



**COST Action CA18120**

**Reliable roadmap for certification  
of bonded primary structures**

**Short Term Scientific Mission (STSM)**

**User Guideline**

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## About COST

The European Cooperation in Science and Technology (COST) is a funding organisation for the creation of research networks, called COST Actions. These networks offer an open space for collaboration among scientists across Europe (and beyond) and thereby give impetus to research advancements and innovation.



COST is bottom up, this means that researchers can create a network – based on their own research interests and ideas – by submitting a proposal to the COST Open Call. The proposal can be in any science field. COST Actions are highly interdisciplinary and open. It is possible to join ongoing Actions, which therefore keep expanding over the funding period of four years. They are multi-stakeholder, often involving the private sector, policymakers as well as civil society.

Since 1971, COST receives EU funding under the various research and innovation framework programmes, such as Horizon 2020.

COST funding intends to complement national research funds, as they are exclusively dedicated to cover collaboration activities, such as workshops, conferences, working group meetings, training schools, short-term scientific missions, and dissemination and communication activities. For more information, please go to the Funding section of the COST website (<https://www.cost.eu/>).

The COST Association places emphasis on actively involving researchers from less research-intensive COST Countries (Inclusiveness Target Countries, ITC<sup>1</sup>). Researchers from Near Neighbour Countries and International Partner Countries can also take part in COST Actions, based on mutual benefit. For more information, please visit the global networking page (<https://www.cost.eu/>).

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<sup>1</sup> Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Estonia, Macedonia, Hungary, Latvia, Lithuania, Luxembourg, Malta, Montenegro, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Turkey

## COST Action CA18120

With the increasing pressure to meet unprecedented levels of eco-efficiency, aircraft industry aims for superlight structures and towards this aim, composites are replacing the conventional Aluminium. The same trend is being followed by civil, automotive, wind energy, naval and offshore industry, in which the combination (or replacement) of steel with composites can increase the strength-to-weight ratio. However, the joining design is not following this transition. Currently, composites are being assembled using fasteners. This represents a huge weight penalty for composites, since holes cut through the load carrying fibres and destroy the load path.

Adhesive bonding is the most promising joining technology in terms of weight and performance. However, its lack of acceptance is limiting its application to secondary structures, whose failure is not detrimental for the structural safety. In primary (critical-load-bearing) structures, fasteners are always included along bondlines, as “back-up” in case the bond fails. The main reasons for this lack of acceptance are the limited knowledge of their key manufacturing parameters, non-destructive inspection techniques, damage tolerance methodology and reliable diagnosis and prognosis of their structural integrity.

The Action aims to deliver a reliable roadmap for enabling certification of primary bonded composite structures. Despite the motivation being aircraft structures, which is believed to have the most demanding certification, it will directly involve other application fields in which similar needs are required. This Action will tackle the scientific challenges in the different stages of the life-cycle of a bonded structure through the synergy of multi-disciplinary fields and knowledge transfer.

### General information

Start of Action: 04/04/2019

End of Action: 03/04/2023

### Main Contacts

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Action website: <https://certbond.eu/>

Domain website: <https://www.cost.eu/actions/CA18120>

## Action Management Committee

<b>Action Chair</b>	Sofia TEIXEIRA DE FREITAS
<b>Action Vice Chair</b>	Anastasios P. VASSILOPOULOS
<b>WG 1 - Adhesive and interface chemistry</b>	Ana MARQUES ( <a href="mailto:ana.marques@tecnico.ulisboa.pt">ana.marques@tecnico.ulisboa.pt</a> )
<b>WG 2 - Design phase</b>	Konstantinos TSERPES ( <a href="mailto:kitserpes@upatras.gr">kitserpes@upatras.gr</a> )
<b>WG 3 - Manufacturing phase</b>	Nicolas CUVILLIER ( <a href="mailto:nicolas.cuvillier@safrangroup.com">nicolas.cuvillier@safrangroup.com</a> )
<b>WG 4 - In-service life phase</b>	Wieslaw OSTACHOWICZ ( <a href="mailto:wieslaw@imp.gda.pl">wieslaw@imp.gda.pl</a> )
<b>WG 5 - Disassembly phase</b>	Laurent BERTHE ( <a href="mailto:laurent.berthe@ensam.eu">laurent.berthe@ensam.eu</a> )
<b>WG 6 – Certification</b>	Thomas KRUSE-STRACK ( <a href="mailto:thomas.kruse-strack@airbus.com">thomas.kruse-strack@airbus.com</a> )
<b>Grant Holder Scientific Representative</b>	Sofia TEIXEIRA DE FREITAS ( <a href="mailto:s.teixeiradefreitas@tudelft.nl">s.teixeiradefreitas@tudelft.nl</a> )
<b>Science Communication Manager</b>	Jose SENA CRUZ ( <a href="mailto:jsena@civil.uminho.pt">jsena@civil.uminho.pt</a> )
<b>STSM Coordinator</b>	Loucas PAPADAKIS ( <a href="mailto:l.papadakis@frederick.ac.cy">l.papadakis@frederick.ac.cy</a> )
<b>ITC Conference Manager</b>	Loucas PAPADAKIS ( <a href="mailto:l.papadakis@frederick.ac.cy">l.papadakis@frederick.ac.cy</a> )
<b>Training Schools Coordinator</b>	Chiara BEDON ( <a href="mailto:chiara.bedon@dia.units.it">chiara.bedon@dia.units.it</a> )
<b>Database Coordinator</b>	Michal BUDZIK ( <a href="mailto:mibu@eng.au.dk">mibu@eng.au.dk</a> )

## Action Working Groups

### WG 1 - Adhesive and interface chemistry

Leader: Ana MARQUES

Vice-leader: Åsa LUNDEVALL

- Evaluate current common practice in industry: adhesive chemistries and surface treatment processes for bonded joints.
- Collect the requirements and needs of the stakeholders and certification agencies, in terms of regulations (REACH).
- Propose novel non-toxic and environmentally friendly surface treatment processes and adhesive chemistries.
- Evaluate the quality of the new proposed eco-friendly solutions.

### WG 2 - Design phase

Leader: Konstantinos TSERPES

Vice-leader: Norbert BLANCO

- Explore new design concepts (geometrical configurations and new crack arresting design features).
- Compare testing procedures for bondline characterization and models validation (under static, fatigue and impact loading, creep phenomena, imperfect bonding and environmental effects).
- Evaluate different design methodologies for the structural behaviour and progressive damage analysis of adhesively bonded structures.

### WG 3 - Manufacturing phase

Leader: Nicolas CUVILLIER

Vice-leader: Rūta RIMAŠAUSKIENĖ

- Specify and select the key-parameters that influence the manufacturing process on an industrial scale.
- Evaluate destructive and non-destructive testing for quality control of manufacturing process.
- Propose novel embedded sensing solutions for the evaluation of adhesion strength.
- Evaluate of the effect of different manufacturing defects on the bondline performance.

### WG 4 - In-service life phase

Leader: Wieslaw OSTACHOWICZ

Vice-leader: Theodoros LOUTAS

- Propose diagnostic tools for the structural integrity assessment of the bonded structure.
- Propose prognostic tools for the remaining useful life of the bonded structure.
- Develop guidelines towards bonded repairs application.

### WG 5 - Disassembly phase

Leader: Laurent BERTHE

- Description of the state-of-the-art about disassembly technologies.
- Evaluation of the technologies and selection of the most promising technology.

### WG 6 - Certification

Leader: Thomas KRUSE-STRACK

Vice-leader: Ranko PETKOVIC

- Define common nomenclature for all WG's activities and deliverables.
- Integrate the outcomes and build the roadmap.
- Establish contact with relevant certification bodies and large industry manufacturers in naval, civil, offshore, automotive and wind energy and disseminate the progress of the Action and the roadmap.

## STSM application

The selection of applicants is based on the scientific scope of the STSM application which must clearly compliment the overall objectives of the Action. Applications that contribute to the fulfilment of the Action deliverables will be given priority. Applications which advance the overall objectives of Certbond will be also considered on their merit and contribution, as far as the STSM funding is available. Action members are encouraged to promote their projects to potential STSM applicants thus encouraging collaboration between institutions whilst strengthening the Actions outputs and network.

## Who is eligible to take part in STSM

STSM applicants must be engaged in a research programme as a postgraduate student or postdoctoral fellow, or be employed by or officially affiliated to an institution or legal entity. This institution is considered as the Home institution. Institutions may be public or private entities.

Home Institution	Host Institution
From a Participating COST Country or Cooperation State	To another Participating COST Country or Cooperation State
	To an approved NNC institution
	To an approved IPC institution
	To an approved Specific organization
From an approved NNC institution	To a Participating COST Country or Cooperation State
From an approved European RTD Organization	To a Participating COST Country or Cooperation State

Applicants are also requested to consult the COST Vademecum Chapter 8 for the updated information about STSMs.

## Duration of the STSM

STSMs can take place according to the following rules:

- Minimum duration of 5 days
- Maximum duration of 90 days
- Early stage researchers (ESR) may extend the duration of the STSM beyond 90 days, the maximum duration is 180 days
- All travels must be completed during the grant period of the action for each year individually (April-March)
- The Home and Host institution should be located in different countries
- STSMs within the same country are not allowed
- STSMs must occur entirety within the dates specified in the Grant Period or as published in the respective Action call announcement but not later than March 15
- Be aware when determining the start date of the STSM that pre-approval is needed to claim the grant

## The STSM grant

A STSM grant is a fixed contribution based on the budget requested by the applicant and the evaluation of the application by the Core Group of the Action. The aim of this grant is to support the costs associated with the exchange visit. The grant will not necessarily cover all expenses, it is intended as a contribution to the travel and subsistence costs of the participant.

STSM grantees must make their own arrangements for all provisions related to personal security, health, taxation, social security and pension matters.

The following conditions apply:

- The maximum reimbursement rate per day is EUR 160
- Up to EUR 300 may be attributed to the travel expenses
- A maximum of EUR 3.500 in total can be awarded to the grantee

## Application process for STSM

The applicant can submit an STSM application through e-Cost by clicking on the STSM application tab. If the applicant's e-COST profile is incomplete, they will first have to fill in the missing information (affiliation, education details, CV). Any already submitted applications are available for consultation in the applicant's e-COST profile. To submit a new application, the applicant clicks on 'Create a new STSM Request'.

The application page contains the following sections:

- Applicant details
- STSM details
- Bank details
- Host details (must be located in a different country than the country of the applicant)
- Financial support<sup>2</sup>
- Supporting documents

## Review of the proposal

As soon as the application is submitted, the STSM coordinator is notified and assigns - depending on the call topic - 3 core group members to serve as a review committee. Within 15 days from the deadline, the application will be reviewed and ranked based on the criteria set. Those with the highest scores will be financed, subject to the duration of the STSM applications and the available budget.

EVALUATION FORM FOR PROPOSALS FOR Short Term Scientific Missions (STSM)											
Short Term Scientific Missions (STSM)			Proposal 1: xxx (country)			Proposal 2: xxx (country)			Proposal 3: xx (country)		
Available Budget		€ 25.000,00	Title:		Title:		Title:				
			Duration:		Duration:		Duration:				
			Marking		Marking		Marking				
	Criteria	Weight	Review member 1	review member 2	review member 3	review member 1	view member	review member 3	review member 1	review member 2	review member 3
1	Relevance to COST-Action	30%									
2	Scientific value and Excellence	25%									
3	Interdisciplinary involvement amongs COST involved countries	20%									
4	know-how transfer level	15%									
5	Impact	10%									
		Results	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
		Total				0,00		0,00		0,00	
		Total requested budget									

<sup>2</sup> If the applicant is affiliated with an institute from an Inclusiveness Target Country, (s)he can apply for a pre-payment of 50% of the Grant. The applicant must keep in mind that the transfer of the 50% of the Grant can only take place after the mission has started and as such, requesting a pre-payment is more effective for STSMs longer than 1 month.



The GH will be notified on the outcome and send the Grant Letter to the applicant<sup>3</sup>.

In case of rejection, the STSM coordinator will provide a justification in order to guide the applicant in her/his resubmission.

## After the STSM

1 day and 15 days after the end of the STSM, the applicant receives a reminder to upload the two scientific reports (STSM Short and Long Reports – templates in <https://certbond.eu/repository/>) and the host approval of the report. The deadline to submit the last supporting documents is 30 days from the end of the STSM.

The reports should be developed in agreement with the templates:

- STSM Long Report: [https://certbond.eu/wp-content/uploads/CA18120\\_STS\\_M00\\_STSM-Long-Report-Template.docx](https://certbond.eu/wp-content/uploads/CA18120_STS_M00_STSM-Long-Report-Template.docx)
- STSM Short Report: [https://certbond.eu/wp-content/uploads/CA18120\\_STS\\_M00\\_STSM-Short-Report-Template.docx](https://certbond.eu/wp-content/uploads/CA18120_STS_M00_STSM-Short-Report-Template.docx)

The reports should be accompanied by:

- Confirmation by the host institution of the successful execution of the STSM (official signed letter)
- Confirmation from a senior researcher affiliated to the Host Institution that they formally accept your scientific report. This can be an email confirming that the STSM took place and the goals outlined in the Work plan were reached.

By accepting the awarded grant, the applicant gives consent for the use of the data from the STSM report from e-Cost for dissemination purposes such as the Certbond website.

The submission of the supporting documents is mandatory or the Grant is cancelled. Late submission, beyond the deadline, can also lead to the cancellation of the Grant and, in cases when a pre-payment was done, the obligatory reimbursement by the applicant of the amount received.

## Approval

The STSM coordinator forward the scientific report to the review members for approval. Thereafter, the Core group members will be informed and the Grant Holder will start the payment process.

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<sup>3</sup> If a pre-payment is applicable, the STSM host receives an notification requesting her/him to confirm to the GH that the STSM started on schedule. Without the host confirmation, the pre-payment will not be done.

## Annex 1: Agreement of the host institution

Address            Institute Head

Letter of invitation for [Title], [First Name], [LAST NAME]

To whom it may concern:

In the name of the host institution, [Institution], the undersigned [Title], [First Name], [LAST NAME] would like to express the interest in hosting [Title], [First Name], [LAST NAME] as STSM candidate for a duration of [Time] at our institute (alternatively “between [date] and [date]”). The research to be carried out during this short-term scientific mission within COST Action FP1402 will be [briefly describe subject].

We will support [Title], [First Name], [LAST NAME] with a working place and will provide access to data obtained in the frame of this research collaboration. Collaboration with [Title], [First Name], [LAST NAME] of the local advisor/contact] is envisaged. We kindly ask for agreement to mention the [Institution] in the acknowledgments of all related publications. Additionally, consideration of [Title], [First Name], [LAST NAME] of the local advisor/contact] as co-authors in related publications is appreciated.

Sincerely,

Signature

[Title], [First Name], [LAST NAME]

Institute Seal



<https://certbond.eu/>



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