

EASA MoC roadmap on electric/hybrid propulsion systems.

Slido:

#AEROProp

- Session: Overview of Hybrid-Electric Propulsion

AERO – 10/04/2025

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Table of content

EHPS – 1st Electric engine TC using SC E-19

MoCs published 2024 – consultation period 2025.

MoC road map 2025.

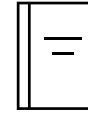
EASA mapping on novel prop. technologies

EHPS – 1st Electric engine TC using SC E-19

- Jan 2025: First TC showing the practical application of the SC E-19
- [Link](#) to related history.
- Open Session sharing the EASA lesson learned under preparation – to be announced soon.
- The experience and lessons learned will be used for future MoC publication (**see next slides**).
- Also Standards produced in working groups -> Use of SAE AIR-7130 and ED-321.

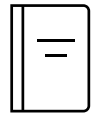
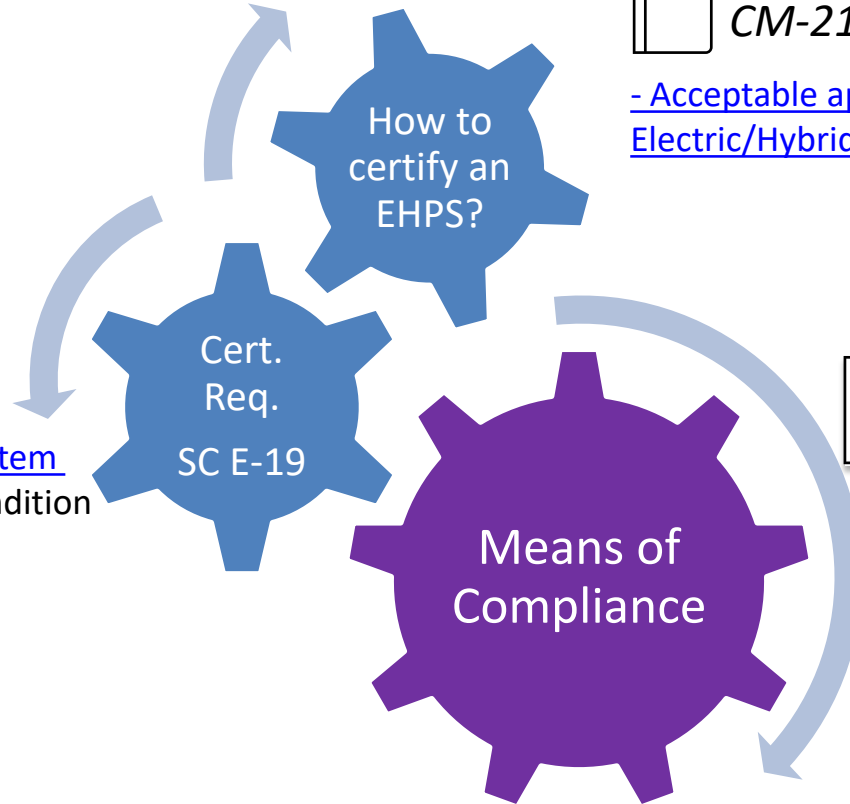


EHPS certification - framework



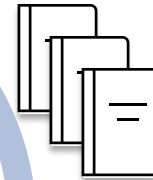
Proposed:
CM-21. A-004 Issue 01

- Acceptable approaches for the certification of Electric/Hybrid Propulsion Systems"



Final:
SC E-19 Issue 01

- Electric / Hybrid Propulsion System
- Performance Based Special Condition



See next slides

- Detail guidance provided in the MoCs.

SC E-19

→ Objectives:

- Technology agnostic
- To certify products as safe as the previous generation of propulsion technology
- Be able to reuse certified engines (recip or turbine) as part of an EHPS
- Safety objectives = $f(\text{intended aircraft application})$ to be proportionate
- To certify an EHPS as a stand-alone product or as part of the aircraft

Performance Based

→ Means of Compliance:

- Level 1 “A la Carte” table: tool for applicants
- Level 2 EASA MOC for each requirement
 - New EASA guidance
 - Explanation how to use recognised standards and Guidance Materials (L3)
 - Dedicated Subpart for each intended aircraft application product type
- Level 3 “Methods of Compliance”: Published Standards, CS-E, Guidance Material...

Level 2 and 3: examples

SC E.19 REQ	Level 2	Level 3	Name
EHPS.80	MOC.EHPS.80		Safety Assessment
		CS-E 850	Compressor, Fan and Turbine Shafts
		AMC E850	Compressor, Fan and Turbine Shafts
		CMT-20240605	Single Fault Tolerance and LOPC in Electric Engines: Level 1 & 2 Normal-Category Aeroplanes in General Aviation - Issue 2
		SAE AIR-7130	Single Fault Tolerance
	

i.e. **LOPC** and **Single Fault** new material required as a result of the exercise “GAP identification”

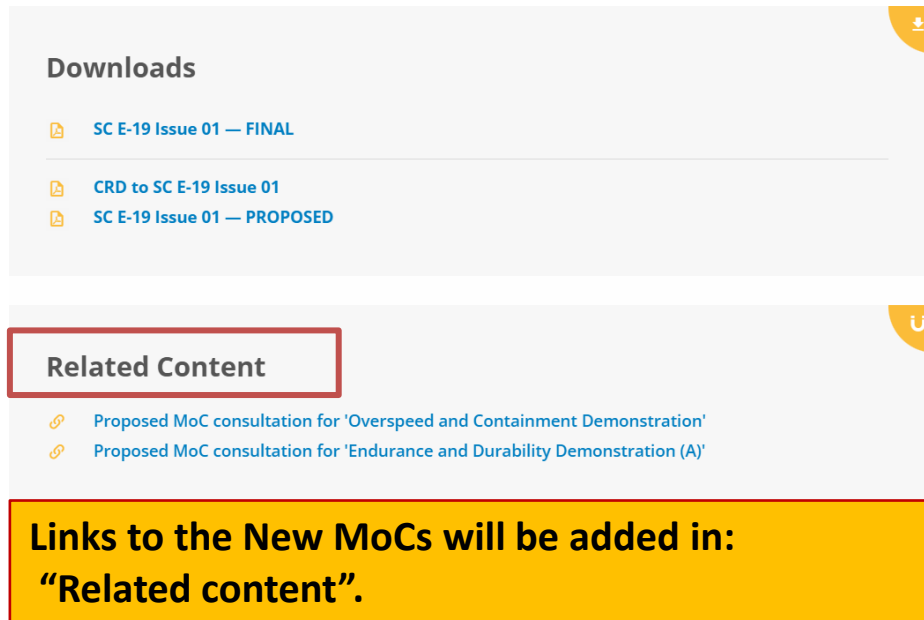
Rely on Industry to propose standards or methods of compliance to be accepted by EASA

MoC to :

- Provide clarifications of the rationale and intent of the SC- E 19.
- Link to other relevant requirements associated to these requirements.
- Propose means of compliance.
- Refer to methods of compliance such as regulatory texts, guidance material, Certification memo, industry standards, etc.

MoC published 2024

- [SC E-19 website](#) updated describing the EASA Level 1-3 strategy.
- “Related content” section indicates the links to the new MoCs for consultation.



The screenshot displays two sections from the SC E-19 website. The 'Downloads' section, located at the top, lists three documents: 'SC E-19 Issue 01 — FINAL', 'CRD to SC E-19 Issue 01', and 'SC E-19 Issue 01 — PROPOSED'. Below this, the 'Related Content' section is highlighted with a red border and lists two consultation links: 'Proposed MoC consultation for 'Overspeed and Containment Demonstration'' and 'Proposed MoC consultation for 'Endurance and Durability Demonstration (A)''.

Downloads

- SC E-19 Issue 01 — FINAL
- CRD to SC E-19 Issue 01
- SC E-19 Issue 01 — PROPOSED

Related Content

- Proposed MoC consultation for 'Overspeed and Containment Demonstration'
- Proposed MoC consultation for 'Endurance and Durability Demonstration (A)'

**Links to the New MoCs will be added in:
“Related content”.**

MoC published 2024 – Consultation period extended!

→ Additional information:

→ [Overspeed and Containment Demonstration | EASA](#)

- EHPS.240 Overspeed and Rotor Integrity; and
- EHPS.250 Rotating Parts Containment.

→ [Endurance and Durability Demonstration \(A\) | EASA](#)

- EHPS.40 Ratings;
- EHPS.420 Endurance Demonstration; and
- EHPS.450 Teardown Inspection.
- These MoC are based on the standard ED321.

→ Consultation period on the [Comment-Response Tool \(CRT\)](#) extended until **31 April 2025**.

Means of Compliance (MOC) Roadmap 2025

Publication-
April 2021

SC E19

Q4-2024

MOC approach
definition

Drafting

Projects

CMT
TST*

SDO

Internal
consultation

publication for
consultation

Target Q1 2026

MoC under definition

EHPS.380 Propulsion Battery -
Electrical Charger
EHPS.50 Materials
EHPS.370 Electrical Power
Generation, Distribution and
Wirings (based on)

1st Draft Initiated

EHPS.100 Fire protection
EHPS.430 Durability demonstration
EHPS.350 EHPS Control System

Under review

Ready for public consultation

EHPS.40 Ratings and operating
limitations
EHPS.80 Safety Assessment
EHPS.240 Overspeed and rotor integrity
EHPS.250 Rotating Parts Containment
EHPS.420 Endurance substantiation
EHPS.440 Calibration assurance
EHPS.450 Tear Down inspection

*CMT – Certification management team
TST – Task Specific Team
SDO – Standards Development Organization

Working groups supporting the activity -> Join!

- EUROCAE WG112
- EUROCAE WG113 Hybrid electrical propulsion
- EUROCAE WG116 High Voltage Systems and Components in Aviation
- SAE E-40 Electrified Propulsion
- SAE E-36

MOC Road map 2025 – further notes.

→ MOC 1st Draft:

- **EHPS.100 Fire protection** – lesson learned from 1st TC.
- **EHPS.430 Durability demonstration** – intend to follow ED under development in WG113 – targeted for mid 2025.
- **EHPS.350 EHPS Control System**

Publication for consultation intended beginning 2026

→ MOC under definition

- **EHPS.370 Electrical Power Generation, Distribution and Wirings** – 1st publication focus in EWIS – will adopt MoC VTOL.2517 – under publication for consultation.
- **EHPS.380 380 Propulsion Battery - Electrical Charger** – 1st publication intended in 2026 will focus mainly in thermal run away. Other topics under discussion in the CMT (ie. Remaining useful energy - Endurance and durability of Energy Storage) target date is TBD – based on the progress with working groups and harmonization with FAA.
- **EHPS.50 Materials** – First intention is to focus in reliability estimation of new electric engines technologies/components. Publication intended in 2026.

EASA mapping on novel prop. technologies

- EASA strategy to support the certification of novel technologies related to propulsion is under review to better support industry need and ensure readiness of regulatory material at the time of application when possible.
- Double mapping in terms of TRL and CRL (Certification Readiness Level) for novel technologies
- Planning: Q3 2025



Thank you
Any further question?

easa.europa.eu/connect



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