything seems wonderful from the outside, there are many challenges, and my advise to someone that wish to do the same, is to definitely jump on that plane and explore the world, but knowing it will not be always easy. Moving to new cities, not knowing anyone, and interacting with people with a totally different culture, may be difficult and lonely at first. But if you have a strong passion and you love the reason why you are there, that's what makes everything beautiful again. One important tip is to be able to adapt easily. Don't hang on your past and your habits, but explore new ways of living, new friendships, new cultures. I remember when I arrived in Kiruna, in February 2011, and up there, in that time of the year, there were only about 3 hours of sunlight a day, and the temperature was 45 degrees below zero. It was definitely a shock in my life, but then when I looked up in the sky and I saw the Aurora above me, I couldn't help but smile.

And for all the young girls who want to work in the STEM field, who see more male role models compared to the few women (even though they are increasing!), what would you say?

Of course I notice for example that the space work-environment is still very male-oriented; it happens for me to be in meetings with 15-20 people and I am the only woman. It can be challenging but in the end I always say there is no difference between the brain of a male or a female engineer. Things are changing quickly anyway, there are more women in STEM, and industries are keen to hire more female employees. I expect in the next 5 to 10 years, when the older generation will retire, to have a 50/50 percentage of male and female employees' composition in STEM industries.

And to conclude, what do you look back at and think “I wish my younger self would have known this was possible?”

There are many things that changed over the years; the world evolved, and with it the technology. Nowadays we are always connected, everywhere and every time.

When I was a kid I did not have a cellphone nor a laptop or internet, and I remember a funny anecdote which happened on mother's day when I was in middle-school: I went with a friend after school to buy flowers for our mothers, but this meant we

came home much later than usual. There was no cellular and no whatsapp to tell my parents that I was going to be late, and when I arrived home I totally ruined mother's day surprise because my parents were very angry and worried about me not coming home. That was the last time I went to buy flowers for mother's day for a very long time... Looking back, I laugh about what happened, and I definitely wish

my younger self would have known about cellphones, internet and whatsapp, and the possibility one day to send a text or voice message anytime and from anywhere.

I wish my younger self would have known that one day I could even monitor satellites while seating on the sofa of my apartment.

ABOUT THE AUTHOR:
LUCIA MASCOTELLI



Lucia is a researcher in experimental fluid dynamics at University of Bologna, and she carries out her research on wall-bounded high Reynolds number turbulent flows at the CICLoPE laboratory. She is the co-founder of EA Forli-Bologna and the coordinator of the Communication WG. She is passionate about communicating science, make it accessible to everyone and she works to make it a more inclusive place by promoting gender equality.



Interview to Federica Angeletti

ABOUT THE INTERVIEWEE:
Federica ANGELETTI



Federica Angeletti is currently pursuing a PhD in aerospace engineering at Università "La Sapienza" in Rome. She masterfully combines her passion for space and gender equality: in 2018 she was awarded the Amelia Earhart Fellowship, a prize given annually to 30 women around the world pursuing a PhD in aerospace-related sciences. She is also an active member of the association Women in Aerospace - Rome.

Interview by Lucia Mascotelli

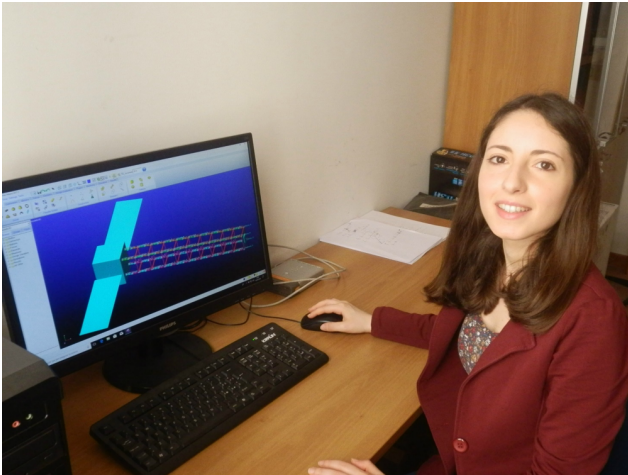
I know your research is part of a study in collaboration with big names such as Thales Alenia Space, can you tell us without being too specific, what are you currently working on?

Yes, of course! My PhD research is currently focussing on advanced active vibration control strategies for large space antenna structures, which means I am investigating how to improve pointing and stability performance for those satellites equipped with wide flexible scientific instrument (for instance, you may think of Earth Observation (EO) missions hosting large SAR antennas or radar altimeters to monitor the height of sea surface, agriculture, etc.). Nowadays, there is a tendency to narrow pointing requirements to improve the quality of EO acquired data, while reducing the mass and increasing the surface of scientific payloads. If no precautions are taken, this may often lead to dangerous interactions between the flexible structures and the attitude control system dynamics, where uncontrolled oscillations of the flexible parts jeopardize the mission objectives. A possible solution, other than classical attitude PID controllers with filters, consists in implementing vibration control dis-

tributed systems (for instance, based on active materials as piezoelectrics) to actively rigidize the antennas and suppress undesired elastic vibrations. In this context, I am now working on developing an end-to-end architecture to design both attitude and vibration control systems suitable to generically shaped space antennas, starting from the structural project, to the optimal placement of a network of distributed actuators/sensors and concluding with the control synthesis task.

Moreover, I want to stress that I had the possibility to address several research subjects during my PhD and this is perhaps the thing I most appreciated in my university experience! For instance, I am also passionate about machine learning, so I had the occasion to study learning-based control strategies for improving the deployment precision of multibody space structures and for controlling EO satellites performing repetitive attitude manoeuvres. Lately, I have been involved in researches implementing Deep Learning algorithms to control space flexible robotic arms and to perform damage identification in large space structures. Therefore, if you feel like engaging in challeng-

ing research and exploring fields of study that you find fascinating, you may want to pursue a PhD!



Why did you decide to pursue a career in aerospace engineering? Who inspired you?

I have always been fascinated by the night sky and I was genuinely impressed the first time I learned as a child that there were not only stars, planets and natural objects in space, but also something made by humans. I immediately believed this was one of the most curious and interesting things I had ever heard of and I started wanting to know more and more about it. Lately, I was determined to contribute to space activities, being also, in a figurative way, a solution to be a little closer to my beloved starry sky. I am not sure I have been inspired by someone in particular, as my family always supported my enthusiasm, but I do remember my uncle printing and giving to me a *Lectio Magistralis* on interstellar travels when I was 12 years old. I could not understand all of it of course, but that gift really boosted my enthusiasm for space and renewed my interest in a career as space engineer. I believe all these little gestures can gradually make the difference.

Who are your role models now?

Lately, I got in touch with brilliant people from different Italian aerospace-related associations. They are individuals embodying what is for me a role model: someone who had an impactful and inspiring career in different areas of the Italian aerospace sector, while fostering with their actions and feelings a sense of inclusive community around them.

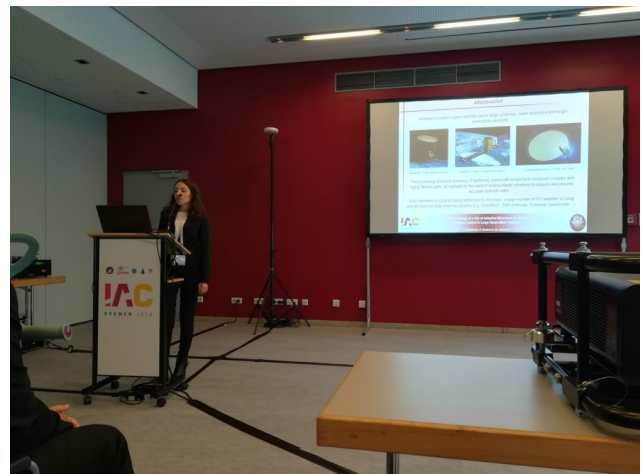
After such a brilliant career in academia, where you won lots of prizes and awards for your work, do you see yourself there or you would like to transition to industry?

Currently, I see myself keeping on working in a research-related environment, being academia or a RD department of an industry. What I value the most in my future is the possibility to pursue my interest

in studying space structures and multibody systems. Having a curious and proactive attitude, I have always been willing to learn something new and to challenge myself in new ways, so I long for a working environment that will allow me to do so.

Speaking of awards, in 2018 you won the Amelia Earhart Fellowship, a scholarship annually awarded by Zonta International to 30 women around the world who are pursuing a PhD in aerospace-related sciences. What did it mean to you and why is it so important to you to be an active part of Zonta, as you are now also a member of the Zonta e-club of Italy?

Of course, it has been a privilege for me to have been awarded a Zonta International Amelia Earhart (AE) Fellowship. When I received the award, I felt committed to contribute as much as I could to the progress of modern space activities, and felt willing to carry out my research project thanks to the Foundation support, which effectively allowed me to improve the quality of my work. Moreover, I sincerely wanted to be part of an association that is providing invaluable assets to the education of women around the globe, not only by promoting awards worldwide, but also by carrying out campaigns aiming at ending child marriage, reducing poverty and supporting post-primary education in Madagascar, also in cooperation with UNICEF. Therefore, I asked to become a member of the Zonta e-club of Italy, and I was more than pleased to meet such an interesting and skilled group of women! We aim to create an online community to share events and news, support Zonta International and promote participation in Zonta's awards and fellowships as well as award ceremonies in different Italian universities! For instance, last January, we succeeded in organizing the first joint ceremony for AE Fellowship WIT Award (Women in Technology) 2019 at Italian national level at the Engineering Faculty of Sapienza University of Rome!



Your activism for gender equality does not start or end there, as you are a member of Women in Aerospace in Rome.

Indeed, I am very honoured to be part of the Committee of the Rome Local Group of Women in Aerospace Europe (WIA-E). Our local group was founded in 2013 as a network of women and men in the area of Rome promoting an inclusive and diverse environment in the Italian aerospace sector. I started being involved as a student in their activities in 2016, by taking part in local events (as museum visits, aperitifs, etc) and attending interesting seminars and workshops on space-related topics. Now, I am responsible for our Instagram account and I contribute to various initiatives supporting gender equality: during the lockdown, we started organizing several online webinars having guests who had a remarkable career in the aerospace sector. Among them, we proposed an interesting online Round Table on the current situation on gender equality in the Italian aerospace field, by inviting three women and three men from both industry and academia. The video is now available on YouTube in the Women in Aerospace Europe (WIA-E) channel.

You have a very scientific approach to this very delicate subject. For instance, recently you sent a survey to investigate the personal perception about gender inequality in the aerospace fields. Where did it stem from and can you reveal a bit of the first results?

In 2017, the WIA-E Rome Local Group started to cooperate with the Japanese association UNISEC-Global to promote activities related to gender equality in STEM and Aerospace fields. Since then, I have become part of the Gender Equality Research Team of WIA-E Rome, which is now composed of Alice Pellegrino, Marzia Zucchelli, Aloisia Russo, Alessia Gloder, Maria Giulia Pancalli, Eleonora Vestito and me. Since 2019, our local group and the Japanese association of women in aerospace (Sorajo) are working on a cross-cultural analysis of the Italian and Japanese

Aerospace sectors to understand individuals' perception of Gender Inequality and the possible impact on the considered country and culture. In this context, a survey investigating how female and male individuals in the Italian and Japanese Aerospace fields perceive gender bias was shared this summer. The preliminary results confirmed a relevant correlation between some of the collected answers and the gender of the respondents, which means individuals may actually perceive a gender bias while working/studying. The results will be officially presented at the IAC-2020 (an international online conference with no registration fees) with the paper "Cross-cultural analysis on the Gender Equality Perception as a driver for the future Space Workforce development". Later, the outcome of the survey will be also shared on WIA-E Rome social media.

Timeline of 2017-2020 #GenderEquality Research Activity



To conclude, what would you say to a young girl/boy that wants to follow a path similar to yours?

I would cite the words of a Nobel Prize winner, Gertrude B. Elion, when she said: "Don't be afraid of hard work. Nothing worthwhile comes easily". But I would also add that, if you are passionate about aerospace, you wouldn't even notice you are working so hard!



Articles from EUROAVIAns



THIS section gathers three articles from EUROAVIAns, telling us about the interesting projects they are involved with and past exciting events they were part of. In the first article, Marzia Corsi will tell you how synthetic vision and augmented reality technologies are improving the situational awareness in air traffic control. Then, Francesco Giani will show you how XSun is using solar energy to fly their drone, featuring an incredible video of the first long solar flight. We will finish with the article from EA Terrassa, virtually taking you with them in the trip to Bologna they did this winter.



RETINA - Resilient Synthetic Vision for Advanced Control Tower Air Navigation Service Provision

Founded under the EU initiative SESAR Joint Undertaking (part of the EU Horizon 2020) and coordinated by the University of Bologna, with collaboration of Crida, ENAV, Eurocontrol and Luciad, the RETINA (Resilient Synthetic Vision for Advanced Control Tower Air Navigation Service Provision) project aims at enhancing sight capabilities and situational awareness of air traffic controllers in control tower through the use of synthetic vision and augmented reality technologies.

In the RETINA concept, controllers are enabled to have a head-up view of the airport traffic even in low visibility conditions since they are no longer limited by what the human eye can physically see out of the tower windows; additional information such as runway layout, flight tags, wind velocity and direction and warning detection are placed over the actual out of the window view.

RETINA investigates and exploits two different augmented reality systems namely conformal head-up displays (to coincide with the tower windows) and see-through head-mounted displays. A proof-of-concept of both systems is implemented and validated by means of human-in-the-loop real-time simulations in a laboratory environment (Figure 1); the external view is provided to the user through a high fidelity 4D model in an immersive environment that replicates the out-of-the tower view.



The results of the validation, obtained through subjective qualitative information and objective quantitative data, show how the RETINA concept could lead to an improvement of the human performance in the control

tower, preserving safety and increasing resiliency at airports to low visibility.

Even if the main benefits of the project are the improved situational awareness for controllers, the increased airport capacity and throughput, the improved flight punctuality and the reduced emissions, remarkable impacts are expected for the whole aviation system such as, financial savings for carriers and ANSP, increased safety for passengers, environmental pollution reduction, and increased resilience and efficacy for the control tower IT systems.

The results obtained by RETINA consortium will feed SESAR's Wave 2 Solution 97 "HMI Interaction modes for Airport Tower" that will bring the RETINA concept to TRL 4 by the end of 2021.

by Marzia Corsi

ABOUT THE AUTHOR:
MARZIA CORSI



MSc in Aerospace Engineering and research fellow at University of Bologna for the project "HMI interaction modes for airport tower", carried on in the framework of the DTT (Digital Technologies for Tower) project. Co-founder and first president of EA Forlì-Bologna, joined the AS WG in 2017. After two years in the BoP unit, she took a step forward in the WG and became the Coordinator.



XSun, the energy independent and autonomous UAV

Introduction

In the aviation history the attempt to use electric power for flight vehicles is ancient. The pioneers of this technology were the French with the hydrogen-filled dirigible France in the year 1884. In contrast with this early use, the electric power engines were abandoned leaving the place to the more powerful gasoline engines. New research in the field of electric propulsion became interesting again with the development of photo voltaic technology in 1954. However, for the first solar flight the history had to wait until 1974 when the model Sunrise I flew 20 minutes at an altitude of around 100 m. With this result a lot of engineers and investors started to work to realize the dream of eternal flight. An eternal flight means a robust multi day autonomous operation. This is possible with the solar energy. The solar powered UAV should be able to store more solar energy in the batteries than is needed during the day. In this way it can use the stored energy to fly all night and potentially do more cycles of this kind. All this can be achievable in optimal conditions. This is the mission of XSun. In the Figure 1 is shown the quality trend of the solar power gave by solar panels, the necessary flight power and the battery capacity.

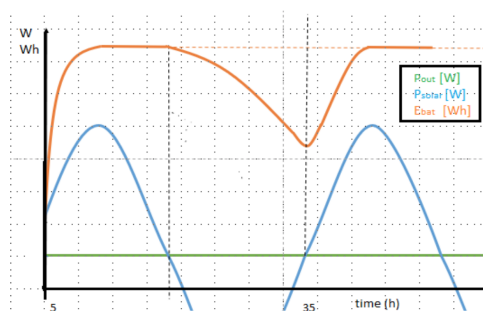


Figure 1: input (P_{solar}), output power and battery capacity.

XSun

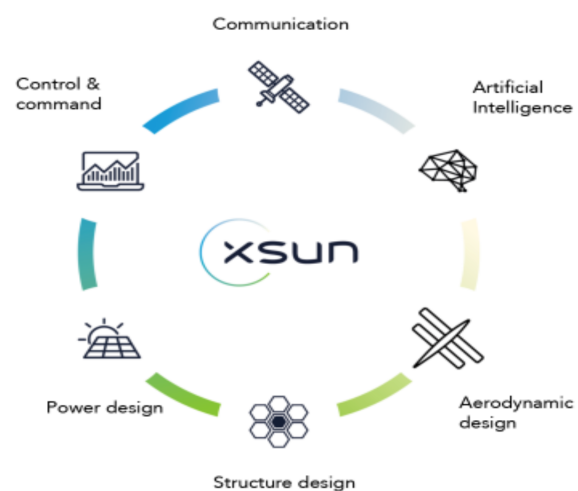


Figure 2: The main subjects.

XSun is a French start-up located in Guérande near Nantes in the Loire-Atlantique region, which has an important role in the aeronautical sector for France and the entire Europe. The company was founded by Benjamin David in 2016. Mr. David's idea is to realize a low altitude long endurance (LALE) autonomous drone powered by solar energy. The UAV should travel great distances at a low altitude for its missions. The missions cover numerous areas: surveillance, search and rescue, scientific studies, cartography, precision agriculture and smart fishing. The low altitude is necessary to give to operators a high-quality image. For the purposes, the XSun UAV could be compared to a satellite. The advantages respect to the orbiting satellites is the quality and precision of the images (without the cloud obstruction) that it can provide, a customized operativity and above all a lower complexity and cost. To achieve all the objectives, the XSun drone is equipped with photo voltaic

panels on all wing surfaces. It is also completely autonomous. In fact, for the nature of its missions (long duration) it is equipped with an auto pilot capable of driving the drone through a pre-determined path. To carry out such an ambitious project it needs to mix lots of competences and knowledge ranging from non-common aerodynamic and structural configurations to the embedded system and avionics, from energy management to the electric propulsion following aeronautical standards of competent national and international agency. Figure 2 shows the main subjects. A great technical support is giving by Dassault System which also provides computational tools and software. Other XSun's partners are: Airbus, Total and Invidia.

The drone



Figure 3: SX1.2 photo during the 7th of July 2020 flight.

The second drone designed and manufactured by the XSun team is SolarX1.2. This plane is characterized by a double wings configuration having an high aerodynamic and structure efficiency with strong flight stability. The first wing is at the front of the drone while the second wing is located at the rear and it is positioned a little higher respect to the front wing, and it work also as stabilizer. Then, the drone doesn't need a horizontal stabilizer. In fact, only the vertical stabilizers present with the rudder to control the plane in yaw. The drone can carry a larger payload, while having similar dimensions to the precursor and thus expand the range of possible missions. The payload is in the central part of the drone between the two wings to allow all camera to have the best field of view possible. The payload of the drone includes gyroscopic ball, thermal camera, lidar (digital terrain models) and high-performance cameras. Solar SX1.2 takes off with the help of a catapult and it is designed for belly landing. The majority of the wing surface is covered by solar panels and they are capable to produce enough energy for the flight and to recharge the batteries during all day long. The propulsion is guaranteed by two electrical engines positioned on the front wing. The drone and all necessary equipment can be transported with a minivan on the road or in a standard civil cargo air-

plane. This is essential to facilitate the transport and therefore the product use by the customers all over the world. Solar X1.2's first long solar flight was done the 7th of July 2020. A mission with more than 12 hours cruise in autonomous flight. In Figure 3 the drone is pictured during the flight.

My internship experience

Thanks to an Erasmus project, I did a 7-month internship at XSun where I was able to work on this excellent project under the supervision of the XSun aerodynamic engineer Andrea Viti on the aerodynamic investigation and optimisation of the drone. In particular, I investigated the aerodynamic performance of the drone with a particular focus on the wing efficiency. Figure 4 shows a CAD render of SX1.2

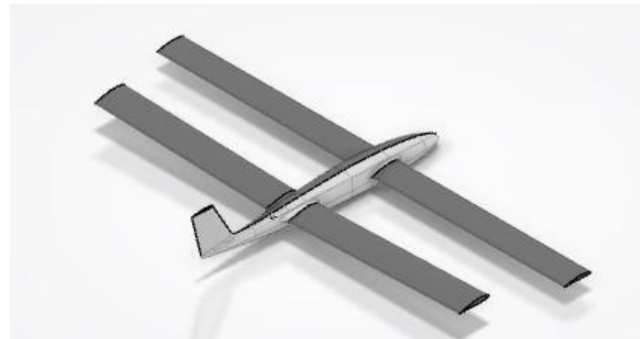


Figure 4: CAD render of SX1.2.

I have carried out multiple CFD analyses to optimize the main geometry parameters in order to find a balanced efficient configuration (Figure 5). I also described the aerodynamic advantages of the new architecture compared to a classical airplane configuration.

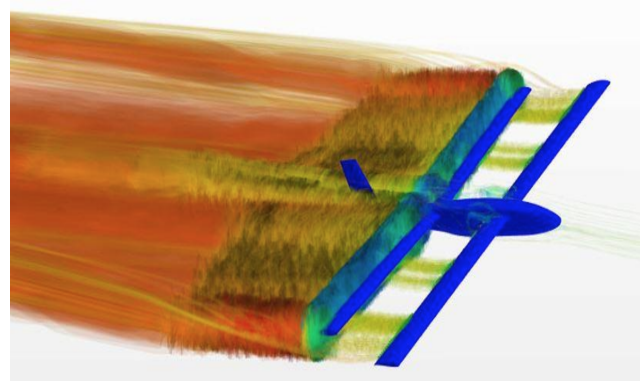


Figure 5: CFD scene.

I also carried out numerous internal aerodynamics studies to investigate on payload ventilation that consists of numerous heat sources. So, I was involved in the design of opening sand scopes on the fuselage to solve the thermal problem with meeting aerodynamic and structural needs. The experience at XSun involved me in a motivating atmosphere to say the least. Thanks to my colleagues I immediately felt comfortable and integrated into the team. In this pleas-

ant climate I was able to make use of the knowledge learnt at the university by turning them into skills. I've seen first-hand what it means to solve real engineering problems and meet demands within predetermined deadlines. The difficulty to switch from theory to practise pushed me in acquiring sensitivity to design parameters and of the results, while broadening my knowledge of drone design process. I strongly recommend this kind of experience. It helps students in the transition from University to industry. Besides that, I found fascinating to deal with a different culture, different language and way to do.



Figure 6: QRcode: first long solar flight video.

by Francesco Giani

ABOUT THE AUTHOR:
FRANCESCO GIANI



Francesco Giani is currently an aeronautic master's degree student at the University of Pisa. He says "My passions are aeronautics and aerodynamics. I hope I can turn my passion into my job."



EUROAVIA Terrassa's Trip to Bologna

THIS last winter, the student association EUROAVIA Terrassa organized a 5-day trip with the intention of exploring the world of motorsports, and the place chosen to do so was one of the most famous Italian cities in this field, Bologna.

The first day gave us the opportunity to get to know each other while visiting the city centre of Bologna. There were a lot of new faces due to the great success of the activity so it was important to do some team building activities right at the beginning of the trip.

The next day we woke up early to catch a train heading to Forlì, where the Aerospace faculty of the Università di Bologna is located. It is worth mentioning its incredible facilities where many interesting projects take place, such as the virtual reality lab and or the construction of a mini satellite. They also had a combustion engine and a composite materials laboratory.



Once we had finished the visit, since we were near Imola, one of the most known Italian towns in the world of Formula 1 and motorsport in general, we were able to take a walk around the surroundings of the Autodromo Enzo e Dino Ferrari. In the racetrack, we visited the tribute to Ayrton Senna, one of the best ever drivers in the history of Formula 1, who tragically lost his life in the very same circuit.

We woke up even earlier the third day to meet the tight schedule of the most appointed day of the whole trip. One of the most awaited visits was the one to the Dallara factory in Parma. This company designs and builds race cars chassis for some world-known championships such as Formula 2, Formula 3, Indycar, Formula E and many others. In the first part of the visit we saw in first person how they design and build the race car components that later are used by many motorsport teams. One of the main attractions was their simulator, used by the own company to test new designs, and even by some other professional organizations like the Haas Formula 1 team to train and study the driving of their drivers. The second part was less technical and more visual as they guide us through their museum, where we were able to see some cars which are part of

Italian automotive history and have won in many worldwide prestigious competitions.



After lunch, to end a day dedicated to race cars, we headed to Maranello, where the Ferrari headquarters are located. There we visited the Ferrari Museum and the Pista di Fiorano, their own test track. The great importance of this manufacturer was reflected in their huge automobile collection, both street cars and race cars, where we needed more than two hours to complete the visit.



The fourth day, we gave ourselves the luxury of resting a bit as the intensity of the past days tired us a lot. At noon, we met again with some of our colleagues from EUROAVIA Bologna, who joined us to eat lunch by the city. After eating, we caught a bus heading to the Ducati factory. As we did in the Dallara factory, we divided the tour in two sections. First, we did a chronological guide through the company's history with the help of many of their models exposed in the museum, with some incredibly special ones as this company has been active for nearly 100 years. Next, they took us to their factory, where we could see the many components that make their motorbikes unique and the great organizing capacity needed to sustain a big production line, as

we were able to take a walk around the factory surrounded by Ducati employees who work in many different components, from assembling the engines to the last quality tests.

To sum up this article we would like to highlight the great opportunity which is being a member of EUROAVIA, as it gives you the chance to live many experiences like this trip, that motivates us as engineering students to keep working dreaming about being part of one of this companies in the near future.

by AS Terrassa

ABOUT THE AUTHOR:
AS TERRASSA



EUROAVIA Terrassa was founded in 2006. It is based at the aerospace faculty of Universitat Politècnica de Catalunya BarcelonaTech, which is located 30km away from Barcelona. Nowadays the association has 137 members and apart from organizing courses on engineering software, visits to engineering companies and conferences with aerospace engineers, some of its members also work on projects about rockets, drones, high altitude weather balloons and rovers at an association called UPC Space Program.



Grasping the unknown

WE are entering an aviation industry that is more complex than ever. Every 15 years, the number of aircraft and passengers doubles. While these are indeed good news for the stakeholders of the industry, this also implies additional fuel consumption, emissions, and noise. Only if we manage to assure sustainable growth, aviation can further improve our lives and connect more people.

However, this cannot be solved by just one technology. Just to name a few, we will not only need electric and hybrid propulsion, but also bio-fuels or alternative fuels along with modern aerodynamic structures. Further, we must not forget the rapidly increasing potential of data collection and analysis from entire aircraft fleets. Merging these innovations means mastering unparalleled complexity on our way to a greener future.

There is no doubt that these ambitious goals require extensive measures by the aviation industry. In addition, we have to deal with the still unpredictable but surely enormous consequences of the current global crisis, where even the largest companies are struggling and the best graduates are facing unemployment. With airlines already projecting operation of smaller fleets due to significantly lower air travel after the crisis, the budgets for the conventional aircraft manufacturers are certain to be downsized.

Nevertheless, there are already creative solutions to compensate for the layoffs and we, as a community, shall continue to focus on the mentioned goals. Concluding from discussions with experts and representatives of the industry, from our point of view, there are some concepts standing out. While it is predicted that zero-emission technologies will take some more time in development and implementation, they will certainly shape the future of aviation as a whole. We believe that key areas will be urban air mobility, electrification of short-haul flights, and autonomy. These avant-garde technologies will greatly improve the efficiency of aircraft operations and also the general safety of passengers and cargo. Yet how can we face what we collectively do not know?

The European community needs to join resources creating cooperation between industry and academia, involving the next generation of students. EUROAVIA is the European Association of Aerospace Students and represents the interests of over 2200 members from 42 different universities in 18 European countries. Its Affiliated Society (AS) Aachen is a founding member of the association and represents one of the leading engineering institutions in Europe. The RWTH Aachen University has proved itself among the largest innovators in modern flying vehicles ranging from the novel small rotorcrafts to QSTOL (Quiet Short Take-Off and Landing) aircraft. The faculties also thrive towards constant innovations in remotely controlled aircraft and UAS (Unmanned Aerial Systems), while continuously working on improving the conventional flight technology.

AS Aachen is the voice of all the passionate students at the RWTH who want to contribute to reach the goals of modern air transport set by the European Commission. Most of our members are conventional engineers, but the future of aeronautics will not only be mechanical but also digital. For example, new aerodynamic structures like eg.SAT's box wing configuration need faster and more complex simulations. Gathering and analyzing an unprecedented amount of data will allow us to find new patterns and improvements, but this requires insights into novel fields. Most engineering students are not confronted with present-day advanced technologies in their studies such as Quantum Computing or Artificial Intelligence. It is therefore important to equip future professionals with these tools by including these topics in the curriculum or establishing and participating in relevant multidisciplinary workshops. Grasping the unknown can be challenging, but the aerospace industry is a dream factory. By exploring new territories, we can realize these dreams and achieve the goals and challenges facing our industry.

by Vandit Bhayani, Karl Funke, Saurabh Sharma, Cem Uyanik from AS Aachen.

ABOUT THE AUTHOR:
AS AACHEN



Aachen is the city where the idea of Euroavia originated from and where it was founded back in 1959. Being one of the founding members of Euroavia, AS Aachen was founded in 1959 and remained active member since then. Currently they have over 50 members and more than 60 alumnis. Most of them are studying mechanical and aerospace engineering. On the local level they regularly organise official meetings and somewhat “less-official” get-togethers. Often they organise visits to different companies like DLR, airports and air-shows.



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Abbreviations

AS	Affiliated Society
WG	Working Group
LB	Local Board
IE	International Event
FoWo	Formation Workshop
ETS	EUROAVIA Training System
TNT	Train New Trainers