

## **COST Action CA18120**

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

## **Inclusiveness Target Countries (ITC) conference grants for ECIs and PhDs**

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

## Action Management Committee

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## 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

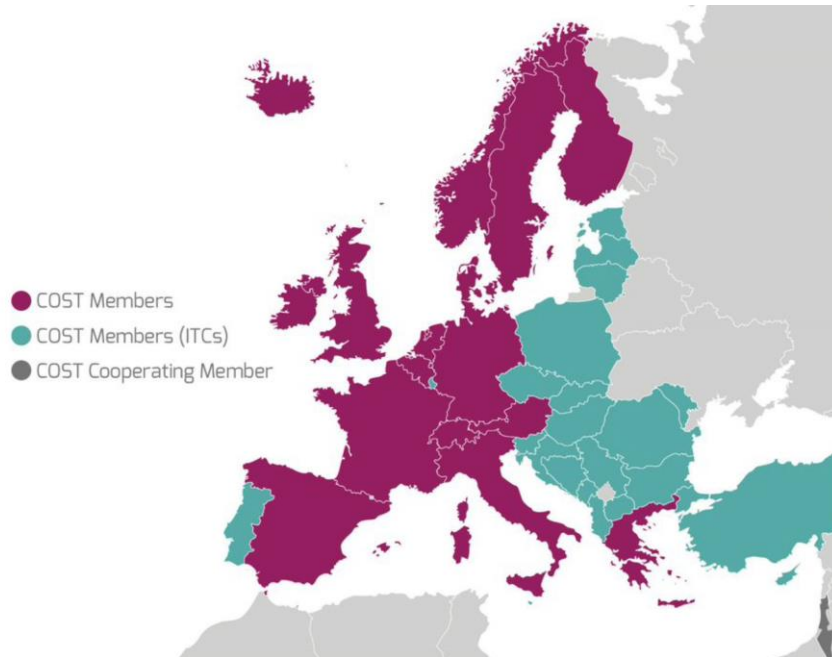
Leader: Thomas KRUSE-STRACK

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.

## What are the 21 Inclusiveness Target Countries (ITC)

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



## Who is eligible

- PhD students and Early Career Investigators (ECI)<sup>2</sup> with affiliation in a participating Inclusiveness Target Country (ITC).
- Oral/poster presentation.
- Listed in official programme.
- Pre-approval by the MC required.

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

## Evaluation and selection

- The evaluation of Conference Grant application is performed by Action's Core Group.
- ITC Conference Grant Manager assigns - depending on the call topic and involvement - 3 core group members to serve as reviewers.
- The person responsible for performing the related tasks into e-COST is the ITC Conference Grant Manager.
- The evaluation criteria defined by the Action's Core Group are communicated to all potential applicants.
- Proposals will be financed according to available budget as decided for each action period and on an open submission basis with no deadlines.

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<sup>2</sup> Researchers/postdocs/academics up to 8 years after PhD award

- STSMs must occur entirely 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.

### Evaluation criteria

Criterion	Weight
Relevance to COST-Action	30%
Scientific value and Excellence	25%
Team and ECI involvement	25%
Impact and Dissemination level	20%

Note: CERTBOND is fostering gender balance in ITC conference grants, in order to close the gaps in the participation of women.

### Financial support

- Conference Grants do not necessarily cover all the expenses related to participating in a given conference.
- A Conference Grant is a contribution to the overall travel, accommodation and meal expenses of the selected Grantee.
- Maximum EUR 160 per day for travel, accommodation and meals.
- Conference fees up to EUR 500.
- Maximum EUR 2500 in total can be afforded to successful candidate.
- Scientific report approval required before payment.

### Additional remarks

Pre-approval of ITC CG proposals to receive financial support can only be communicated after the evaluation and approval by the Action's Core Group (indicative date 15 days after submission).

Applicants for ITC conference participation must apply for the conference grant early in advance in order to allow for the evolution and pre-approval by the CG.

The deadline to submit a report is 30 days from the end of the conference.

ITC participation authors and presenters to acknowledge the COST action and provide the ITC CG Coordinator with their final paper and presentation/poster together with their final report for final approval.

ITC conference visits should be timely completed within the each Cost action period, and no later than the 15th March.





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