



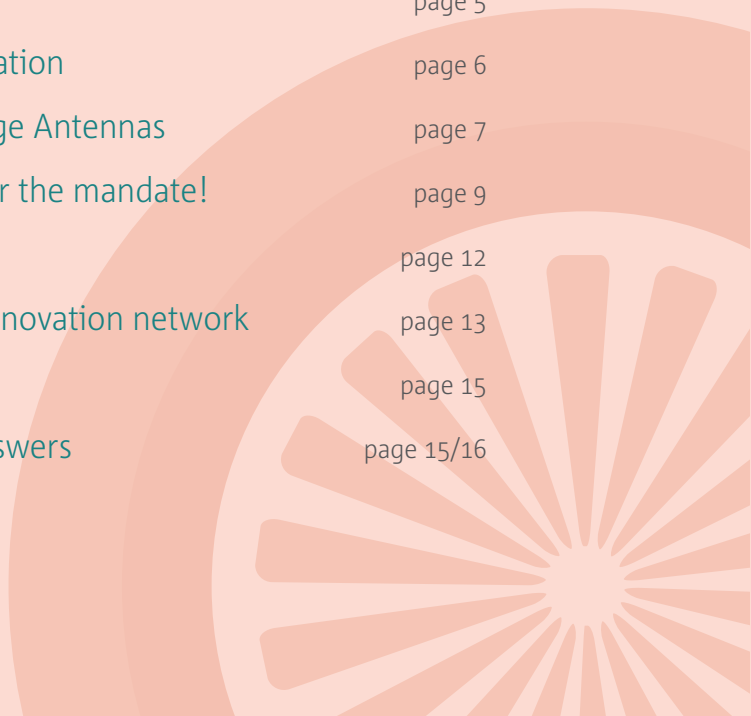
**EASA**  
European Aviation Safety Agency

**SEASONAL  
TECHNICAL  
COMMUNICATION**



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Dear Readers,

I am delighted to present the second edition of our e-STC Newsletter targeting Supplemental Type Certificates designed by EASA Large Aeroplanes Certification Department.

With our Seasonal Technical Communication – e-STC Newsletter we aim to offer a unique platform to share information, outlooks, and updates from the Authority perspective as well as to share and receive information, feedbacks, opinions and queries from the STC Holders community.

Taking your interests into consideration, this additional communication channel can promptly deliver the technical information you need to know.

The Year 2018 has seen the Entry into Force of the FAA/EASA TIP rev 6 weaving further ties between the US and European aviation stakeholders. This is a great achievement and a great challenge at the same time. This specific topic will be one of the many that will be presented and discussed during our 2018 STC Workshop.

### **Strong Industry– Safe Product**

For this year's STC Workshop taking place in Cologne, we expect the European/international STC Holders community and the Certification Aviation Authorities to intensively share knowledge and debate about important STC related subjects.

We expect this event to strengthen the European STC applicant's knowledge, to the benefit of all safety related aspects. In this respect we welcome this year, the numerous FAA representatives for their participation to the STC workshop.

At project level, certification can be an expensive endeavour. While one of our mission is to ensure safe air travel for the EU citizens, another mission is to contribute to the European industry's success by providing support to our applicants. Several sources of information and opportunities for exchanges with our staff are provided by the Agency, with the aim to reinforce the applicant's Design Organisation competences.

### **Efficient Certification – Higher Competitiveness**

In the spirit of the FAA/EASA TIP rev6, validation processes are in many cases simplified and competition will surely increase on both sides of the Atlantic. For all stakeholders involved in the design of STC, high level of competences and process predictability mean efficient certification process and better in-service experience for the airlines. This virtuous cycle starting with a better EASA/applicant relationship is increasing the competitiveness of the European industry.

I kindly invite you to send your queries in case you believe that our system can be improved. Since EASA's creation we have changed many processes but, we acknowledge that we might still have some areas which need improvement. The best way to reach us, independently of your participation to the EASA workshops is by sending an e-mail to **STC\_news@easa.europa.eu**.

### **In This Edition**

For this edition of the newsletter, we have chosen the following topics:

1. STC Workshop information
2. Technical subjects – Installation of large antennas and ADS-B
3. New regulations- New Basic Regulation
4. EASA Initiatives- Innovation network
5. Upcoming EASA events
6. Questions & Answers

Enjoy reading the articles and come to see us during one of our workshops!

Sincerely,  
Nicolas Duprez

### **For this second edition of the e-STC Newsletter special thanks to:**

Stephane VAUBOURG (e-STC Newsletter coordinator - Avionics Expert)

Gabriele CARDONE (e-STC Newsletter technical support)

Emmanuel LICHERON (Structure Expert)

Johan NYBERG (Project Certification Manager)



## INSIDE THE STORY

Nicolas Duprez has been working in the world of STCs for EASA since February 2012 as EASA Project Certification Manager after an initial career in the aeronautical industry.

After several hundreds of STCs certification/validation related to various aircraft design changes (such as head of state interiors installations, Electronic Flight Bags installations or new winglets concepts) he has gained a solid experience in dealing with industrial partners.

As Project Certification Manager he is responsible for the B737 standing certification team working on STCs and on changes from the aircraft manufacturer.

He is also one of the PCM acting as focal point for some STC applicants, ensuring a flawless communication between the applicant and the several EASA certification teams.

Nicolas is passionate about mechanical engineering, “thinking out of the box” on many project with the applicant is a daily exercise.

Despite a much standardised aviation world, Design Organisations applying for STC have proven to be extremely creative. This is one of the great strengths of aviation.

Thanks to the flexibility and dedication of all EASA staff, the Agency has taken up many challenges posed by complex projects.

We will not get you the moon, but we can help you get there!

### Did you know...

...that EASA has established 53 Working Arrangements with many countries throughout the world, ensuring that your business is supported by predictable validation processes?

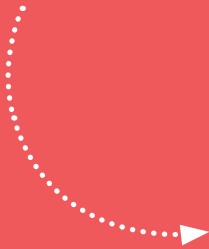
# WORKSHOP INFORMATION

During the two days of the EASA STC workshop we will provide you with regulatory updates and detailed technical presentations in areas of interest for applicants. Our common objective is to enhance communication and ensure fruitful cooperation that will lead to a more efficient processing of STC applications.

The discussions will encompass various regulatory/rulemaking, certification, technical topics such as:

- **Technical:** Avionics new NAV part of CS-ACNS, Lithium batteries, Technology for Safety, Questions & Answers from the DOA Workshop, Maintenance and operational considerations, Additive manufacturing & composite materials and our shared electronic platform “SEPIAC”.
- **Regulatory/Rulemaking:** updates on STC and cabin safety, AML Certification Memorandum.
- **Certification:** LOI, STC validation process with foreign authorities, EASA changes embedded in Non-EASA approved design, Military application in Civil Certification, CAW aspect for STC, Synergy project, rotorcraft STC and OSD.

Furthermore, this year the format of the STC workshop will include also side industry session at the end of the 1<sup>st</sup> day to allow debates and technical discussion with PCMs, DOA TLs, International Cooperation Policy Officer, NAAs and Foreign Authorities.



Watch the workshop

on  YouTube

If you missed the STC workshop or you want to watch again an interesting presentation you can visit our EASA YouTube channel [here](#) (go to → Playlists)



# INSTALLATION OF LARGE ANTENNAS

Even if nearly each major Airline proposes on board internet access. Wi-Fi on planes is just at the beginning. Today, a small antenna on the roof of the device can certainly offer - without interfering with the piloting - an internet connection to passengers even after takeoff.

But if you need more broadband, a small antenna is not enough and then a large(r) antenna becomes necessary, requiring a big(ger) radome.

Therefore many OEMs and DOAs apply for the installation of a “large antenna” on aircraft fuselage.

A short definition: an antenna is considered as “small” when the antenna installation is confined within one skin bay (two adjacent frames and two adjacent stringers).

Several disciplines are affected by the installation (and activation) of a large antenna, such as Flight & Performance, Structures, Electrics, Environmental Control Systems...

This can depend on the different configurations of the aircraft, on the location along the fuselage... some JAR / CS-25 requirements may be differently affected (e.g. airflow, ice accretion, bird Strike, impact on the empennage, penetration through pressure bulkheads ...).

In addition to the above, some other aspects have to be considered, such as Metallic vs. composite, baseline structure and the Interrelationship with baseline structure, modifications and repairs, the location and the final installation.

## Expert TIPS

The installation of a large antenna system is for sure a major change.

As the technology evolves, new antennas will be developed, possibly smaller and with better capacities. Therefore it may be tempting to classify as minor the replacement of a smaller and/or lighter antenna within an existing radome.

Applicants have to be aware that some aspect like vibration (up to buffeting & flutter) may be worse as the new system eigenfrequency will be different. But also other characteristics could be affected. Therefore such a replacement is more than *“open the radome; remove previous antenna; install new antenna; close the radome”* and it requires further investigations, from design review, via analysis up to possibly new flight test.

Installation of Large Antenna in a Large Aeroplane is a Major Design Change for EASA. Be sure to know the prerequisite conditions (e.g. damages, repairs...) and the operational context in order to perform the right analyses especially regarding FDT as well as ICA, with the right inspection methods and intervals.

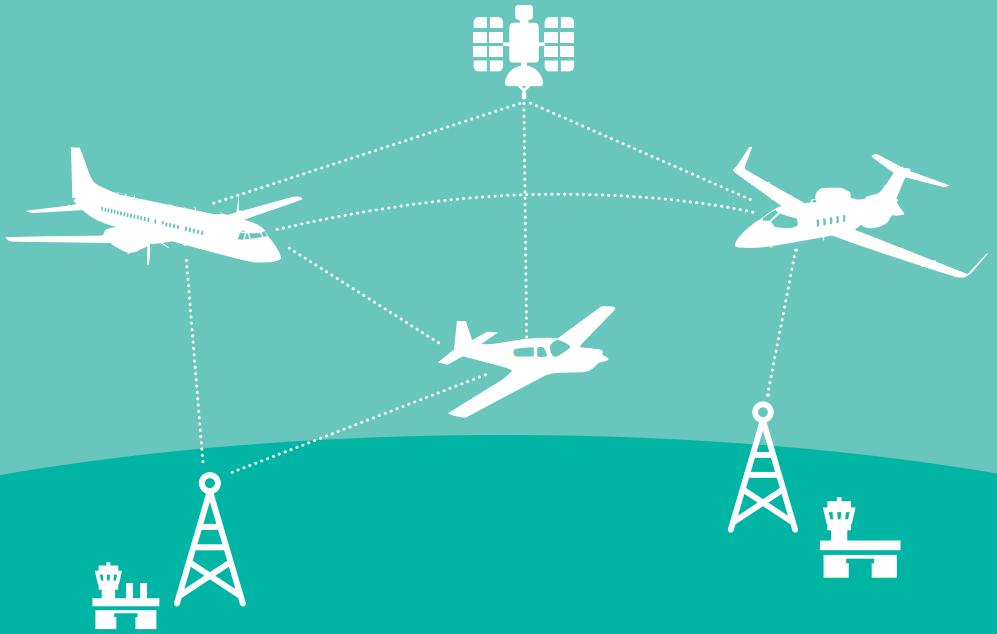
Splitting a large antenna project in two parts: the installation and later on the activation, could operatively make sense in order to allow the aircraft to leave earlier the maintenance facility.

It has been determined, that Vibration and buffeting / flutter excitation could be caused at radome location and at the empennage through a flow separation at the antenna radome and subsequent propagation of non-laminar flow. Consequently flight test is typically required, except if a validated and approved analysis method is available. In other case a validation is done with a flight test up to  $V_{MO}/M_{MO}$ , with an extrapolation to  $V_D/M_D$ .

Also some design features are not contained in JAR / CS-25 requirements or need a specific showing of compliance. For a structural point of view two generic CRIs are raised on large antenna projects. The CRI “Large Antenna Installations” (Means of Compliance / Interpretative Material) ([Click here](#)) as well as one “Vibration / buffeting compliance criteria for large external antenna installation” (Equivalent Safety Finding).







# ADS-B: ON TRACK FOR THE MANDATE!

## What is ADS-B?

Automatic Dependent Surveillance-Broadcast (ADS-B) is a system broadcasting, without the need for action from the pilot or any request from ATC, that provides an enhanced set of aircraft surveillance data to Air Traffic Management (and potentially to other airplanes).

Relying on a Mode S 1090ES transponder (ETSO-2C112b), GNSS ( (E)TSO C-129(), (E)TSO C-145()/C-146()), and the deployment of ground-based surveillance systems, the system significantly improves the accuracy of aircraft parameters (e.g. position, track, speed) compared with the data from existing land-based radars. That will allow Air Traffic Controllers to manage safer aircraft separations and to provide more efficient routings, resulting in a reduced environmental footprint.

## What is the ADS-B mandate in Europe?

Commission Regulation (EU) No 1207/2011, of 22 November 2011, lays down requirements for the performance and the interoperability of surveillance for the single European sky. From 7 June 2020, all aircraft that weigh more than 5 700 kg, or have a max cruise speed greater than 250 knots, will need to be equipped with ADS-B capabilities to be operated in European airspace.

This means that by June 2020, a huge fleet of aircraft needs to be retrofitted. That represents a great business opportunity for numerous STC applicants who have experience in avionics installations. However, an ADS-B installation is much more than a “simple” change of transponder, and it may not be as easy to handle as it might initially appear.

## What about certification?

Installation of ADS-B capability to comply with Commission Regulation 1207/2011 is considered to be a STC or major change.

EASA relies on compliance with “Subpart D – Surveillance” of **CS-ACNS** to demonstrate that the aircraft fulfils requirements of the Commission Regulation. Beyond the obvious compliance demonstration required with the 1090ES ADS-B requirements, the impact on the CSACNS ELS/EHS requirements has to be evaluated. Credit may be taken from the pre-modification installation, provided it has been shown to be compliant with the CSACNCS ELS/EHS requirements (the requirement for antenna diversity is usually a good example). A compliance matrix with CS-ACNS Subpart D attached to the certification data would be a simple and efficient means to support the discussions.

The applicant has to approach the certification by considering the “end to end” ADS-B system (e.g. including sensors and control panels), and not solely the installation of the Mode S 1090ES transponder. That may present challenges, especially when dealing with installations on legacy products, where the Applicant may have difficulty in obtaining the data necessary to satisfy the CS-ACNS requirements (e.g. reliability figures to support the continuity requirements).

## What about validation?

Deployment of ADS-B is a worldwide effort, and it is not only European airspace that will be impacted. Numerous countries have issued mandates similar to the EU Regulation.

In particular, applicants who wish to certify their ADS-B out installations so they can also be validated by the FAA, have to consider FAA 14 CFR § 91.227 (relying on FAA AC 20165()). Appendix J of CS-ACNS - Subpart D provides comparisons between CS ACNS.D.ADSB and the FAA AC 20-165A requirements. One major difference is that, as the AC 20-165A requires a flight test, whereas the CS consider that ground testing is sufficient. A demonstration of compliance with AC 20-165() also has to be submitted to EASA as part of the certification dossier, as EASA will perform the compliance finding on behalf of FAA.

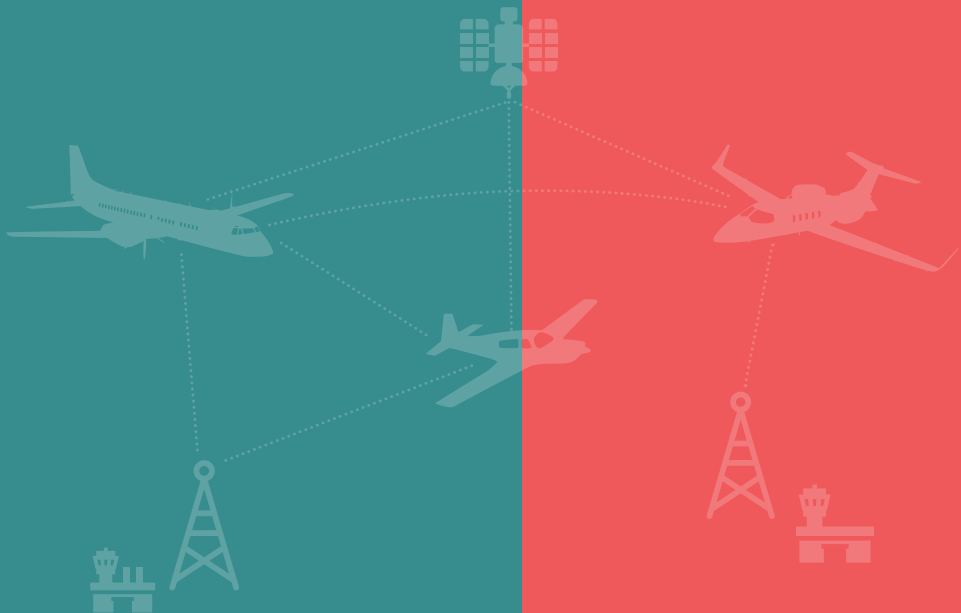
## Expert TIPS

Material is available on the internet that could be of interest regarding the certification of an ADS-B installation.

EASA has developed a set of FAQs related to ADS-B installations, providing considerations and clarifications on various concerns. These FAQs are available on the EASA website [here](#).

CS-ACNS stands for “Certification Specifications and Acceptable Means of Compliance for Airborne Communications, Navigation and Surveillance”, and these are also available on the EASA website [here](#).

The text of the Commission Regulation (EU) No 1207/2011, and its amendment No 2017/386, are available in all the EU languages [here](#) and [here the 2017/386](#).



# NEW REGULATIONS

## STATE AIRCRAFT AND THE NEW BASIC REGULATION

You are a DOA and outside of the hangar you have a state aircraft for which you wish to incorporate an EASA STC. Will this be possible? Yes it will, and here is why.

In order to make better use of the limited resources in Europe, the new Basic Regulation is aiming at creating a new framework for transferring of responsibilities for aviation safety. Proposed is a new possibility for Opt-in of state aircraft under the Basic Regulation. This includes aircraft which normally are under the responsibility of the EU member state, and which are typically operated by Police, Coast Guard or the military.

Already today, with the current Basic Regulation, EASA is working in the spirit of the upcoming changes on a number of so called civil derivatives aircraft and dual-use platforms. The A330 MRTT is such an example.

The EASA team is currently working on establishing the working methods that will furnish these new possibilities for the European Member States and industry.

This topic will be further elaborated during the STC-workshop in June this year. Military related activities may create potential new opportunities for the Agency in terms of expertise and resources. To be fully prepared to the future scenarios, the “EASA Military Coordination Mechanism” (EMCM) has been established aimed to:

- support the integration function for civil derivatives and dual-use aircraft
- ensure an effective support to military and industry applicants to ensure adequate and prioritized technical advice for appropriate airworthiness and safety solutions
- develop a consolidated and enriched Safety Intelligence & Performance system integrating military and state aircraft occurrences reporting for civil derivative aircraft and dual-use platforms.

The new BR is planned for entry into force by the end of this year. There might be an impact also for your organisation. To that end the Agency will establish a communication plan to raise awareness of the basic principles of “Opt-In” within the New Basic Regulation and its practical application among military and industry applicants. So please keep yourself updated.

# EASA INITIATIVES / INNOVATION NETWORK

As an STC applicant you may face the arrival of several new disruptive technologies that will significantly change the way your products are designed, certified and operated. New technologies like artificial intelligence, blockchain, digital twins, big data, and new concepts like autonomous vehicles and urban mobility are typical examples of incoming innovations that may impact your projects.

To successfully handle these changes, EASA needs as well to be prepared up front. Numerous fields of innovation will also transversally impact EASA, and they will also require us to reinforce the synergy across our domains.

EASA has already been contacted by STC applicants to discuss these novelties in the frame of STCs or Technical Advice Contract (TAC). We are glad to make the STC community aware that in the meantime EASA launched an internal initiative to anticipate how these innovations will affect our current ways of working, to identify the most efficient and safest approaches to handle novelties, and to be well-prepared to support the industry in these new challenges.

Since the 1<sup>st</sup> of March 2018, EASA has been setting up an 'Innovation network'. The primary intent of this initiative is to connect EASA staff members, in order to:

- **create synergies and stimulate collaboration across the organisational boundaries and domains,**
- **identify a reservoir of competence and experience,**
- **share knowledge, stimulate ideas, and develop EASA's competence in these different areas,**
- **conduct foresight and monitoring activities, in order to capture low signals and identify upcoming innovations.**

To make this project a reality and to amplify the network dynamics, the members of the 'Innovation network' will initially be invited to contribute to an exchange and knowledge platform, as well as to participate in a series of interactive sessions with representatives of the industry, who will present their innovation projects and activities.

To date, about 80 EASA staff members have expressed their interest and have already joined the 'Innovation network'; they will soon have the opportunity to take up these challenges with industry. Meanwhile, STC applicants may still contact EASA to receive advice in the frame of TAC using the information: [here](#)



*It is essential for us to keep up-to-date with the rapid development and introduction of new innovations. The Innovation Network will allow us to share knowledge and information across EASA, assisting us to understand and take the best approach for the certification of these technologies.*

Emily – Certification

*I very much welcome this initiative and I am enthusiastic to be part of it. From my perspective, EASA should use internally the latest technologies to be more efficient, but even more important is to be prepared to respond to the latest initiatives coming from the industry. This will demand a flexible approach on our side and we need to have, as an organisation, a good understanding of novelties such as artificial intelligence or blockchain. I hope that the EASA Innovation Network will motivate EASA staff to be current in the technological revolution that it is already here!*

Alberto - Flight Standards

# NEXT EVENTS

The yearly Product Certification and DOA workshop will take place on 30th-31th October at Maritime hotel in Cologne. It will be launched soon on EASA website. [Click here](#)

A side meeting day event is planned on 29<sup>th</sup> October at EASA premises. As in the past, representatives from STC DOAs will have the opportunity to discuss topics of common interest in the relevant community Group. A call for subjects of discussion will be launched soon on EASA web-site. Stay tuned!

## QUESTIONS AND ANSWERS

### **1) Just for confirmation: LOI only applies to major changes and major repairs on aircraft for which the DOA is not the TCH?**

No, LOI applies to all projects but an applicant's proposal is required for major changes, major repairs and STCs.

### **2) Can a DOA with low STC activity decide not to implement LOI processes and continue to operate as before?**

No, LOI will become mandatory through the amendment of Part 21 and applies to all projects but an applicant's proposal is required for major changes, major repairs and STCs.

### **3) If there is an automatic validation of (E)TSO/STC, will there still be an EASA reference and FAA reference for the same modification?**

No, only the primary certification authority's reference.

# QUESTIONS AND ANSWERS

## 4) Is there a Part 21 Light (DOA\POA) for STC holders for production of low volume STC and limited failure effects (non HAZ/CAT) planned (not only for GA)?

Yes, see rulemaking task (RMT).0018 (former task number 21.026). The “Part 21 light” concept is a concept related to the GA Roadmap Project and as such will be applicable only to the low-end General Aviation. The question seems related to STC applicable to all products, but considered as simple. This can be addressed today in the context of the actual regulation. The scope of the DOA can be limited to this kind of activity, and the limited scope would lead to a simplified investigation and surveillance activities. Furthermore, the concept of Level of Involvement (LOI) could allow the product certification team to reduce their level of involvement if the level of criticality is low and if the DOA is performing well.

## 5) Regarding the abandoned and surrendered STCs, will EASA follow the same guidelines as FAA 8110-120, especially regarding the requirements for Freedom Of Information Act FOIA?

The FAA 8110-120 does not apply to EASA. Even if there is no extensive series of examples regarding surrendered or abandoned STC, the Agency principle, similar to the TC case, is that in case of surrendered STC, the Agency keeps the responsibility on the TCH holder and will ensure, in the framework of the Continued Airworthiness, the highest level of safety of the products. The EASA role is strictly limited to CAW oversight.

Moreover, EASA is not bound by the FAA Guidelines 8110-120, regarding FOI. EASA is bound by regulation (EC) 1049/2001 on access to documents, which foresees that any member of the public with residence in the EU (but in practice anyone) can request access to documents held by the Agency. The Agency can then decide whether such access might be granted (there are exceptions foreseen in article 4).

Such regulation applies only to already existing documents that the Agency holds (either because EASA is the author or because they have been received by EASA in the framework of its institutional activities).

This regulation does not apply to request for information where the Agency has to compile a new document to put together the aforementioned requested data and/or info.

Following the idea of this newsletter, to have a two-way communication and cooperation, we kindly invite you to share by e-mail to: [STC\\_news@easa.europa.eu](mailto:STC_news@easa.europa.eu)

