

Publication of CEN Technical Standard (CEN/TS) 19101: Design of Fibre-Polymer Composite Structures

Publication of CEN/TS 19101

Technical Specification CEN/TS 19101 was published on November 9th, 2022, after a unanimously positive vote from the member states earlier in the year [1]. The result of more than 12 years of strong effort in CEN Technical Committee 250 (TC250) Working Group WG4.T2 (2018-2021) led by Prof. Luigi Ascione, this truly is a landmark moment for the European composites industry. A significant contribution has been given by the project team appointed by CEN TC250 in 2018, composed of: João Ramôa Correia, Leader, University of Lisbon, Portugal; Thomas Keller, École Polytechnique Fédérale de Lausanne, Switzerland; Jan Knippers, University of Stuttgart, Germany; Toby Mottram, University of Warwick, UK; Carlo Paulotto, Ferrovial, Spain; José Sena-Cruz, University of Minho, Portugal (since 09/2020); Till Vallée, Fraunhofer Institute, Germany (until 11/2019).

CEN/TS 19101 provides clear guidance on how to design structures based on fibre-polymer composite materials in accordance with the Eurocodes to which all civil engineering structures in general design in Europe must comply. Having a dedicated Technical Specification establishes composites as a credible construction material alongside steel, concrete, and aluminium.

The structure and key elements of CEN/TS 19101 have been described in previous publications [2], [3], [4], [5]. In addition to the TS itself, two other documents have been prepared for publication in 2023: a 1000-page commentary document provides the background, duly referenced, for the formulas used, the partial and conversion factors listed and all other recommendations; and a book of 14 worked examples will help engineers to understand and apply the TS in practice.

Next steps towards the Eurocode for composites

The publication of CEN/TS 19101 starts a 2-3 year trial phase in the engineering world. During this period, designers, engineers, academics and other professionals are encouraged to apply the guidelines in real cases. EuCIA supports the wide dissemination of CEN/TS 19101 for extensive testing of the document to take place.

Questions, comments and suggestions will be sent to TC250 via the National Standardisation Bodies, after which the final decision to turn CEN/TS 19101 into a Eurocode will be taken by CEN TC250. The green light for the Eurocode for composites is expected in 2025-2026.

Communication and planned activities

EuCIA, its members and partners will keep the composites world up-to-date on developments related to the Eurocode for composites via their websites and other communication channels.

CEN/TS 19101 is available for sale now in many of the member states via their National Standardisation Bodies.

Participants of WG4 will be giving presentations on the CEN/TS 19101, our future Eurocode for composites, at conferences across the globe. Such conferences will be both internal to our industry and in the wider building and construction community. A list of presentations will be available on the EuCIA website.

EuCIA and the WG4 team members encourage professors and their academic colleagues to start integrating the recommendations of the CEN/TS 19101 into their course materials.

Meanwhile, TC250 has responded positively to our sector's demand to develop an execution code for composite structures [6]. The positive result of a TC250 ballot, concluded on March 27th 2023, means this work will commence soon as a continuation of the activities of CEN WG4.

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Prof. Eric Moussiaux
VP Technology, Exel Composites
Member of the Board of EuCIA and EPTA
CEN/TC250 WG 4 Liaison Officer for EuCIA

Prof. Roberto Frassine
President, EuCIA
President, Assocompositi
Professor, Politecnico Milano

References

[1] CEN/TC 250 WG 4, Ascione, L. et al: FprEN/TS 19101: 2021 Design of Fiber-Polymer Composite Structures (November 2021) final version, duly referenced.

[2] Correia, J.R., Keller, T., Knippers, J., Mottram, T., Paulotto, C., Sena-Cruz, J., Ascione, L.: "Publication of the new European Technical Specification CEN/TS 19101: 2022. "Design of fibre-polymer composite structures," IIFC Newsletter, Vol. 19, No. 2, December 2022, pp. 16-20.

[3] Proceedings of the 20th European Conference on Composite Materials ECCM20, 26-30 June 2022, Vol 5 – Applications and Structures, pp. 576-630, EPFL Lausanne, Switzerland (https://doi.org/10.5075/epfl-298799_978-2-9701614-0-0).

[4] EuCIA, Frassine, R. et al: Towards a Eurocode for Fibre-Polymer Composite Structures (June 2021).

[5] Moussiaux, E.: The Eurocode for Composites, EPTA World Pultrusion Conference, Paris, (May 2022).

[6] Ascione, L. et al: Execution of fibre-polymer composite structures, online publication, <https://eucia.eu/> (July 2022).